2023

DEKALB COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

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PREPARED BY MO-KAN REGIONAL COUNCIL
224 N. 7TH ST., ST. JOSEPH, MO 64501

DeKalb Hazard Mitigation Planning Committee

Jurisdictional Representatives

Name		Title	Department	Jurisdiction/Agency/Organiz
Harold	Allison	Emergency Management Director	Commission	DeKalb County
Penny	Gans	Deputy Clerk	Commission	DeKalb County
Michele	Alwood	Deputy Clerk	Administration	Maysville
Tina	Good	City Clerk	Administration	Clarksdale
Jody	Barlow	City Clerk	Administration	Osborn
John	Lawson	City Council	City Council	Stewartsville
Stacy	Benoit	City Clerk	Administration	Union Star
Stephen	Gallus	City Council	City Council	Weatherby
Chris	Heslinga	Superintendent	Administration	Maysville School District
Derek	Brady	Superintendent	Administration	Osborn School District
Michael	Stephenson	Superintendent	Administration	Stewartsville School District
Rick	Calloway	Superintendent	Administration	Union Star School District

Stakeholder Representatives

Name		Title	Department	Agency/Organization
Chet	Owen	Commissioner	Commission	DeKalb County
Missy	Meek	County Clerk	Commission	DeKalb County
Tanya	Zimmerman	Assessor	Assessor's Office	DeKalb County
Wendy	Cochran	Assistant to Assessor	Assessor's Office	DeKalb County
Jennifer	Justus	Code Enforcer	City Council	Maysville
Mark	Humphrey	Trustee	Township Board	Polk Township
Bill	Gray	Operator	Road & Bridge Department	DeKalb County
Ben	Routon	Operator	Road & Bridge Department	DeKalb County
Rachel	Brown	Emergency Planner	Public Health	Tri-County Health Department

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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. DeKalb 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 October 4, 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 DeKalb County
- Amity
- Clarksdale
- Maysville
- Osborn
- Stewartsville
- Union Star
- Weatherby
- Maysville School District
- Osborn School District
- Stewartsville School District
- Union Star School District

DeKalb County and the entities listed above developed a Multi-Jurisdictional Hazard Mitigation Plan that was approved by FEMA on October 4, 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 County A 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.

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Based upon the risk assessment, the MPC agreed to carry forward the updated 2018 goals for reducing risk from hazards. The goals are listed below:

Goal 1: Protect the lives, property and livelihoods of all citizens.
1. Objective: Provide sufficient warning of impending disasters.
2. Objective: Increase knowledge of natural hazards among citizens.
3. Objective: Protect residential and commercial structures in the present and future.
Goal 2: Reduce the impact of disasters.
1. Objective: Manage growth in designated areas through sustainable policies, principles and practices.
Goal 3: Ensure continued operation of government and emergency functions in a disaster.
1. Objective: Increase disaster mitigation management capability in local governments.
2. Objective: Strengthen critical infrastructure.

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

Table I. Mitigation Action Matrix

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
	Prevention Public Education							
1.1.2	Storm shelter map	Stewartsville	High	1	Tornado, thunderstorm	x	x	x

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#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
1.2.a	Public education	DeKalb County	High	1	Dam Failure, Drought, Earthquake, Flood, Heat Wave, Severe Winter Weather, Thunderstorm, Tornado, Wildfire	x	x	x
1.2.i	Water and conservation	Maysville	High	1	Drought, heat wave	X	X	n/a
1.2.j	Water and conservation	DeKalb County	High	1	Drought, heat wave	X	X	n/a
1.2.m	Snow day plans	DeKalb County	Medium	1	Severe winter weather	X	X	n/a
1.3.a	Safe area assessment	DeKalb County	High	1	Tornado, thunderstorm	X	X	x
1.3.b	Safe area assessment	Maysville	High	1	Tornado, thunderstorm	X	X	x
1.3.c	Safe area assessment	Stewartsville School District	High	1	Tornado, thunderstorm	X	X	x
1.3.d	Safe area assessment	Union Star School District	High	1	Tornado, thunderstorm	X	X	x
2.1.c	Flood hazard maps	DeKalb County	High	2	Dam failure, flood, thunderstorm	X	X	x
	Structure and Infrastructure Projects							
1.1.1	Outdoor warning siren	DeKalb County	High	1	Tornado, thunderstorm	x	x	x

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#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
1.1.2	Safe Room	Clarksdale	Medium	1	Tornado, earthquake, thunderstorm	x	x	x
1.3.e	Volunteer groups assist with winterizing homes	DeKalb County	Medium	1	Severe winter weather	X	X	n/a
2.1.b	Address development in hazard-prone areas	DeKalb County	Low	2	Dam Failure, Earthquake, Flood, Severe Winter Weather, Thunderstorm, Tornado, Wildfire	x	x	x
3.2.b	Generator	Maysville	High	3	Earthquake, flood, heat wave, severe winter weather, thunderstorm, tornado	X	X	x
3.2.c	Street improvements	Union Star	High	3	Flood	X	X	x
	Natural Systems Protection							
1.3.f	Tall grass management	Amity	Medium	1	Wildfire	X	X	n/a
2.1.a	Watershed and stormwater practices	DeKalb County	Medium	2	Flood, thunderstorm	X	X	x
	Emergency Services							
1.2.n	Heat Emergency Shelters	DeKalb County	High	1	Heat wave	X	X	n/a

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#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
1.2.o	Inventory of facilities with generators	DeKalb County	High	1	Dam Failure, Earthquake, Flood, Severe Winter Weather, Thunderstorm, Tornado, Wildfire	x	x	x
1.2.p	Emergency access and evacuation routes	DeKalb County	Medium	1	Dam Failure, Earthquake, Flood, Severe Winter Weather, Thunderstorm, Tornado, Wildfire	x	x	x
1.2.q	Lack of emergency response	DeKalb County	Medium	1	Dam Failure, Earthquake, Flood, Severe Winter Weather, Thunderstorm, Tornado, Wildfire	x	x	x
1.2.r	Winter Weather Shelters	DeKalb County	High	1	Severe winter weather	X	X	n/a
3.1.b	Mutual aid agreements	DeKalb County	High	3	Dam Failure, Earthquake, Flood, Severe Winter Weather, Thunderstorm, Tornado, Wildfire	X	X	x

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#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
3.1.c	Emergency Management Director Position (full time)	DeKalb County	Medium	3	Dam Failure, Earthquake, Flood, Severe Winter Weather, Thunderstorm, Tornado, Wildfire	x	x	x
3.1.i	Radios	Clarksdale	Medium	3	Earthquake, Flood, Severe Winter Weather, Thunderstorm, Tornado	x	x	x
3.2.a	Evaluate dispatch center locations	DeKalb County	High	3	Earthquake, Flood, Heat Wave, Severe Winter Weather, Thunderstorm, Tornado	x	x	x
	Education and Outreach							
1.2.b	Disaster drills	Stewartsville School District	High	1	Dam Failure, Earthquake, Flood, Severe Winter Weather, Thunderstorm, Tornado, Wildfire	x	x	x

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#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
1.2.c	Public service announcements	DeKalb County	Medium	1	Dam Failure, Earthquake, Flood, Severe Winter Weather, Thunderstorm, Tornado, Wildfire	x	x	x
1.2.d	Webpage info	DeKalb County	High	1	Dam Failure, Earthquake, Flood, Severe Winter Weather, Thunderstorm, Tornado, Wildfire	X	x	X
1.2.e	Tornado safe room public education campaign	DeKalb County	High	1	Tornado, thunderstorm	X	X	x
1.2.f	Home winterization public education campaign	DeKalb County	High	1	Severe Winter Weather	X	X	n/a
1.2.g	Winter travel public education campaign	DeKalb County	High	1	Severe Winter Weather	X	X	n/a
1.2.h	Winter travel public education campaign	Osborn School District	High	1	Severe Winter Weather	X	X	n/a
1.2.k	Wildfire public education campaign	DeKalb County	High	1	Severe Winter Weather	X	X	n/a
1.2.l	Fire hazard level information	DeKalb County	High	1	Severe Winter Weather	X	X	n/a
1.2.s	Public information campaign about “ice dams”	DeKalb County	Medium	1	Severe Winter Weather	X	X	n/a
3.1.a	Earthquake mitigation	DeKalb County	High	3	Earthquake	X	x	n/a

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#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
3.1.d	Debris management	DeKalb County	High	3	Flood, severe winter weather, thunderstorm, tornado	X	X	x
3.1.e	Debris management	Maysville	Medium	3	Flood, severe winter weather, thunderstorm, tornado	X	X	x
3.1.f	Debris management	Osborn	High	3	Flood, severe winter weather, thunderstorm, tornado	X	X	x
3.1.g	Earthquake mitigation	Osborn School District	Medium	3	Earthquake	X	X	n/a
3.1.h	Earthquake mitigation	Stewartsville School District	High	3	Earthquake	X	X	n/a

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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.

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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: _____

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1 INTRODUCTION AND PLANNING PROCESS

1 INTRODUCTION AND PLANNING PROCESS 1.1
1.1 Purpose *1.1*
1.2 Background and Scope *1.2*
1.3 Plan Organization *1.2*
1.4 Planning Process *1.3*
1.4.1 Multi-Jurisdictional Participation 1.5
1.4.2 The Planning Steps 1.6
CRS Activity Points ..... ***Error! Bookmark not defined.***

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.

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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 DeKalb County Multi-Jurisdictional Hazard Mitigation Plan is a revision of the previous five-year update adopted in March 2018 which was the second update of the original plan.

Jurisdictions that participated in the last plan and are continuing participation in the 2021 include:

• DeKalb County
• Village of Amity
• City of Clarksdale
• City of Maysville
• City of Osborn
• City of Stewartsville
• City of Union Star
• Village of Weatherby (in progress)
• Maysville School District
• Osborn School District
• Stewartsville School District
• Union Star School District

The jurisdictions of Cameron, Stewartsville and Osborn are located in both DeKalb County and Clinton County. Stewartsville and Osborn are participating in the DeKalb County plan while Cameron is participating in the Clinton County plan. Information in the plan will be used to help guide and coordinate mitigation activities and decisions for local land use policy.

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1.3 Plan Organization

The 2023 HMP is organized into the following chapters:

- 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
  Appendix A: References
  Appendix B: Planning Process Documentation
  Appendix C: Completed/Deleted Mitigation Actions
  Appendix D: Adoption Resolutions
  Appendix E: Critical/Essential Facilities (Redacted from Public Version)

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 Process,

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 shows each chapter and summarizing the changes made in the update.

Table 1.1. Changes Made in Plan Update

2018 HMP	2023 HMP
Chapter 1 - Introduction and Planning Process	Updated members of the Mitigation Planning Committee (MPC) and participating jurisdictions that formally adopted the Plan.
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.

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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 was contracted to facilitate the update of the multi-jurisdictional, local hazard mitigation plan. Mo-Kan staff met with the DeKalb County commissioners and Emergency Management Director during the informational meeting to develop a list of stakeholders and local jurisdiction representatives for the Mitigation Planning Committee (MPC). The updating process involved four MPC 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. Press releases were disseminated for the MPC

meetings for all four meetings, held on December 7, 2021, February 8, 2022, April 12, 2022, and June 14, 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. A press release was sent notifying the public that the plan was available for comment. Input from city and county officials was also solicited through the online availability of the draft.

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
Penny	Gans	DeKalb County Deputy Clerk	Commission	DeKalb County
Harold	Allison	EMD	Commission	DeKalb County
Tanya	Zimmerman	Assessor	Assessor's Office	DeKalb County
Wendy	Cochran	Deputy Assessor	Assessor's Office	DeKalb County
Chet	Owen	Commissioner	Commission	DeKalb County
Tina	Good	Clerk	City Council	City of Clarksdale
Stacy	Benoit	Clerk	City Council	City of Union Star
John	Lawson	City Council	City Council	City of Stewartsville
Michele	Allwood	Deputy Clerk	City Council	City of Maysville
Jennifer	Justus	Code Enforcer	City Council	City of Maysville
Chris	Heslinga	Superintendent	Administration	Maysville School District
Derek	Brady	Superintendent	Administration	Osborn School District
Michael	Stephenson	Superintendent	Administration	Stewartsville School District
Rick	Calloway	Superintendent	Administration	Union Star School District
Rachel	Brown	Emergency Planner		Tri-County Health Department

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. MPC Capability with Six Mitigation Categories

Community Department/Office	Preventive Measures	Structure and Infrastructure Projects		Natural Resource Protection	Public Information	Emergency Services
		Property Protection	Structural Flood Control Projects			
DeKalb County Emergency Management	✓					✓
DeKalb County Assessor's Office		✓			✓	
DeKalb County Commission		✓			✓	
City of Clarksdale		✓				
City of Maysville		✓				
City of Stewartsville		✓				
City of Union Star		✓				
Maysville School		✓				

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District						
Osborn School District					✓	
Stewartsville School District					✓	
Union Star School District					✓	

1.4.1 Multi-Jurisdictional Participation

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

Write an introductory paragraph explaining the importance of active participation in the hazard mitigation process. See FEMA guide *Local Mitigation Planning Handbook March 2013 ("Handbook")* Tasks 1, 2, and 3.

- Summarize how incorporated communities, public school and special districts, and various other stakeholders in mitigation planning were invited to participate in the plan update, referencing the appendix for supporting documentation.
- Explain that the DMA requires each jurisdiction to participate in the planning process and officially adopt the plan. Establish minimum criteria for participation that each jurisdiction must meet in order to be considered a "participant." These plan participation requirements should be defined at the first planning meeting, and could include the following:
  - Designation of a representative from each participating jurisdiction to serve on the MPC;
  - Participation in a minimum number of specified meetings, including centralized, planning area wide MPC meetings, by either direct participation or authorized representation;
  - 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;
  - Provide progress reports on mitigation actions from the previously approved plan and identify additional mitigation actions for the plan;
  - Eliminate from further consideration those actions from the previously approved plan that were not implemented because they were impractical, inappropriate, not cost-effective, or were otherwise not feasible;
  - Review and comment on plan drafts;
  - Actively solicit input from the public, local officials, and other interested parties about the planning process and provide an opportunity for them to comment on the plan;
  - Provide documentation to show time donated to the planning effort; and
  - All participants should formally adopt the mitigation plan prior to submittal to SEMA and FEMA for final approval.

Communities with full-time staff were able to attend meetings, in general, but the communities without full-time staff had difficulty. The MPC agreed that if a jurisdiction was unable to attend the meetings that participation could be met by communicating with Mo-Kan to receive meeting materials and submitting necessary paperwork. See **Table 1.5** for jurisdictional involvement in the planning process, which shows the representation of each participating jurisdiction at the planning meetings, the provision of responses to the Data Collection Questionnaire, the active critical facility validation, the update/development of mitigation actions, and the documentation of donated time, as applicable. Reference sign-in sheets and

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other documentation located in an appendix.

Table 1.4. Jurisdictional Participation in Planning Process

Jurisdiction	Kick-off Meeting	Meeting #2	Meeting #3	Meeting #4	Data Collection Questionnaire Response	Update/Develop Mitigation Actions
DeKalb County	✓	✓	✓	✓	✓	✓
Village of Amity					✓	✓
City of Clarksdale	✓	✓	✓	✓	✓	✓
City of Maysville	✓	✓	✓	✓	✓	✓
City of Osborn				✓	✓	✓
City of Stewartsville			✓	✓	✓	✓
City of Union Star	✓	✓	✓	✓	✓	✓
Village of Weatherby				✓	?	?
Maysville School District	✓	✓	✓		✓	✓
Osborn School District	✓				✓	✓
Stewartsville School District		✓			✓	✓
Union Star School District	✓	✓	✓	✓	✓	✓

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.

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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)

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Step 1: Organize the Planning Team
(Handbook Tasks 1, 2, and 4)

In February 2021, Mo-Kan entered into cooperative agreements with SEMA and DeKalb County to prepare this multi-jurisdictional plan for local jurisdictions in DeKalb County. Discussions on the development of the DeKalb County Multi-Jurisdictional Hazard Mitigation Plan began on October 4, 2021, with a meeting attended by Mo-Kan staff, DeKalb County Commissioners and the Emergency Management Director for the county. 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, private industry and utility providers, and conservation 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	Mo-Kan staff met with commissioners and EMD to discuss potential MPC participants and the timeline for updating the plan, including setting the kick-off meeting date. Jurisdictions were mailed questionnaire forms after this meeting.	10-5-21
Kick-off Meeting	Discussed background and importance of HMP, timeline, participation requirements, data collection & next steps	12-7-21
Planning Meeting #2	Discussed hazards in the county, outreach opportunities, and reviewed goals and objectives	2-8-22
Planning Meeting #3	Action assessment workshop session	4-12-22
Planning Meeting #4	Plan maintenance process	6-14-22

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

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

The MPC held its kick-off meeting on December 7, 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 and press releases to the media, 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. Additionally, an HMP informational brochure was developed to distribute at various meetings and some jurisdictions included this information in community mailings. Ready-In-Three materials were distributed to the public in City of Clarksdale during a local spring community event and in City of Maysville _____.

Step 3: Coordinate with Other Departments and Agencies and Incorporate Existing Information

(Handbook Task 3)

44 CFR Requirement 201.6(b): An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include: (2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process. (3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

At the informational meeting, held October 5, 2021, the DeKalb County Emergency Manager Director and 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 DeKalb County, school districts, emergency service personnel, and private industry representatives. 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 DeKalb 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

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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 7, 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 count. At the second MPC meeting, held on February 8, 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 14, 2022, which included questionnaire information. The 2018 DeKalb County HMP and the 2018 State Plan provided a basis for the 2022 DeKalb 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. DeKalb County and the City of Maysville 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)

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During the third MPC meeting, held April 12, 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.
1. Objective: Provide sufficient warning of impending disasters.
2. Objective: Increase knowledge of natural hazards among citizens.
3. Objective: Protect residential and commercial structures in the present and future.

Goal 2: Reduce the impact of disasters.
1. Objective: Manage growth in designated areas through sustainable policies, principles and practices.

Goal 3: Ensure continued operation of government and emergency functions in a disaster.
1. Objective: Increase disaster mitigation management capability in local governments.
2. Objective: Strengthen critical infrastructure.

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

At the third MPC meeting, held on April 12, 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 12, 2022, and June 14, 2022, new actions were discussed. The individual jurisdictions submitted their new actions after discussion

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with their respective city council or school board. It was at the individual jurisdiction's discretion on whether to include actions with low STAPLEE scores. 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 DeKalb County Commissioners and the other jurisdictions for public comment in July for adoption in Fall 2022. 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 14, 2022, the discussion was more in depth, including strategies for plan implementation, monitoring and plan review dates. DeKalb 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.

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2 PLANNING AREA PROFILE AND CAPABILITIES

2 PLANNING AREA PROFILE AND CAPABILITIES 2.1

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2.1 DeKalb Planning Area Profile

Figure 2.1. Map of DeKalb County

Source: Mo-Kan Regional Council

DeKalb County is bordered by Andrew, Buchanan, Clinton, Caldwell, Daviess and Gentry counties in Missouri. As shown in **Figure 2.1**, the county seat of Maysville is located near the geographic

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center of the county. Incorporated communities are Amity, Clarksdale, Maysville, Osborn, Stewartsville, Union Star and Weatherby. The City of Cameron is situated partially in DeKalb County and partially in Clinton County and is participating in Clinton County's Hazard Mitigation Plan.

According to the U.S. Census Population as of April 1, 2020, 11,029 people live in DeKalb County. This is a 14.5 percent decline in population compared with the 2010 population of 12,892 and shows a 4.9 percent downward trend in population compared to the 11,597 in population reported in the 2000 U.S. Census. The decline in population could be attributed to the prison population decline in Cameron that occurred in 2019 when the two prisons there were consolidated. 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. DeKalb County's median household income (MHI) was $58,433 in 2020, compared with $31,654 in 2000, indicating an 84.6 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 72 percent from $72,700 in 2000 to $125,000 in 2020; Missouri's MHV increasing 82 percent; and the United States' MHV increasing 92 percent (http://www.census.gov, http://www.mcdc.missouri.edu).

2.1.1 Geography, Geology and Topography

In accordance with the United States Census Bureau the county is about 426 square miles; and about 424 square miles is land, and two square miles is water. The county is predominately rural with centrally located Maysville serving as the county seat. Cameron, located in both Clinton and DeKalb County is the largest population center, with 9,665 residents. Agriculture is the primary land use.

The general geology of DeKalb County can be described as an interbedded limestone and shale bedrock, with glacial till deposited in the soils. There are four associations of soil in this county; an association is a distinctive proportional pattern of soil. The Lamoni-Zook-Shelby association occupies 53 percent of the county, Lagonda-Grundy occupies 29 percent, and Zook-Kennebec and Armstong-Gara-Ladoga each cover 9 percent.

DeKalb County does not have a major river, but there is one fork and two larger creeks. Third Fork Grand River runs from the north to the south, flowing next to Union Star along the western border of DeKalb County. Lost Creek runs from the north to southeast, beginning in the north central part of the county forming King Lake, and then running from the central part of the county to almost straight east, before spilling into Grindstone Creek. Grindstone Creek runs from the northeast to the southwest and is along the eastern border of DeKalb County.

There are two watersheds in DeKalb County. The Platte watershed includes the communities of Amity, Clarksdale, Stewartsville and Union Star. The Upper Grand watershed includes the communities of Cameron, Maysville, Osborn and Weatherby. Figure 2.2 shows the two 8-digit hydrological unit (HUC) watersheds in the county (Source: MoDNR).

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Figure 2.2 DeKalb County HUC 8 Watersheds

Source: Mo-Kan Regional Council

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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. Weather reports from the Amity Weather Station state the mean average temperature is 52.3°, show that July is the warmest month, and indicates a mean maximum temperature of 86.5° (76.5° is mean average temperature for the month). January is the coldest month and has a mean average minimum temperature of 16.4° (25.6° is the mean average temperature for the month). (Source: http://mrcc.isws.illinois.edu/mw_climate/climateSummaries/climSummOut_temp.jsp?stnId=USC00230143). The average rainfall is 38 inches per year and average snowfall is 18 inches per year (Source: https://www.ncdc.noaa.gov/temp-and-precip/ and http://www.bestplaces)

2.1.3 Population/Demographics

Table 2.1 provides the populations for each city, village, and the unincorporated county for 2000 and 2016 American Community Survey 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 jurisdictions overlap into the adjacent counties, such as the case with the cities of Union Star, Stewartsville,

Osborn and Cameron. Cameron, the largest incorporated area, is participating in Clinton County's Plan since most of its population reside in Clinton County.

Table 2.1. DeKalb Population 2000-2020 by Jurisdiction

Jurisdiction	2000 Census Total Population	2010 Census Total Population	2016-2020 ACS 5-yr Estimates	2010-2020 # Change	2010-2020 % Change
DeKalb County	11,597	12,892	11,872	1,020	-7.9%
Village of Amity	70	54	56	2	3.7%
City of Clarksdale	351	271	263	-8	-3%
City of Maysville	1,212	1,114	1,142	28	2.5%
City of Osborn	455	423	402	-21	-5%
City of Stewartsville	759	750	692	-58	-7.7%
City of Union Star	433	437	555	118	27%
Village of Weatherby	123	107	67	-40	-37.4%
Unincorporated and the City of Cameron	8,194	9,736	8,695	1,041	-10.7%

Source: U.S. Bureau of the Census, Decennial Census, annual population estimates/ 5-Year American Community Survey 2020; censusreporter.org *population includes the portions of these cities in adjacent counties

According to the 2016-2020 US Census Bureau ACS 5-year estimates, DeKalb 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 4.8 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 analysis data in the next chapter includes Social Vulnerability Index (SoVI ®) information from the Hazards and Vulnerability Research Institute at the University of South Carolina. The University developed this index to evaluate and rank the ability to respond to, cope with, recover from, and adapt to disasters. The index synthesizes 29 socioeconomic variables which research literature suggests may contribute to a 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. DeKalb County has a SoVI ® score of -0.409999996 which is in the 43.1 percentile for the nation.

Figure 2.3 shows how DeKalb County compares to the state in social vulnerability to environmental hazards. A high 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). DeKalb County's score the county is in the lowest category of vulnerability in relation to both state and national quantiles.

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Figure 2.3 Social Vulnerability Index

Source:
https://www.sc.edu/study/colleges_schools/artsandsciences/centers_and_institutes/hvri/data_and_resources/sovi/sovi_data/index.php

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

Jurisdiction	Labor Force Participation Rate (%)	Unemployment Rate (%)	Percent of Families Below the Poverty	Percentage of Population (High School graduate)	Percentage of Population (Bachelor's degree or higher)	Percentage of population with spoken language other than English
DeKalb County	41.1%	2%	6.9%	88.4%	15.8%	2.1
Village of Amity	62.5%	0%	0	85.5%	1.8%	0
City of Clarksdale	63.4%	14.1%	9.5%	89.1%	8%	0
City of Maysville	63.7%	0	15%	91.5%	13.4	.7
City of Osborn	68.5%	.4%	1.1%	95.4%	29.2	1.3
City of Stewartsville	68%	3.8%	6.2%	96.3%	21.9	0
City of Union Star	62.6%	2.2%	12.6%	91.6%	11.7	0
Village of Weatherby	30.8%	30%	17.4%	79.7%	3.4	0

Unincorporated* and the City of Cameron	58.9	Unincorporated,-* Cameron, 2.4	18.4	Unincorporated,-* Cameron, 85.3	Unincorporated,-* Cameron, 12.7	Unincorporated,-* Cameron, 1.8
Missouri	63	5.4	8.9	90.6	29.9	6.7
United States	63.4	2	9.1	88.5	32.9	21.5

Source: U.S. Census, 2020 American Community Survey, 5-year Estimates. *Unincorporated values not available

2.1.4 History

The Native Americans that lived in DeKalb County were the Kansa, Osage, and Missourians. They were nomadic people that were known to follow herds of large game species including buffalo, turkey, elk, bear and waterfowl. Numerous Native American artifacts have been discovered along Grindstone Creek. The first European settlers came to DeKalb County around 1839. The county's present boundaries were drawn on February 25, 1845. The county was named after American Revolution War Hero General Johann de Kalb. The City of Osborn was also founded that same year. Stewartsville was platted in 1854 under the name of Tethetown, followed by Cameron in 1855. The Union Star post office has been open since 1863. The Village of Amity was platted in 1870. Clarksdale and Weatherby were both platted in 1885. Agriculture and two railroad lines played an important role in the county's growth in the late 1800s, but the use of motor cars and trucks made transporting people and livestock more efficient. The DeKalb County Historical Society was formed in 1969 to preserve the county's history and continues to maintain a museum and research center on the square in Maysville.

2.1.5 Occupations

Table 2.3 shows occupation statistics for the incorporated cities and the county.

Table 2.3. Occupation Statistics, DeKalb County, Missouri

Place	Management, Business, Science, and Arts Occupations	Service Occupations	Sales and Office Occupations	Natural Resources, Construction, and Maintenance Occupations	Production, Transportation, and Material Moving Occupations
DeKalb County	18.6%	28.9%	18.1%	16.3%	18%
Village of Amity	-	51.4%	-	-	48.6%
City of Clarksdale	12.7%	18.2%	22.7%	25%	22%
City of Maysville	11.4%	34.3%	21.3%	12.9%	20.1%
City of Osborn	32.2%	13%	28.3%	16.5%	10%
City of Stewartsville	10.3%	33.7%	14.6%	19.5%	21.9%
City of Union Star	3%	43%	7%	23%	20.1%
Village of Weatherby	7.1%	-	21.4%	7.1%	64.3%

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

2.1.6 Agriculture

According to the USDA 2017 Census on Agriculture, DeKalb County has 708 farms with a total of 201,641 acres of farmland, compared with the 863 farms totaling 242,855 acres in reported in 2012, which is around a

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17 percent decrease over the five-year reporting period. The neighboring counties farm acreage is as follows for 2017: Andrew County- 706 farms totaling 204,944 acres; Clinton and Buchanan County- 797 farms totaling 184,062 acres; and Clinton County- 684 farms totaling 222,361 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 DeKalb was $64,768,000 with $42,354,000 (65 percent) coming from crops like grain, oilseeds, dry beans, and dry peas, and $22,413,000 (35 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 (51,430 acres), corn for grain (33,229 acres), forage (28,344 acres), wheat (572) and corn for silage or greenchop (164) as the top crops in the county. Cattle and calves led in the livestock inventory with 32,279 head, followed by sheep and lambs (644), goats (494), horses and ponies (325) and hogs and pigs (30). Of the 1,170 producers in the county, 289 were new and beginning farmers with 99 percent being white and 63 percent male. The 2016-2020 American Community Survey (ACS) 5-Year Estimates showed that 209 people were employed in agriculture, fishing and forestry operations, which is 2.6 percent of the DeKalb County workforce.

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

DeKalb County has not received any recent hazard mitigation assistant grants, other than the statewide grant for funds to update the hazard mitigation plan.

2.2 JURISDICTIONAL PROFILES AND MITIGATION CAPABILITIES[3, 7, AND 8]

Individual profiles for each participating jurisdiction are included, along with discussion of previous mitigation initiatives in the planning area. A summary table follows the profiles that indicates 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 DeKalb County

DeKalb County's jurisdiction includes all unincorporated areas within the county boundaries. The governing body of DeKalb County is the County Commission, which consists of three commissioners. The county departments include:

- Board of Supervisors or Board of Commissioners
  - Presiding Commissioner – Kyle Carroll
  - West District Commissioner – Kyle White
  - East District Commissioner – Chet Owen
- County Assessor
  - Tanya Zimmerman
- County Attorney
  - Eric Tate
- County Clerk
  - Melissa Meek
- County Recorder
  - JoAnn Marshall

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- County Sheriff
  - Kasey Keesaman
- County Treasurer
  - Jessica Lee
- Emergency Management
  - Harold Allison
- General Services
- Tri-County Health Department (DeKalb, Gentry and Worth counties), Administrator
  - Teresa McDonald
- Medical Examiner
  - Heath Turner
- Public Administrator
  - Connie Bray
- Public Works
  - Bill Gray and Ben Routon

Mitigation Initiatives/Capabilities

The Emergency Management Director is responsible for:

- Planning, organizing and directing the county's emergency management plan with other government and business officials
- Speaking before various groups to promote interest and cooperation in emergency situations
- Advising and assisting businesses in industrial emergency management programs
- Meeting with state and federal officials to coordinate county program
- Preparing necessary documentation to affected agencies
- Planning and coordinating county's disaster drills

The EMD organizes the Local Emergency Planning Committee (LEPC) bi-annual meetings. **Table 2.4** lists mitigation capabilities for the unincorporated county.

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Table 2.4. Unincorporated DeKalb County Mitigation Capabilities

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

Watershed Plan	No
Firewise or other fire mitigation plan	Yes
School Mitigation Plan	N/A
Critical Facilities Plan (Mitigation/Response/Recovery)	No
Policies/Ordinance	
Zoning Ordinance	Yes, 3 townships
Building Code	Yes
Floodplain Ordinance	No
Subdivision Ordinance	No
Tree Trimming Ordinance	No
Nuisance Ordinance	No
Stormwater Ordinance	No
Drainage Ordinance	No
Site Plan Review Requirements	No
Historic Preservation Ordinance	No
Landscape Ordinance	No
Seismic Construction Ordinance	No
Program	
Zoning/Land Use Restrictions	Yes
Codes Building Site/Design	Yes
Hazard Awareness Program	No
National Flood Insurance Program (NFIP)	No
NFIP Community Rating System (CRS) program	No
National Weather Service (NWS) Storm Ready	No
Firewise Community Certification	No
Building Code Effectiveness Grading (BCEGs)	No
ISO Fire Rating	Varies

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Capabilities	Status Including Date of Document or Policy
Economic Development Program	No
Land Use Program	Yes
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)	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	No
Building Inspector	No
Mapping Specialist (GIS)	No
Engineer	No
Development Planner	No
Public Works Official	No
Emergency Management Director	Yes, contracted
NFIP Floodplain Administrator	No
Emergency Response Team	No
Hazardous Materials Expert	No
Local Emergency Planning Committee	Yes
County Emergency Management Commission	No
Sanitation Department	No
Transportation Department	Yes
Economic Development Department	No
Housing Department	No
Historic Preservation	No
Non-Governmental Organizations (NGOs)	
American Red Cross	Yes
Salvation Army	No
Veterans Groups	Yes
Local Environmental Organization	No
Homeowner Associations	No
Neighborhood Associations	No
Chamber of Commerce	Yes
Community Organizations (Lions, Kiwanis, etc.	Yes

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Capabilities	Status Including Date of Document or Policy
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	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
Withhold spending in hazard prone areas	Yes

Source: Data Collection Questionnaire, March 3, 2022

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2.2.2 Village of Amity

The Village of Amity is located near the center of DeKalb County on Route J. The 2016-2020 ACS 5-year Estimates show the population at 56 people. There is one outdoor warning siren that is activated locally. The village does not have Reverse 911. There is no staff, and the village relies on the county for emergency management, public safety and public education programs. The government consists of a five-member city council. There are no essential and critical facilities in town. No new infrastructure or facilities are anticipated over the next five years, nor is growth. **Table 2.5** lists the mitigation capabilities of the Village of Amity.

Table 2.5. Village of Amity Mitigation Capabilities

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

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Capability	Status Including Date of Document or Policy
Building Code Effectiveness Grading (BCEGs)	N/A
ISO Fire Rating	N/A
Economic Development Program	N/A
Land Use Program	N/A
Public Education/Awareness	No
Property Acquisition	N/A
Planning/Zoning Boards	N/A
Stream Maintenance Program	N/A
Tree Trimming Program	N/A
Engineering Studies for Streams (Local/County/Regional)	N/A
Mutual Aid Agreements	No
Studies/Reports/Maps	
Hazard Analysis/Risk Assessment (Local)	N/A
Hazard Analysis/Risk Assessment (County)	Yes
Flood Insurance Maps	N/A
FEMA Flood Insurance Study (Detailed)	N/A
Evacuation Route Map	N/A
Critical Facilities Inventory	N/A
Vulnerable Population Inventory	No
Land Use Map	N/A
Staff/Department	
Building Code Official	N/A
Building Inspector	N/A
Mapping Specialist (GIS)	N/A
Engineer	N/A
Development Planner	N/A
Public Works Official	N/A
Emergency Management Coordinator	No
NFIP Floodplain Administrator	N/A
Emergency Response Team	N/A
Hazardous Materials Expert	N/A
Local Emergency Planning Committee	No
County Emergency Management Commission	N/A
Sanitation Department	N/A
Transportation Department	N/A
Economic Development Department	N/A
Housing Department	N/A
Historic Preservation	N/A
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.	Lions
Local Funding Availability	
Ability to apply for Community Development Block Grants	Unknown
Ability to fund projects through Capital Improvements funding	N/A
Authority to levy taxes for a specific purpose	N/A
Fees for water, sewer, gas, or electric services	N/A
Impact fees for new development	N/A
Ability to incur debt through general obligation bonds	N/A
Ability to incur debt through special tax bonds	N/A
Ability to incur debt through private activities	N/A
Ability to withhold spending in hazard prone areas	N/A

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Source: Data Collection Questionnaire, November 2021

2.1.3 City of Clarksdale

Clarksdale is in southwestern DeKalb County on Missouri Route 6. The city has experienced a three-percent decrease in population since the 2010 census, according to the 2016-2020 ACS 5-Year Estimates, which showed a population of 263 people. There is one outdoor warning siren located on the water tower and remotely activated by the DeKalb County Sheriff's Office. The community does not have Reverse 911 or any other type of warning system. The city employs three part-time staff which are the city clerk, city treasurer and water supervisor, and the city government consists of a mayor and four city council members. The city relies on the county for emergency management, public safety and public education programs, but it does distribute a monthly newsletter to residents with public education information topics. Volunteers also distributed Ready-In-Three materials at a community event in the spring as part of public outreach for updating the hazard mitigation plan. To keep residents safe during severe weather, the city passed a local mobile home anchoring ordinance in 2020. The city also completed updates to its water system and installed broadband since the last plan update. Because the community doesn't have designated storm shelter space and there is an elderly housing complex in town, the community did apply for a FEMA grant for a storm shelter but was not granted the award. The community does participate in the NFIP, and the most common flooding issue is water seeping into basements. Essential and critical facilities include city hall, a fire department (not city-owned), senior housing, two churches, the water tower and a wastewater lift station. New infrastructure plans over the next five years include street resurfacing if the Community Development Block Grant (CDBG) application is successful, as some street and sidewalk conditions present a hazard for pedestrians and drivers. Sewer upgrades are also expected in the next five years. No new facilities or growth is expected over the next five years. **Table 2.6** lists the mitigation capabilities of the City of Clarksdale.

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Table 2.6. City of Clarksdale Mitigation Capabilities

Capability	Status Including Date of Document or Policy
Planning Capabilities	
Comprehensive Plan	N/A
Builder's Plan	N/A
Capital Improvement Plan	N/A
Local Emergency Plan	N/A
County Emergency Plan	N/A
Local Recovery Plan	N/A
County Recovery Plan	N/A
Local Mitigation Plan	Yes
County Mitigation Plan	Yes, 2013
Economic Development Plan	N/A
Transportation Plan	N/A
Land-use Plan	N/A
Flood Mitigation Assistance (FMA) Plan	N/A
Watershed Plan	N/A
Firewise or other fire mitigation plan	N/A
School Mitigation Plan	N/A
Critical Facilities Plan (Mitigation/Response/Recovery)	N/A
Policies/Ordinance	**Status Including Date of Document or Policy**
Zoning Ordinance	No
Building Code	Yes, Under fire limits Chapter 40 code
Floodplain Ordinance	Yes
Subdivision Ordinance	No

Tree Trimming Ordinance	No - have for weeds
Nuisance Ordinance	Yes
Storm Water Ordinance	Yes, for people that have sewer
Drainage Ordinance	No
Capability	**Status Including Date of Document or Policy**
Site Plan Review Requirements	No
Historic Preservation Ordinance	No
Landscape Ordinance	Yes, for weeds
Debris Management Plan	No
Program	**Status Including Date of Document or Policy**
Zoning/Land Use Restrictions	Yes, ordinance on no junk yards
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	Yes
Economic Development Program	N/A
Land Use Program	N/A
Public Education/Awareness	N/A
Property Acquisition	N/A
Planning/Zoning Boards	No
Stream Maintenance Program	No
Tree Trimming Program	No
Engineering Studies for Streams (Local/County/Regional)	No
Mutual Aid Agreements	Yes fire dept.
Studies/Reports/Maps	**Status Including Date of Document or Policy**
Hazard Analysis/Risk Assessment (Local)	N/A
Hazard Analysis/Risk Assessment (County)	Yes
Flood Insurance Maps	N/A
FEMA Flood Insurance Study (Detailed)	N/A
Evacuation Route Map	N/A
Critical Facilities Inventory	N/A
Vulnerable Population Inventory	N/A
Land Use Map	N/A
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	Yes
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	No
Historic Preservation	No
Non-Governmental Organizations (NGOs)	**Status Including Date of Document or Policy**
American Red Cross	No

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Salvation Army	No
Capability	**Status Including Date of Document or Policy**
Veterans Groups	No
Environmental Organization	No
Homeowner Associations	No
Neighborhood Associations	No
Chamber of Commerce	No
Community Organizations (Lions, Kiwanis, etc.	Yes, Lions
Local Funding Availability	**Status Including Date of Document or Policy**
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 water & sewer
Impact fees for new development	N/A
Ability to incur debt through general obligation bonds	N/A
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	N/A

Source: Data Collection Questionnaire, December 2021

2.1.4 City of Maysville

The City of Maysville is centrally located in the county and serves as the county seat. Missouri Route 33 and Missouri Route 6 intersect the city. The population has experienced a 2.5 percent increase in population since 2010, according to the 2016-2020 ACS 5-Year Estimates, which showed a population of 1,142 people. There is one outdoor warning siren which is activated by the county sheriff's department. The city does not have Reverse 911 but has an emergency call system in place. The Methodist Church serves as a public tornado shelter, but it's unknown if the shelter is in accordance with FEMA standards. The city employs seven full-time staff (two water department staff, one public works staff, one policeman and two clerks) and one-part time code enforcement staff. The city relies on the county for emergency management and most public education programs. The city government consists of a mayor and city council. The major employers include the nursing home, school district, Independent Farmers Bank, (29 employees), BTC Bank (20 employees) and the courthouse (46 employees). The community does not participate in the NFIP and experiences minimal flooding issues. Essential and critical facilities include the courthouse, city hall, school, Methodist Church, fire station, nutrition center, nursing home, water treatment plant and assisted living facility. The nursing home has a backup generator. During the next five years, Maysville has plans to construct a new water line to the community from American Water in St. Joseph. **Table 2.7** lists the mitigation capabilities of Maysville.

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Table 2.7. City of Maysville Mitigation Activities

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
School Mitigation Plan	No
Critical Facilities Plan (Mitigation/Response/Recovery)	No
Policies/Ordinance	**Status Including Date of Document or Policy**
Zoning Ordinance	Yes
Building Code	Yes, 2012
Floodplain Ordinance	No
Subdivision Ordinance	No
Tree Trimming Ordinance	No
Nuisance Ordinance	No
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	7
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)	Yes
Flood Insurance Maps	No
FEMA Flood Insurance Study (Detailed)	No

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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	Yes, Pat Fisher-Johnson, full time
Building Inspector	Yes, Pat Fisher-Johnson
Mapping Specialist (GIS)	No
Engineer	No
Development Planner	No
Public Works Official	Yes, Josh Mygatt, full time
Emergency Management Coordinator	Yes, Robert Walser, part time
Non-Governmental Organizations (NGOs)	**Status Including Date of Document or Policy**
American Red Cross	No
Salvation Army	No
Capability	**Status Including Date of Document or Policy**
Veterans Groups	No
Environmental Organization	No
Homeowner Associations	No
Neighborhood Associations	No
Chamber of Commerce	Yes
Community Organizations (Lions, Kiwanis, etc.	Yes, Lions
Local Funding Availability	**Status Including Date of Document or Policy**
Ability to apply for Community Development Block	Yes
Ability to fund projects through Capital Improvements	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, December 2021

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2.1.5 City of Osborn

The City of Osborn is situated in southern DeKalb County, residing in both DeKalb and Clinton Counties, but primarily in DeKalb County. It's located just south of US Highway 36. The population has experienced a five percent decrease since 2010, according to the 2016-2020 ACS 5-year Estimates, which showed a population of 402 people. There is one outdoor warning siren that is manually activated by the local fire district. The city does not have Reverse 911 or any additional type of warning system. The city employs two full-time staff, city clerk and a water/sewer/maintenance person, and two part-time staff, back up operator and mowing/maintenance person. The city relies on the county for emergency management and public education programs. The city government consists of a mayor and a board of four alderman. The major employers include the Osborn School District (35 employees) United Cooperative (six employees) and Sur-Gro (five employees). The community does not participate in the NFIP and experiences minimal flooding issues. Essential and critical facilities include city hall, the school, Osborn Fire Station, water treatment plant and lagoons, as well as United Cooperative's Anhydrous plant. No new facilities or infrastructure is planned for the near future. The Osborn High School is located on the north end of town. **Table 2.8** lists the mitigation capabilities of Osborn.

Table 2.8. City of Osborn Mitigation Activities

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
School Mitigation Plan	No
Critical Facilities Plan (Mitigation/Response/Recovery)	No
Policies/Ordinance	**Status Including Date of Document or Policy**
Zoning Ordinance	No
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	Yes, 6
Economic Development Program	No
Land Use Program	No
Public Education/Awareness	No
Property Acquisition	No
Planning/Zoning Boards	No
Stream Maintenance Program	No
Tree Trimming Program	No
Engineering Studies for Streams (Local/County/Regional)	No
Mutual Aid Agreements	No
Studies/Reports/Maps	**Status Including Date of Document or Policy**
Hazard Analysis/Risk Assessment (Local)	No
Hazard Analysis/Risk Assessment (County)	Yes
Flood Insurance Maps	No
FEMA Flood Insurance Study (Detailed)	No

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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	Yes, full time
Emergency Management Coordinator	No
Non-Governmental Organizations (NGOs)	**Status Including Date of Document or Policy**
American Red Cross	No
Salvation Army	No
Capability	**Status Including Date of Document or Policy**
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	Yes
Ability to fund projects through Capital Improvements	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 2022

2.1.6 City of Stewartsville

The City of Stewartsville is in southern DeKalb County, just south of US Highway 36. The population has experienced a nearly eight percent decrease since 2010, according to the 2016-2020 ACS 5-Year Estimates, which showed the population at 692. There are two outdoor warning sirens that are activated by the DeKalb County Sheriff's Office. The city does not have Reverse 911 or any other type of warning system, besides the outdoor warning siren. The city relies on the county for emergency management, public safety and most public education programs. The city government consists of a mayor and four aldermen. The largest employers are the school district, Fast Gas, Lawson Quick Stop and a Dollar General retail store. The community participates in the NFIP, and the city has an ordinance in place that requires potential builders to hire an engineer to ensure the structure is one foot above the floodplain. Essential and critical facilities include City Hall, the police and fire departments, a medical clinic and the high school. The Stewartsville High School is located on the west side of town. The city is looking into grant opportunities to renovate its park restrooms. **Table 2.9** lists the mitigation capabilities of Stewartsville.

Table 2.9. City of Stewartsville 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

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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	**Status Including Date of Document or Policy**
Zoning Ordinance	No
Building Code	Yes, 8/9/2006
Floodplain Ordinance	Yes, 8/10/2021 (revised)
Subdivision Ordinance	Yes, 6/14/2005
Tree Trimming Ordinance	No
Nuisance Ordinance	Yes, 8/18/2000
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	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	8
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)	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	No
Staff/Department	**Status Including Date of Document or Policy**
Building Code Official	Yes, part time
Building Inspector	Yes, part time
Mapping Specialist (GIS)	No

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Engineer	No
Development Planner	No
Public Works Official	Yes, full time
Emergency Management Coordinator	Yes, full time
NFIP Floodplain Administrator	Yes, part time
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	Yes, full time
Economic Development Department	No
Housing Department	No
Planning Consultant	No
Regional Planning Agencies	No
Historic Preservation	No
Non-Governmental Organizations (NGOs)	**Status Including Date of Document or Policy**
American Red Cross	No
Salvation Army	No
Capability	**Status Including Date of Document or Policy**
Veterans Groups	Yes, American Legion
Environmental Organization	No
Homeowner Associations	No
Neighborhood Associations	No
Chamber of Commerce	No
Community Organizations (Lions, Kiwanis, etc.	Yes, Masonic Lodge
Local Funding Availability	**Status Including Date of Document or Policy**
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, water & sewer
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, December 2021

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2.1.7 City of Union Star

The City of Union Star is in northwestern DeKalb County on US Highway 169, and immediately west of the city limits lies Andrew County. The population has experienced a 27 percent increase since 2010, according to the ACS 5-Year Estimates, which showed the population at 555. There is one outdoor warning siren, providing full coverage of the community, that is manually activated by fire department personnel. The city does not have Reverse 911, public tornado shelters/safe rooms or any other type of warning system. The city employs one full-time staff, city clerk, and two part-time maintenance staff and relies on the county for emergency management, public safety and most public education programs. The city government consists of a mayor and four aldermen. The largest employers are the school district and bank. The community participates in the NFIP and experiences minimal flooding issues. Essential and critical facilities include City Hall, the fire department and the high school, located immediately north of the city. No new infrastructure, facilities or growth is expected during the next five years. However, there is interest in applying for a mitigation grant to purchase a generator to add redundancy to the town's sewer system if an opportunity arises. **Table 2.10** lists the mitigation capabilities of Union Star.

Table 2.10. City of Union Star 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	No
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	**Status Including Date of Document or Policy**
Zoning Ordinance	Yes
Building Code	No
Floodplain Ordinance	Yes, 11-9-21
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	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	Unknown
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)	Yes
Flood Insurance Maps	No
FEMA Flood Insurance Study (Detailed)	No

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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	Yes
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	No
Historic Preservation	No
Non-Governmental Organizations (NGOs)	**Status Including Date of Document or Policy**
American Red Cross	No
Salvation Army	No
Capability	**Status Including Date of Document or Policy**
Veterans Groups	No
Environmental Organization	No
Homeowner Associations	No
Neighborhood Associations	No
Chamber of Commerce	No
Community Organizations (Lions, Kiwanis, etc.)	Yes
Local Funding Availability	**Status Including Date of Document or Policy**
Ability to apply for Community Development Block Grants	Yes
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	No
Ability to incur debt through private activities	No
Ability to withhold spending in hazard prone areas	No

Source: Data Collection Questionnaire, November 2021

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2.1.8 Village of Weatherby

The Village of Weatherby is situated in eastern DeKalb County, located on Missouri Route 6. The population decreased by 37 percent since 2010, according to the 2016-2020 ACS 5-Year Estimates, which showed the population at 67. There is one outdoor warning siren that is remotely activated by the county sheriff's department. The village does not have Reverse 911, public tornado shelter or any additional type of warning system. The lack of public shelter for senior citizens is of particular concern to the community since 26 percent of the population is 60 years of age or older. The village has a part-time city clerk and relies on the county for emergency management and public education programs. The city government consists of a mayor and four city council members. The major employer is the post office and MU Auto, each employing one

person. No new facilities or infrastructure is planned for the near future, nor is growth expected.

Table 2.11 lists the mitigation capabilities of the Village of Weatherby

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
School Mitigation Plan	No
Critical Facilities Plan (Mitigation/Response/Recovery)	No
Policies/Ordinance	**Status Including Date of Document or Policy**
Zoning Ordinance	No
Building Code	No
Floodplain Ordinance	No
Subdivision Ordinance	No
Tree Trimming Ordinance	No
Nuisance Ordinance	Yes, 1997
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	No
Studies/Reports/Maps	**Status Including Date of Document or Policy**
Hazard Analysis/Risk Assessment (Local)	No
Hazard Analysis/Risk Assessment (County)	No

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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

Source: Data Collection Questionnaire,

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2.2.1 Summary of Jurisdictional Capabilities

The following table summarizes the mitigation capabilities of the county and its community jurisdictions.

Table 2.11. Mitigation Capabilities Summary Table

CAPABILITIES	DeKalb County	Village of Amity	City of Clarksdale	City of Maysville	City of Osborn	City of Stewartsville	City of Union Star	Village of Weatherby
Planning Capabilities								
Comprehensive Plan	Yes	No	No	No	No	No	No	
Builder's Plan	No	No	No	No	No	No	No	
Capital Improvement Plan	No	No	No	No	No	No	No	
Local Emergency Plan	No	No	No	No	No	No	No	
County Emergency Plan	Yes	No	No	No	No	Yes	No	
Local Recovery Plan	No	No	No	No	No	No	No	
County Recovery Plan	No	No	No	No	No	No	No	
Local Mitigation Plan	No	No	No	Yes	Yes	Yes	No	
County Mitigation Plan	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Local Mitigation Plan (PDM)	No	No	No	No	No	No	No	
County Mitigation Plan (PDM)	No	No	No	No	No	No	No	
Debris Management Plan	No	No	No	No	No	No	No	
Economic Development Plan	No	No	No	No	No	No	No	
Transportation Plan	No	No	No	No	No	No	No	
Land-use Plan	Yes	No	No	No	No	No	No	
Flood Mitigation Assistance (FMA) Plan	No	No	No	No	No	No	No	
Watershed Plan	No	No	No	No	No	No	No	
Firewise or other fire mitigation plan	Yes	No	No	No	No	No	No	
School Mitigation Plan	N/A	No	No	No	No	No	No	
Critical Facilities Plan (Mitigation/Response/Recovery)	No	No	No	No	No	No	No	
Policies/Ordinance								
Zoning Ordinance	Yes	No	No	Yes	No	No	Yes	
Building Code	Yes	No	Yes	Yes	No	Yes	No	
Floodplain Ordinance	No	No	Yes	No	No	Yes	Yes	
Subdivision Ordinance	No	No	No	No	No	Yes	No	
Tree Trimming Ordinance	No	No	No	No	No	No	No	
Nuisance Ordinance	No	No	Yes	No	Yes	Yes	Yes	
Storm Water Ordinance	No	No	Yes	No	No	No	No	

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CAPABILITIES	DeKalb County	Village of Amity	City of Clarksdale	City of Maysville	City of Osborn	City of Stewartsville	City of Union Star	Village of Weatherby
Drainage Ordinance	No	No	No	No	No	No	No	
Site Plan Review Requirements	No	No	No	No	No	No	No	
Historic Preservation Ordinance	No	No	No	No	No	No	No	
Landscape Ordinance	No	No	Yes	No	No	No	No	
Seismic Construction Ordinance	No	No	No	No	No	No	No	
Program								
Zoning/Land Use Restrictions	**Yes**	**No**	**Yes**	**No**	No	No	No	
Codes Building Site/Design	Yes	No	No	No	No	No	No	
National Flood Insurance Program (NFIP) Participant	No	No	Yes	No	No	Yes	Yes	
NFIP Community Rating System (CRS) Participating Community	No	No	No	No	No	No	No	
Hazard Awareness Program	No	No	No	No	No	No	No	
National Weather Service (NWS) Storm Ready	No	No	No	No	No	No	No	
Building Code Effectiveness Grading (BCEGs)	No	No	No	No	No	No	No	
ISO Fire Rating	Varies	No	Yes	Yes	Yes	Yes	Unknown	
Economic Development Program	No	No	No	No	No	No	No	
Land Use Program	Yes	No	No	No	No	No	No	
Public Education/Awareness	No	No	No	No	No	No	No	
Property Acquisition	No	No	No	No	No	No	No	
Planning/Zoning Boards	No	No	No	No	No	No	No	
Stream Maintenance Program	No	No	No	No	No	No	No	
Tree Trimming Program	No	No	No	No	No	No	No	
Engineering Studies for Streams (Local/County/Regional)	No	No	No	No	No	No	No	
Mutual Aid Agreements	Yes	No	Yes	No	No	Yes	Yes	
Studies/Reports/Maps								
Hazard Analysis/Risk Assessment (Local)	**No**	No	**No**	No	No	No	No	
Hazard Analysis/Risk Assessment (County)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Flood Insurance Maps	No	No	No	No	No	No	No	
FEMA Flood Insurance Study (Detailed)	No	No	No	No	No	No	No	
Evacuation Route Map	No	No	No	No	No	No	No	
Critical Facilities Inventory	No	No	No	No	No	No	No	
Vulnerable Population Inventory	No	No	No	No	No	No	No	
Land Use Map	Yes	No	No	No	No	No	No	

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CAPABILITIES	DeKalb County	Village of Amity	City of Clarksdale	City of Maysville	City of Osborn	City of Stewartsville	City of Union Star	Village of Weatherby
Staff/Department								
Building Code Official	**No**	No	No	**Yes**	No	**Yes**	No	
Building Inspector	No	No	No	Yes	No	Yes	No	
Mapping Specialist (GIS)	No	No	No	No	No	No	No	
Engineer	No	No	No	No	No	No	No	
Development Planner	No	No	No	No	No	No	No	
Public Works Official	No	No	No	Yes	Yes	Yes	No	
Emergency Management Coordinator	Yes	No	No	Yes	No	Yes	No	
NFIP Floodplain Administrator	No	No	Yes	No	No	Yes	Yes	
Emergency Response Team	No	No	No	No	No	No	No	
Hazardous Materials Expert	No	No	No	No	No	No	No	
Local Emergency Planning Committee	Yes	No	No	No	No	No	No	
County Emergency Management Commission	No	No	No	No	No	No	No	
Sanitation Department	No	No	No	No	No	No	No	
Transportation Department	Yes	No	No	No	No	Yes	No	
Economic Development Department	No	No	No	No	No	No	No	
Housing Department	No	No	No	No	No	No	No	
Historic Preservation	No	No	No	No	No	No	No	
Non-Governmental Organizations (NGOs)								
American Red Cross	**Yes**	No	No	No	No	No	No	
Salvation Army	No	No	No	No	No	No	No	
Veterans Groups	Yes	No	No	No	No	Yes	No	
Environmental Organization	No	No	No	No	No	No	No	
Homeowner Associations	No	No	No	No	No	No	No	
Neighborhood Associations	No	No	No	No	No	No	No	
Chamber of Commerce	Yes	No	No	Yes	No	No	No	
Community Organizations (Lions, Kiwanis, etc.	Yes	Yes	Yes	Yes	No	Yes	No	
Financial Resources								
Apply for Community Development Block Grants	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**	Yes	
Fund projects through Capital Improvements funding	Yes	No	Yes	Yes	Yes	Yes	No	
Authority to levy taxes for specific purposes	Yes	No	Yes	Yes	Yes	Yes	Yes	

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CAPABILITIES	DeKalb County	Village of Amity	City of Clarksdale	City of Maysville	City of Osborn	City of Stewartsville	City of Union Star	Village of Weatherby
Fees for water, sewer, gas, or electric services	No	No	Yes	Yes	Yes	Yes	Yes	
Impact fees for new development	Yes	No	No	No	No	No	No	
Incur debt through general obligation bonds	Yes	No	No	Yes	Yes	No	Yes	
Incur debt through special tax bonds	Yes	No	Yes	Yes	Yes	No	No	
Incur debt through private activities	No	No	No	No	No	No	No	
Withhold spending in hazard prone areas	Yes	No	No	No	No	No	No	

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2.2.2 Public School District Profiles and Mitigation Capabilities

This section provides general information about participating school districts in DeKalb County. There are four school districts with facilities in DeKalb County and all are participants in the plan. Figure 2.4 is a map of school district boundaries in Dekalb County. Cameron R-I has facilities in Clinton County and the school district participants in that county's plan.

Figure 2.4 School Districts in DeKalb County

Table 2.12. Maysville School District Buildings and Enrollment Data, 2020-2021

District Name	Building Name	Building Enrolment
Maysville R-I	Maysville Jr.-Sr. High	269
Maysville R-I	Maysville Elementary	268
Maysville R-I	Pre-School	22

Table 2.13. Osborn School District Buildings and Enrollment Data, 2020-2021

District Name	Building Name	Building Enrolment
Osborn R-O	Osborn High	58
Osborn R-O	Osborn Elementary	83

Table 2.14. Stewartsville School District Buildings and Enrollment Data, 2020-2021

District Name	Building Name	Building Enrolment
Stewartsville C-2	Stewartsville High	98
Stewartsville C-2	Stewartsville Elementary	143

Table 2.15. Union Star School District Buildings and Enrollment Data, 2020-2021

District Name	Building Name	Building Enrolment
Union Star R-II	Union Star High	74
Union Star R-II	Union Star Elementary	86

Source: Data Questionnaires (2021-2022); https://apps.dese.mo.gov/MCDS/home.aspx?categoryid=1&view=2 (May 11, 2022)

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Table 2.16. Summary of Mitigation Capabilities-School Districts

Capability	Maysville School District	Osborn School District	Stewartsville School District	Union Sar School District
Planning Elements				
Master Plan/ Date	No	Yes, 2019	Yes, 2019	Yes, 2019
Capital Improvement Plan/Date	No	Yes, 2019	Yes, 2020	Yes, 2020
School Emergency Plan / Date	Yes, 2021	Yes, 2019	Yes, 2021	Yes, 2021
Weapons Policy/Date	Yes, 2021	Yes, 2019	Yes, 202	Yes, 2021
Personnel Resources				
Full-Time Building Official (Principal)	Yes	Yes	Yes	Yes
Emergency Manager	No	Yes	No	No
Grant Writer	No	No	No	No
Public Information Officer	No	Yes	No	No
Financial Resources				
Capital Improvements Project Funding	Yes	Yes	No	No
Local Funds	Yes	Yes	Yes	Yes
General Obligation Bonds	No	No	No	No
Special Tax Bonds	No	No	No	No
Private Activities/Donations	No	Yes	No	No
State and Federal Funds/Grants	No	No	No	No
Other				
Public Education Programs	Yes	Yes		Yes
Privately or Self- Insured?	Yes, self	Yes, self		Yes, privately
Fire Evacuation Training	Yes	Yes		Yes
Tornado Sheltering Exercises	Yes	Yes		Yes
Public Address/Emergency Alert System	Yes	Yes	Yes	Yes
NOAA Weather Radios	No	Yes	Yes, 1	Yes, 1
Lock-Down Security Training	Yes	Yes		Yes
Mitigation Programs	No	No		No
Tornado Shelter/Saferoom	No	No	No	No
Campus Police	Yes	Yes	Yes	Yes

Source: Data Collection Questionnaires, November 2021

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3 RISK ASSESSMENT

3 RISK ASSESSMENT **3.1**

3.1 HAZARD IDENTIFICATION *3.3*
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- **3.1.2** Review Disaster Declaration History 3.3
- **3.1.3** Research Additional Sources 3.4
- **3.1.4** Hazards Identified 3.7
- **3.1.5** Multi-Jurisdictional Risk Assessment 3.2

3.2 ASSETS AT RISK *3.8*
- **3.2.1** Total Exposure of Population and Structures 3.8
- **3.2.2** Critical and Essential Facilities and Infrastructure 3.10
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3.3 LAND USE AND DEVELOPMENT *3.15*
- **3.3.1** Development Since Previous Plan Update 3.15
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3.4 HAZARD PROFILES, VULNERABILITY, AND PROBLEM STATEMENTS *3.17*
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- **3.4.7** Extreme Temperatures 3.52
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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 Land Use and Development** discusses areas of planned future development;
- **Section 3.4 Hazard Profiles, Vulnerability and Problem Statements** 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.

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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 DeKalb County. The natural hazards that can affect the county have been identified in the 2018 DeKalb 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 MPC reviewed the hazards identified in the previously approved plan, as well as the hazards identified in the most recent state plan.

In Missouri, local plans customarily include only natural hazards, as only natural hazards are required by federal regulations to be included. While some counties have included public emergencies in plan updates in light of the COVID pandemic, the MPC decided to continue to include only natural hazards at this time and wait to see how the state plan presents public emergencies in its next update. More committee members expressed interest in adding cybersecurity as a hazard rather than public emergencies, but they decided to keep the same hazards as 2018 for this plan update.

3.1.2 Review Disaster Declaration History

Federal and/or state 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. **Table 3.1** lists the federal FEMA disaster declarations that included the planning area from 1965 to present.

Table 3.1. FEMA Disaster Declarations that included DeKalb 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	
EM-3017-MO	Drought	September 24, 1976 September 24, 1976	

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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	IA, PA
EM-1054-MO	Severe Storms, Tornadoes, Hail, Flooding	June 2, 1995 May 13, 1995-June 23, 1995	IA, PA
DR-1253-MO	Severe Storms, Flooding & Tornadoes	October 14, 1998 October 4, 1998-October 11, 1998	PA
DR-1412-MO	Severe Storms, Tornadoes & Flooding	May 6, 2002 April 24, 2002-June 10, 2002	PA
DR-1403-MO	Severe Winter Ice Storms	February 6, 2002 January 29, 2002-February 13, 2002	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, 2011	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

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

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3.1.3 Research Additional Sources

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

- 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
- National Drought Mitigation Center Drought Reporter

- US Department of Agriculture's (USDA) Risk Management Agency Crop Insurance Statistics
- National Agricultural Statistics Service (Agriculture production/losses)
- Data Collection Questionnaires completed by each jurisdiction
- State of Missouri GIS data
- Environmental Protection Agency
- Flood Insurance Administration
- Hazards US (Hazus)
- Missouri Department of Transportation
- Missouri Division of Fire Marshal Safety
- Missouri Public Service Commission
- National Fire Incident Reporting System (NFIRS)
- National Oceanic and Atmospheric Administration's (NOAA) National Centers for Environmental Information (NCEI);
- County and local Comprehensive Plans to the extent available
- County Emergency Management
- County Flood Insurance Rate Map, FEMA
- Flood Insurance Study, FEMA
- SILVIS Lab, Department of Forest Ecology and Management, University of Wisconsin
- U.S. Army Corps of Engineers
- U.S. Department of Transportation
- United States Geological Survey (USGS)
- Various articles and publications available on the internet (you should state that you will give citations to the sources in the body of the plan)

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

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

The database currently contains data from January 1950 to March 2014, as entered by the NWS. Due to changes in the data collection and processing procedures over time, there are unique

periods of record available depending on the event type. The following timelines show the different time spans for each period of unique data collection and processing procedures.

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

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

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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. 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
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
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

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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. DeKalb County is fairly uniform in terms of climate, topography, and building construction characteristics.

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 DeKalb County structures dataset downloaded from Missouri Spatial Data Information Service (MSDIS), local jurisdiction data collection questionnaires, and HAZUS MH 4.2. There have not been significant changes to the planning area since the previous hazard mitigation plan.

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/1Fug9DJriBNlBrcsf6Bki1iQ2wWa1w8uk. 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. 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.

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).

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Table 3.3. Maximum Population and Building Exposure by Jurisdiction

Jurisdiction	2019 Annual Population Estimate	Building Count	Building Exposure ($)	Contents Exposure ($)	Total Exposure ($)
Village of Amity	24	32	$5,246,000	$2,623,000	$7,869,000
City of Clarksdale	237	149	$23,439,000	$12,593,000	$36,032,000
City of Maysville	1,241	499	$79,369,000	$41,971,000	$121,340,000
City of Osborn	380	206	$29,771,000	$15,276,000	$45,047,000
City of Stewartsville	733	317	$50,994,000	$27,493,000	$78,487,000
City of Union Star	448	221	$32,850,000	$16,648,000	$49,498,000
Village of Weatherby	71	54	$8,716,000	$4,371,000	$13,087,000
Unincorporated and Cameron	12,526	6,863	$471,477,000	$208,152,000	$724,669,000
Totals	15,660	8,341	$701,862,000	$374,167,000	1,076,029,000

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 & Education	Total
Village of Amity	$5,246,000	$0	$0	$0	$0	$5,246,000
City of Clarksdale	$21,639,000	$1,774,000	$0	$26,000	$0	$23,439,000
City of Maysville	$70,982,000	$6,290,000	$0	$74,000	$2,023,000	$79,369,000
City of Osborn	$27,540,000	$1,451,000	$0	$113,000	$665,000	$29,769,000
City of Stewartsville	$45,737,000	$4,516,000	$0	$22,000	$720,000	$50,995,000
City of Union Star	$30,983,000	$1,129,000	$0	$100,000	$638,000	$32,850,000
Village of Weatherby	$8,688,000	$0	$0	$0	$27,000	$8,715,000
Unincorporated and Cameron	$397,040,000	$44,672,000	$2,862,000	$39,718,000	$6,303,000	$471,479,000
Totals	$607,855,000	$59,832,000	$2,862,000	$40,053,000	$10,376,000	$701,862,000

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
Village of Amity	32	0	0	0	0	32
City of Clarksdale	132	11	0	6	0	149
City of Maysville	433	39	0	17	10	499
City of Osborn	168	9	0	26	3	206
City of Stewartsville	279	28	0	5	5	317
City of Union Star	189	7	0	23	2	221
Village of Weatherby	53	0	0	0	1	54
Unincorporated	2,063	184	19	4,061	6	6,333

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Totals	3,349	278	19	4,138	27	7,811

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 ($)
Maysville School District	564	10	$18,637.268.00	$6,651,032.00	$25,288,300.00
Osborn School District	124	emailed2-23			
Stewartsville School District	232	1	$2,500,00	$10,000,000	$12,500,000
Union Star School District	144	1	$1,000,000	$8,113,843	$9,113,843

Source: https://dese.mo.gov/school-data, select the file for the most recent year called "20xx Building Enrollment PK-12", filter the spreadsheet by selecting only the public school districts in the planning area. 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 the following sources:

- 2018 Missouri State Hazard Mitigation Plan and Hazard Mitigation Viewer
- Files from the Emergency Management Director, including Chemical Facilities (Tier II Facilities) information
- Hazus MH 4.2
- Meetings with city councils, boards and agencies

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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
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	1	0	2	2	0	0	1	8
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	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Totals	0	0	1	1	3	1	7	4	2	2	1	2	0	0	1	4	2	0	4	6	0	0	4	45

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

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According to information provided by the Federal Highway Administration through its National Bridge Inventory, http://www.fhwa.dot.gov/bridge/nbi/no10/county.cfm, DeKalb County has 238 bridges, with 92 rated in good condition, 135 rated as fair, and 11 rated as poor. Info on new bridges in the last five years…

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. According to the 2018 State Plan, there are five state scour critical bridges identified in DeKalb County.

Figure 3.1. DeKalb County Bridges

Figure 3.2. DeKalb County Structurally Deficient Bridges

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.

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

Table 3.8. Threatened and Endangered Species in DeKalb County

Common Name	Scientific Name	Status
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; see also https://ecos.fws.gov/ipac/ and select 'Get Started" > Step '1 Find Location', choose select by state or county and enter the county

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name, selecting the appropriate community > follow remaining on-screen instructions.

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** provides the names and locations of parks and conservation areas in the planning area.

Table 3.9. Parks in DeKalb County

Park / Conservation Area	Address	City
Pony Express Conservation Area	7163 SW State Route RA	Osborn, MO
King Lake Conservation Area	CR 500 south (DeKalb & Gentry Counties)	King City, MO
Stewartsville City Park	Main Street	Stewartsville, MO
Maysville City Park	Wilson Street	Maysville, MO
Ray Schnitker Community Park	255 Walnut St.	Union Star, MO
Clarksdale City Park	Main Street	Clarksdale, MO
Osborn City Park	Park Street	Osborn, MO
Cameron Reservoir Walking Trail	US-Bus 36	Cameron, MO
Cameron Reservoir 1-2	Summit Rd	Cameron, MO

Source: http://mdc7.mdc.mo.gov/applications/moatlas/AreaList.aspx?txtUserID=guest&txtAreaNm=s and Google Maps

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 in DeKalb County that are on the National Register of Historic Places.

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

Property	Address	City	Date Listed
DeKalb County Courthouse	109 W. Main Street	Maysville, MO	2/5/1998
Dalton-Uphoff House	N of Stewartsville	Stewartsville, MO	04/02/1982
Riggs, Absolom House (Mathias House)	SR 1	Weatherby	04/02/1982

Source: https://www.nps.gov/subjects/nationalregister/database-research.htm#table

Economic Resources: **Table 3.11** shows major types of industry in the county.

Table 3.11. DeKalb County Employment by Industry

Industry	Estimate	Percent
Management	477	1
Business and Finance	166	3.8
Computer and Mathematical	33	.8
Architecture and Engineering	33	.8
Life, Physical, and Social Science	14	.3
Community and Social Service	127	2.9
Legal	3	.07
Education, Training & Library	195	4.4
Arts, Design, Entertainment, Sports & Media	49	1

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Health Diagnosis & Treating Practitioners	148	3.4
Health Technologist & Technicians	67	1.5
Healthcare Support	172	3.9
Fire Fighting and Prevention	67	1.5
Law Enforcement	46	1
Food Preparation and Serving	169	3.9
Building, Grounds Cleaning & Maintenance	128	2.9
Personal Care and Service	175	4
Sales	334	7.6
Office and Administrative Support	460	10.5
Farming, Fishing & Forestry	114	2.6
Construction and Extraction	281	6.4
Installation, Maintenance, and Repair	200	4.6
Production	420	9.6
Transportation	193	4.4
Material Moving	316	7.2
Total	4,387	100

Source: US Census Bureau ACS 5-year 2015-2019

Agriculture: Agriculture has traditionally been an important part of the county's economy. According to the 2017 Census of Agriculture, crop and livestock sales are in excess of $64,768,000 and 1,170 people are employed as farmers or farm hands in DeKalb County, up from 434 people in the 2012 Ag Census.

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3.3 LAND USE AND DEVELOPMENT

3.3.1 Development Since Previous Plan Update

The overall population in DeKalb County has declined significantly in the last decade. The largest population decline is in the City of Cameron area, which is participating in the Clinton County plan. However, most of the other communities have also experienced population decline. Table 3.12 shows the population growth statistics for all cities in DeKalb County as well as the county as a whole

Table 3.12. County Population Growth, 2010-2020

Jurisdiction	Total Population 2010	Total Population 2020	2010-2020 # Change	2000-2020 % Change
Amity	54	26	-28	-51.85%
Clarksdale	271	245	-26	-9.59%
Maysville	1,114	1,095	-19	-1.70%
Osborn	423	374	-49	-11.58%
Stewartsville	750	733	-17	-2.27%
Union Star	437	380	-57	-13.04%
Weatherby	107	80	-27	-25.23%
Unincorporated and Cameron*	9736	8096	-1640	-16.84%
Totals	12,892	11,029	-1,863	-14.45%

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, but as demonstrated below, this is not always the case. While Unincorporated DeKalb County and Cameron had stable housing levels, this was where the greatest decline occurred. On average this section of the county went from having an average of 3.4 residents per household to 2.82, which could indicate a decline in family sizes. Overall, the county the percentage of occupied housing versus vacant housing remained relatively the same with only about 10% of houses in county recorded as vacant between 2010 and 2020 Census. Table 3.15 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	2000-2020 % Change
Amity	31	24	-7	-18.91%
Clarksdale	145	130	-15	-10.34%
Maysville	496	479	-17	-3.42%
Osborn	209	193	-16	-7.65%
Stewartsville	320	329	9	2.81%
Union Star	203	191	-12	-5.91%
Weatherby	58	50	-8	-13.79%
Unincorporated and Cameron*	2,867	2868	-1	-
Totals	4,329	4,264	-65	-1.50%

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

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DeKalb County

DeKalb County consists of nine townships. Highway 36 runs through three townships—Colfax, Grand River and Washington—with zoning regulation. The county population has decreased 16.84 percent since 2010, with every community experiencing population decline and unincorporated DeKalb County and the Cameron area (Cameron is participating in Clinton County's plan) experiencing the largest decline.

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. After the facility, which housed up to 1,440 inmates that were all included in local population counts, closed in 2019, DeKalb experienced the largest percentage population decline in the state for the 2020 Census. (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.

Village of Amity

Amity has experienced a 51.85 percent population decrease since 2010. The community's risk to natural hazards remains the same as in the 2018 plan.

City of Clarksdale

Clarksdale has experienced a 10.34 percent population decrease since 2010. The community's risk to natural hazards remains the same as in the 2018 plan.

City of Maysville

Maysville has experienced a 10 percent population decrease since 2000. 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.

DeKalb County

DeKalb County has a comprehensive plan. No future development is anticipated.

Village of Amity

The village does not have a comprehensive plan or land use plan. No future development is anticipated.

City of Clarksdale

The community does not have a comprehensive plan or land use plan. No future development is anticipated. Clarksdale made water system improvements in 2021 with new water lines for the whole town and now has broadband in place.

City of Maysville

The community does not have a comprehensive plan or land use plan. The city is currently working with the Great Northwest Wholesale Water Commission and USDA to get a new water connection source from Missouri American Water in St. Joseph.

City of Osborn

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

City of Stewartsville

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

City of Union Star

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

School District's Future Development

Maysville School District

The school district expects enrollment to remain stable over the next five years with no new planned construction.

Osborn School District

The school district expects enrollment to remain stable over the next five years. The district has plans to tear down a building at the northwest corner of the property and rebuild a larger building in the same location.

Stewartsville School District

The school district does not foresee any major changes in enrollment.

Union Star School District

Little change in enrollment is expected over the next five years. There are no planned construction or remodeling activities.

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3.4 HAZARD PROFILES, VULNERABILITY, AND PROBLEM STATEMENTS

Each hazard will be analyzed individually in a hazard profile. The profile will consist of a general hazard description, location, strength/magnitude/extent, previous events, future probability, a discussion of risk variations between jurisdictions, and how anticipated development could impact risk. At the end of each hazard profile will be a vulnerability assessment, followed by a summary problem statement.

Hazard Profiles

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 3.4 will be profiled individually in this section. 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 areas in the planning area that are affected by the hazard. Where available, use maps to indicate the specific locations of the planning area that are vulnerable to the subject hazard. For some hazards, the entire planning area is at risk.
- **Strength/Magnitude/Extent:** This includes information about the strength, magnitude, and extent of a hazard. For some hazards, this is accomplished with description of a value on an established scientific scale or measurement system, such as an EF2 tornado on the Enhanced Fujita Scale. This section should also include information on the typical or expected strength/magnitude/extent of the hazard in the planning area. Strength, magnitude, and extent can also include the speed of onset and the duration of hazard events. Describing the strength/magnitude/extent of a hazard is not the same as describing its potential impacts on a community. Strength/magnitude/extent defines the characteristics of the hazard regardless of the people and property it affects.
- **Previous Occurrences:** This section includes available information on historic incidents and their impacts. Historic event records form a solid basis for probability calculations.
- **Probability of Future Occurrence:** The frequency of recorded past events is used to estimate the likelihood of future occurrences. Probability can be determined by dividing the number of recorded events by the number of years of available data and multiplying by 100. This gives the percent chance of the event happening in any given year. For events occurring more than once annually, the probability should be reported as 100% in any given year, with a statement of the average number of events annually. For hazards such as drought that may have gradual onset and extended duration, probability can be based on the number of months in drought in a given time-period and expressed as the probability for any given month to be in drought.
- **Changing Future Conditions Considerations:**

In addition to the probability of future occurrence, changing future conditions should also be

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considered, including the effects of long-term changes in weather patterns and climate on the identified hazards. NOAA has a new tool that can provide useful information for this purpose. NOAA Climate Explorer, https://toolkit.climate.gov/tools/climate-explorer

Vulnerability Assessments

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.

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Following the hazard profile for each hazard will be the vulnerability assessment. The vulnerability assessment further defines and quantifies populations, buildings, critical facilities, and other community assets at risk to damages from natural hazards. The vulnerability assessments should be based on the best available data. The vulnerability assessments can also be based on data that was collected for the 2018 State Hazard Mitigation Plan Update. With the 2018 Hazard Mitigation Plan Update, SEMA is pleased to provide online access to the risk assessment data and associated mapping for the 114 counties in the State, including the independent City of St. Louis. Through the web-based Missouri Hazard Mitigation Viewer, local planners or other interested parties can obtain all State Plan datasets. This effort removes from local mitigation planners a barrier to performing all the needed local risk assessments by providing the data developed during the 2018 State Plan Update.

The Missouri Hazard Mitigation Viewer includes a Map Viewer with a legend of clearly labeled features, a north arrow, a base map that is either aerial imagery or a street map, risk assessment data symbolized the same as in the 2018 State Plan for easy reference, search and query capabilities, ability to zoom to county level data and capability to download PDF format maps. The Missouri Hazard Mitigation Viewer can be found at this link: http://bit.ly/MoHazardMitigationPlanViewer2018.

The vulnerability assessments in the DeKalb 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:
The plan must provide an overall summary of each jurisdiction's vulnerability to the identified hazards. The overall summary of vulnerability identifies structures, systems, populations or other community assets as defined by the community that are susceptible to damage and loss for hazard events.

Potential Losses to Existing Development:
(including types and numbers, of buildings, critical facilities, etc.) For each participating jurisdiction, the plan must describe the potential impacts of the hazard. Impact means the consequences of effect of the hazard on the jurisdiction and its assets. Assets are determined by the community and include, for example, people, structures, facilities, systems, capabilities, and/or activities that have value to the community. For example, impacts could be described by referencing historical disaster impacts and/or an estimate of potential future losses.

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

Hazard Summary by Jurisdiction:

For hazard risks that vary by jurisdiction, this section will provide an overview of the variation and the factual basis for that variation.

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Problem Statements

Each hazard analysis must conclude with a brief summary of the problems created by the hazard in the planning area, and possible ways to resolve those problems. Include jurisdiction-specific information in those cases where the risk varies across the planning area. The focus of the problem statements sub-section is to synthesize the "problems" revealed through the risk assessment and then through the process of updating the mitigation strategy, develop mitigation actions that are aimed at "solving" the identified problems. Problem statements should be as specific as possible; relating to specific jurisdictions as well as specific assets or areas of the planning area that are problematic. This will in turn prompt development of specific mitigation actions.

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

Sections 3.4.2 and 3.4.3 will discuss flooding caused by levee or dam failure, so those hazards 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.

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Geographic Location

Riverine flooding is most likely to occur in SFHAs. Maps in **Figures 3.3** to **3.8** show SFHAs for DeKalb County and jurisdictions that have a 100-year floodplain in 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 (FIRMs). According to these maps, no schools or critical facilities are located in SFHAs.

Figure 3.3. DeKalb County 100-Year Floodplain with Critical Facilities

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Figure 3.4. Amity 100-Year Floodplain

Figure 3.5. Clarksdale 100-Year Floodplain

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Figure 3.6. Maysville 100-Year Floodplain

Figure 3.7. Stewartsville 100-Year Floodplain

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Figure 3.8. Union Star 100-Year Floodplain

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 which jurisdictions are most prone to flash or riverine flooding from 2001 to December 2021 are listed in **Table 3.14 and 3.15.**

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

Location	# of Events
Clarksdale – 4/05/2017; 04/05/2017	2
Fairport (unincorporated) -- 9/13/2016; 4/05/2017	2
Maysville – 6/26/2011	1
Weatherby—9/14/2016	1
Total	6

Source: National Centers for Environmental Information, 1-20-22

Table 3.15. DeKalb County NCEI Flash Flood Events by Location, 2001-2021

Location	# of Events
Amity – 05/18/2004; 05/30/2004; 06/25/2021	3
Clarksdale – 06/12/2003; 6/25/2021	2
Maysville – 06/02/2010; 07/16/2015	2
Osborn – 05/30/2004; 05/15/2009; 06/04/2010; 06/04/2010; 05/16/2015	5
Union Star- 09/18/2004	1

Weatherby—9/14/2016	**1**
Total	**14**

Source: National Centers for Environmental Information, 1/20/22

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.

National Flood Insurance Program (NFIP) Participation

Table 3.16 lists NFIP participants in the planning area. **Table 3.17** lists the number of policies in force, amount of insurance in force, number of closed losses, and total payments for each jurisdiction, where applicable. Sanctioned communities are those communities that are not currently participating in the NFIP and where a Flood Hazard Boundary Map or Flood Insurance Rate Map has been issued.

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Table 3.16. NFIP Participation in DeKalb County

Community ID #	Community Name	NFIP Participant (Y/N/Sanctioned)	Current Effective Map Date	Regular-Emergency Program Entry Date
90630	City of Clarksdale	Y	11/19/03 (M)	11/19/03
290117	City of Stewartsville	Y	11/19/03 (M)	08/19/1985
290512	City of Union Star	Y	11/19/03 (M)	08/19/85

Source: NFIP Community Status Book, 1-24-22; 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 3.17. NFIP Policy and Claim Statistics as of February 7, 2022

Community Name	Policies in Force	Insurance in Force	Closed Losses	Total Payments
City of Stewartsville	2	$151,000	--	--

Source: NFIP Community Status Book, 1-24-22; BureauNet, http://bsa.nfipstat.fema.gov/reports/reports.html; *Closed Losses are those flood insurance claims that resulted in payment. Loss statistics are for the period from 2018 to 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 county.

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 residential structures located in DeKalb County.

Previous Occurrences

Table 3.18 lists Past Presidential Flooding Disaster Declarations in DeKalb County**.**

Table 3.18. Presidential Disaster Declarations for Flood, 1975-2020

Date	Declaration #	Disaster
July 9, 1993	DR 995	Flooding, Severe Storm (IA, PA)
June 2, 1995	DR 1054	Severe Storm, Tornado, Hail, Flooding (IA, PA)
October 14, 1998	DR 1253	Severe Storm and Flooding (PA)
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)
August 7, 2015	DR-4238	Severe Storms, Tornadoes, Straight-Line Winds, & Flooding (PA)

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

Tables 3.19 and **3.20** list NCEI information for flood (flash and river) events for the last 21 years.

Table 3.19. NCEI DeKalb County Flash Flood Events Summary, 2000 to 2021

Year	# of Events	# of Deaths	# of Injuries	Property Damages	Crop Damages
2003	1	0	0	0	0
2004	4	0	0	0	0
2009	2	0	0	0	0
2010	3	0	0	0	0
2015	2	0	0	0	0
2021	2	0	0	0	0
Total:	14				

Source: NCEI, data accessed 1-24-22

Most flash floods resulted in road closures. Flash flood events resulted in the evacuation of trailer parks due to rapidly rising water in Amity in 2004 and Cameron in 2010.

Table 3.20. NCEI DeKalb County Riverine Flood Events Summary, 2000 to 2022

Year	# of Events	# of Deaths	# of Injuries	Property Damages	Crop Damages
2011	1	0	0	0	0
2016	2	0	0	0	0
2017	3	0	0	0	0
Total	**6**				

Source: NCEI, data accessed 1-24-22

In the flood event on 04-05-2017 in Clarksdale, State Routes P and V were temporarily closed due to flooding along Third Fork. State Route W along Middle Fork Lost Creek was temporarily closed during a flood event on 09-13-2016. No damages were reported as a result of these events.

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Probability of Future Occurrence

Over the past 22 years, 14 flash flood events have occurred with no reported property damages. Based on this historical data, an average of .64 flash flood events (14 flash floods/22 years) occur in a given year, thus there is a 63 percent chance of a flash flood to occur in a given year. Since no property damages were reported, there are no annualized damage costs to report.

A total of six riverine flooding events have occurred over the past 22 years, resulting in .27 riverine flood events (6 floods/22 years) on average each year. Thus, there is a 27 percent chance for a riverine flood to occur in a given year. Since no property damages were reported, there are no annualized damage costs to report.

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

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Vulnerability

Vulnerability Overview

Since 1975, DeKalb County has been included in seven Presidential Disaster Declarations for flooding. 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 3.21** below identifies the total potential direct building loss and income loss for DeKalb County.

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Table 3.21. Potential Direct Building Loss and Income Loss for DeKalb County

DeKalb County	Potential Flood Building/Income Loss
Countywide Building Exposure	$1,090,102,000
Structural Damage	$4,407,000
Loss Ratio	0.40%
Contents Loss	$3,509,000
Inventory Loss	$92,000
Total Direct Loss	$8,008,000

Total Income Loss	$7,000
Total Direct and Income Loss	$8,015,000
# MSDIS Residential Structures Exposed	70
# Hazus Buildings Risk	2
# Substantially Damaged	0
# Displaced People	184
# Shelter Needs	7

Source: 2018 MO State Mitigation Plan, pg. 3.110

Potential Losses to Existing Development

Flood loss estimates by structure for DeKalb County were identified in the 2018 State Plan and are presented in **Table 3.22**. There are no school or special districts, or critical facilities directly located in Special Flood Hazard Areas (SFHA) in DeKalb County.

Table 3.22. Potential Losses for Building Type in DeKalb County

Type of Structure	# of Structures	Total # of Losses
Residential	70	$16,496,444
Agriculture	30	$6,162,273
Commercial	10	$60,938,981
Education	--	--
Government	--	--
Industry	--	--
Total Loss- HAZUS Layer		$83,597,698
Total # of People Affected	174	

Source: 2018 MO State Mitigation Plan, pg. 3.114

Table 3.23 provides the total exposure count for structures in each jurisdiction. Losses were estimated by applying a 5 percent damage factor to total exposure.

Table 3.23. Total Exposure of Structures and Contents by Building Type

Jurisdiction	Residential	Commercial	Agriculture	Other	Estimated Exposure	Estimated Loss
Unincorp. DeKalb Co.	2,063	184	4,061	25	$593,500,000	$29,675,000
Amity	32	--	--	--	$7,869,000.00	$393,450.00
Clarksdale	132	11	6	--	$36,032,000.00	$1,801,600.00
Maysville	433	39	17	10	$121,340,000.00	$6,067,000.00
Osborn	168	9	26	3	$45,047,000.00	$2,252,350.00
Stewartsville	279	28	5	5	$78,486,000.00	$3,924,300.00
Union Star	189	7	5	2	$49,498,000.00	$2,474,900.00
Weatherby	53	--	--	1	$13,087,000.00	$654,350.00

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.

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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 DeKalb 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

DeKalb County has been listed in seven out of 14 Presidential Disaster Declarations for flood-related disasters in the state since 1975. Three 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 enforcing storm water management regulations.

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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).

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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 levees 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 DeKalb County's population is protected from regulated levees. Population protected from low-head agricultural levees which are not regulated is unknown. 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 one-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 one-percent annual chance flood, losses associated with overtopping or failure are captured in the Flood Section of this plan.

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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 3.24** below defines the three ratings.

Table 3.24. 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.

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Previous Occurrences

There is no levee system in the planning area, therefore there have been no breaches or incidents.

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 DeKalb 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.

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 DeKalb County have levee-protected areas.

Problem Statement

DeKalb County does not have a regulated levee system so there have been no levee breaches or incidents. However, it's likely 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 3.25** 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

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(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 3.26**.

Table 3.25. 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 3.26. 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

According to the MDNR's online GeoSTRAT tool, there are 69 dams located in DeKalb County. Of these dams, 11 fall under the USACE's "High Hazard" dam classification and of these 15 dams 2 are considered "Class I" hazards under the MDNR classification system. **Table 3.27** lists the 15 NID defined "High Hazard" dams, along with details regarding their height, storage capacity, last inspection date, which river they connect to, and their nearest downstream city.

Figure 3.9 maps the location of all of the dams in DeKalb County, distinguishing the NID defined "High Hazard" from the "Low Hazard" dams.

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Figure 3.9. Location of High and Low Hazard Dams in DeKalb County

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Table 3.27. High Hazard Dams in the DeKalb 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
Maysville New City Dam (Class I)	Yes	48	1,157	01/18/2017	N/A	Maysville	0	City of Maysville
Buffalo Bill Dam (Class II)	Yes	41	271	11/01/2016	Tributary of West Fork Lost Creek	Pattonsburg	N/A	MDC
Pony Express Lake Dam (Class II)	Yes	40	3,560	09/02/2015	Tributary of West Fork Lost Creek	Santa Rosa	22	MDC
King Lake Dam (Class II)	Yes	40	4,773	01/09/2018	Lost Creek	Weatherby	N/A	MDC
Cameron Reservoir Dam #1 (Class II)	Yes	36	630	01/09/2018	Tributary of Grindstone Creek	Cameron	N/A	City of Cameron
Cameron Reservoir Dam #2 (Class II)	Yes	38	387	03/22/2017	Tributary of Grindstone Creek	Cameron	N/A	City of Cameron

Cameron Dam #3 (Class I)	No	33	1,536	07/05/1979	Tributary of Grindstone Creek	Cameron	3	City of Cameron
Grindstone – Lost Muddy Watershed B-21 Dam (Class II)	Yes	34	316	N/A	Tributary of West Fork Creek	Pattonsburg	N/A	GRNSN-LS-MD WRSD SBDISTR
Redman Lake Dam (Class II)	No	30	193	N/A	Tributary of West Fork Lost Creek	Maysville	N/A	Carl Redman
Grindstone – Lost Muddy Watershed A-39 Dam (Class II)	Yes	31	213	06/01/2008	Tributary of Grindstone Creek	Pattonsburg	N/A	GRNSN-LS-MD WRSD SBDISTR
Jestes Lake Dam (Class II)	No	25	107	N/A	Tributary of North Fork Lost Creek	Santa Rosa	N/A	Keith Jestes
Far West Stake RLD Church Dam (Class II)	No	25	120	N//A	Tributary of Castile Creek	Stewartsville	N/A	Far West Stake RLDS Church
Grindstone – Lost Muddy Watershed A-26 Dam (Class II)	Yes	25	78	N/A	Tributary of Grindstone Creek	Pattonsburg	N/A	GRNSN-LS-MD WRSD SBDISTR
Duce Lake Dam (Class II)	Yes	23	160	N/A	Tributary of Grindstone Creek	Santa Rosa	16	Clarence Duce
Maysville New Reservoir Dam (Class II)	No	20	353	N/A	Tributary of West Fork Lost Creek	Maysville	N/A	City of Maysville

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.

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Figure 3.10 provides the locations of NID high hazard dams, identified in yellow that are in DeKalb County. The highest concentration of NID high hazard dams are found near Maysville and Cameron.

Figure 3.10. High Hazard Dam Locations in DeKalb County and Areas Impacted in the Event of Breach.

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

Upstream Dams Outside the Planning Area

Dams located outside of DeKalb 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 DeKalb County. 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 2013 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 DeKalb 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 ten state regulated dams with heights of 35 or greater. One of these dams, Maysville New City Dam, is rated High Hazard/Class I dam. Five dams are rated Class II and four are rated Class III. 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 DeKalb County.

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

Table 3.28 lists the exposure vulnerability for the ten state-regulated dams (over 35 feet in height) in DeKalb County.

Table 3.28. 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
DeKalb County	35	$82,530	$6,049,514	188	$3,024,757

Source: 2018 State Plan

Maysville New City Dam

A portion of the Maysville New City Dam inundation zone is shown in **Figure 3.11**. This is the only dam in DeKalb County that is both a Class I state regulated dam and a high hazard NID dam. Approximately 30 minutes after a breach, the flood waters would reach the southwest side of Maysville city limits and then the sewage disposal ponds. If flood waters stayed within the inundation zone, shown in red, residential structures would be spared. However, as previously noted, depending on the speed and velocity of a breach and flooding, inundation zones might be exceeded and residential structures could be impacted. No Emergency Action Plan (EAP) is required.

Figure 3.11. Maysville New City Dam Inundation Zone in Maysville

Source: MDNR, Maysville New City Dam Report

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Pony Express Lake Dam

The Pony Express Lake Dam inundation zone is not located near any city limits. However, a breach would impact several rural residential and agricultural structures, as shown in **Figure 3.12**. There is an EAP.

Figure 3.12. Pony Express Lake Dam Inundation Zone

Source: MoDNR, Pony Express Lake Dam Report

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Cameron City Reservoir Dams #1 and #2

Cameron City Reservoir Dams #1 and #2 are located south of Cameron City Reservoir Dam #3, as shown in Figure 3.8. Flood waters from a breach in Cameron City #1 or #2 would flow into #3, raising the water level. Figure 3.9 shows the flood arrival times in the event of Cameron City #3 breach. There are EAPs and recent inspections for the Cameron City #1 and #2 since they are state regulated. However, Cameron City #3 is not regulated by the state since the dam height is just under 35 feet. It was last inspected in 1979 and is not required to have an EAP. The duration of the inundation zone, a portion of the inundation zone is shown in red in the figures below, does not encroach heavily populated areas. At the four-hour mark after a breach, there are several structures located just outside of the inundation zone which could be threatened.

Figure 3.13. Cameron City Reservoir Dam #1 and 2 Inundation Zones

Source: MoDNR, Cameron City Reservoir #2 Dam Report

Figure 3.14. Cameron City Reservoir Dam #1 and 2 Inundation Zones

Source: MoDNR, Cameron City Reservoir #1 Dam Report

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Impact of Previous and Future Development

Future development in DeKalb 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 DeKalb County is rural but the southeast area of the county, 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 Maysville has a sewer disposal pond located in an inundation zone. According to the 2013 State Plan an estimated 188 people and 35 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. Eight 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.

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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 DeKalb 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 DeKalb County and produces lower magnitude seismic events.

Geographic Location

Figure 3.15 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 3.16** show the same regional intensities for 6.7 and 8.6 earthquakes, respectively.

Figure 3.15. 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

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.

7.6

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

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

Figure 3.16. 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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Figure 3.17 illustrates seismicity in the United States. DeKalb County is located in the blue zone, which is the second lowest hazard area.

Figure 3.17. United States Seismic Hazard Map

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

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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 12 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 DeKalb 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 in DeKalb County.

Probability of Future Occurrence

The United States Geological Survey (USGS) earthquake probability map for the DeKalb County area is shown in **Figure 3.18**. No known earthquakes have occurred in DeKalb 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/Dekalb-County.html

Figure 3.18 2014 Seismic Hazard Map of Missouri

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

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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/

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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 International Building Code uses this level of ground shaking for building design in seismic areas. This scenario used a 7.7 driving magnitude in HAZUS-MH, which is the magnitude used for typical New Madrid fault planning scenarios in Missouri. Table 3.19 depicts the estimated losses in the county based on this scenario.

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 3.19** 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 3.19 Estimated Earthquake Losses for DeKalb County

Jurisdiction	Structural Damage	Non-Structural Damage	Contents Damage and Inventory Loss	Loss Ratio (%)	Income Loss	Total Economic Loss to Buildings
DeKalb County	$829,000	$1,511,000	$353,000	0.21	$858,000	$3,550,000

(Source: https://sema.dps.mo.gov/docs/programs/LRMF/mitigation/MO_Hazard_Mitigation_Plan2018.pdf)

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 3.20** lists the timeframe housing structures were built in in the county's jurisdictions.

Table 3.20 Age of Housing Structures in DeKalb County

Year Structure Built	DeKalb County	Amity	Clarksdale	Maysville	Osborn	Stewartsville	Union Star	Weatherby
2014 or later	37	0	0	0	1	0	0	0
2010 to 2013	105	0	0	5	0	6	0	1
2000 to 2009	530	2	1	20	11	41	13	3
1980 to 1999	1,154	3	43	55	75	100	34	1
1960 to 1979	1,254	1	39	215	48	93	52	3
1940 to 1959	462	4	24	79	33	23	54	10
1939 or earlier	783	27	14	166	36	67	78	25

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Total # of Housing Units	4,325	37	121	540	204	330	231	43

(Source: http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml)

Problem Statement

Based on intensity damage description in **Figure 3.18**, a 7.6 magnitude earthquake along the New Madrid fault may result in slight damage to older, poorly built structures, if any. Over 30 percent of the housing structures in Amity, Union Star, and Weatherby 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.

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3.4.1 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.

Geographic Location

There are no known documented sinkholes in DeKalb 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.

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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 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.

Vulnerability

Vulnerability Overview

DeKalb 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 DeKalb County make significant land movement events unlikely.

Hazard Summary by Jurisdiction

DeKalb 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, particularly at a former mineral mining site.

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3.4.2 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. Drought most directly impacts the agricultural sector. DeKalb County covers 426 square miles and, as of 2017, approximately 315 square miles (74 percent) is land in farm use and 4.5 square miles (1 percent) is water. Of the 201,641 acres of land in farm use, only one farm is irrigated. From 2007 to 2017, the number of farms decreased by 2.7 percent from 978 to 708 but the average size of farms increased by 7.1 percent from 266 acres to 285 acres per farm. The total acreage of farmland decreased by 22 percent from a total of 260,472 acres in 2007 to 201,641 acres in 2017. (Source: https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_2_County_Level/Missouri/st29_2_0001_0001.pdf).

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Figure 3.19. U.S. Drought Monitor Map of Missouri on January 11, 2022

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	62.89	37.11	0.43	0.00	0.00	0.00
Last Week 01-04-2022	64.36	35.64	0.43	0.00	0.00	0.00
3 Months Ago 10-12-2021	59.55	40.45	2.31	0.00	0.00	0.00
Start of Calendar Year 01-04-2022	64.36	35.64	0.43	0.00	0.00	0.00
Start of Water Year 09-28-2021	48.89	51.11	2.29	0.00	0.00	0.00
One Year Ago 01-12-2021	84.35	15.65	0.81	0.00	0.00	0.00

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

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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 3.20** shows the crop loss payments in DeKalb County from 2011 to 2021. Crop loss payments were the highest in 2012, with a total of $15,744,334.00 worth of loss.

Table 3.20. Crop Loss Payments in DeKalb County from 2011-2021

Year	Crop Loss Payment
2021	$5,769.00
2020	$98,749.00
2019	$0.00
2018	$7,919,617.00
2017	$726,289.60
2016	$19,738.00
2015	$0.00
2014	$90,647.50
2013	$6,018,363.00
2012	$15,744,334.00
2011	$256,876.00

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

None of the communities in DeKalb County use water from a well as the only source of water. There are no surface water sites in the county (Source: https://maps.waterdata.usgs.gov/mapper/index.html).

Previous Occurrences

DeKalb County experienced droughts for 9 months between July 2012 and March 2013, 3 additional months in fall of 2013, and 5 months in the summer of 2018 as shown below in **Table 3.21.** This matches the crop loss data from **Table 3.20.**

Table 3.21. Years of Drought in Clinton County

Year	Number of Months
2018	5 months
2013	6 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=2001&endDate_mm=12&endDate_dd=31&endDate_yyyy=2021&county=DE%2BKALB%3A63&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, DeKalb County was in a drought for 17 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 7.08 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.

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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 DeKalb County's distance from the Missouri River, the National Drought Mitigation Center determines the county is medium-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:

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- 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 DeKalb 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 DeKalb County are on water systems. 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.

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3.4.5 Extreme Temperatures

Hazard Profile

Hazard Description

Extreme temperature events, both hot and cold, can impact human health and mortality, natural ecosystems, agriculture, and other economic sectors. According to information provided by FEMA, extreme heat is defined as temperatures that hover 10 degrees or more above the average high temperature for the region, 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 3.22**.

Table 3.22. 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, www.weather.gov/os/heat/index.shtml

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

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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 3.20**) 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 (2) 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 3.20. Heat Index (HI) Chart

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

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

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Figure 3.21. 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 5 extreme temperature events in DeKalb County from 2000 – August 2021, with 3 extreme cold/wind chill events and 2 excessive heat events. Of these events the most recent, and longest, cold event was recorded from February 14-16, 2021 when a cold air mass combined with several inches of snow and winds from 10-20 mph dragged temperatures into the negative double digits in the region. The Maysville area saw record temperature lows for three straight days, dipping to negative 15 degrees. Overall, there were four record cold days for the county in February 2021. The USDA Risk Management Agency documents that in DeKalb County from 2011-2021 there were approximately 2,375 acres of various crops lost due to “cold winter” conditions valued at $428,031.66. For figures on deaths due to hypothermia cold-related deaths refer to **Figure 3.22**.

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 Maysville area saw nine days during July 2012 with record high temperatures as high as 105 degrees. The USDA Risk Management Agency documents that from 2011-2021 there were approximately 2,606 acres of various crops lost due to “heat, and hot wind” conditions valued at $329,773.97. For figures on deaths due to hyperthermia heat-related deaths refer to **Figure 3.23.** The National Weather Service has stated that among natural hazards, no other natural disaster—not lightning, hurricanes, tornadoes, floods, or earthquakes—causes more deaths.

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Figure 3.22. Cold Related Deaths in Missouri October 1989 – March 2012

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

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Figure 3.23. Heat Related Deaths in Missouri 2000 - 2016

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

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Probability of Future Occurrence

The probability that an extreme cold event will occur in DeKalb County in any given year is 14%. This equates to dividing 21 years by 3, the number of events during that reporting period. Using this same methodology, the probability that an extreme heat event will occur based on 2 events over 21 years is approximately 10%. Data limitation indicates that extreme heat events could be underreported in the NCDC. See **Table 3.23.**

Table 3.23. Likelihood of Occurrence (Based on Data 2000-2021)

Type of Event	Total Events	Likelihood of Occurrence (Total/21 years)
Extreme Heat	2	0.10
Extreme Cold	**3**	0.14

Source: 2018 MO State Hazard Mitigation Plan

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 3.24**.

Figure 3.24. Maysville, MO – Project Avg Daily Max Temp (°F)

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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, 16.6% percent of DeKalb County's overall population is aged 65 or older, which the 2018 Missouri plan rates as a medium-low risk. The groups that may be a greater risk factor for the county though are the obese and cigarette smokers. **Figure 3.25** shows that based on 2016 data from Missouri Department of Health and Senior Services, the county obesity rate (33.87%) is 2.7 percent higher than the overall state average (31.16%). **Figure 3.26** also shows that

based on the same data, the county prevalence of cigarette smoking (26.17%) is 4.29 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, DeKalb is rated as having “low” vulnerability for both extreme heat and extreme cold events.

Figure 3.25. MO DHSS Missouri and Buchanan County Obesity Rates (2016)

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

Figure 3.26. MO DHSS Missouri and Buchanan 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 DeKalb County due to extreme temperatures averaged 475.61 acres valued at $72,230.87 per year, as seen in **Table 3.24** 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 3.24. Average Annual Crop Loss in DeKalb Co., MO Due to Extreme Temperatures (2011-2020)

Type of Weather	Acreage Loss	Value
Extreme Cold (Cold Winter)	237.45	$42,803.17
Extreme Heat (Heat)	238.16	$29,427.70
Extreme Temperatures Overall	475.61	$72,230.87

Source: USDA Risk Management Association Risk of Crop Loss

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Impact of Previous and Future Development

Dekalb County's median age is 40.4 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 3.27** 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 3.28** 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 3.27. Age of Buildings in DeKalb County

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

Figure 3.28. Heating Fuel for Housing Units in DeKalb 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 3.25** 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.

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Table 3.25. DeKalb County Population Under Age 5 and Over Age 65, 2019 American Community Survey

Jurisdiction	Population Under 5 yrs	Population 65 yrs and over
*DeKalb County	571 (4.6%)	2,083 (16.6%)
Village of Amity	0 (0%)	14 (58.3%)
City of Clarksdale	16 (6.8%)	59 (24.9%)
City of Maysville	80 (6.4%)	206 (16.6%)
City of Osborn	24 (6.3%)	66 (17.4%)
City of Stewartsville	75 (10.2%)	93 (12.7%)
City of Union Star	36 (8%)	64 (14.3%)
City of Weatherby	6 (8.5%)	20 (28.2%)

Source: U.S. Census Bureau, (*) includes entire population of each city or county

Problem Statement

While DeKalb County is rated as having an overall low 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 3.29** 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 3.29. NWS Hyperthermia Symptoms Guide

Source: https://www.weather.gov/safety/heat-illness

Residents of the county should also be aware of the risks of using vehicles in extreme temperatures. The NWS advises to prepare travel safety kits in case one is trapped in the cold or heat. Keeping automobiles fueled to at least a half-tank of gas and having necessary tools, nutrition, clothing, and a back-up batter for electronics in case of becoming stuck or stranded due to cold or heat.

Child safety with vehicles is also an important educational opportunity. Families and community members should know the importance of ensuring children are not left in or around unattended vehicles for risk of carbon monoxide poisoning or developing a heat stroke. Helpful tips can include remembering to lock vehicles, knowing where keys are, and even using notes or some kind of reminder on the dash or front-passenger seat of a vehicle as a reminder to check for children before exiting the vehicle.

Education and training for farmers could be helpful as well in best practices to prepare for extreme weather and what resources, financial or otherwise, might be available to them to either protect crops and livestock or recover after an extreme temperature event.

The most useful source of education might be for those who live with or near seniors. While it is important that seniors are aware that they are at greater risk, it is even more important that those around them are aware. It can be as simple as knowing to check on the elderly in the summer and winter, encouraging neighbors to shovel their sidewalk, or even helping connect them to food pantry resources if they will have difficulty leaving their house.

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For at-risk populations, such as the elderly or homeless, DeKalb County has developed 1 facility, the DeKalb County Senior Citizens Council Building, that doubles as a cooling & warming center 7 facilities in Maysville. Investing in water fountains with the ability to easily fill water bottles might also be advisable.

Data and technology resources for communities may also be helpful. OSHA has developed a heat index mobile app for Android and IOS devices that can deliver precise community measurements and offer specific safety advice for work and outdoor activities depending on the severity of the heat. Specific tools like this can help individuals and families make decisions to mitigate their own risks. Text alerts are already a useful community safety tool as well and could help provide directions to warming and cooling centers as well.

Finally, funding resources to prepare for extreme temperatures could help the most with mitigation. Funding to improve and maintain HVAC equipment in buildings, as well as updating electrical infrastructure can improve efficiency and reduce the risk of outages or fires. Assistance providing CO_2 detectors to make them as common as normal smoke detectors could also increase safety and reduce risk. Additionally, assistance providing backup generators could help to ensure critical facilities have at least some access to power in the event of an outage related to extreme temperatures where such an outage could potentially extend over days.

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3.4.3 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

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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 3.30 shows lightning frequency in the state. DeKalb 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 3.30. Location and Frequency of Lightning in Missouri

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

Figure 3.31 shows wind zones in the United States. DeKalb 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 3.31. 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

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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 DeKalb 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 3.26** below describes typical damage impacts of the various sizes of hail.

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Table 3.26. 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

Error! Reference source not found. **and 3.28** 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 DeKalb County from 2010-2020.

Table 3.27. Crop Insurance Claims Paid in DeKalb County from High Winds, 2010-2020

Crop Year	Crop Name	Cause of Loss Description	Insurance Paid
2011	Corn	Wind/Excess Wind	$302,881.00
2011	Soybeans	Wind/Excess Wind	$21,289.00
Total			**$324,170.00**

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

Table 3.28. Crop Insurance Claims Paid in DeKalb County from Hail, 2010-2020.

Crop Year	Crop Name	Cause of Loss Description	Insurance Paid
2011	Soybeans	Hail	$53,778
2012	Corn	Hail	$12,773
2012	Corn	Hail	$84,495
2012	Soybeans	Hail	$19,901
2012	Soybeans	Hail	$18,881
2013	Wheat	Hail	$50,727
2013	Soybeans	Hail	$1,106
2013	Soybeans	Hail	$4,188
2015	Wheat	Hail	$3,427
2015	Soybeans	Hail	$2,094
2016	Corn	Hail	$2,229
2016	Soybeans	Hail	$11,671.00
2019	Corn	Hail	$5,843.00
Total			**$271,113**

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

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thunderstorms, wind, and hail. There were 56 days with recorded thunderstorm wind events in DeKalb County, of which caused $15,050 in property damages and two injuries. **Table 3.29** only lists thunderstorm wind events that involved recorded property damage or injuries.

Table 3.29. NCEI Thunderstorm Wind Events in DeKalb County, 2000-2020

Jurisdiction	Date	Wind Speed (in knots)	Injuries	Property Damage
Osborn	4/02/2010	61	0	$5,000
Clarksdale	6/18/2010	52	0	$3,000
Osborn	6/26/2011	52	0	$300
Osborn	6/26/2011	57	0	$2,000
Weatherby	2/28/2012	52	0	$3,000
Stewartsville	5/24/2012	52	0	$1,000
Osborn	5/19/2013	52	0	$250
Osborn	6/3/2014	60	2	$0
Union Star	6/3/2014	52	0	$500
Total:				**$15,050.00**

There were 52 days with recorded hail (one inch and larger) events in DeKalb County, causing no reported injuries and $10,000 total in recorded property damage**. Table 3.30** only lists hail events with hail over two inches in diameter.

Table 3.30. NCEI Hail Events in DeKalb County, 2000-2020

Jurisdiction	Date	Hail size (inches)	Injuries	Property Damage
Weatherby	5/24/2004	2	0	0
Maysville	5/24/2004	2.75	0	$10,000
Weatherby	6/7/2009	2	0	0
Union Star	6/7/2009	2	0	0
Stewartsville	5/6/2012	2.75	0	$0
Osborn	5/19/2019	2.50	0	$0
Maysville	5/19/2019	2.5	0	$0
Total				**$10,000**

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Probability of Future Occurrence

Thunderstorm Wind: There have been 56 recorded thunderstorm events over a 21-year period from 2000-2020. This equates to 2.7 thunderstorm wind events in any given year with a 100 percent probability of occurrence. There were eight events that resulted in $15,050 in property damages. This equates to 3.8 damaging events per year with annualized losses of $531.56.

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 52 recorded hail events over a 21-year period from 2000-2020. This equates to 2.48 hail events in any given year with a 10 percent probability of occurrence. There was one recorded event that resulted in property damage from hail. This equates to .48 damaging events per year with annualized losses of $476.19.

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

Figure 3.32 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. DeKalb 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 3.32. Annual Hailstorm Probability (2" diameter or larger), 1980- 1994

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

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 DeKalb 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,

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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 DeKalb 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, DeKalb County has a low vulnerability rating for thunderstorms, including high wind, hail, and lightning as detailed in **Tables 3.31-3.32** below.

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Table 3.31. 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
DeKalb County	$1,090,102,000	1	10.21	1	Low	1	4.6	4

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

Table 3.32. 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 Occurrence Rating
DeKalb	53	2.524	1	97	4.619	2	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 DeKalb County, they have the potential to damage private property and commercial buildings. Based on the $25,050.00 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 $1,192.86.

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 3.27** for ages of structures in jurisdictions in DeKalb County.

Problem Statement

The NCEI Storm Events Database notes over 100 thunderstorm wind/hail events in DeKalb County over the past 21 years with around $25,000 dollars in 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

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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.

3.4.4 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 3.33** shows the zones of average number of hours of freezing rain per year. DeKalb County is located in the light-yellow zone, indicating that the county receives three to six hours of freezing rain per year.

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Figure 3.33. 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)

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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 3.33 includes NCEI reported events and damages for the past 25 years in Clinton County. There were 110 days with reported events.

Table 3.33. NCEI DeKalb 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 Chill as low as 30-50 below zero	0	$0	$0
Winter Storm	02/21/1997	1-5 in. of snow	0	$0	$0
Heavy Snow	04/10/1997-04/11/1997	6-12 in. of snow	0	$100,000	$0
Ice Storm	12/21/1997	Icy road conditions	0	$0	$0
Ice Storm	01/04/1998	1/8 in. of ice	0	$0	$0
Heavy Snow	12/05/1999	6-11 in. of snow	0	$0	$0
Extreme Cold/Wind Chill	10/06/2000-10/10/2000	Below freezing temp. for 5 consecutive days	0	$0	$0
Extreme Cold/Wind Chill	12/10/2000-12/31/2000	Average temp. of 10-20 below normal	0	$0	$0
Winter Storm	12/11/2000	3-5 in. of snow	0	$0	$0
Winter Storm	01/28/2001	1-5 in. of snow	0	$0	$0
Winter Storm	02/09/2001	6-8 in. of snow	0	$0	$0
Heavy Snow	02/27/2001	6-9 in. of snow	0	$0	$0
Heavy Snow	01/30/2002-01/31/2002	8-14 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
Winter Weather	01/20/2006	2-4 in. of snow	0	$0	$0
Ice Storm	11/29/2006	1/4 in. of ice	0	$0	$0
Frost/Freeze	04/04/2007-04/10/2007	Low temperatures dropped into the upper teens and twenties	0	$0	$0
Ice Storm	12/10/2007-12/11/2007	3/4 in. of ice, temp. in upper 20s-lower 30s	0	$250,000	$0
Winter Storm	12/22/2007	9 in. of snow	0	$0	$0
Heavy Snow	02/05/2008-02/06/2008	6-10 in. of snow	0	$0	$0
Winter Storm	02/16/2008-02/17/2008	3-6 in. of snow	0	$0	$0
Ice Storm	12/18/2008-12/19/2008	1/4-1/2 in. of ice	0	$0	$0
Blizzard	12/07/2009-12/09/2009	10-14 in. of snow	0	$0	$0
Blizzard	12/24/2009-12/26/2009	6-8 in. of snow	0	$0	$0
Winter Storm	01/06/2010-01/07/2010	3-6 in. of snow	0	$0	$0
Winter Weather	02/07/2010-02/08/2010	6 in. of snow	0	$0	$0
Winter Storm	02/21/2010	9 in. of snow	0	$0	$0
Winter Weather	01/10/2011-01/11/2011	4-8 in. of snow	0	$0	$0
Winter Storm	01/22/2011-01/23/2011	5-7 in. of snow	0	$0	$0
Blizzard	02/01/2011	9-10 in. of snow	0	$0	$0
Winter Storm	02/24/2011-02/25/2011	5-7 in. of snow	0	$0	$0
Winter Weather	12/19/2011-12/20/2011	1 in. of snow	0	$0	$0
Winter Weather	02/04/2012-02/05/2012	1 in. of snow	0	$0	$0
Winter Weather	02/13/2012	1-4 in. of snow	0	$0	$0
Winter Storm	12/20/2012	1-3 in. of snow	0	$0	$0

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Winter Storm	02/21/2013-02/22/2013	6 in. of snow	0	$0	$0
Winter Storm	02/26/2013-02/27/2013	9 in. of snow	0	$0	$0
Winter Storm	03/23/2013-03/24/2013	6-10 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	01/05/2014-01/06/2014	Wind chill values to 30 degrees 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	1/4-1/2 in. of ice, 3-4 in. of snow	0	$0	$0
Ice Storm	01/15/2017-01/16/2017	1/4 of ice	0	$0	$0
Freezing Fog	01/17/2017-01/18/2017		1 injury	$0	$0
Ice Storm	02/20/2018	1/8-1/3 in. of ice	0	$0	$0
Blizzard	11/25/2018	Whiteout conditions	0	$0	$0
Winter Storm	01/11/2019-01/12/2019	8-10 in. of snow	0	$0	$0
Ice Storm	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 Weather	12/17/2019	A fatal accident	1 death, 1 injury	$0	$0
Winter Storm	01/10/2020-01/11/2020	2-3 in. of snow	0	$0	$0
Winter Storm	12/29/2020	1 in. freezing rain	0	$0	$0
Extreme Cold/Wind Chill	02/14/2021	Wind chill around 20-30 below zero	0	$0	$0
Extreme Cold/Wind Chill	02/15/2021	Wind chill around 20-30 below zero	0	$0	$0
Extreme Cold/Wind Chill	02/16/2021	Wind chill around 20-30 below zero	0	$0	$0
Total			2 injuries, 1 death	$350,000	$0

Source: NCEI, data accessed 12/08/2021

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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 3.34** 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 3.34. Crop Insurance Claims Paid in DeKalb County as a Result of Cold Conditions and Snow 2011-2021

Crop Year	Crop Name	Cause of Loss Description	Insurance Paid ($)
2011	Wheat	Cold Wet Weather	$38,071.75
2011	Wheat	Cold Wet Weather	$25,339.05

2011	Corn	Cold Wet Weather	$28,294
2011	Corn	Cold Wet Weather	$8,044
2011	Soybeans	Cold Wet Weather	$2,106
2012	Wheat	Cold Wet Weather	$1,164
2012	Corn	Cold Wet Weather	$819
2013	Wheat	Cold Wet Weather	$2,396
2013	Corn	Cold Wet Weather	$16,664
2013	Corn	Cold Wet Weather	$2,260
2013	Corn	Cold Wet Weather	$3,390
2013	Soybeans	Cold Wet Weather	$19,082
2013	Soybeans	Cold Wet Weather	$34,144
2013	Soybeans	Cold Wet Weather	$6,270
2014	Wheat	Frost	$14,815
2014	Soybeans	Frost	$2,624
2014	Wheat	Cold Winter	$41,648
2014	Wheat	Cold Winter	$131,804.69
2014	Wheat	Cold Winter	$49,333
2015	Wheat	Cold Winter	$9,716.50
2015	Wheat	Cold Winter	$1,913.25
2016	Wheat	Cold Winter	$3,007.68
2016	Soybeans	Cold Wet Weather	$797
2016	Soybeans	Cold Wet Weather	$1,103
2017	Wheat	Cold Winter	$185,778
2017	Soybeans	Cold Wet Weather	$2,827.50
2017	Soybeans	Cold Wet Weather	$556
2018	Wheat	Cold Winter	$3,399
2018	Wheat	Cold Winter	-$34.65
2018	Wheat	Cold Winter	$1,466.19
2019	Soybeans	Cold Wet Weather	$15,709
2019	Soybeans	Cold Wet Weather	$6,101.50
2019	Soybeans	Cold Wet Weather	$1,288

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2021	Soybeans	Cold Wet Weather	$6,703
Total			**$668,599.46**

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 58 severe winter weather events in Clinton County from 1996 to 2021 (25 years). This equates to a 232% 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)

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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 $350,000 in property loss was attributed to Winter Weather Events. That is an average of $14,000 per year. From 2011-2021, a total of $182,004 in crop insurance payments were issued due to Winter Weather Events. This averages to $66,859.95 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 3.35** includes information on populations over 65 and the percent living below the poverty level by jurisdiction.

Table 3.35. Population over 65 and Population Living Below the Poverty Level

Jurisdiction	% of Families Living Below Poverty Level	% of Population Over 65
DeKalb County	8.5%	16.6%
Village of Amity	0%	58.3%
City of Clarksdale	15.9%	24.9%
City of Maysville	6.7%	16.6%
City of Osborn	0%	17.4%
City of Stewartsville	10.7%	12.7%
City of Union Star	14.6%	14.3%
Village of Weatherby	36.8%	28.2%

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

The Village of Weatherby is the jurisdiction with the highest percent of families living below the poverty line. Amity has the highest percentage of population over 65.

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

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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.

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3.4.5 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 DeKalb 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

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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 3.36**) 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 3.36. 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 3.37**. 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 3.37. 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

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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 3.38 includes NCEI reported tornado events and damages since 1993 in DeKalb 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 3.38. Recorded Tornadoes in DeKalb County, 1993 – Present

Date	Beginning Location	Ending Location	Length (miles)	Width (yards)	F/EF Rating	Death	Injury	Property Damage	Crop Damages
05/29/2004	Osborn	Osborn	1	150	F1	0	0	$10,000	$0
05/29/2004	Osborn	Osborn	2	100	F2	0	0	$0	$0
05/29/2004	Maysville	Maysville	1	50	F0	0	0	$0	$0
05/29/2004	Weatherby	Weatherby	4	800	F4	3	6	$300,000	$0
05/29/2004	Fairport	Fairport	1	50	F0	0	0	$0	$0
04/15/2006	Stewartsville	Stewartsville	1.5	50	F0	0	0	$0	$0
04/15/2006	Stewartsville	Maysville	13	100	F2	0	0	$75,000	$0
06/07/2009	Amity	Amity	0.1	25	EF0	0	0	$0	$0
06/07/2009	Weatherby	Weatherby	0.1	25	EF0	0	0	$0	$0
09/09/2014	Fairport	Fairport	.75	25	EF0	0	0	$0	$0
05/20/2021	Osborn	Osborn	.88	50	EF0	0	0	$5,000	$0
Total						**3**	**6**	**$390,000**	**$0**

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

Figure 3.34 shows historic tornado paths in the planning area.

Figure 3.34. DeKalb Map of Historic Tornado Events

Source: DeKalb County HMP, 2018

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There are no insurance payments for crop damages because of tornadoes from 2007-2020.

Probability of Future Occurrence

According to the NCEI, 11 documented tornadoes have occurred during the 28-year period from 1993 to 2021, resulting in a probability percentage of 39 percent chance of a tornado of any magnitude event in the planning area in any given year.
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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

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 3.35** refers to this area known as Tornado Alley. This area averages three tornadoes or more per year per 10,000 square miles in general. DeKalb County is located in the center of Tornado Alley, which poses a high risk for future tornadoes.

Figure 3.35. 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

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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 3.39** 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, DeKalb County has a low vulnerability to tornadoes.

Table 3.39. Building Exposure, Population Density, SOVI Index Rating

Jurisdiction	Total Building Exposure	Exposure Rating	Population Density	Population Rating	SOVI Index Ranking	SOVI Index Rating	Percent Mobile Homes	Mobile Home Rating
DeKalb County	$1,090,102,000	1	30.11	1	Low	1	14.6	4

Source: Missouri State Plan 2018, pg. 3.379

Previous and Future Development

Since there are currently no major development plans underway in DeKalb County, there is no increased vulnerability to tornadoes based on growth; however, due to the vulnerability of mobile homes to tornado and high wind damage, some jurisdictions do not allow mobile home parks. DeKalb County and local jurisdictions should assess the warning siren coverage in the planning area and seek resources for expanding coverage to underserved areas of the county.

Hazard Summary by Jurisdiction

In DeKalb 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 (10 percent) and mobile homes (10 percent). These homes are at risk due to the fact that they could have weak structural protection from high winds associated with tornadoes due to lower grade materials used, inadequate construction standards or possible lack of foundation.

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Homes that are over 25 years old also face the risk of older building codes and deteriorating structure. A tornado of any magnitude could have a large, adverse impact on these homes. Because 66.6 percent of homes in DeKalb County were built before 1990 (2015-2019 US Census ACS5-year estimates), the impact of a tornado could be substantial. See **Figure 3.27** for the ages of homes within DeKalb 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.

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 DeKalb County have resulted in three deaths, six injuries and $390,000 in property damage. Information in the 2018 State Plan indicates that DeKalb County has a low vulnerability to tornadoes based on frequency of occurrence and previous damages.

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.

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3.4.6 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 3.36** is a WUI map of DeKalb County, that identifies the density intermix. Low density intermix is found in a few unincorporated areas in the county. There is no interface in the county.

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Figure 3.36. Wildland—Urban Interface and Intermix Areas in DeKalb County

Source: http://silvis.forest.wisc.edu/maps/wui_main

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 3.37** shows the average number of acres burned per year in each county in Missouri, and **Figure 3.38** shows the average number of structure/urban fires per year in each Missouri county.

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Figure 3.37. Average Acres Burned Per Year in Missouri Counties

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

Figure 3.38. Average Annual Structure/Urban Fires in Missouri Counties

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

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Previous Occurrences

Table 3.40 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 3.40. Wildfire Incidents and Average Acres Burned in DeKalb County (2010-2020)

Year	Total Incidents	Total Acres Burned	Avg. Acres Burned/month
2010	16	62	3.88
2011	22	412	18.73
2012	77	3,100	40.26
2013	16	168	10.5
2014	23	167	7.26
2015	43	1,285	29.88
2016	23	2,956	128.52
2017	17	230	13.53
2018	30	154.82	5.16
2019	3	1.34	0.45
2020	11	149.35	13.58

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

The largest wildfire of the last decade occurred July 19, 2012 near King City, MO. The fire was discovered at 2:10 PM and contained by 5:00 PM with the hand of 7 hand crew members, 3 water unites, 1 fire engine, and 1 tanker. In total 600 acres were consumed in the fire.

Probability of Future Occurrence

Using data from **Table 3.40** and dividing the 281 fires over 11 years from 2010-2020, there is a 25.5% chance of a wildfire happening in any given year in DeKalb County. Stretching across the same period of time if a wildfire does occur it will likely burn 24.7 acres on average. Evens are more likely to occur in wildfire-prone areas experiencing new or additional development.

The Missouri Hazard Mitigation Viewer lists the average number of urban/structural fires occurring annually in DeKalb County as 61. 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 3.27** under **Extreme Temperatures (3.4.7**), one can see there are approximately 781 structures in Maysville 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 3.40**, there were 281 reported wildfires in DeKalb 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),

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DeKalb County is likely to have 26 wildfire incidents in a given year. **Figure 3.39** from the 2018 State Plan demonstrates that like it neighboring counties in the Northwest region, DeKalb County is at a a slightly increased risk for wildfire occurrence.

Due to lack of publicly available data on structure fires in DeKalb 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, DeKalb County scored 7-points, putting it at a Low vulnerability (See **Table 3.41**). 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 3.39. Likelihood of Wildfire Occurrence by Missouri County

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

Table 3.41. DeKalb County Urban/Structural Fire Vulnerability 2002-2012

Factor Considered	Vulnerability Measure	Vulnerability Rating
Building Exposure ($)	$1,090,102,000	1/5
Housing Density (# per sq. mile)	10.21	1/5
Social Vulnerability Index Rating	Low	1/5
Likelihood of Occurrence (# / 11 years)	61	2/5
Total Annualized Property Loss	$432,096	1/5
# of Deaths Injuries	3	5/5
	Overall Vulnerability Rating:	7 (Low)

Source: 2018 Missouri State Hazard Mitigation Plan

Wildfires occur throughout wooded and open vegetation areas of Missouri. They can occur any time of the year, but mostly occur during long, dry hot spells. Any small fire, if not quickly detected and suppressed, can get out of control. Most wildfires are caused by human carelessness or negligence. However, some are precipitated by lightning strikes and in rare instances, spontaneous combustion. Structures and people in WUI areas in the county and cities are more vulnerable to the impact of wildfires due to the level of fuel mixed with structures.

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Potential Losses to Existing Development

As Seen in **Table 3.40**, DeKalb County has experienced an average of 790 (8,685.51 acres burned / 11 years) acres of wildfire destruction per year over the last eleven years. As indicated in **Figure 3.39,** county has seen a larger amount of acreage burned compared to surrounding counties in Northwest Missouri, even though the county has a similar 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 3.41 above summarizes the structure exposure for DeKalb 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.

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4 MITIGATION STRATEGY 4.1
4.1 Goals 4.1
4.2 Identification and Analysis of Mitigation Actions 4.2
4.3 Implementation of Mitigation Actions 4.5

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.

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4.1 Goals

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

This planning effort is an update to DeKalb County's existing hazard mitigation plan approved by FEMA on October 4, 2018. Therefore, the goals from the 2018 DeKalb County Hazard Mitigation Plan were reviewed to see if they were still valid, feasible, practical, and applicable to the defined hazard impacts. The MPC conducted a discussion session during their second meeting to review and update the plan goals. To ensure that the goals developed for this update were comprehensive and supported State goals, the 2018 State Hazard Mitigation Plan goals were reviewed. The MPC also reviewed the goals from current surrounding county plans. The 2023 plan's goals and objectives are:

Goal 1: Protect the lives, property and livelihoods of all citizens.
1. Objective: Provide sufficient warning of impending disasters.
2. Objective: Increase knowledge of natural hazards among citizens.
3. Objective: Protect residential and commercial structures in the present and future.

Goal 2: Reduce the impact of disasters.
1. Objective: Manage growth in designated areas through sustainable policies, principles and practices.

Goal 3: Ensure continued operation of government and emergency functions in a disaster.
1. Objective: Increase disaster mitigation management capability in local governments.
2. Objective: Strengthen critical infrastructure.

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 planning meeting, MPC members reviewed and discussed changes in risk since adoption of the previously approved plan. At the third MPC meeting, mitigation strategies were discussed and FEMA's *Mitigation Ideas Handbook: A Resource for Reducing Risk to Natural Hazards (January 2013)* was distributed and reviewed by those in attendance. Discussion followed regarding completed actions, on-going actions, and actions upon which progress had not been made. Those in attendance were instructed to provide descriptive information regarding the "Action Status" using the following status choices:

- Completed, with a description of the process (if provided)
- Continue, with an update of the progress or a reason for the lack of progress (if provided)
- Delete, with a description for the reason for deletion (if provided)

Former actions that were completed since the last update were deleted since the jurisdiction has that capability. New actions were created that reflected the changes in development and priorities, and actions for acquiring additional outdoor warning sirens for areas with recent growth that were part of the last update were continued since DeKalb County is still in the process of acquiring those sirens. Some jurisdictions continued actions with modifications to reflect changing needs. The MPC reviewed:

- A list of actions proposed in the previous mitigation plan, the current State Plan, and approved plans in surrounding counties,

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- 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.

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

Table 4.1. Action Status Summary

Jurisdiction	Completed Actions	Continuing Actions (ongoing or modify)	Deleted Actions
DeKalb County	1.2.n, 1.2.q **Total: 2**	1.1.2, 1.2.2, 1.2.a, 1.2.c, 1.2.d, 1.2.e, 1.2.g, 1.2.h, 1.2.1, 1.2.m, 1.2.n, 1.2.o, 1.2.q, 1.2.r, 1.2.s, 1.2.t, 1.2.23, 1.2.v, 1.3.a, 1.3.e, 2.1.a, 2.1.b, 2.1.c, 3.1.a, 3.1.b, 3.1.c, 3.1.d, 3.2.j **Total:28**	1.2.f **Total:1**
Amity	**Total:0**	1.2.1, 1.4.a **Total:2**	**Total:0**
Clarksdale	1.4.b **Total: 1**	2.1.2, 3.2.1, 1.1.c **Total:3**	2.1.3, 1.4.b **Total:2**
Maysville	1.1.3 **Total: 1**	1.2.k, 1.3.b, 3.1.e **Total:3**	1.1.3 **Total:1**
Maysville School District	**Total:0**	2.1.6, 1.1.e **Total:2**	**Total:0**
Osborn	1.1.4 (siren) **Total: 1**	3.1.f **Total:1**	**Total:0**
Osborn School District	**Total: 0**	2.1.7, 1.1.a, 1.2.i, 3.1.g (need more info) **Total:4**	**Total:0**
Stewartsville	1.1.1, 2.1.4 **Total: 2**	**Total:0**	1.1.1, 2.1.4 **Total: 2**

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Stewartsville School District NEED UPDATE FROM SUP	1.1.b **Total: 1**	1.2.b, 1.3.c, 3.1.h **Total:3**	1.1.b, 1.1.j **Total:2**
Union Star	2.1.5 **Total: 1**	3.2.2, 1.1.d **Total: 2**	2.1.5 **Total:1**
Union Star School District	1.1.b **Total: 1**	2.1.9, 1.3.d **Total: 2**	1.1.b **Total:1**
Weatherby	**Total: 0**	**Total: 0**	**Total: 0**
	Total Completed Actions: 10	**Total Continuing Actions: 50**	**Total Deleted Actions: 10**

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

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

Completed Actions	Completion Details (date, amount, funding source)
1.2.n- DeKalb County- Broadcast fire hazard level and open burning information on weather radio and local media. Work in conjunction with local fire districts to provide information.	County is in year three of five-year contract with RAVE notification system at a cost of $3,150 per year.
1.n.q- DeKalb County- Designate certain air-conditioned facilities, such as the senior center, as heat emergency shelters.	The LEOP designated the courthouse, senior center, and Methodist Church and notifications sent through RAVE.
1.4.b- Clarksdale- Require the anchoring of manufactured homes and exterior attachments such as carports and decks.	Passed ordinance 44 on 12-17-2020
1.1.3- Maysville- Place outdoor warning sirens in area not covered by the community's other siren.	? NEED MORE INFO.
1.1.4- Osborn- Acquire outdoor warning siren.	The action was completed 2022. The City turned this action over to Dekalb County Hazard Management.
1.1.1-Stewartsville- Replace outdated warning sirens to have backup power and be automatically updated.	Completed. NEED MORE INFO.
2.1.4-Stewartsville- Adoption and enforce floodplain management requirements, including regulating new construction in Special Flood Hazard Areas (SFHAs).	Completed. NEED MORE INFO.
1.1.b- Stewartsville School District- Use electronic media and radios to communicate alerts and warnings. Current system uses phone messages; upgrade system to include cell phones and utilize texting technology. Purchase radios for busses.	Completed. NEED MORE INFO.
2.1.5- Union Star- Adoption and enforce floodplain management requirements, including regulating new construction in Special Flood Hazard Areas (SFHAs).	Updated floodplain ordinance passed 11-9-2021 after review by SEMA, which revealed that all floodplain areas are in the community park the City owns. No costs were incurred.

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1.1.b- Union Star School District- Use electronic media and radios to communicate alerts and warnings. Current system uses phone messages; upgrade system to include cell phones and utilize texting technology. Purchase radios for busses.	Completed. NEED MORE INFO.
Deleted Actions	**Reason for Deletion**
1.2.f- DeKalb County- Participate in SEMA public education campaign to inform dam owners and citizens living near dams about the need to properly maintain and upgrade these structures.	NEED MORE INFO.
2.1.3- Clarksdale- Require the anchoring of manufactured homes and exterior attachments such as carports and decks.	Action completed.
1.4.b- Clarksdale- Adoption and enforce floodplain management requirements, including regulating new construction in Special Flood Hazard Areas (SFHAs).	We have a floodplain manager. We do not have a lot of new construction on the floodplain.
1.1.3- Maysville- Place outdoor warning sirens in area not covered by the community's other siren.	County assuming responsibility of city siren, replacing it with 360-degree rotational siren to cover whole city, per deputy clerk.
1.1.1-Stewartsville- Replace outdated warning sirens to have backup power and be automatically activated.	NEED MORE INFO.
2.1.4- Stewartsville- Adoption and enforce floodplain management requirements, including regulating new construction in Special Flood Hazard Areas (SFHAs).	NEED MORE INFO.
1.1.b- Stewartsville School District- Use electronic media and radios to communicate alerts and warnings. Current system uses phone messages; upgrade system to include cell phones and utilize texting technology. Purchase radios for busses.	Action completed. Digium Phones and a Switchvox from United Fiber purchased for $13,423.91 in July of 2019 for a phone and intercom system. Pay $1,000 annually for the School Messenger program from IISC Education for text and voice notifications for staff and community in August 2019
1.1.j- Stewartsville School District- Include safety strategies for winter driving in driver safety training.	No progress.
2.1.5- Union Star- Adoption and enforce floodplain management requirements, including regulating new construction in Special Flood Hazard Areas (SFHAs).	Action completed.
1.1.b- Union Star School District- Use electronic media and radios to communicate alerts and warnings. Current system uses phone messages; upgrade system to include cell phones and utilize texting technology. Purchase radios for busses.	Action completed.

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

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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 4.3) that lists the actions in the categories of prevention, structure and infrastructure projects, emergency services and education/outreach.

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Goal 1: Protect the lives, property and livelihoods of all citizens.

ACTION 1.1.1:

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Lack of warning
Hazard(s) Addressed:	Thunderstorm, Tornado
Action or Project	
Action/Project Number:	1.1.1
Name of Action or Project:	Outdoor warning siren
Action or Project Description:	Place outdoor warning sirens in populated areas that do not have them.
Applicable Goal Statement:	Protect the lives, property and livelihood of all citizens
Estimated Cost:	Unsure
Benefits:	Warning of impending disaster
Plan for Implementation	
Responsible Organization/Department:	Emergency Management Director
Action/Project Priority:	High
Timeline for Completion:	Fall 2022
Potential Fund Sources:	Internal, ARPA
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan
Progress Report	
Action Status	Continuing, in progress.
Report of Progress	County secured funding and purchased new warning siren system; awaiting siren installation

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Goal 1: Protect the lives, property and livelihoods of all citizens. (Weatherby warning siren should be 1.1.2 but not participating)

ACTION 1.1.2:

Action Worksheet	
Name of Jurisdiction:	Clarksdale
Risk / Vulnerability	
Problem being Mitigated:	Provide shelter for vulnerable populations (many do not have basements or a safe place in severe weather).
Hazard(s) Addressed:	Tornado, Severe Storm, Earthquake
Action or Project	
Action/Project Number:	1.1.2

Name of Action or Project:	Safe room
Action or Project Description:	Build a safe room with the capacity to handle the city's population and more.
Applicable Goal Statement:	Protect the lives, property and livelihood of all citizens
Estimated Cost:	Unsure
Benefits:	Protect lives by providing a safe place for citizens and public to seek shelter in a tornado or storm.
Plan for Implementation	
Responsible Organization/Department:	City/Mayor
Action/Project Priority:	Medium
Timeline for Completion:	5 years
Potential Fund Sources:	Internal, fundraisers, grants, donations
Local Planning Mechanisms to be Used in Implementation, if any:	City Council
Progress Report	
Action Status	New
Report of Progress	

Goal 1: Protect the lives, property and livelihoods of all citizens.

ACTION 1.2.1:

Action Worksheet	
Name of Jurisdiction:	City of Stewartsville
Risk / Vulnerability	
Problem being Mitigated:	Awareness of shelter locations
Hazard(s) Addressed:	Thunderstorm, Tornado
Action or Project	
Action/Project Number:	1.1.2
Name of Action or Project:	Storm Shelter Map
Action or Project Description:	Provide clearly marked map of storm shelters (churches) for vulnerable population during storms
Applicable Goal Statement:	Protect the lives, property and livelihood of all citizens
Estimated Cost:	Unsure
Benefits:	Informed, protected public
Plan for Implementation	
Responsible Organization/Department:	City of Stewartsville
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Internal, grants
Local Planning Mechanisms to be Used in Implementation, if any:	

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Progress Report	
Action Status	New
Report of Progress	

Goal 1: Protect the lives, property and livelihoods of all citizens.

ACTION 1.2.a:

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Lack of public information about disaster preparedness
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake, Flood, Heat Wave, Severe Winter Weather, Thunderstorm, Tornado, Wildfire
Action or Project	
Action/Project Number:	1.2.a
Name of Action or Project:	Public education
Action or Project Description:	Implement public education campaign on disaster preparedness.
Applicable Goal Statement:	Protect the lives, property and livelihood of all citizens
Estimated Cost:	Unsure
Benefits:	Prepared public
Plan for Implementation	
Responsible Organization/Department:	Emergency Management Director
Action/Project Priority:	High
Timeline for Completion:	Ongoing
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	

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Goal 1: Protect the lives, property and livelihoods of all citizens.

Action 1.2.b:

Action Worksheet	
Name of Jurisdiction:	Stewartsville School District
Risk / Vulnerability	
Problem being Mitigated:	Lack of hazard response drills
Hazard(s) Addressed:	Dam Failure, Earthquake, Flood, Severe Winter Weather, Thunderstorm, Tornado, Wildfire
Action or Project	
Action/Project Number:	1.2.b
Name of Action or Project:	Disaster drills
Action or Project Description:	Encourage local fire departments and other emergency responders to participate in regular disaster drills at school. Purchase radios and other necessary equipment to carry out drills and inform students of an emergency.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	School children and responders prepared for a disaster
Plan for Implementation	
Responsible Organization/Department:	Superintendent, Fire Department
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	School budget, grants
Local Planning Mechanisms to be Used in Implementation, if any:	School Emergency Plan
Progress Report	
Action Status	Continuing
Report of Progress	Superintendent reached out to Fire Chief and first responders to develop a plan.

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Goal 1: Protect the lives, property and livelihoods of all citizens.

Action 1.2.c:

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Delay in information
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake, Flood, Heat Wave, Severe Winter Weather, Thunderstorm, Tornado, Wildfire
Action or Project	
Action/Project Number:	1.2.c
Name of Action or Project:	Public service announcements
Action or Project Description:	Have public service announcement made and prepared to deliver to media during emergencies, using state resources as a guide. Include phone numbers for emergency services, Red Cross, hospitals, SEMA, etc.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	None
Benefits:	Informed public
Plan for Implementation	
Responsible Organization/Department:	Emergency Management Director
Action/Project Priority:	Medium
Timeline for Completion:	5 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	

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Goal 1: Protect the lives, property and livelihoods of all citizens.

Action 1.2.d:

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Difficult to access information
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake, Flood, Heat Wave, Severe Winter Weather, Thunderstorm, Tornado, Wildfire
Action or Project	
Action/Project Number:	1.2.d
Name of Action or Project:	Webpage info
Action or Project Description:	Develop a web page for the Local Emergency Planning Committee and emergency services to be part of the DeKalb County web site and link to other county web sites.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	Increase knowledge of natural disasters among citizens
Plan for Implementation	
Responsible Organization/Department:	County Clerk
Action/Project Priority:	High
Timeline for Completion:	5 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	

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Goal 1: Protect the lives, property and livelihoods of all citizens.

Action 1.2.e:

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Lack of information
Hazard(s) Addressed:	Thunderstorm, Tornado
Action or Project	
Action/Project Number:	1.2.e
Name of Action or Project:	Tornado safe room public education campaign
Action or Project Description:	Conduct a public education campaign to inform citizens of the benefits of constructing tornado safe rooms in their home or business.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	Increase knowledge of natural disasters among citizens
Plan for Implementation	
Responsible Organization/Department:	Emergency Management Director
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	

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Goal 1: Protect the lives, property and livelihoods of all citizens.

Action 1.2.f:

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Lack of information
Hazard(s) Addressed:	Severe winter weather
Action or Project	
Action/Project Number:	1.2.f
Name of Action or Project:	Home winterization public education campaign
Action or Project Description:	Public education campaign to inform citizens on how to winterize their homes, shut off water and all utilities in case of emergency.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	Increase knowledge of natural disasters among citizens
Plan for Implementation	
Responsible Organization/Department:	Emergency Management Director
Action/Project Priority:	High
Timeline for Completion:	5 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	

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Goal 1: Protect the lives, property and livelihoods of all citizens.

Action 1.2.g:

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Lack of information
Hazard(s) Addressed:	Severe winter weather
Action or Project	
Action/Project Number:	1.2.g
Name of Action or Project:	Winter travel public education campaign
Action or Project Description:	Distribute information to travelers about winter hazards.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	Increase knowledge of natural disasters among citizens
Plan for Implementation	
Responsible Organization/Department:	Emergency Management Director and Sheriff's Office
Action/Project Priority:	High
Timeline for Completion:	5 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	

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Goal 1: Protect the lives, property and livelihoods of all citizens.

Action 1.2.h:

Action Worksheet	
Name of Jurisdiction:	Osborn School District
Risk / Vulnerability	
Problem being Mitigated:	Unsafe roadways
Hazard(s) Addressed:	Severe winter weather
Action or Project	
Action/Project Number:	1.2.h
Name of Action or Project:	Winter driving training
Action or Project Description:	Include safety strategies for winter driving in driver safety training.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	Better prepared drivers
Plan for Implementation	
Responsible Organization/Department:	Superintendent
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	October 4, 2017 held a safe driving workshop in regards to texting and driving under the influence. Adding winter safety to the workshop in the future.

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Goal 1: Protect the lives, property and livelihoods of all citizens.

Action 1.2.i:

Action Worksheet	
Name of Jurisdiction:	Maysville
Risk / Vulnerability	
Problem being Mitigated:	Lack of information
Hazard(s) Addressed:	Drought, Heat Wave
Action or Project	
Action/Project Number:	1.2.i
Name of Action or Project:	Water and conservation
Action or Project Description:	Inform citizens on how to take water-saving measures, such as using low-flow showerheads and toilets. Include alerts about boil order and advisories.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	Increase citizens knowledge of natural hazards
Plan for Implementation	
Responsible Organization/Department:	City Council
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
Report of Progress	Sending notices in bills and putting items on new website

DRAFT

Goal 1: Protect the lives, property and livelihoods of all citizens.

Action 1.2.j:

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Lack of information
Hazard(s) Addressed:	Drought, Heat Wave
Action or Project	
Action/Project Number:	1.2.j
Name of Action or Project:	Water and conservation
Action or Project Description:	Inform citizens on how to take water-saving measures, such as using low-flow showerheads and toilets. Include alerts about boil order and advisories.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	Increase citizens knowledge of natural hazards.
Plan for Implementation	
Responsible Organization/Department:	Emergency Management Director
Action/Project Priority:	High
Timeline for Completion:	5 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	

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Goal 1: Protect the lives, property and livelihoods of all citizens.

Action 1.2.k:

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Lack of information
Hazard(s) Addressed:	Wildfire
Action or Project	
Action/Project Number:	1.2.k
Name of Action or Project:	Wildfire public education campaign
Action or Project Description:	Individuals will be informed about wildfires and the importance of identifying several escape routes away from their home by car and foot.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	Increase citizens knowledge of natural hazards.
Plan for Implementation	
Responsible Organization/Department:	Emergency Management Director
Action/Project Priority:	High
Timeline for Completion:	5 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	

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Goal 1: Protect the lives, property and livelihoods of all citizens.

Action 1.2.l:

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Lack of information
Hazard(s) Addressed:	Wildfire
Action or Project	
Action/Project Number:	1.2.l
Name of Action or Project:	Fire hazard level information
Action or Project Description:	Broadcast fire hazard level and open burning information on weather radio and local media. Work in conjunction with local fire districts to provide information.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens.
Estimated Cost:	Unsure
Benefits:	Increase citizens knowledge of natural hazards.
Plan for Implementation	
Responsible Organization/Department:	Emergency Management Director
Action/Project Priority:	High
Timeline for Completion:	5 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	County has early warning system in place

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Goal 1: Protect the lives, property and livelihoods of all citizens.

Action 1.2.m:

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Public traveling in hazardous conditions
Hazard(s) Addressed:	Severe Winter Weather
Action or Project	
Action/Project Number:	1.2.m
Name of Action or Project:	Snow day plans
Action or Project Description:	Work with businesses and departments of county government to implement snow-day policies to reduce the amount of people on the road during severe winter weather.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	Increase knowledge of natural hazards among citizens
Plan for Implementation	
Responsible Organization/Department:	Emergency Management Director
Action/Project Priority:	Medium
Timeline for Completion:	5 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	

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Goal 1: Protect the lives, property and livelihoods of all citizens.

Action 1.2.n:

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Lack of identified heat emergency shelters for vulnerable populations
Hazard(s) Addressed:	Heat Wave
Action or Project	
Action/Project Number:	1.2.n
Name of Action or Project:	Heat Emergency Shelters
Action or Project Description:	Designate certain air-conditioned facilities, such as the senior center, as heat emergency shelters.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens.
Estimated Cost:	Unsure
Benefits:	Protect vulnerable citizens
Plan for Implementation	
Responsible Organization/Department:	Emergency Management Director
Action/Project Priority:	High
Timeline for Completion:	5 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	Courthouse, senior center, Methodist Church designated in LEOP

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Goal 1: Protect the lives, property and livelihoods of all citizens.

Action 1.2.o:

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Lack of identified electricity during a natural disaster
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake, Flood, Heat Wave, Severe Winter Weather, Thunderstorm, Tornado, Wildfire
Action or Project	
Action/Project Number:	1.2.o
Name of Action or Project:	Inventory of facilities with generators
Action or Project Description:	Inventory facilities with generators and/or 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:	None
Benefits:	Protect vulnerable citizens
Plan for Implementation	
Responsible Organization/Department:	Emergency Management Director
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan
Progress Report	
Action Status	Continuing

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Report of Progress	No real shelters in county

Goal 1: Protect the lives, property and livelihoods of all citizens.

Action 1.2.p:

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Lack of emergency access and evacuation routes
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake, Flood, Heat Wave, Severe Winter Weather, Thunderstorm, Tornado, Wildfire
Action or Project	
Action/Project Number:	1.2.p
Name of Action or Project:	Emergency access and evacuation routes
Action or Project Description:	Establish emergency access routes and evacuation routes.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	None
Benefits:	Protect citizens
Plan for Implementation	
Responsible Organization/Department:	Emergency Management Director
Action/Project Priority:	Medium
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan

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Progress Report	
Action Status	Continuing
Report of Progress	

Goal 1: Protect the lives, property and livelihoods of all citizens.

Action 1.2.q:

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Lack of emergency response
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake, Flood, Heat Wave, Severe Winter Weather, Thunderstorm, Tornado, Wildfire
Action or Project	
Action/Project Number:	1.2.q
Name of Action or Project:	CERT
Action or Project Description:	Form and train Community Emergency Response Teams (CERT).
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	Protect citizens
Plan for Implementation	
Responsible Organization/Department:	Emergency Management Director
Action/Project Priority:	Medium
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to	Local Emergency Operating Plan

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be Used in Implementation, if any:	
Progress Report	
Action Status	Continuing
Report of Progress	No progress

Goal 1: Protect the lives, property and livelihoods of all citizens.

Action 1.2.r:

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Public traveling in hazardous conditions
Hazard(s) Addressed:	Severe Winter Weather
Action or Project	
Action/Project Number:	1.2.r
Name of Action or Project:	Winter Weather Shelters
Action or Project Description:	Work with Red Cross to establish shelters for vulnerable populations and stranded motorists during severe winter weather.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens.
Estimated Cost:	Unsure
Benefits:	Protect vulnerable citizens
Plan for Implementation	
Responsible Organization/Department:	Emergency Management Director
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Internal

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Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan
Progress Report	
Action Status	Continuing
Report of Progress	

Goal 1: Protect the lives, property and livelihoods of all citizens.

Action 1.2.s:

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Property damage from ice
Hazard(s) Addressed:	Severe winter weather
Action or Project	
Action/Project Number:	1.2.s
Name of Action or Project:	Public information campaign about "ice dams"
Action or Project Description:	Information to home owners and public building maintenance about how to prevent roof and wall damage from "ice dams."
Applicable Goal Statement:	Reduce the impact of disasters
Estimated Cost:	Unsure
Benefits:	Informed public
Plan for Implementation	
Responsible Organization/Department:	County Commissioners
Action/Project Priority:	Medium
Timeline for Completion:	Ongoing
Potential Fund Sources:	Internal

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Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan
Progress Report	
Action Status	Continuing
Report of Progress	

Goal 1: Protect the lives, property and livelihoods of all citizens.

Action 1.3.a:

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Safe spaces not identified
Hazard(s) Addressed:	Thunderstorm, Tornado
Action or Project	
Action/Project Number:	1.3.a
Name of Action or Project:	Safe area assessment
Action or Project Description:	Assess public facilities and identify suitable areas safe during times of severe storms or tornados. If available, these areas should be clearly marked.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	Informed public
Plan for Implementation	
Responsible Organization/Department:	County Commission
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Internal

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Local Planning Mechanisms to be Used in Implementation, if any:	Local Emergency Operating Plan
Progress Report	
Action Status	Continuing
Report of Progress	

Goal 1: Protect the lives, property and livelihoods of all citizens.

Action 1.3.b:

Action Worksheet	
Name of Jurisdiction:	Maysville
Risk / Vulnerability	
Problem being Mitigated:	Safe spaces not identified proactively.
Hazard(s) Addressed:	Thunderstorm, Tornado
Action or Project	
Action/Project Number:	1.3.b
Name of Action or Project:	Safe area assessment
Action or Project Description:	Assess public facilities and identify suitable areas safe during times of severe storms or tornados. If available, these areas should be clearly marked.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	Informed public
Plan for Implementation	
Responsible Organization/Department:	Police chief, mayor
Action/Project Priority:	High
Timeline for Completion:	5 years
Potential Fund Sources:	Internal

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Local Planning Mechanisms to be Used in Implementation, if any:	None
Progress Report	
Action Status	Continuing
Report of Progress	Still need to put signage at the areas

Goal 1: Protect the lives, property and livelihoods of all citizens.

Action 1.3.c:

Action Worksheet	
Name of Jurisdiction:	Stewartsville School District
Risk / Vulnerability	
Problem being Mitigated:	Safe spaces not identified
Hazard(s) Addressed:	Thunderstorm, Tornado
Action or Project	
Action/Project Number:	1.3.c
Name of Action or Project:	Safe area assessment
Action or Project Description:	Assess public facilities and identify suitable areas safe during times of severe storms or tornados. If available, these areas should be clearly marked.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	Informed public
Plan for Implementation	
Responsible Organization/Department:	Superintendent
Action/Project Priority:	High
Timeline for Completion:	5 years

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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	The school has a nice area for staging in the event of a disaster, contingent upon the facilities not suffering major damage. Have not reached out to local officials.

Goal 1: Protect the lives, property and livelihoods of all citizens.

Action 1.3.d:

Action Worksheet	
Name of Jurisdiction:	Union Star School District
Risk / Vulnerability	
Problem being Mitigated:	Safe spaces not identified
Hazard(s) Addressed:	Thunderstorm, Tornado
Action or Project	
Action/Project Number:	1.3.d
Name of Action or Project:	Safe area assessment
Action or Project Description:	Assess public facilities and identify suitable areas safe during times of severe storms or tornados. If available, these areas should be clearly marked.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens
Estimated Cost:	Unsure
Benefits:	Informed public
Plan for Implementation	
Responsible Organization/Department:	Superintendent

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Action/Project Priority:	High
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	We have identified suitable areas. Working to clearly mark these areas for easy identification.

Goal 1: Protect the lives, property and livelihoods of all citizens.

Action 1.3.e:

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Public traveling in hazardous conditions
Hazard(s) Addressed:	Severe Winter Weather
Action or Project	
Action/Project Number:	1.3.e
Name of Action or Project:	Volunteer Groups Assist with Winterizing Homes
Action or Project Description:	Work with volunteer groups to assist at-risk residents in winterizing their homes.
Applicable Goal Statement:	Protect the lives, property and livelihoods of all citizens.
Estimated Cost:	Unsure
Benefits:	Protect at-risk residents
Plan for Implementation	

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Responsible Organization/Department:	Emergency Management Director
Action/Project Priority:	Medium
Timeline for Completion:	5 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	

Goal 1: Protect the lives, property and livelihoods of all citizens.

Action 1.3.f:

Action Worksheet	
Name of Jurisdiction:	Amity
Risk / Vulnerability	
Problem being Mitigated:	Fire Hazard
Hazard(s) Addressed:	Wildfire
Action or Project	
Action/Project Number:	1.3.f
Name of Action or Project:	Tall grass management
Action or Project Description:	Residential area with tall grass and excessive vegetation should be mitigated to lessen the potential for grass fires, spread of fire from one location to another, and potential for ignition from lightning strikes.
Applicable Goal Statement:	Protect citizen's lives. Protect residential and commercial structures in the present and future.
Estimated Cost:	None
Benefits:	Reduction in the probability of fire spread, and structure damage

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Plan for Implementation	
Responsible Organization/Department:	Mayor
Action/Project Priority:	Medium
Timeline for Completion:	Ongoing
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	City Ordinance
Progress Report	
Action Status	Continuing, in progress
Report of Progress	Outreach to property owners and citizens in the development stage

Goal 2: Reduce the impact of disasters.

Action 2.1.a:

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Flooding
Hazard(s) Addressed:	Flood, Thunderstorm
Action or Project	
Action/Project Number:	2.1.a
Name of Action or Project:	Watershed and storm water practices
Action or Project Description:	Develop environmentally sound watershed and storm water practices to decrease flash flooding.
Applicable Goal Statement:	Reduce the impact of disasters
Estimated Cost:	Unsure
Benefits:	Decrease in flash flooding
Plan for Implementation	

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Responsible Organization/Department:	County Commissioners
Action/Project Priority:	Medium
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Floodplain Ordinance
Progress Report	
Action Status	Continuing
Report of Progress	

Goal 2: Reduce the impact of disasters.

Action 2.1.b:

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Loss of property
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake, Flood, Severe Winter Weather, Wildfire
Action or Project	
Action/Project Number:	2.1.b
Name of Action or Project:	Address development in hazard-prone areas
Action or Project Description:	Craft new plans and update comprehensive land use plans to address development in hazard-prone areas and identify strategies for decreasing vulnerability to hazards.
Applicable Goal Statement:	Reduce the impact of disasters
Estimated Cost:	Unsure
Benefits:	Decrease in loss of property
Plan for Implementation	
Responsible	County Commissioners

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Organization/Department:	
Action/Project Priority:	Low
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Floodplain ordinance
Progress Report	
Action Status	Continuing
Report of Progress	

Goal 2: Reduce the impact of disasters.

Action 2.1.c:

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Flooding
Hazard(s) Addressed:	Dam failure, Flood, Thunderstorm
Action or Project	
Action/Project Number:	2.1.c
Name of Action or Project:	Flood hazard maps
Action or Project Description:	Develop an accurate countywide series of maps detailing the flood plain, flash flood danger zones and other hazard areas.
Applicable Goal Statement:	Reduce the impact of disasters
Estimated Cost:	Unsure
Benefits:	Decrease in flooding
Plan for Implementation	
Responsible Organization/Department:	County Commissioners

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Action/Project Priority:	Very high
Timeline for Completion:	5 years
Potential Fund Sources:	Internal
Local Planning Mechanisms to be Used in Implementation, if any:	Floodplain ordinance
Progress Report	
Action Status	Continuing
Report of Progress	

Goal 3: Ensure continued operation of government and emergency functions in a disaster.

Action 3.1.a:

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Lack of practicing hazard mitigation best practices
Hazard(s) Addressed:	Earthquake
Action or Project	
Action/Project Number:	3.1.a
Name of Action or Project:	Earthquake mitigation
Action or Project Description:	Work with state and local governments to raise awareness of earthquake mitigation activities in homes, schools and businesses.
Applicable Goal Statement:	Increase disaster mitigation management capability in local governments.
Estimated Cost:	
Benefits:	Prepared public
Plan for Implementation	
Responsible Organization/Department:	County Commissioners
Action/Project Priority:	High

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Timeline for Completion:	5 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	

Goal 3: Ensure continued operation of government and emergency functions in a disaster.

Action 3.1.b:

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Lack of resources
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake, Flood, Heat Wave, Severe Winter Weather, Thunderstorm, Tornado, Wildfire
Action or Project	
Action/Project Number:	3.1.b
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:	Increase disaster mitigation management capability in local governments
Estimated Cost:	None
Benefits:	Additional resources available if needed
Plan for Implementation	
Responsible Organization/Department:	County Commissioners and Fire Districts
Action/Project Priority:	Very high

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Timeline for Completion:	5 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	

Goal 3: Ensure continued operation of government and emergency functions in a disaster.

Action 3.1.c:

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Lack of emergency management staff
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake, Flood, Heat Wave, Severe Winter Weather, Thunderstorm, Tornado, Wildfire
Action or Project	
Action/Project Number:	3.1.c
Name of Action or Project:	Emergency Management Director position
Action or Project Description:	Expand the county emergency management director position to full time.
Applicable Goal Statement:	Increase disaster mitigation management capability in local governments
Estimated Cost:	Unsure
Benefits:	Staffed position
Plan for Implementation	
Responsible Organization/Department:	County Commissioners
Action/Project Priority:	Medium

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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
Report of Progress	No progress

Goal 3: Ensure continued operation of government and emergency functions in a disaster.

Action 3.1.d:

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Lack of debris management system
Hazard(s) Addressed:	Flood, Severe Winter Weather, Thunderstorm, Tornado
Action or Project	
Action/Project Number:	3.1.d
Name of Action or Project:	Debris Management
Action or Project Description:	Have a debris management plan for the county to take care of debris after storms
Applicable Goal Statement:	Ensure continued operation of government and emergency functions in a disaster.
Estimated Cost:	Unsure
Benefits:	Quick removal of debris after a storm
Plan for Implementation	
Responsible Organization/Department:	County Commissioners
Action/Project Priority:	High

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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	

Goal 3: Ensure continued operation of government and emergency functions in a disaster.

Action 3.1.e:

Action Worksheet	
Name of Jurisdiction:	Maysville
Risk / Vulnerability	
Problem being Mitigated:	Lack of debris management system
Hazard(s) Addressed:	Flood, Severe Winter Weather, Thunderstorm, Tornado
Action or Project	
Action/Project Number:	3.1.e
Name of Action or Project:	Debris management
Action or Project Description:	Have a debris management plan for the county and cities to take care of debris after storms.
Applicable Goal Statement:	Ensure continued operation of government and emergency functions in a disaster
Estimated Cost:	Unsure
Benefits:	Quick removal of debris after a storm
Plan for Implementation	
Responsible Organization/Department:	Mayor

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Action/Project Priority:	Medium
Timeline for Completion:	Ongoing
Potential Fund Sources:	Internal, grants
Local Planning Mechanisms to be Used in Implementation, if any:	Code of Ordinances
Progress Report	
Action Status	Continuing, in progress
Report of Progress	Debris collected at the water plant

Goal 3: Ensure continued operation of government and emergency functions in a disaster.

Action 3.1.f:

Action Worksheet	
Name of Jurisdiction:	Osborn
Risk / Vulnerability	
Problem being Mitigated:	Lack of debris management system
Hazard(s) Addressed:	Flood, Severe Winter Weather, Thunderstorm, Tornado
Action or Project	
Action/Project Number:	3.1.f
Name of Action or Project:	Debris management
Action or Project Description:	Have a debris management plan for the county and cities to take care of debris after storms.
Applicable Goal Statement:	Ensure continued operation of government and emergency functions in a disaster
Estimated Cost:	Unsure
Benefits:	Quick removal of debris after a storm
Plan for Implementation	
Responsible Organization/Department:	Mayor

DRAFT

Action/Project Priority:	High
Timeline for Completion:	Ongoing
Potential Fund Sources:	Local, grants
Local Planning Mechanisms to be Used in Implementation, if any:	Code of Ordinances
Progress Report	
Action Status	Continuing, no progress
Report of Progress	The Board hasn't found the best way to proceed with this action.

Goal 3: Ensure continued operation of government and emergency functions in a disaster.

Action 3.1.g:

Action Worksheet	
Name of Jurisdiction:	Osborn School District
Risk / Vulnerability	
Problem being Mitigated:	Understanding hazard mitigation best practices
Hazard(s) Addressed:	Earthquake
Action or Project	
Action/Project Number:	3.1.g
Name of Action or Project:	Earthquake mitigation
Action or Project Description:	Work with state and local governments to raise awareness of earthquake mitigation activities in homes, schools and businesses.
Applicable Goal Statement:	Increase disaster mitigation management capability in local governments
Estimated Cost:	Unsure
Benefits:	Increase warning and reaction time for severe weather
Plan for Implementation	
Responsible Organization/Department:	Superintendent
Action/Project Priority:	Medium

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Timeline for Completion:	Ongoing
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	We continue to prepare students/staff with earthquake drills. Working to incorporate information about home safety as well as school safety.

Goal 3: Ensure continued operation of government and emergency functions in a disaster.

Action 3.1.h:

Action Worksheet	
Name of Jurisdiction:	Stewartsville School District
Risk / Vulnerability	
Problem being Mitigated:	Understanding hazard mitigation best practices
Hazard(s) Addressed:	Earthquake
Action or Project	
Action/Project Number:	3.1.h
Name of Action or Project:	Earthquake mitigation
Action or Project Description:	Work with state and local governments to raise awareness of earthquake mitigation activities in homes, schools and businesses.
Applicable Goal Statement:	Increase disaster mitigation management capability in local governments
Estimated Cost:	Unsure
Benefits:	Increase warning and reaction time for severe weather
Plan for Implementation	
Responsible Organization/Department:	Superintendent

DRAFT

Action/Project Priority:	High
Timeline for Completion:	Ongoing
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	Working to understand what best practices are used for this goal

Goal 3: Ensure continued operation of government and emergency functions in a disaster.

Action 3.1.i: (Weatherby was supposed to be 3.1.i but not participating)

Action Worksheet	
Name of Jurisdiction:	Clarksdale
Risk / Vulnerability	
Problem being Mitigated:	Lack of communication between city government, emergency, and clean up personnel in disaster
Hazard(s) Addressed:	Earthquake, Flood, Severe Winter Weather, Thunderstorm, Tornado
Action or Project	
Action/Project Number:	3.1.i.
Name of Action or Project:	Radios
Action or Project Description:	Acquire radios for location communication with government officials, emergency and disaster management personnel
Applicable Goal Statement:	Ensure continued operation of government and emergency functions in a disaster.
Estimated Cost:	Unsure
Benefits:	Source of communication between personnel working to serve people during a crisis.
Plan for Implementation	

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Responsible Organization/Department:	City
Action/Project Priority:	Medium
Timeline for Completion:	3 years
Potential Fund Sources:	Internal, grants
Local Planning Mechanisms to be Used in Implementation, if any:	City Council
Progress Report	
Action Status	New action
Report of Progress	

Goal 3: Ensure continued operation of government and emergency functions in a disaster.

Action 3.2.a:

Action Worksheet	
Name of Jurisdiction:	DeKalb County
Risk / Vulnerability	
Problem being Mitigated:	Dispatch centers in poor locations
Hazard(s) Addressed:	Earthquake, Flood, Heat Wave, Severe Winter Weather, Thunderstorm, Tornado
Action or Project	
Action/Project Number:	3.2.a
Name of Action or Project:	Evaluate dispatch center locations
Action or Project Description:	Evaluate the location of 911 dispatch center and consider other possible locations.
Applicable Goal Statement:	Ensure continued operation of government and emergency functions in a disaster.
Estimated Cost:	Unsure
Benefits:	Protected infrastructure

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Plan for Implementation	
Responsible Organization/Department:	County Commissioners and Sheriff
Action/Project Priority:	High
Timeline for Completion:	5 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	

Goal 3: Ensure continued operation of government and emergency functions in a disaster.

Action 3.2.b:

Action Worksheet	
Name of Jurisdiction:	City of Maysville
Risk / Vulnerability	
Problem being Mitigated:	Water and wastewater service interruption due to natural disaster
Hazard(s) Addressed:	Earthquake, Flood, Heat Wave, Severe Winter Weather, Thunderstorm, Tornado
Action or Project	
Action/Project Number:	3.2.b
Name of Action or Project:	Generator
Action or Project Description:	Purchase a portable generator capable of powering water distribution and wastewater removal if power is out
Applicable Goal Statement:	Ensure continued operation of government and emergency functions in a disaster.
Estimated Cost:	Unsure
Benefits:	Source of power during natural disaster to avoid interruption of service

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Plan for Implementation	
Responsible Organization/Department:	Board of Aldermen/Mayor
Action/Project Priority:	High
Timeline for Completion:	2 years
Potential Fund Sources:	Grants
Local Planning Mechanisms to be Used in Implementation, if any:	Unknown
Progress Report	
Action Status	New
Report of Progress	

Goal 3: Ensure continued operation of government and emergency functions in a disaster.

Action 3.2.c:

Action Worksheet	
Name of Jurisdiction:	City of Union Star
Risk / Vulnerability	
Problem being Mitigated:	Poor drainage
Hazard(s) Addressed:	Flood
Action or Project	
Action/Project Number:	3.2.c
Name of Action or Project:	Street improvements
Action or Project Description:	Perform street improvements to further improve drainage throughout the community.
Applicable Goal Statement:	Ensure continued operation of government and emergency functions in a disaster.
Estimated Cost:	$500,000
Benefits:	Mitigate flooding throughout the community
Plan for Implementation	

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Responsible Organization/Department:	City, local RPC
Action/Project Priority:	High
Timeline for Completion:	3 years
Potential Fund Sources:	Grants
Local Planning Mechanisms to be Used in Implementation, if any:	Unknown
Progress Report	
Action Status	New
Report of Progress	

Table 4.3. Mitigation Action Matrix

#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
	Prevention Public Education							
1.1.2	Storm shelter map	Stewartsville	High	1	Tornado, thunderstorm	x	x	x
1.2.a	Public education	DeKalb County	High	1	Dam Failure, Drought, Earthquake, Flood, Heat Wave, Severe Winter Weather, Thunderstorm, Tornado, Wildfire	x	x	x
1.2.i	Water and conservation	Maysville	High	1	Drought, heat wave	X	X	n/a
1.2.j	Water and conservation	DeKalb County	High	1	Drought, heat wave	X	X	n/a

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#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
1.2.m	Snow day plans	DeKalb County	Medium	1	Severe winter weather	X	X	n/a
1.3.a	Safe area assessment	DeKalb County	High	1	Tornado, thunderstorm	X	X	x
1.3.b	Safe area assessment	Maysville	High	1	Tornado, thunderstorm	X	X	x
1.3.c	Safe area assessment	Stewartsville School District	High	1	Tornado, thunderstorm	X	X	x
1.3.d	Safe area assessment	Union Star School District	High	1	Tornado, thunderstorm	X	X	x
2.1.c	Flood hazard maps	DeKalb County	High	2	Dam failure, flood, thunderstorm	X	X	x
	Structure and Infrastructure Projects							
1.1.1	Outdoor warning siren	DeKalb County	High	1	Tornado, thunderstorm	x	x	x
1.1.2	Safe Room	Clarksdale	Medium	1	Tornado, earthquake, thunderstorm	x	x	x
1.3.e	Volunteer groups assist with winterizing homes	DeKalb County	Medium	1	Severe winter weather	X	X	n/a
2.1.b	Address development in hazard-prone areas	DeKalb County	Low	2	Dam Failure, Earthquake, Flood, Severe Winter Weather, Thunderstorm, Tornado, Wildfire	x	x	x

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#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
3.2.b	Generator	Maysville	High	3	Earthquake, flood, heat wave, severe winter weather, thunderstorm, tornado	X	X	x
3.2.c	Street improvements	Union Star	High	3	Flood	X	X	x
	Natural Systems Protection							
1.3.f	Tall grass management	Amity	Medium	1	Wildfire	X	X	n/a
2.1.a	Watershed and stormwater practices	DeKalb County	Medium	2	Flood, thunderstorm	X	X	x
	Emergency Services							
1.2.n	Heat Emergency Shelters	DeKalb County	High	1	Heat wave	X	X	n/a
1.2.o	Inventory of facilities with generators	DeKalb County	High	1	Dam Failure, Earthquake, Flood, Severe Winter Weather, Thunderstorm, Tornado, Wildfire	x	x	x
1.2.p	Emergency access and evacuation routes	DeKalb County	Medium	1	Dam Failure, Earthquake, Flood, Severe Winter Weather, Thunderstorm, Tornado, Wildfire	x	x	x

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#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
1.2.q	Lack of emergency response	DeKalb County	Medium	1	Dam Failure, Earthquake, Flood, Severe Winter Weather, Thunderstorm, Tornado, Wildfire	x	x	x
1.2.r	Winter Weather Shelters	DeKalb County	High	1	Severe winter weather	X	X	n/a
3.1.b	Mutual aid agreements	DeKalb County	High	3	Dam Failure, Earthquake, Flood, Severe Winter Weather, Thunderstorm, Tornado, Wildfire	X	X	x
3.1.c	Emergency Management Director Position (full time)	DeKalb County	Medium	3	Dam Failure, Earthquake, Flood, Severe Winter Weather, Thunderstorm, Tornado, Wildfire	x	x	x
3.1.i	Radios	Clarksdale	Medium	3	Earthquake, Flood, Severe Winter Weather, Thunderstorm, Tornado	x	x	x

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#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
3.2.a	Evaluate dispatch center locations	DeKalb County	High	3	Earthquake, Flood, Heat Wave, Severe Winter Weather, Thunderstorm, Tornado	x	x	x
	Education and Outreach							
1.2.b	Disaster drills	Stewartsville School District	High	1	Dam Failure, Earthquake, Flood, Severe Winter Weather, Thunderstorm, Tornado, Wildfire	x	x	x
1.2.c	Public service announcements	DeKalb County	Medium	1	Dam Failure, Earthquake, Flood, Severe Winter Weather, Thunderstorm, Tornado, Wildfire	x	x	x
1.2.d	Webpage info	DeKalb County	High	1	Dam Failure, Earthquake, Flood, Severe Winter Weather, Thunderstorm, Tornado, Wildfire	X	x	X
1.2.e	Tornado safe room public education campaign	DeKalb County	High	1	Tornado, thunderstorm	X	X	x

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#	Action	Jurisdiction	Priority	Goals Addressed	Hazards Addressed	Address Current Development	Address Future Development	Continued Compliance with NFIP
1.2.f	Home winterization public education campaign	DeKalb County	High	1	Severe Winter Weather	X	X	n/a
1.2.g	Winter travel public education campaign	DeKalb County	High	1	Severe Winter Weather	X	X	n/a
1.2.h	Winter travel public education campaign	Osborn School District	High	1	Severe Winter Weather	X	X	n/a
1.2.k	Wildfire public education campaign	DeKalb County	High	1	Severe Winter Weather	X	X	n/a
1.2.l	Fire hazard level information	DeKalb County	High	1	Severe Winter Weather	X	X	n/a
1.2.s	Public information campaign about “ice dams”	DeKalb County	Medium	1	Severe Winter Weather	X	X	n/a
3.1.a	Earthquake mitigation	DeKalb County	High	3	Earthquake	X	x	n/a
3.1.d	Debris management	DeKalb County	High	3	Flood, severe winter weather, thunderstorm, tornado	X	X	x
3.1.e	Debris management	Maysville	Medium	3	Flood, severe winter weather, thunderstorm, tornado	X	X	x
3.1.f	Debris management	Osborn	High	3	Flood, severe winter weather, thunderstorm, tornado	X	X	x
3.1.g	Earthquake mitigation	Osborn School District	Medium	3	Earthquake	X	X	n/a
3.1.h	Earthquake mitigation	Stewartsville School District	High	3	Earthquake	X	X	n/a

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5 PLAN MAINTENANCE PROCESS

5 PLAN MAINTENANCE PROCESS 5.1

5.1 Monitoring, Evaluating, and Updating the Plan 5.1

5.1.1 Responsibility for Plan Maintenance 5.1

5.1.2 Plan Maintenance Schedule 5.2

5.1.3 Plan Maintenance Process 5.2

5.2 Incorporation into Existing Planning Mechanisms 5.3

5.3 Continued Public Involvement 5.4

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 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 bi-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.

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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.

5.1.2 Plan Maintenance Schedule

The DeKalb 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 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[10(b)] 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

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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 DeKalb 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 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 DeKalb 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 Plans;
- Capital improvement plans and budgets;
- Other community plans within the county, such as water conservation plans, storm water management plans, and parks and recreation plans; and
- 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 multijurisdictional hazard mitigation plan.

Additionally, the DeKalb County Emergency Management Director (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.

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
DeKalb County	Comprehensive Plan, Local Emergency Operating Plan	Comprehensive Plan, Local Emergency Operating Plan	Comprehensive Plan, Local Emergency Operating Plan

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Amity	None	Unknown	None
Clarksdale	Building Code, Storm Water Ordinance, Landscape Ordinance, Zoning/Land Use Restriction, Floodplain Ordinance	Building Code, Storm Water Ordinance, Landscape Ordinance, Zoning/Land Use Restriction, Floodplain Ordinance	Building Code, Storm Water Ordinance, Landscape Ordinance, Zoning/Land Use Restriction, Floodplain Ordinance
Maysville	Code of Ordinances	Code of Ordinances	Code of Ordinances
Osborn	Local Emergency Operations Plan	None	Local Emergency Operations Plan
Stewartsville	Emergency Operations Plan, City Mitigation Plan, Building Code, Floodplain Ordinance, Subdivision Ordinance	Emergency Operations Plan, City Mitigation Plan, Building Code, Floodplain Ordinance, Subdivision Ordinance	Emergency Operations Plan, City Mitigation Plan, Building Code, Floodplain Ordinance, Subdivision Ordinance
Union Star	Floodplain Ordinance, City Emergency Operations Plan	Floodplain Ordinance, City Emergency Operations Plan	Floodplain Ordinance, City Emergency Operations Plan
Weatherby	None	Unknown	None
Maysville School District	School Emergency Plan, Master Plan, Capital Improvement Plan	School Emergency Plan	School Emergency Plan
Osborn School District	School Emergency Plan, Master Plan, Capital Improvement Plan	School Emergency Plan	School Emergency Plan
Stewartsville School District	School Emergency Plan, Capital Improvement Plan	School Emergency Plan	School Emergency Plan
Union Star School District	School Emergency Plan, Master Plan	School Emergency Plan	School Emergency Plan

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5.3 Continued Public Involvement

44 CFR Requirement §201.6(c)(4)(iii): [The plan maintenance process shall include a] discussion on how the community will continue public participation in the plan maintenance process.

The hazard mitigation plan update process provides an opportunity to publicize success stories resulting from the plan's implementation and seek additional public comment. Information about the annual reviews will be posted in the local newspaper, as well as, on the DeKalb 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 notice will be posted and public participation will be actively solicited, at a minimum, through available website postings and press releases to local media outlets, primarily newspapers.

DeKalb County Multi-Jurisdictional Hazard Mitigation Plan

Appendix A:

Resources

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DeKalb County Dams

Info taken from: National Inventory of Dams, https://nid.sec.usace.army.mil/

	Dam Name	NID ID	Federal ID	Owner Nar	Owner Typ	Primary Ov	State or Fe	Number of	Designer N	Non-Federa	State Regu
1	Pony Express Lake I	MO10171	MO10171	MO DEPT C	State	State		0	MO DEPT OF CONSERV		Yes
2	Maysville New City	MO12375	MO12375	CITY OF MA	Local Gove	Local Government		0	RHODES-SAYRE		Yes
3	Grindstone-Lost-M	MO12198	MO12198	GLM WATE	Local Gove	Local Government		0	USDA NRCS		Yes
4	King Lake Dam	MO10384	MO10384	MO DEPT C	Local Gove	Local Government		0	USDA NRCS		Yes
5	Buffalo Bill Dam	MO12201	MO12201	MO DEPT C	State	State		0	USDA NRCS		Yes
6	Grindstone Glm C-	MO12203	MO12203	GLM WATE	State	State		0	USDA NRCS		Yes
7	Grindstone L-M-C S	MO12228	MO12228	GRINDSTO	Local Gove	Local Government		0	USDA NRCS		Yes
8	G-L-M Creek A-6	MO12377	MO12377	CHAIRMAN	Private	Private		0	USDA NRCS		Yes
9	Grindstone-Lost-M	MO50598	MO50598	GRINDSTO	Local Gove	Local Government		0	USDA NRCS		No
10	Grindstone-Lost-M	MO50102	MO50102	GSTN-LS-M	Local Gove	Local Government		0	USDA NRCS		No
11	Grindstome-Lost-M	MO12254	MO12254	JOHN DON	Private	Private		0	USDA NRCS		No
12	Grindstone-Lost-M	MO50105	MO50105	GRNSTN-LS	Local Gove	Local Government		0	USDA NRCS		No
13	Duce Lake Dam	MO10322	MO10322	CLARENCE	Private	Private		0			No
14	Grindstone-Lost-M	MO50083	MO50083	GLM WATE	Local Gove	Local Government		0	USDA NRCS		No
15	Grindstone-Lost-M	MO50082	MO50082	GLM WATE	Local Gove	Local Government		0	USDA NRCS		No
16	Grindstone-Lost-M	MO50093	MO50093	GRNSN-LS-	Local Gove	Local Government		0	USDA NRCS		No
17	Grindstone-Lost-M	MO50104	MO50104	GRNSTN-LS	Local Gove	Local Government		0	USDA NRCS		No
18	Grindstone-Lost-M	MO10299	MO10299	GRNDSTN-	Local Gove	Local Government		0	USDA NRCS		No
19	Grindstone-Lost-M	MO50600	MO50600	GRINDSTO	Local Gove	Local Government		0	USDA NRCS		No
20	Haan Lake Dam	MO11894	MO11894	CARL J HAA	Private	Private		0			No
21	Karr Lake Dam	MO11918	MO11918	GERALD KA	Private	Private		0			No
22	Grindstone-Lost-M	MO12262	MO12262	WILBUR TH	Local Gove	Local Government		0	USDA NRCS		No
23	Grindstone-Lost-M	MO50096	MO50096	GNSN-LS-M	Local Gove	Local Government		0	USDA NRCS		No
24	Nance Dam	MO10326	MO10326	MARION N	Private	Private		0			No
25	Eiberger Lake Dam	MO11892	MO11892	BERNARD E	Private	Private		0			No
26	Finkle Lake Dam	MO11917	MO11917	ROBERT FI	Private	Private		0			No
27	Redman Lake Dam	MO12140	MO12140	CARL REDM	Private	Private		0			No
28	Grindstone-Lost-M	MO50599	MO50599	GRINDSTO	Local Gove	Local Government		0	USDA NRCS		No
29	Maysville New Rese	MO10670	MO10670	CITY OF MA	Local Gove	Local Government		0			No
30	Grindstone-Lost-M	MO12248	MO12248	LARRY MC	Private	Private		0	USDA NRCS		No
31	Far West Stake Rlds	MO11896	MO11896	FAR WST S	Private	Private		0			No
32	Grindstone-Lost-M	MO50084	MO50084	GREG POTT	Local Gove	Local Government		0	USDA NRCS		No
33	Glenkirk Farms Lak	MO11895	MO11895	GLENKIRK	Private	Private		0			No

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34	Grindstone-Lost-M	MO50088	MO50088	GRNSTN-LS	Local Gove	Local Government	0	USDA NRCS	No
35	Severling Lake(Too	MO11223	MO11223	JOE SEUFE	Private	Private	0		No
36	Grindstone-Lost-M	MO12252	MO12252	PAULINE H	Private	Private	0	USDA NRCS	No
37	Grindstone-Lost-M	MO50089	MO50089	GRNSTN-LS	Local Gove	Local Government	0	USDA NRCS	No
38	Grindstone-Lost-M	MO12251	MO12251	JOHN H. O	Private	Private	0	USDA NRCS	No
39	Jestes Lake Dam	MO11247	MO11247	KEITH JEST	Private	Private	0		No
40	Grindstone-Lost-M	MO50099	MO50099	GLM CK. W	Local Gove	Local Government	0	USDA NRCS	No
41	Bryson Lake Dam	MO11889	MO11889	WADE BRY	Private	Private	0		No
42	Grindstone Lost-M	MO12116	MO12116	GRDSN-LST	Local Gove	Local Government	0		No
43	Mckim Lake Dam	MO11912	MO11912	MICHAEL +	Private	Private	0		No
44	Hooper Dam	MO50109	MO50109	CLEO HOO	Private	Private	0		No
45	Greg Paige Structur	MO51412	MO51412	GREG PAIG	Private	Private	0	USDA NRCS	No
46	Grindstone-Lost-M	MO12250	MO12250	DAVID MU	Local Gove	Local Government	0	USDA NRCS	No
47	Cameron Reservoir	MO10169	MO10169	CITY OF CA	Local Gove	Local Government	0	BLACK AND VEATCH	Yes
48	Grindstone-Lost-M	MO11267	MO11267	GRDNS-LS-	Local Gove	Local Government	0	USDA NRCS	No
49	Grindstone-Lost-M	MO11913	MO11913	GRNS-LS-M	Local Gove	Local Government	0	USDA NRCS	No
50	Grindstone-Lost-M	MO12261	MO12261	GLM CR W	Local Gove	Local Government	0	USDA NRCS	No
51	Grindstone-Lost-M	MO12263	MO12263	G-L-M WA	Local Gove	Local Government	0	USDA NRCS	No
52	Grindstone-Lost-M	MO10310	MO10310	GRNSN-LS-	Local Gove	Local Government	0	USDA NRCS	No
53	Grindstone-Lost-M	MO11890	MO11890	GRNS-LS-M	Local Gove	Local Government	0	USDA NRCS	No
54	Grindstone-Lost-M	MO12114	MO12114	GRNS-LS-M	Local Gove	Local Government	0	USDA NRCS	No
55	Grindstone-Lost-M	MO10324	MO10324	GNDSN-LS	Local Gove	Local Government	0	USDA NRCS	No
56	Grindstone-Lost-M	MO10421	MO10421	GNDSN-LS	Local Gove	Local Government	0	USDA NRCS	No
57	Grindstone-Lost-M	MO12253	MO12253	GLM WAT	Local Gove	Local Government	0	USDA NRCS	No
58	Grindstone-Lost-M	MO10325	MO10325	GNDSN-LS	Local Gove	Local Government	0	USDA NRCS	No
59	Grindstone-Lost-M	MO12159	MO12159	GRNSTN-LS	Local Gove	Local Government	0	USDA NRCS	No
60	Grindstone-Lost-M	MO10386	MO10386	GNDSN-LS	Local Gove	Local Government	0	USDA NRCS	No
61	Grindstone-Lost-M	MO11270	MO11270	GRNDSN-L	Local Gove	Local Government	0	USDA NRCS	No
62	Grindstone-Lost-M	MO12115	MO12115	GNSN-LST-	Local Gove	Local Government	0	USDA NRCS	No
63	Grindstone-Lost-M	MO11266	MO11266	GRNS-LS-M	Local Gove	Local Government	0	USDA NRCS	No
64	Grindstone-Lost-M	MO11911	MO11911	GLM CREE	Local Gove	Local Government	0	USDA NRCS	No
65	Grindstone-Lost-M	MO11064	MO11064	GRNSN-LS	Local Gove	Local Government	0	USDA NRCS	No
66	Grindstone-Lost-M	MO10323	MO10323	GNDSN-LS	Local Gove	Local Government	0	USDA NRCS	No
67	Grindstone-Lost-M	MO10321	MO10321	GLM CREE	Local Gove	Local Government	0	USDA NRCS	No

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68	Cameron #3 Dam	MO10170	MO10170	CITY OF CA	Local Gove	Local Government	0			No
69	Cameron City Rese	MO10042	MO10042	CITY OF CA	Local Gove	Local Government	0			Yes

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DEKALB COUNTY

PROJECT STATUS UPDATE I JUNE 2022

RiskMAP
Increasing Resilience Together

In December 2021 we conducted a Pre-Meeting Survey. We will be sharing those results as part of the Pre-Discovery Report. During this phase, your county will be heavily researched to "discover" existing data that can be used in your project. This includes local aerial photography, flood control structure as-builts, high water marks, etc. This is a cost-effective approach that will allow us to not only utilize our resources effectively, but to also produce the most accurate floodplain maps for your county. We will hold a Discovery Meeting on June 29, 2022 to discuss the modeling methods that we plan to use for the streams in Dekalb County. If you have any questions, please don't hesitate to reach out to us.

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Discovery with BLEs: Year 1 and 2 → **Data Development:** Year 3 → **Prelim Map Products:** Year 4 → **Post Prelim Processing:** Year 5

Project Tasks and Milestones

- ☐ Pre-Discovery Meeting
  Date: 06/29/2022
- ☐ 30 day Comment Period for Discovery Meeting
  Dates: TBD anticipated for July 2022
- ☐ Send out Final Report – anticipated for August 2022
- ☐ 30 day Comment Period – anticipated to end August 2022
- ☐ Field Survey Collection – TBD anticipated in Fall 2022
- ☐ Flood Study Review meetings for BLE models
  Date: TBD

MO SEMA Web Portal Access: https://bit.ly/MOFloodPortal
· Data Submission · Draft Maps · Model Requests · Project Documents · Workshop Registration

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wood.

AMITY 100-YEAR FLOOD PLAIN

Essential Facilities

Church

100-Year Flood Plain

N
W E
S

0 250 500 1,000 Feet

Mo-Kan
An Economic & Community Development Organization

CLARKSDALE 100-YEAR FLOOD PLAIN

Essential Facilities

- City Hall
- Postal
- Fire
- Church
- 100-Year Flood Plain

N W E S

0 250 500 1,000 Feet

Mo-Kan
An Economic & Community Development Organization

MAYSVILLE 100-YEAR FLOOD PLAIN

Essential Facilities

- City Hall
- Fire
- Police
- Courthouse
- Postal
- School
- 100-Year Flood Plain

N W E S

0 400 800 1,600 Feet

Mo-Kan
An Economic & Community Development Organization

OSBORN 100-YEAR FLOOD PLAIN

Essential Facilities

- City Hall
- Fire
- Water
- Postal
- School
- 100-Year Flood Plain

0 400 800 1,600 Feet

Mo-Kan
An Economic & Community Development Organization

UNION STAR 100-YEAR FLOOD PLAIN

Essential Facilities

- City Hall
- School
- Fire
- Postal
- 100-Year Flood Plain

N W E S

0 250 500 1,000 Feet

Mo-Kan
An Economic & Community Development Organization

WEATHERBY 100-YEAR FLOOD PLAIN

Essential Facilities

City Hall

Postal

Fire

100-Year Flood Plain

Church

N
W
E
S

0 200 400 800 Feet

Mo-Kan
An Economic & Community Development Organization

STEWARTSVILLE 100-YEAR FLOOD PLAIN

Essential Facilities

- City Hall
- Postal
- Medical
- School
- 100-Year Flood Plain

N W E S

0 400 800 1,600 Feet

Mo-Kan
An Economic & Community Development Organization

DeKalb County Population Data

Total Population	People	% Diff.*
DeKalb County, MO	**11,872**	
Osborn, MO	**402**	↓ 96.6%
Stewartsville, MO	**692**	↓ 94.2%
Union Star, MO	**555**	↓ 95.3%
Weatherby, MO	**67**	↓ 99.4%
Amity, MO	**56**	↓ 99.5%

Total Population	People	% Diff.*
DeKalb County, MO	**11,592**	
Osborn, MO	**400**	↓ 96.5%
Stewartsville, MO	**759**	↓ 93.5%
Union Star, MO	**412**	↓ 96.4%
Weatherby, MO	**97**	↓ 99.2%
Amity, MO	**30**	↓ 99.7%

Sources: US Census Bureau 2000; US Census Bureau ACS 5-year 2016-2020

Total Population	People
DeKalb County, MO	**12,886**
Amity, MO	**30**
Weatherby, MO	**117**
Union Star, MO	**397**
Stewartsville, MO	**752**
Osborn, MO	**388**

Sources: US Census Bureau 2010

Total Population	People
DeKalb County, MO	**11,872**
Missouri	**6,124,160**
United States of America	**326,569,308**

Population Age Under 5	People
DeKalb County, MO	**568**
Missouri	**371,046**
United States of America	**19,650,192**

Population Age 65 to 74	People
DeKalb County, MO	**1,085**
Missouri	**595,770**
United States of America	**30,547,950**

Population Age 75 to 84	People
DeKalb County, MO	**685**
Missouri	**307,569**
United States of America	**15,193,051**

Population Age Over 85	People
DeKalb County, MO	**335**
Missouri	**130,045**
United States of America	**6,621,816**

Sources: US Census Bureau ACS 5-year 2016-2020

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Total Population	People
DeKalb County, MO	**11,872**
Clarksdale, MO	**263**
Amity, MO	**56**
Stewartsville, MO	**692**
Missouri	**6,124,160**
United States of America	**326,569,308**

Labor Force Participation Rate	
DeKalb County, MO	**41.1%**
Clarksdale, MO	**63.4%**
Amity, MO	**62.5%**
Stewartsville, MO	**68%**
Missouri	**63%**
United States of America	**63.4%**

Unemployment Rate	
DeKalb County, MO	**2%**
Clarksdale, MO	**14.1%**
Amity, MO	**0%**
Stewartsville, MO	**3.8%**
Missouri	**4.5%**
United States of America	**5.4%**

Language Spoken at Home - English Only	People
DeKalb County, MO	**11,064**
Clarksdale, MO	**255**
Amity, MO	**56**
Stewartsville, MO	**616**
Missouri	**5,392,010**
United States of America	**240,826,040**

Language Spoken at Home - Spanish	People
DeKalb County, MO	**41**
Clarksdale, MO	**0**
Amity, MO	**0**
Stewartsville, MO	**0**
Missouri	**149,698**
United States of America	**40,537,337**

Language Spoken at Home - Other Indo-European	People
DeKalb County, MO	**170**
Clarksdale, MO	**0**
Amity, MO	**0**
Stewartsville, MO	**0**
Missouri	**101,306**
United States of America	**11,270,634**

Language Spoken at Home - Asian-Pacific Islander	People
DeKalb County, MO	**23**
Clarksdale, MO	**0**
Amity, MO	**0**
Stewartsville, MO	**0**
Missouri	**78,305**
United States of America	**10,800,470**

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Language Spoken at Home - Other	People
DeKalb County, MO	**6**
Clarksdale, MO	**0**
Amity, MO	**0**
Stewartsville, MO	**0**
Missouri	**31,795**
United States of America	**3,484,635**

Families Below Poverty Level	Families
DeKalb County, MO	**163**
Clarksdale, MO	**7**
Amity, MO	**0**
Stewartsville, MO	**11**
Missouri	**137,383**
United States of America	**7,245,704**

Total Families	Families
DeKalb County, MO	**2,377**
Clarksdale, MO	**74**
Amity, MO	**18**
Stewartsville, MO	**178**
Missouri	**1,551,056**
United States of America	**79,849,830**

Percent High School Educated	
DeKalb County, MO	**88.4%**
Clarksdale, MO	**89.1%**
Amity, MO	**85.5%**
Stewartsville, MO	**96.3%**
Missouri	**90.6%**
United States of America	**88.5%**

Percent College Educated	
DeKalb County, MO	**15.8%**
Clarksdale, MO	**8%**
Amity, MO	**1.8%**
Stewartsville, MO	**21.9%**
Missouri	**29.9%**
United States of America	**32.9%**

Sources: US Census Bureau ACS 5-year 2016-2020

Total Population	People
Maysville, MO	**1,142**
Weatherby, MO	**67**
Cameron, MO	**8,941**
Union Star, MO	**555**
Stewartsville, MO	**692**
Osborn, MO	**402**

Labor Force Participation Rate	
Maysville, MO	**63.7%**
Weatherby, MO	**30.8%**
Cameron, MO	**33.5%**
Union Star, MO	**62.6%**
Stewartsville, MO	**68%**
Osborn, MO	**68.5%**

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Unemployment Rate	
Maysville, MO	**0%**
Weatherby, MO	**30%**
Cameron, MO	**2.4%**
Union Star, MO	**2.2%**
Stewartsville, MO	**3.8%**
Osborn, MO	**0.4%**

Total Families	Families
Maysville, MO	**306**
Weatherby, MO	**23**
Cameron, MO	**1,338**
Union Star, MO	**103**
Stewartsville, MO	**178**
Osborn, MO	**91**

Families Below Poverty Level	Families
Maysville, MO	**46**
Weatherby, MO	**4**
Cameron, MO	**73**
Union Star, MO	**13**
Stewartsville, MO	**11**
Osborn, MO	**1**

Percent High School Educated	
Maysville, MO	**91.5%**
Weatherby, MO	**79.7%**
Cameron, MO	**85.3%**
Union Star, MO	**91.6%**
Stewartsville, MO	**96.3%**
Osborn, MO	**95.4%**

Language Spoken at Home - English Only	People
Maysville, MO	**1,059**
Weatherby, MO	**67**
Cameron, MO	**8,468**
Union Star, MO	**512**
Stewartsville, MO	**616**
Osborn, MO	**369**

Language Spoken at Home - Spanish	People
Maysville, MO	**2**
Weatherby, MO	**0**
Cameron, MO	**122**
Union Star, MO	**0**
Stewartsville, MO	**0**
Osborn, MO	**5**

Language Spoken at Home - Other Indo-European	People
Maysville, MO	**3**
Weatherby, MO	**0**
Cameron, MO	**17**
Union Star, MO	**0**
Stewartsville, MO	**0**
Osborn, MO	**0**

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Language Spoken at Home - Asian-Pacific Islander	People
Maysville, MO	**2**
Weatherby, MO	**0**
Cameron, MO	**10**
Union Star, MO	**0**
Stewartsville, MO	**0**
Osborn, MO	**0**

Language Spoken at Home - Other	People
Maysville, MO	**0**
Weatherby, MO	**0**
Cameron, MO	**6**
Union Star, MO	**0**
Stewartsville, MO	**0**
Osborn, MO	**0**

Percent College Educated	
Maysville, MO	**13.4%**
Weatherby, MO	**3.4%**
Cameron, MO	**12.7%**
Union Star, MO	**11.7%**
Stewartsville, MO	**21.9%**
Osborn, MO	**29.2%**

Sources: US Census Bureau ACS 5-year 2016-2020

Total Population	People
DeKalb County, MO	**11,872**
Weatherby, MO	**67**
Cameron, MO	**8,941**
Union Star, MO	**555**
Stewartsville, MO	**692**
Osborn, MO	**402**

Total Employed	People
DeKalb County, MO	**4,073**
Weatherby, MO	**14**
Cameron, MO	**2,513**
Union Star, MO	**270**
Stewartsville, MO	**329**
Osborn, MO	**230**

Employment by Occupation - Management	People
DeKalb County, MO	**564**
Weatherby, MO	**0**
Cameron, MO	**160**
Union Star, MO	**5**
Stewartsville, MO	**16**
Osborn, MO	**64**

Employment by Occupation - Business and Finance	People
DeKalb County, MO	**130**
Weatherby, MO	**0**
Cameron, MO	**84**
Union Star, MO	**0**
Stewartsville, MO	**13**
Osborn, MO	**4**

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Employment by Occupation - Computer and Mathematical	People
DeKalb County, MO	**30**
Weatherby, MO	**0**
Cameron, MO	**58**
Union Star, MO	**0**
Stewartsville, MO	**4**
Osborn, MO	**0**

Employment by Occupation - Architecture and Engineering	People
DeKalb County, MO	**19**
Weatherby, MO	**1**
Cameron, MO	**6**
Union Star, MO	**0**
Stewartsville, MO	**0**
Osborn, MO	**3**

Employment by Occupation - Life, Physical, and Social Science	People
DeKalb County, MO	**11**
Weatherby, MO	**0**
Cameron, MO	**0**
Union Star, MO	**1**
Stewartsville, MO	**0**
Osborn, MO	**3**

Employment by Occupation - Community and Social Service	People
DeKalb County, MO	**126**
Weatherby, MO	**0**
Cameron, MO	**85**
Union Star, MO	**15**
Stewartsville, MO	**4**
Osborn, MO	**2**

Employment by Occupation - Legal	People
DeKalb County, MO	**2**
Weatherby, MO	**0**
Cameron, MO	**0**
Union Star, MO	**0**
Stewartsville, MO	**0**
Osborn, MO	**0**

Employment by Occupation - Education, Training and Library	People
DeKalb County, MO	**209**
Weatherby, MO	**0**
Cameron, MO	**155**
Union Star, MO	**13**
Stewartsville, MO	**16**
Osborn, MO	**0**

Employment by Occupation - Arts, Design, Entertainment, Sports and Media	People
DeKalb County, MO	**4**
Weatherby, MO	**0**
Cameron, MO	**37**
Union Star, MO	**2**
Stewartsville, MO	**1**
Osborn, MO	**0**

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Employment by Occupation - Health Diagnosis and Treating Practitioners	People
DeKalb County, MO	**130**
Weatherby, MO	**0**
Cameron, MO	**178**
Union Star, MO	**0**
Stewartsville, MO	**6**
Osborn, MO	**0**

Employment by Occupation - Health Technologist and Technicians	People
DeKalb County, MO	**179**
Weatherby, MO	**0**
Cameron, MO	**86**
Union Star, MO	**60**
Stewartsville, MO	**16**
Osborn, MO	**0**

Employment by Occupation - Healthcare Support	People
DeKalb County, MO	**176**
Weatherby, MO	**0**
Cameron, MO	**204**
Union Star, MO	**13**
Stewartsville, MO	**14**
Osborn, MO	**7**

Employment by Occupation - Fire Fighting and Prevention	People
DeKalb County, MO	**32**
Weatherby, MO	**0**
Cameron, MO	**8**
Union Star, MO	**0**
Stewartsville, MO	**0**
Osborn, MO	**0**

Employment by Occupation - Law Enforcement	People
DeKalb County, MO	**92**
Weatherby, MO	**0**
Cameron, MO	**76**
Union Star, MO	**0**
Stewartsville, MO	**19**
Osborn, MO	**9**

Employment by Occupation - Food Preparation and Serving	People
DeKalb County, MO	**148**
Weatherby, MO	**0**
Cameron, MO	**83**
Union Star, MO	**11**
Stewartsville, MO	**19**
Osborn, MO	**12**

Employment by Occupation - Building, Grounds Cleaning, and Maintenance	People
DeKalb County, MO	**95**
Weatherby, MO	**0**
Cameron, MO	**12**
Union Star, MO	**7**
Stewartsville, MO	**15**
Osborn, MO	**10**

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Employment by Occupation - Personal Care and Service	People
DeKalb County, MO	**85**
Weatherby, MO	**0**
Cameron, MO	**60**
Union Star, MO	**4**
Stewartsville, MO	**17**
Osborn, MO	**0**

Employment by Occupation - Sales	People
DeKalb County, MO	**311**
Weatherby, MO	**2**
Cameron, MO	**258**
Union Star, MO	**4**
Stewartsville, MO	**35**
Osborn, MO	**36**

Employment by Occupation - Farming, Fishing and Forestry	People
DeKalb County, MO	**123**
Weatherby, MO	**0**
Cameron, MO	**41**
Union Star, MO	**42**
Stewartsville, MO	**2**
Osborn, MO	**0**

Employment by Occupation - Construction and Extraction	People
DeKalb County, MO	**202**
Weatherby, MO	**1**
Cameron, MO	**177**
Union Star, MO	**6**
Stewartsville, MO	**22**
Osborn, MO	**8**

Employment by Occupation - Installation, Maintenance, and Repair	People
DeKalb County, MO	**242**
Weatherby, MO	**0**
Cameron, MO	**135**
Union Star, MO	**7**
Stewartsville, MO	**25**
Osborn, MO	**20**

Employment by Occupation - Production	People
DeKalb County, MO	**411**
Weatherby, MO	**5**
Cameron, MO	**159**
Union Star, MO	**44**
Stewartsville, MO	**53**
Osborn, MO	**13**

Employment by Occupation - Transportation	People
DeKalb County, MO	**133**
Weatherby, MO	**2**
Cameron, MO	**93**
Union Star, MO	**8**
Stewartsville, MO	**9**
Osborn, MO	**10**

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Employment by Occupation - Material Moving	People
DeKalb County, MO	**191**
Weatherby, MO	**2**
Cameron, MO	**157**
Union Star, MO	**13**
Stewartsville, MO	**10**
Osborn, MO	**0**

Employment by Occupation - Office and Administrative Support	People
DeKalb County, MO	**428**
Weatherby, MO	**1**
Cameron, MO	**201**
Union Star, MO	**15**
Stewartsville, MO	**13**
Osborn, MO	**29**

Sources: US Census Bureau ACS 5-year 2016-2020

Total Population	People
DeKalb County, MO	**11,872**
Amity, MO	**56**
Maysville, MO	**1,142**
Clarksdale, MO	**263**

Total Employed	People
DeKalb County, MO	**4,073**
Amity, MO	**35**
Maysville, MO	**536**
Clarksdale, MO	**110**

Employment by Occupation - Management	People
DeKalb County, MO	**564**
Amity, MO	**0**
Maysville, MO	**44**
Clarksdale, MO	**10**

Employment by Occupation - Business and Finance	People
DeKalb County, MO	**130**
Amity, MO	**0**
Maysville, MO	**14**
Clarksdale, MO	**4**

Employment by Occupation - Computer and Mathematical	People
DeKalb County, MO	**30**
Amity, MO	**0**
Maysville, MO	**3**
Clarksdale, MO	**0**

Employment by Occupation - Architecture and Engineering	People
DeKalb County, MO	**19**
Amity, MO	**0**
Maysville, MO	**0**
Clarksdale, MO	**0**

Employment by Occupation - Life, Physical, and Social Science	People
DeKalb County, MO	**11**
Amity, MO	**0**
Maysville, MO	**0**
Clarksdale, MO	**0**

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Employment by Occupation - Community and Social Service	People
DeKalb County, MO	**126**
Amity, MO	**1**
Maysville, MO	**4**
Clarksdale, MO	**1**

Employment by Occupation - Legal	People
DeKalb County, MO	**2**
Amity, MO	**0**
Maysville, MO	**0**
Clarksdale, MO	**0**

Employment by Occupation - Education, Training and Library	People
DeKalb County, MO	**209**
Amity, MO	**0**
Maysville, MO	**50**
Clarksdale, MO	**6**

Employment by Occupation - Arts, Design, Entertainment, Sports and Media	People
DeKalb County, MO	**4**
Amity, MO	**0**
Maysville, MO	**0**
Clarksdale, MO	**0**

Employment by Occupation - Health Diagnosis and Treating Practitioners	People
DeKalb County, MO	**130**
Amity, MO	**0**
Maysville, MO	**22**
Clarksdale, MO	**3**

Employment by Occupation - Health Technologist and Technicians	People
DeKalb County, MO	**179**
Amity, MO	**15**
Maysville, MO	**36**
Clarksdale, MO	**0**

Employment by Occupation - Healthcare Support	People
DeKalb County, MO	**176**
Amity, MO	**0**
Maysville, MO	**12**
Clarksdale, MO	**7**

Employment by Occupation - Fire Fighting and Prevention	People
DeKalb County, MO	**32**
Amity, MO	**0**
Maysville, MO	**8**
Clarksdale, MO	**0**

Employment by Occupation - Law Enforcement	People
DeKalb County, MO	**92**
Amity, MO	**0**
Maysville, MO	**31**
Clarksdale, MO	**1**

Employment by Occupation - Food Preparation and Serving	People
DeKalb County, MO	**148**
Amity, MO	**2**
Maysville, MO	**13**
Clarksdale, MO	**2**

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Employment by Occupation - Building, Grounds Cleaning, and Maintenance	People
DeKalb County, MO	**95**
Amity, MO	**0**
Maysville, MO	**18**
Clarksdale, MO	**4**

Employment by Occupation - Personal Care and Service	People
DeKalb County, MO	**85**
Amity, MO	**0**
Maysville, MO	**8**
Clarksdale, MO	**0**

Employment by Occupation - Sales	People
DeKalb County, MO	**311**
Amity, MO	**0**
Maysville, MO	**63**
Clarksdale, MO	**10**

Employment by Occupation - Office and Administrative Support	People
DeKalb County, MO	**428**
Amity, MO	**0**
Maysville, MO	**51**
Clarksdale, MO	**15**

Employment by Occupation - Farming, Fishing and Forestry	People
DeKalb County, MO	**123**
Amity, MO	**0**
Maysville, MO	**0**
Clarksdale, MO	**1**

Employment by Occupation - Construction and Extraction	People
DeKalb County, MO	**202**
Amity, MO	**0**
Maysville, MO	**31**
Clarksdale, MO	**12**

Employment by Occupation - Installation, Maintenance, and Repair	People
DeKalb County, MO	**242**
Amity, MO	**0**
Maysville, MO	**20**
Clarksdale, MO	**10**

Employment by Occupation - Production	People
DeKalb County, MO	**411**
Amity, MO	**16**
Maysville, MO	**60**
Clarksdale, MO	**17**

Employment by Occupation - Transportation	People
DeKalb County, MO	**133**
Amity, MO	**0**
Maysville, MO	**19**
Clarksdale, MO	**3**

Employment by Occupation - Material Moving	People
DeKalb County, MO	**191**
Amity, MO	**1**
Maysville, MO	**29**
Clarksdale, MO	**4**

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Social Vulnerability to Environmental Hazards
State of Missouri

County Comparison Within the Nation

County Comparison within the State

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N

0 25 50 100 Miles

National Quantiles

- High (Top 20%)
- Medium High
- Medium
- Medium Low
- Low (Bottom 20%)

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 HAZARDS & VULNERABILITY RESEARCH INSTITUTE

An official website of the United States government

United States Census Bureau

QuickFacts

United States; DeKalb County, Missouri; Missouri

QuickFacts provides statistics for all states and counties, and for cities and towns with a ***population of 5,000 or more***.

Table

All Topics	United States	DeKalb County, Missouri	Missouri
Population Estimates, July 1 2021, (V2021)	**331,893,745**	**11,098**	**6,168,187**
PEOPLE			
Population			
Population Estimates, July 1 2021, (V2021)	**331,893,745**	**11,098**	**6,168,187**
Population estimates base, April 1, 2020, (V2021)	331,449,281	11,029	6,154,913
Population, percent change - April 1, 2020 (estimates base) to July 1, 2021, (V2021)	0.1%	0.6%	0.2%
Population, Census, April 1, 2020	331,449,281	11,029	6,154,913
Population, Census, April 1, 2010	308,745,538	12,892	5,988,927
Age and Sex			
Persons under 5 years, percent	6.0%	4.5%	6.0%
Persons under 18 years, percent	22.3%	17.1%	22.3%
Persons 65 years and over, percent	16.5%	16.6%	17.3%
Female persons, percent	50.8%	37.5%	50.9%
Race and Hispanic Origin			
White alone, percent	76.3%	85.9%	82.9%
Black or African American alone, percent (a)	13.4%	11.8%	11.8%
American Indian and Alaska Native alone, percent (a)	1.3%	0.6%	0.6%
Asian alone, percent (a)	5.9%	0.4%	2.2%
Native Hawaiian and Other Pacific Islander alone, percent (a)	0.2%	0.1%	0.2%
Two or More Races, percent	2.8%	1.2%	2.4%
Hispanic or Latino, percent (b)	18.5%	2.9%	4.4%
White alone, not Hispanic or Latino, percent	60.1%	83.4%	79.1%
Population Characteristics			
Veterans, 2016-2020	17,835,456	1,016	391,513
Foreign born persons, percent, 2016-2020	13.5%	0.6%	4.2%
Housing			
Housing units, July 1, 2019, (V2019)	139,684,244	4,355	2,819,383
Owner-occupied housing unit rate, 2016-2020	64.4%	69.6%	67.1%
Median value of owner-occupied housing units, 2016-2020	$229,800	$125,000	$163,600
Median selected monthly owner costs -with a mortgage, 2016-2020	$1,621	$1,162	$1,287
Median selected monthly owner costs -without a mortgage, 2016-2020	$509	$433	$449
Median gross rent, 2016-2020	$1,096	$700	$843
Building permits, 2020	1,471,141	2	19,839
Families & Living Arrangements			
Households, 2016-2020	122,354,219	3,800	2,440,212
Persons per household, 2016-2020	2.60	2.31	2.44
Living in same house 1 year ago, percent of persons age 1 year+, 2016-2020	86.2%	85.1%	85.5%
Language other than English spoken at home, percent of persons age 5 years+, 2016-2020	21.5%	2.1%	6.3%
Computer and Internet Use			
Households with a computer, percent, 2016-2020	91.9%	82.3%	90.7%
Households with a broadband Internet subscription, percent, 2016-2020	85.2%	72.0%	83.2%
Education			
High school graduate or higher, percent of persons age 25 years+, 2016-2020	88.5%	88.4%	90.6%
Bachelor's degree or higher, percent of persons age 25 years+, 2016-2020	32.9%	15.8%	29.9%
Health			
With a disability, under age 65 years, percent, 2016-2020	8.7%	7.7%	10.2%
Persons without health insurance, under age 65 years, percent	10.2%	11.6%	12.0%
Economy			
In civilian labor force, total, percent of population age 16 years+, 2016-2020	63.0%	41.1%	62.6%
In civilian labor force, female, percent of population age 16 years+,	58.4%	51.1%	58.9%

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2016-2020			
Total accommodation and food services sales, 2012 ($1,000) (c)	708,138,598	7,919	12,430,310
Total health care and social assistance receipts/revenue, 2012 ($1,000) (c)	2,040,441,203	D	40,089,316
Total manufacturers shipments, 2012 ($1,000) (c)	5,696,729,632	D	111,535,362
Total retail sales, 2012 ($1,000) (c)	4,219,821,871	123,550	90,546,581
Total retail sales per capita, 2012 (c)	$13,443	$9,548	$15,036
Transportation			
Mean travel time to work (minutes), workers age 16 years+, 2016-2020	26.9	30.5	23.9
Income & Poverty			
Median household income (in 2020 dollars), 2016-2020	$64,994	$58,433	$57,290
Per capita income in past 12 months (in 2020 dollars), 2016-2020	$35,384	$20,810	$31,839
Persons in poverty, percent	⚠ 11.4%	⚠ 12.8%	⚠ 12.1%
BUSINESSES			
Businesses			
Total employer establishments, 2019	7,959,103	216	151,816
Total employment, 2019	132,989,428	2,180	2,547,310
Total annual payroll, 2019 ($1,000)	7,428,553,593	81,032	125,301,519
Total employment, percent change, 2018-2019	1.6%	3.0%	0.5%
Total nonemployer establishments, 2018	26,485,532	633	426,915
All firms, 2012	27,626,360	1,037	491,606
Men-owned firms, 2012	14,844,597	462	257,948
Women-owned firms, 2012	9,878,397	353	162,616
Minority-owned firms, 2012	7,952,386	F	61,035
Nonminority-owned firms, 2012	18,987,918	995	415,972
Veteran-owned firms, 2012	2,521,682	44	49,217
Nonveteran-owned firms, 2012	24,070,685	857	415,542
GEOGRAPHY			
Geography			
Population per square mile, 2010	87.4	30.6	87.1
Land area in square miles, 2010	3,531,905.43	421.36	68,741.52
FIPS Code	1	29063	29

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DeKalb County Multi-Jurisdictional Hazard Mitigation Plan

Appendix B:

Planning Process

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DeKalb County Commissioner Meeting – Hazard Mitigation Plan

DeKalb County Courthouse
October 5, 2021
11:00 am

1) What is the Hazard Mitigation Plan

A. HMP flyer

B. Hazard Mitigation Grants flyer

C. 2017 DeKalb 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

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Contact Name	Agency	Street Address	City, State, Zip	Email	Phone
Special Districts					
Chris Heslinga, Sup.	Maysville R-I School District	601 West Main	Maysville, MO 64469	heslingac@maysville.k12.mo.us	816-449-2308
Brett Jones, Sup.	Stewartsville C-2 School District	902 Buchanan Street	Stewartsville, MO 64490	bjones@stewartsville.k12.mo.us	816-669-3258
Derek Brady, Sup.	Osborn R-0 School District	675 Clinton Ave,	Osborn, MO 64474	derek.brady@osbornwildcats.org	816-675-2217
Rick Calloway, Sup.	Union Star R-II School District	6132 NW State Rt Z	Union Star, MO 64494	rcalloway@usr2.com	816-593-2294
Rachel Brown, Emergency Planner	Tri-County Health Department	302 N. Park St.	Stanberry, MO 64489	rachel.brown@lpha.mo.gov	
Theresa McDonald, Administrator	Tri-County Health Dept. Satellite Office	200 N. Camden	Maysville, MO 64469	teresa.mcdonald@lpha.mo.gov	
Emergency Services					
Linda Weaver	DeKalb Clinton Ambulance	P O Box 501 261 SE Offutt Road	Maysville, MO 64469	dekalbclinton2018@outlook.com	660-663-9305
Keith Potter	Clarksdale Fire Department	6975 SW HYW 6	Clarksdale, MO, 64430	clarksdalefire@gmail.com	816-724-1004
Terry Workman	Union Star Fire Department	100 9th St	Union Star, MO 64494		816-262-4854
Daniel Praisewater	Central Dekalb County Fire Department	305 S Polk St	Maysville, MO 64469	cdcfpd@hotmail.com	816-261-6233
Fire Chief Brad Lawrence	Plattsburg Fire Protection Department	105 Bush St	Plattsburg, MO 64477		
John Hanson	Stewartsville Fire				816-724-4230
Sheriff Kasey Keesaman	DeKalb County Sheriff	109 W. Main St. P.O. Box 317	Maysville, MO 64469	Kasey45k@yahoo.com	816-449-5802
Barb Shupe	Grand River Ambulance	810 N Alanthus Ave	Stanberry, MO 64489		
	Tri-County Ambulance		Gower, MO		
Jurisdiction Representatives					
DeKalb County					
Chet Owen	DeKalb Commissioners	109 W. Main St. P.O. Box 317	Maysville, MO 64469	chetowen51@gmail.com	
Kyle Carroll	DeKalb Commissioners	109 W. Main St. P.O. Box 317	Maysville, MO 64469	Kyle.L.Carroll@gmail.com	
Kyle White	DeKalb Commissioners	109 W. Main St. P.O. Box 317	Maysville, MO 64469	kylewhite726@me.com	
Harold Allison	DeKalb Emergency Manag. Director	110 W. Main St. P.O. Box 317	Maysville, MO 64470	harold@haroldallison.com	
Missy Meek	County Clerk	111 W. Main St. P.O. Box 317	Maysville, MO 64471	countyclerk@unitedfiber.email	
Penny Gann	Deputy Clerk	111 W. Main St. P.O. Box 317	Maysville, MO 64471	depclerk@unitedfiber.email	
Tanya Zimmerman	Assessor	109 W. Main ST. P.O. Box 77	Maysville, MO 64471	assessor@unitedfiber.email	
Amity					
Mike Harwood	Nick Perkins	PO Box 153	Amity, MO 64422	sam_vivco@yahoo.com	816-449-5852
Clarksdale					
Tina Good	City Clerk	114 N. Main St.	Clarksdale, MO, 64430	cityofclarksdale@yahoo.com	816-393-5363
Eric Zug	Council Member	114 N. Main St.	Clarksdale, MO, 64430	erkzug@gmail.com	816-390-0723
Michael Burris	Council Member	114 N. Main St.	Clarksdale, MO, 64430		
Maysville					

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Robert Walser	Mayor				
Pat Fisher-Johnson	City Clerk	200 N. Camden	Maysville, MO 64469	maysville64469@yahoo.com	816-449-2185
Osborn					
Jody Barlow	City Clerk	151 W. Georgie	Osborn, MO 64474	clerk@cityofosborn.com	816-675-2239
Carlena Bradford	Mayor				
Stewartsville					
Megan Foreman	City Clerk	1307 Main St.	Stewartsville, MO 64490	cityhallofstewartsville@gmail.com	816-669-3278
Union Star					
Stacy Benoit	City Clerk	PO Box 96	Union Star, MO 64494	unionstarcityclerk@gmail.com	816-593-2533
Weatherby					
Steve and Angela Gallus	City Clerk/mayor?	311 E. 2nd Ave/PO Box	Weatherby, MO 64497	sagallus2@yahoo.com	816-449-2707; 81
Other Stakeholders					
DeKalb County	DeKalb County Record Herald	201 Polk	Maysville, MO 64469	Terry Pearl	816-449-2121
Mark McNeely	MDC Conservation Agent			mark.mcneely@mdc.mo.gov	816-262-3532
Jason Brauneker	MDC Conservation Agent			jason.brauneker@mdc.mo.gov	816-262-3506
Steve Groshong	Director Buch Co Amb/Dekalb resid.			steve.groshong@bc-ems.com	816-387-1424
Jason Cross	SHP				816-217-8243

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DeKalb County Multi-Jurisdictional Hazard Mitigation Plan Update Kick-Off Meeting

On behalf of DeKalb County, you are invited to the planning meetings to update the DeKalb County Multi-Jurisdictional Hazard Mitigation Plan (HMP). Your participation is a key element to the success of the plan update effort. Please see the information about the first meeting below:

What: DeKalb County HMP Update Kick-Off Meeting
Where: June Conley Building, 701 E. Main Street, Maysville, MO 64469
When: Tuesday, December 7, 2021
RSVP: Please RSVP by Tuesday, November 30
at https://www.surveymonkey.com/r/SF65B3F or by scanning the following QR Code

At the upcoming meeting, we will discuss the purpose and content of a hazard mitigation plan and the hazards that affect DeKalb County, such as tornadoes and floods.

DeKalb 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 October 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 hayley@mo-kan.org with any questions.

Thank you,

Hayley Howard & Trevor Tutt
Community Development Planners

Enclosure

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DeKalb County Hazard Mitigation Planning Meeting #1

Sign-in Sheet

Date: **Tuesday, December 7, 2021**
Time: **11:00 am**
Location: **June Conley Building, 701 E. Main St., Maysville, MO**

Name		Email Address/Phone #
Stacy Benoit	Union Star	816-593-2533 unionstarcityclerk@gmail.com
Tina Good	Clarksdale	cityofclarksdale@yahoo.com
Chris Heslinga	Maysville	Maysville Schools
Rick Calloway	Union Star	Union Star School rcalloway@usr2.com
Regina Allison	Maysville	jrckallison@yahoo.com 816-262-8309
Tanya Zimmerman	Maysville	assessor@unitedfiber.email 816 449 2212 Ext 1
Bill Mary	DeKalb County Road Bridge	816 729 0651
Ron Rater	DeKalb County Road Bridge	816 449-0076
Michele Allward	City of Maysville	maysville64469@yahoo.com 816 449-2885
Mark Humphrey	Polk Township	markahumphrey21@gmail.com 660-535-4944
Brent Holeman	Polk Township	King City, MO 64463
Jennifer Justus	City of Maysville	maysville64469@yahoo.com
Derek Brady	Osborn	derek.brady@osbornwildcats.org
Kyle White	DeKalb Co	KyleWhite724@yahoo.com
Chet Owen	DeKalb Co	chetowen51@gmail.com
Kyle Carroll	DeKalb Co.	KYLE.L.CARROLL@gmail.com

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DeKalb County Hazard Mitigation Plan Update

Planning Meeting #1

Tuesday, December 7, 2021 @ 11:00 am
June Conley Building
Maysville, Missouri

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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

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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

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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

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(DeKalb'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 (11 disasters declared in the county in 30 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.**

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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.**

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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 DeKalb 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

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Multi-Jurisdictional Plan Approach
Task 1: Determine the Planning Area

- DeKalb County
- Amity
- Clarksdale
- Maysville
- Osborn
- Stewartsville
- Union Star
- Weatherby
- Maysville, Osborn, Stewartsville & Union Star 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?

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Task 2: Build the Planning Team

Amity	
Mike Harwood	Nick Perkins
Clarksdale	
Tina Good	City Clerk
Eric Zug	Council Member
Michael Burris	Council Member
Maysville	
Robert Walser	Mayor
Pat Fisher-Johnson	City Clerk
Osborn	
Jody Barlow	City Clerk
Carlena Bradford	Mayor
Stewartsville	
Megan Foreman	City Clerk
Union Star	
Stacy Benoit	City Clerk
Weatherby	
Steve and Angela Gallus	City Clerk/mayor?
DeKalb County	DeKalb County Record Herald
Mark McNeely	MDC Conservation Agent
Jason Brauneker	MDC Conservation Agent
Steve Groshong	Director Buch Co Amb/Dekalb resid.
Jason Cross	SHP

Contact Name	Agency
Chris Heslinga, Sup.	Maysville R-I School District
Michael Stephenson, Sup.	Stewartsville C-2 School District
Derek Brady, Sup.	Osborn R-0 School District
Rick Calloway, Sup.	Union Star R-II School District
Rachel Brown, Emergency Planner	Tri-County Health Department
Theresa McDonald, Administrator	Tri-County Health Dept. Satellite Office
Linda Weaver	DeKalb Clinton Ambulance
Keith Potter	Clarksdale Fire Department
Terry Workman	Union Star Fire Department
Daniel Praisewater	Central Dekalb County Fire Department
Fire Chief Brad Lawrence	Plattsburg Fire Protection Department
John Hanson	Stewartsville Fire
Sheriff Kasey Keesaman	DeKalb County Sheriff
Barb Shupe	Grand River Ambulance
	Tri-County Ambulance

Jurisdiction Representatives	
Chet Owen	DeKalb Commissioners
Kyle Carroll	DeKalb Commissioners
Kyle White	DeKalb Commissioners
Harold Allison	DeKalb Emergency Manag. Director
Missy Meek	County Clerk
Tanya Zimmerman	Assessor

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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)

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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

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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

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- 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
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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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)

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DeKalb 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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DeKalb County Plan Update Timeline

- DeKalb 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

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In-Kind Match

- DeKalb 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

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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	10 x .45 = 4.50	Hours total + Mileage total = $43.44
# of hours X $ = Total $	# of miles X $ = Total $	

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

Hayley Howard & Trevor Tutt
Community Development Planners
Mo-Kan Regional Council
224 N. 7th Street
St. Joseph, MO 64501
816-233-3144
hayley@mo-kan.org trevor@mo-kan.org

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DeKalb County Multi-Jurisdictional Hazard Mitigation Plan Update Meeting Two

January 26, 2022

On behalf of DeKalb County, you are invited to the 2nd meeting of the four-part meeting series to update the DeKalb County Multi-Jurisdictional Hazard Mitigation Plan. Your participation is a key element to the success of the plan update effort.

What: DeKalb County Multi-Jurisdictional Hazard Mitigation Plan- Meeting 2
When: Tuesday, February 8, 11 am-12:30 pm
Where: June Conley Building, 701 E. Main Street, Maysville, MO 64469
RSVP: Please RSVP by Friday, February 4 by email, phone or QR code

RSVP QR Code

During this meeting, we will discuss the plan's goals and the risks from the different types of natural disasters that DeKalb County has experienced in the past. **Also, completed questionnaire forms (risk assessment, asset inventory, and historic hazard events) will be collected from participating jurisdictions at this meeting, so please bring those along with any questions you may have.**

DeKalb 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 the emergency management director during the update. Please contact Mo-Kan at (816) 233-3144, email hayley@mo-kan.org or scan the QR code above to **RSVP by February 4** or to request additional information.

Thank you,

Hayley Howard
Trevor Tutt

Hayley Howard and Trevor Tutt
Community Development Planners

DRAFT

224 North 7th Street
Saint Joseph, Missouri 64501
www.mo-kan.org
Phone: (816) 233-3144
Fax: (816) 233-8498

which means face masks must be worn on public transit due to COVID-19.

Please call the OATS Transit office at 816-279-3131 or 800-831-9219 to schedule a ride or find out about service in your area.

You can also visit our website at www.oatstransit.org and click on your county under the tab "Bus Schedules" to view your local schedule.

Fares (one-way): Within county: $3, Adjacent county: $4, Long-distance (beyond 2 counties): $2 per county, and $1 each time you board the bus In-town.

Jan. 28: To Maysville and Cameron.

Feb. 4 & 18: To St. Joseph.

OATS Transit is available to the rural general public of any age, seniors, and individuals with disabilities. We also contract with a number of agencies to serve their clients.

DeKalb County Hazard Mitigation Planning Committee members needed

DeKalb County is seeking public participation in updating the DeKalb County Multi-Jurisdictional Hazard Mitigation Plan. The purpose of the plan is to mitigate the impact of natural hazards and to reduce the loss of life and property. The public can help by serving on the planning committee and/or by distributing information at public events.

The planning committee is comprised of representatives from DeKalb County, the incorporated cities, public school districts, agencies, businesses, and community volunteers. The second of four meetings will be held at 11:00 a.m. on Tuesday, February 8 at the June Conley Building, located at 701 E. Main St. Maysville, MO 64469.

The plan update will address a comprehensive list of hazards – ranging from severe winter storms and floods to drought and tornadoes – and will assess the likely impacts of these hazards on communities and school districts in DeKalb County. The committee will also update mitigation strategies and identify additional activities to reduce the vulnerability of people and property from extreme weather events.

Mo-Kan Regional Planning Commission is partnering with DeKalb County to update the plan. For more information about participating and/or to RSVP to the upcoming meeting, please email Hayley Howard at hayley@mo-kan.org or call (816) 233-3144. Please RSVP by February 4. If you cannot participate in the meeting but would like to be involved in the future, please contact us.

DRAFT

DeKalb County, MO
PRESS RELEASE

For Immediate Release

Contact: Hayley Howard
(816) 233-3144

DEKALB COUNTY HAZARD MITIGATION PLANNING COMMITTEE

DeKalb County, MO – DeKalb County is seeking public participation in updating the DeKalb County Multi-Jurisdictional Hazard Mitigation Plan. The purpose of the plan is to mitigate the impact of natural hazards and to reduce the loss of life and property. The public can help by serving on the planning committee and/or by distributing information at public events.

The planning committee is comprised of representatives from DeKalb County, the incorporated cities, public school districts, agencies, businesses, and community volunteers. The second of four meetings will be held at **11:00 am on Tuesday, February 8 at the June Conley Building, located at 701 E. Main St. Maysville, MO 64469.**

The plan update will address a comprehensive list of hazards – ranging from severe winter storms and floods to drought and tornadoes – and will assess the likely impacts of these hazards on communities and school districts in DeKalb County. The committee will also update mitigation strategies and identify additional activities to reduce the vulnerability of people and property from extreme weather events.

Feedback from the public will be incorporated into the plan, which will be available for public review and comment. Upon the formal adoption by each participating jurisdiction, the plan will be presented to Missouri State Emergency Management Agency (SEMA) and Federal State Emergency Management Agency (FEMA) for approval. Jurisdictions that participate in updating the plan will remain eligible for hazard mitigation assistance grants.

Mo-Kan Regional Planning Commission is partnering with DeKalb County to update the plan. For more information about participating and/or to RSVP to the upcoming meeting, please email Hayley Howard at hayley@mo-kan.org or call (816) 233-3144. **Please RSVP by February 4**. If you cannot participate in the meeting but would like to be involved in the future, please contact us.

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DeKalb County Hazard Mitigation Planning Meeting #2

Sign-in Sheet

Date: **Tuesday, February 8, 2022**
Time: **11 am-12:30 pm**
Location: **June Conley Building, 701 E. Main St., Maysville, MO 64469**

Name	Email Address/Phone #
Chris Hesselinga	816.797.5492.
Mark McNeely	mark.mcneely@mdc.mo.gov 816-262-3532
Stacy Benoit	unionstarcityclerk@gmail.com 816-593-2533
Rachel Brown	Rachel.Brown@lpha.mo.gov 660-783-2707
Rick Calloway	rcalloway@[illegible]com 816-261-[illegible]
Tina Good	cityofclarksdale@yahoo.com 816-393-5363
Jennifer Justice	City of Maysville 816-449-2185
Michele Allison	maysville64468@yahoo.com 816-449-2185
Michael Stephenson	816-262-5312 mstephenson@stewartsville.k12.mo.us
Chet Owen	chetowen51@gmail.com
Tanya Zimmerman	assessor@unitedfiber.email
Wendy Cochran	W. Cochran ~~Deputy Assessor~~@unitedfiber.email
Penny Gans	depclerk@unitedfiber.email
Harold Allison	harold@haroldallison.com

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Planning Meeting #2

DeKalb County Multi-Jurisdictional Hazard Mitigation Plan Update

February 8, 2022
June Conley Building

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PUBLIC SURVEY QR CODE

PLEASE TAKE A MOMENT **NOW** TO TAKE THE DEKALB 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**

Mo-Kan
An Economic and Community Development Organization

Meeting Agenda

- Review
- Public Outreach
- Review Mitigation Goals
- Hazard Profile and Vulnerability Assessment
- Previous Occurrences
- In-Kind Match
- Next Steps

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Review

- **What?** DeKalb 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

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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 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

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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/DeKalbCoHMP

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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

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2018 DeKalb 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.

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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)

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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

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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

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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***

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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	

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Send completed risk assessments to Hayley

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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	

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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)**

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Task 6: Develop Mitigation Strategy
What are Mitigation Actions?

Data questionnaire section: Assessment of Previously Proposed Actions

DRAFT

#	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 Hayley.

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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

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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 Hayley Howard
- **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

- DeKalb County is responsible for **$8,640.00** of in-kind match
- At 8% of goal with **$680.66** of in-kind match (for meeting 1 & meeting space)
- 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

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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
Hayley Howard hayley@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

DeKalb County Multi-Jurisdictional Hazard Mitigation Plan Update Meeting Three

March 29, 2022

On behalf of DeKalb County, you are invited to the 3rd meeting of the four-part meeting series to update the DeKalb County Multi-Jurisdictional Hazard Mitigation Plan. Your participation is a key element to the success of the plan update effort.

What: DeKalb County Multi-Jurisdictional Hazard Mitigation Plan- Meeting 3
When: Tuesday, April 12, 11 am-12:30 pm
Where: DeKalb County Courthouse basement, 109 W. Main St., Maysville, MO 64469
RSVP: Please RSVP by Friday, April 8

RSVP QR Code

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 two 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 and economic assets); historic hazard events; and 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 April 22, 2022**.

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 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 saferooms, 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 the emergency management director during the update. Please contact Mo-Kan at (816) 233-3144, email hayley@mo-kan.org or scan the QR code above to **RSVP by April 8** or to request additional information.

Thank you,

Hayley Howard and Trevor Tutt
Community Development Planners

DRAFT

224 North 7th Street
Saint Joseph, Missouri 64501
www.mo-kan.org
Phone: (816) 233-3144
Fax: (816) 233-8498

DeKalb County, MO
PRESS RELEASE

For Immediate Release

Contact: Hayley Howard
(816) 233-3144

DEKALB COUNTY HAZARD MITIGATION PLANNING COMMITTEE MEETING 3

DeKalb County, MO – DeKalb County is seeking public participation in updating the DeKalb County Multi-Jurisdictional Hazard Mitigation Plan. The purpose of the plan is to mitigate the impact of natural hazards and to reduce the loss of life and property. The public can help by serving on the planning committee and/or by distributing information at public events.

The planning committee is comprised of representatives from DeKalb County, the incorporated cities, public school districts, agencies, businesses, and community volunteers. The second of four meetings will be held at **11:00 am on Tuesday, April 12 at the DeKalb County Courthouse basement, located at 109 W. Main St., Maysville, MO 64469.**

The plan update will address a comprehensive list of hazards – ranging from severe winter storms and floods to drought and tornadoes – and will assess the likely impacts of these hazards on communities and school districts in DeKalb County. The committee will also update mitigation strategies and identify additional activities to reduce the vulnerability of people and property from extreme weather events.

Feedback from the public will be incorporated into the plan, which will be available for public review and comment. Upon the formal adoption by each participating jurisdiction, the plan will be presented to Missouri State Emergency Management Agency (SEMA) and Federal State Emergency Management Agency (FEMA) for approval. Jurisdictions that participate in updating the plan will remain eligible for hazard mitigation assistance grants.

Mo-Kan Regional Planning Commission is partnering with DeKalb County to update the plan. For more information about participating and/or to RSVP to the upcoming meeting, please email Hayley Howard at hayley@mo-kan.org or call (816) 233-3144. **Please RSVP by April 7**. If you cannot participate in the meeting but would like to be involved in the future, please contact us.

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DeKalb County Hazard Mitigation Planning Meeting #3

Sign-in Sheet

Date: **Tuesday, April 12, 2022**
Time: **11:00 am**
Location: **DeKalb County Courthouse, 109 W Main St, Maysville, MO**

Name	Email Address/Phone #
John Lawson	hdlowrider82@yahoo.com 816-261-4857
Jennifer Justus	maysville64469@yahoo.com 816-449-2185
Nick Calloway	rcalloway@mgr2.com 816-593-2294
Tina Good	cityofclarksdale@yahoo.com 816-393-5363
Michele Allwood	~~city of~~ Maysville 64469@yahoo.com 816 449 2185
Tanya Zimmerman	tanya.zimmerman@dekalbcountymo.gov ~~Assessor~~
Wendy Cochran	Wendy.Cochran@dekalbcounty.mo.gov
garry McKee	gsmckee@hotmail.com
Bill Yes	816 724 0652
Ben Rawlin	816 724 0652
Rachel Brown	660-183-2707 Rachel.Brown@lpha.mo.gov
Ted Ellis	816-244-3684
Harold Allison	harold@haroldallison.com
Stacy Benoit	unionstarcityclerk@gmail.com
Chris Hesling	hesling@ac@maysville.k12.mo.us

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DeKalb County Hazard Mitigation Planning Meeting #3
Sign-in Sheet

Date: **Tuesday, April 12, 2022**
Time: **11:00 am**
Location: **DeKalb County Courthouse, 109 W Main St, Maysville, MO**

Name	Email Address/Phone #
Toni Poage	660-605-0181

DRAFT

DeKalb County Hazard Mitigation Plan Update

Planning Meeting #3

Tuesday, April 12 @ 11 am
DeKalb County Courthouse
Maysville, Missouri

DRAFT

Meeting Agenda

- Task 6: Develop a Mitigation Strategy
- New/Modified Actions – turn in by April 22, 2022

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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 65 actions in the last plan; 31 of those are for DeKalb County. Each jurisdiction must have one potentially FEMA fundable action in the plan to be considered a "participant."

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Determine/Update Mitigation Goals

pg. 4.14-4.21; 4.33-4.65 in 2018 HMP

- **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

- DeKalb- 1.1.2, 1.2.2, 1.3.1, 1.2.a, 1.2.c, 1.2.d, 1.2.e, 1.2.f, 1.2.g, 1.2.h, 1.2.i, 1.2.m, 1.2.n, 1.2.o, 1.2.q, 1.2.r, 1.2.s, 1.2.t, 1.2.u, 1.2.v, 1.3.a, 1.3.e,

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Determine/Update Mitigation Goals

Pg . 4.22-4.32; 4.66-4.78 in 2018 HMP

Goal 2: Reduce the impact of disasters.

Objective 1: Manage growth in designated areas through sustainable policies, principles and practices.

- DeKalb- 2.1.1, 2.1.a, 2.1.b, 2.1.c,

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.

- DeKalb County- 3.1.3, 3.1.b, 3.1.c, 3.1.d, 3.2.j

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Determine/Update Mitigation Goals

pg. 4.2 in 2017 HMP

- **Goal 3: Increase Resources Available to Citizens via Education and Preparedness Information.**
- Objective 1: Increase knowledge among citizens about disaster safety and preparedness.
- DeKalb County- 3.1.3, 3.1.b, 3.1.c, 3.1.d, 3.2.j

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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

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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		
1.1.5	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

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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)

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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 #): _____

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In-Kind Match

- DeKalb County is responsible for $**8,640** in-kind match and the county has turned in **$1,731.95** so far **(20% 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 Friday, April 22, 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

Hayley Howard hayley@mo-kan.org

Trevor Tutt trevor@mo-kan.org

Mo-Kan Regional Council
224 N. 7th Street
St. Joseph, MO 64501
816-233-3144

DRAFT

Dear Planning Partners:

The fourth and final planning committee meeting for Buchanan County's HMP update will be held on **Tuesday, June 14 at 11:00 am, at the DeKalb County Courthouse, 109 W. Main St., Maysville, MO 64469.**

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.

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.

Mo-Kan Regional Council is the contact for updating the plan and will be working closely with the county commissioners and the emergency management director during the update. Please contact Hayley at 816-233-3144 or hayley@mo-kan.org to **RSVP for the meeting by Friday, June 10 (at the latest)** or if you have any questions.

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Thank you,

Hayley Howard
Trevor Tutt
Community Development Planners

Use this QR Code to RSVP today!

DeKalb County, MO
PRESS RELEASE

For Immediate Release

Contact: Hayley Howard
(816) 233-3144

DEKALB COUNTY HAZARD MITIGATION PLANNING COMMITTEE MEETING 4

DeKalb County, MO – DeKalb County is seeking public participation in updating the DeKalb County Multi-Jurisdictional Hazard Mitigation Plan. The purpose of the plan is to mitigate the impact of natural hazards and to reduce the loss of life and property. The public can help by serving on the planning committee and/or by distributing information at public events.

The planning committee is comprised of representatives from DeKalb County, the incorporated cities, public school districts, agencies, businesses, and community volunteers. The fourth and final meeting will be held at **11:00 am on Tuesday, June 14 at the DeKalb County Courthouse basement, located at 109 W. Main St., Maysville, MO 64469.**

The plan update will address a comprehensive list of hazards – ranging from severe winter storms and floods to drought and tornadoes – and will assess the likely impacts of these hazards on communities and school districts in DeKalb County. The committee will also update mitigation strategies and identify additional activities to reduce the vulnerability of people and property from extreme weather events.

Feedback from the public will be incorporated into the plan, which will be available for public review and comment. Upon the formal adoption by each participating jurisdiction, the plan will be presented to Missouri State Emergency Management Agency (SEMA) and Federal State Emergency Management Agency (FEMA) for approval. Jurisdictions that participate in updating the plan will remain eligible for hazard mitigation assistance grants.

Mo-Kan Regional Planning Commission is partnering with DeKalb County to update the plan. For more information about participating and/or to RSVP to the upcoming meeting, please email Hayley Howard at hayley@mo-kan.org or call (816) 233-3144. **Please RSVP by June 10**. If you cannot participate in the meeting but would like to be involved in the future, please contact us.

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DeKalb County Hazard Mitigation Planning Meeting #4

Sign-in Sheet

Date: **Tuesday, June 14, 2022**
Time: **11:00 am**
Location: **DeKalb County Courthouse, 109 W Main St, Maysville, MO**

Name	Email Address/Phone #
John Lawson	hdlowrider82@yahoo.com
Michele Allwood	Maysville64469@Yahoo.com
Jennifer Justus	maysville64469@yahoo.com
Stephen M. Gallus	sgallus2@yahoo.com
Jody Barlow	clerk@cityofosborn.com
Tina Good	cityofclarksdale@yahoo.com
Natascha Hays	natascha.hays@gmail.com*
Penny Gans	depclerk@dekalbcountymo.gov
Rachel Brown	Rachel.Brown@lpha.mo.gov
Stephanie LeMunyon	StephanieLeMunyon1@gmail
Wendy Cochran	Cochran291470@yahoo.com 816-543-2533
Abby Benoit	unionstarcityclerk@gmail.com

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DeKalb County Hazard Mitigation Plan Update

Planning Meeting #4

Tuesday, June 14 @ 11 am
DeKalb County Courthouse
Maysville, Missouri

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Meeting Agenda

- Review
- Public Outreach Update
- Plan Maintenance/Implementation
- Draft
- Public Comment
- Adopt the Plan
- In-Kind Match
- Next Steps

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An Economic and Community Development Organization

Review

- **What?** DeKalb 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

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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 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**

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Public Outreach Update

- Clarksdale Ready in 3 distribution update
- DeKalb LEPC meeting date established?
- Possibility of distributing materials at Region D solid waste recycling event?
- July 4 fire prevention tips?
- Any other efforts in the works?

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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)

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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?

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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?

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2018 Plan Maintenance Process

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 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 bi-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;

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Any changes needed?

2018 Plan Maintenance Process

- 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.

5.1.2 Plan Maintenance Schedule

The DeKalb 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. During the bi-annual meeting the MPC (or other designated responsible entity) 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 five-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:

Any changes needed?

- 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 DeKalb 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 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 DeKalb 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 Plans;
- Capital improvement plans and budgets;
- Other community plans within the county, such as water conservation plans, storm water management plans, and parks and recreation plans; and
- 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 DeKalb County Emergency Management Director(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

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2018 Plan Maintenance Process

Table 5.1 Changes Made in Plan Update

Jurisdiction	Planning Mechanisms	Integration Process for Previous Plan	Integration Process for Current Plan
DeKalb County	Comprehensive Plan, Local Emergency Operating Plan	Comprehensive Plan, Local Emergency Operating Plan	Comprehensive Plan, Local Emergency Operating Plan
Amity	None	Unknown	None
Clarksdale	Building Code, Storm Water Ordinance, Landscape Ordinance, Zoning/Land Use Restriction, Floodplain Ordinance	Unknown	Building Code, Storm Water Ordinance, Landscape Ordinance, Zoning/Land Use Restrictions, Floodplain Ordinance
Maysville	Code of Ordinances	Unknown	Code of Ordinances
Osborn	None	Unknown	None
Stewartsville	Emergency Operations Plan, City Mitigation Plan, Building Code, Floodplain Ordinance, Subdivision Ordinance	Unknown	Emergency Operations Plan, City Mitigation Plan, Building Code, Floodplain Ordinance, Subdivision Ordinance
Union Star	Floodplain Ordinance, City Emergency Operations Plan	Unknown	Floodplain Ordinance, City Emergency Operations Plan
Weatherby	None	None	None
Maysville School District	Unknown	Unknown	Unknown
Osborn School District	School Emergency Plan, Master Plan, Capital Improvement Plan	School Emergency Plan	School Emergency Plan
Stewartsville School District	School Emergency Plan, Capital Improvement Plan	School Emergency Plan	School Emergency Plan
Union Star School District	School Emergency Plan, Master Plan	School Emergency Plan	School Emergency Plan

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Any changes necessary?

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 DeKalb 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

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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 (July 28-Aug. 12) 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

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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

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In-Kind Match

- DeKalb County is responsible for $**8,640** in-kind match and the county has turned in **$2,458.25** so far **(28% 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 July 28 (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**

DRAFT

Questions?

Hayley Howard hayley@mo-kan.org

Trevor Tutt trevor@mo-kan.org

Houston Roberts houston@mo-kan.org

Rebecca Thacker rebecca@mo-kan.org

Mo-Kan Regional Council
224 N. 7th Street
St. Joseph, MO 64501
816-233-3144

DRAFT

ENHANCING COUNTY AND LOCAL MITIGATION CAPABILITIES TO REDUCE HAZARD VULNERABILITIES IN DEKALB COUNTY

DEKALB COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

Kick-Off Meeting: Tuesday, December 7, 2021 @ 11 am @ 701 E. Main St. in Maysville

Photos courtesy (clockwise): https://www.osborneWildcats.org; https://www.aaropeds.com; https://www.stewartsville.k12.mo.us; Mo-Kan staff

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). 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 diasters 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 and requirements for the national BRIC (Building Resilient Infrastructure and Communities) 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.

PURPOSE

The DeKalb 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 DeKalb 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.

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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 development of 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 Spring 2022 for download, review and comment at:
https://www.mo-kan.org/community/hazard-mitigation/

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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!

Hayley Howard
Community Planner,
Mo-Kan Regional Council
hayley@mo-kan.org
816-233-3144

Harold Allison
DeKalb County
Emergency Management
harold@haroldallison.com

Take the citizen survey!

DeKalb County residents can help with the plan by taking a short survey.

To complete the survey, go to:
https://www.surveymonkey.com/r/DeKalbCoHMP
OR
Scan the QR code

1. **Public Survey: DeKalb County Multi-Jurisdictional Hazard Mitigation Plan**

DeKalb 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:

- ☐ Village of Amity
- ☐ City of Clarksdale
- ☐ City of Maysville
- ☐ City of Osborn
- ☐ City of Stewartsville
- ☐ City of Union Star
- ☐ Village of Weatherby
- ☐ Unincorporated DeKalb County

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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	☐	☐	☐	☐
Winter Weather/Snow/Ice/Severe Cold	☐	☐	☐	☐

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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	☐	☐	☐	☐

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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.

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DeKalb County Multi-Jurisdictional Hazard Mitigation Plan

Appendix C:

Mitigation Actions

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ASSESSMENT OF PREVIOUSLY PROPOSED ACTIONS

Jurisdiction: __Dekalb _____

Directions: Check complete, ongoing or no progress for status of action, describe how it was completed, what progress has been made if it's ongoing, OR why no progress was made. Finally, put a checkmark to keep the action in the new plan, an x to delete it, or M if you want to modify it (a new action worksheet will need to be filled out showing the changes to the action). Review the action worksheets from the last plan for more information.

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.

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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		
1.1.2	Place outdoor warning sirens in populated areas that do not have them.		X		In the process. Was waiting on funding	✓
1.2.2	Acquire a generator for a second critical facility.		X		Senior center purchased generator.	✓
1.2.a	Implement public education campaign on disaster preparedness.		X			✓

We now have the Funding & have purchased the new system, JUST waiting for sirens to be installed, 60-90 DAYS

DRAFT

#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✓ Delete – X Modify – M
		Complete	Ongoing	No Progress		
1.2.c	Have public service announcement made and prepared to deliver to media during emergencies, using state resources as a guide. Include phone numbers for emergency services, Red Cross, hospitals, SEMA, etc.		X			✓
1.2.d	Develop a web page for the Local Emergency Planning Committee and emergency services to be part of the DeKalb County web site and link to other county web sites.		X			✓
1.2.e	Conduct a public education campaign to inform citizens of the benefits of constructing tornado safe rooms in their home or business.		X			✓
1.2.f	Participate in SEMA public education campaign to inform dam owners and citizens living near dams about the need to properly maintain and upgrade these structures.			X		X
1.2.g	Public education campaign to inform citizens on how to winterize their homes, shut off water and all utilities in case of emergency.		X			✓
1.2.h	Distribute information to travelers about winter hazards.		X			✓
1.2.1	Inform citizens on how to take water-saving measures, such as using low-flow showerheads and toilets. Include alerts about boil order and advisories.		X			✓
1.2.m	Individuals will be informed about wildfires and the importance of identifying several escape routes away from their home by car and foot.		X			✓

DRAFT

#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✓ Delete – X Modify – M
		Complete	Ongoing	No Progress		
1.2.n	Broadcast fire hazard level and open burning information on weather radio and local media. Work in conjunction with local fire districts to provide information.	✓	✓		county has early warning system in place, & in process of updating outdoor warning sirens	✓
1.2.o	Work with businesses and departments of county government to implement snow-day policies to reduce the amount of people on the road during severe winter weather.		X			✓
1.2.q	Designate certain air conditioned facilities, such as the senior center, as heat emergency shelters.	✓	✓		Court House, senior center, Methodist Church in Maysville	✓
1.2.r	Inventory facilities with generators and/or emergency power that can be used as shelters in the event of natural disasters.	✓	X		No Real shelters in county	✓
1.2.s	Establish emergency access routes and evacuation routes.		X			✓
1.2.t	Form and train Community Emergency Response Teams (CERT).			X		✓
1.2.23	Work with Red Cross to establish shelters for vulnerable populations and stranded motorists during severe winter weather.		X			✓
1.2.v	Information to home owners and public building maintenance about how to prevent roof and wall damage from "ice dams.		X			✓
1.3.a	Assess public facilities and identify suitable areas safe during times of severe storms or tornados. If available, these areas should be clearly marked.		X			✓

DRAFT

#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✓ Delete – X Modify – M
		Complete	Ongoing	No Progress		
1.3.e	Work with volunteer groups to assist at-risk residents in winterizing their homes.		X			✓
2.1.a	Develop environmentally sound watershed and storm water practices to decrease flash flooding.		X			✓
2.1.b	Craft new plans and update comprehensive land use plans to address development in hazard-prone areas and identify strategies for decreasing vulnerability to hazards.		X			✓
2.1.c	Develop an accurate countywide series of maps detailing the flood plain, flash flood danger zones and other hazard areas.		X			✓
3.1.a	Work with state and local governments to raise awareness of earthquake mitigation activities in homes, schools and businesses.		X			✓
3.1.b	Execute and maintain mutual aid agreements with all relevant agencies.		X			✓
3.1.c	Expand the county emergency management director position to full time.			X		✓
3.1.d	Have a debris management plan for the county to take care of debris after storms		X			✓
3.2.j	Evaluate the location of 911 dispatch center and consider other possible locations.		X			✓

DRAFT

ASSESSMENT OF PREVIOUSLY PROPOSED ACTIONS

Jurisdiction: ____Amity_____

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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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		Complete	Ongoing	No Progress		
1.2.1	Acquire a generator through a grant for the community's only critical facility (church).			✓		✓
1.4.a	Residential area with tall grass and excessive vegetation should be mitigated to lessen the potential for grass fires, spread of fire from one location to another, and potential for ignition from lightning strikes.			✓		✓

DRAFT

ASSESSMENT OF PREVIOUSLY PROPOSED ACTIONS

Jurisdiction: __Clarksdale_____

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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		
2.1.2	Require the building of a safe room with the capacity to handle the population of any new mobile home park or park undergoing renovation or expansion.			Applied for FEMA/SEMA grant - denied	We do not have a mobile home park, but would like to build a safe room/community room for community.	M
2.1.3	Adoption and enforce floodplain management requirements, including regulating new construction in Special Flood Hazard Areas (SFHAs).			X	We have a flood plain manager. We do not have a lot of new construction on the floodplain.	X
3.2.1	Acquire a generator so at least one critical facility is equipped to run off alternate power.			x	We do not have a generator located at the lift station. We would need one at the community room.	✓

DRAFT

#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✓ Delete – X Modify – M
		Complete	Ongoing	No Progress		
1.1.c	Develop an ongoing campaign with seasonal or monthly disaster themes and promote with a variety of advertising.		X		Monthly newsletter has information	/
1.4.b	Require the anchoring of manufactured homes and exterior attachments such as carports and decks.	X			Passed ordinance 44 on 12-17-2020	X
	Create a community safe room					
	Build a sidewalk to the gas station to avoid people/children walking/brike riding along Hwy 6					
	Get unsafe buildings torn down					
	Get radios or something for emergency communications					
	Get Streets and sidewalks in better shape for emergency transportation					

DRAFT

ASSESSMENT OF PREVIOUSLY PROPOSED ACTIONS

Jurisdiction: ____Maysville_____

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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	Place outdoor warning sirens in area not covered by the community's other siren.	X				X
1.2.k	Inform citizens on how to take water-saving measures, such as using low-flow showerheads and toilets. Include alerts about boil order and advisories.		X		Sending notices in their Bill and putting things on New Web Site	✓

DRAFT

#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✓ Delete – X Modify – M
		Complete	Ongoing	No Progress		
1.3.b	Assess public facilities and identify suitable areas safe during times of severe storms or tornados. If available, these areas should be clearly marked.		X		Need to put signpase at the areas	✓
3.1.e	Have a debris management plan for the county and cities to take care of debris after storms.		X		we collect Debri at the waterplant	✓

DRAFT

ASSESSMENT OF PREVIOUSLY PROPOSED ACTIONS

Jurisdiction: ___Osborn_____

Directions: Check complete, ongoing or no progress for status of action, describe how it was completed, what progress has been made if it's ongoing, OR why no progress was made. Finally, put a checkmark to keep the action in the new plan, an x to delete it, or M if you want to modify it (a new action worksheet will need to be filled out showing the changes to the action). Review the action worksheets from the last plan for more information.

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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	Acquire outdoor warning siren.	x			The action was completed 2022. The City turned this action over to Dekalb County Hazard Management.	x
3.1.f	Have a debris management plan for the county and cities to take care of debris after storms.			x	The Board hasn't found the best way to proceed with this action.	✓

DRAFT

ASSESSMENT OF PREVIOUSLY PROPOSED ACTIONS

Jurisdiction: __Stewartsville_____

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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		
1.1.1	Replace outdated warning sirens to have backup power and be automatically activated.	X				X
2.1.4	Adoption and enforce floodplain management requirements, including regulating new construction in Special Flood Hazard Areas (SFHAs).	X				X

DRAFT

ASSESSMENT OF PREVIOUSLY PROPOSED ACTIONS

Jurisdiction: __Union Star _____

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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		
2.1.5	Adoption and enforce floodplain management requirements, including regulating new construction in Special Flood Hazard Areas (SFHAs).	X				X
3.2.2	Acquire a generator/s to power a critical facility and sewer lift stations.			X	lack of funding	✓
1.1.d	Develop an ongoing campaign with seasonal or monthly disaster themes and promote with a variety of advertising.		X			✓

DRAFT

ASSESSMENT OF PREVIOUSLY PROPOSED ACTIONS

Jurisdiction: ___Maysville School District_____

Directions: Check complete, ongoing or no progress for status of action, describe how it was completed, what progress has been made if it's ongoing, OR why no progress was made. Finally, put a checkmark to keep the action in the new plan, an x to delete it, or M if you want to modify it (a new action worksheet will need to be filled out showing the changes to the action). Review the action worksheets from the last plan for more information.

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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	Require the building of a safe room with the capacity to handle the population of any significant renovation or expansion of school facilities			x	Lack of funding	M
1.1.e	Use electronic media and radios to communicate alerts and warnings. Current system uses phone messages; upgrade system to include cell phones and utilize texting technology. Purchase radios for busses.		x		Communicate with parents via texting program (School Messenger Communicate)	M

DRAFT

ASSESSMENT OF PREVIOUSLY PROPOSED ACTIONS

Jurisdiction: Osborn School District

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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		
2.1.7	Require the building of a safe room with the capacity to handle the population of any significant renovation or expansion of school facilities.		X			
1.1.a	Use electronic media and radios to communicate alerts and warnings. Current system uses phone messages; upgrade system to include cell phones and utilize texting technology. Purchase radios for busses.		X			
1.2.i	Include safety strategies for winter driving in driver safety training.		X			
3.1.g	Work with state and local governments to raise awareness of earthquake mitigation activities in homes, schools and businesses.		X			

DRAFT

Gmail

Michael Stephenson <mstephenson@stewartsville.k12.mo.us>

Fwd: Additional Hazard Mitigation Questions

1 message

Hayley Howard <hayley@mo-kan.org> Wed, May 18, 2022 at 5:16 PM
To: Michael Stephenson <mstephenson@stewartsville.k12.mo.us>

Michael,

I was following up on the message below that I sent you last week. Also, I realized that on your action items review, a few of the actions listed in the last plan weren't included in the action assessment sheet I sent you. I apologize! Can you also please complete the chart on these action items (below) and return at your earliest convenience? Thanks again for your help!

#	Action	Status			Description of Implementation Activities or Reasons for Lack of Progress	Keep – ✓ Delete – X Modify – M
		Complete	Ongoing	No Progress		
1.2.b	Encourage local fire departments and other emergency responders to participate in regular disaster drills at school. Purchase radios and other necessary equipment to carry out drills and inform students of an emergency.		X			✓
1.1.j	Include safety strategies for winter driving in driver safety training.					X
1.3.c	Assess public facilities and identify suitable areas safe during times of severe storms or tornadoes. If available, these areas should be clearly marked.		X			✓
3.1.h	Work with state and local governments to raise awareness of earthquake mitigation activities in homes, schools and businesses.		X			✓

DRAFT

---------- Forwarded message ---------
From: **Hayley Howard** <hayley@mo-kan.org>
Date: Thu, May 12, 2022 at 9:19 AM
Subject: Additional Hazard Mitigation Questions
To: Michael Stephenson <mstephenson@stewartsville.k12.mo.us>

Michael,

There are a few more questions I need answered for the plan update. Can you tell me Yes or No on the following for your district:

Public Education Programs	yes
Privately or Self- Insured?	Private
Fire Evacuation Training	yes
Tornado Sheltering Exercises	yes
Public Address/Emergency Alert System	Yes
NOAA Weather Radios	Yes
Lock-Down Security Training	yes
Mitigation Programs	yes
Tornado Shelter/Saferoom	No
Campus Police	Yes

Thanks!!

–

Hayley Howard

Community Planner

Mo-Kan Regional Council

224 N 7th Street

St. Joseph, MO 64501

O: 816-233-3144

cid:image001.jpg@01CBA1BB.1954DF60

Mo-Kan Regional Council is an equal opportunity employer/program. Auxiliary aids and services are available upon request to individuals with disabilities. (Missouri TTY users can dial 711.)

DRAFT

–

Hayley Howard

Community Planner

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St. Joseph, MO 64501

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ASSESSMENT OF PREVIOUSLY PROPOSED ACTIONS

Jurisdiction: Union Star School District

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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		
2.1.9	Require the building of a safe room with the capacity to handle the population of any significant renovation or expansion of school facilities			X	Finances	✓
1.1.b	Use electronic media and radios to communicate alerts and warnings. Current system uses phone messages; upgrade system to include cell phones and utilize texting technology. Purchase radios for busses.	X				X
1.3.d	Assess public facilities and identify suitable areas safe during times of severe storms or tornados. If available, these areas should be clearly marked.		X			✓

DRAFT

Action Worksheet

Name of Jurisdiction:	Clarksdale
Risk / Vulnerability	
Hazard(s) Addressed:	Tornado, Severe Storm, Flood, Earthquake
Problem being Mitigated:	Lack of communication between city government, emergency, and clean up personnel, due to power outage.
Action or Project	
Applicable Goal Statement:	Ensure local communication for operation of local government & emergency personnel, and clean up when no electricity,
Action/Project Number:	3.1.i
Name of Action or Project:	Radios
Mitigation Category:	
Action or Project Description:	Acquire radios for local communication with government officials and emergency personnel and clean up person when electricity and communications are disabled
Estimated Cost:	$1000.00 - $2000.00 ?
Benefits:	Source of communication between personnel working to serve people during a crisis.
Plan for Implementation	
Responsible Organization/Department:	City Hall
Supporting Organization/Department	Mayor
Action/Project Priority:	Medium
Timeline for Completion:	3 years
Potential Fund Sources:	Internal, Grants, ?
Local Planning Mechanisms to be Used in Implementation, if any:	City Council, & Mayor, Emergency personnel
Progress Report	
Action Status	
Report of Progress	

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NEW

Action Worksheet	
Name of Jurisdiction:	Clarksdale
Risk / Vulnerability	
Hazard(s) Addressed:	Tornado, Severe Storm, Earthquake
Problem being Mitigated:	Reduce the impact and/or occurrence of natural disaster in the city, protect lives.
Action or Project	
Applicable Goal Statement:	Ensure local communication for operation of local government & emergency personnel, and clean up when no electricity,
Action/Project Number:	G 1.1.2
Name of Action or Project:	Safe room
Mitigation Category:	
Action or Project Description:	Build a safe room with the capacity to handle the city's population and more. Many do not have basements or a safe place in severe weather.
Estimated Cost:	$10000.00 or ?
Benefits:	A safe place for citizens and public to seek shelter in a tornado, or storm. Protect people,
Plan for Implementation	
Responsible Organization/Department:	City Hall
Supporting Organization/Department	Mayor
Action/Project Priority:	Medium high
Timeline for Completion:	5 years
Potential Fund Sources:	Internal, fund raisers, grants, private gifts?
Local Planning Mechanisms to be Used in Implementation, if any:	City Council, & Mayor
Progress Report	
Action Status	
Report of Progress	

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1-1.2 ✓

ACTION WORKSHEET
***Highlighted items must be filled out by Jurisdiction**

Action Worksheet	
Name of Jurisdiction:	City of Stewartsville
Risk / Vulnerability	
Hazard(s) Addressed:	Thunderstorms / Tornados
Problem being Mitigated:	Residents having a safe place during storms
Action or Project	
Applicable Goal Statement:	
Action/Project Number:	
Name of Action or Project:	~~Safe rooms~~ Storm Shelter Map
Mitigation Category:	
Action or Project Description:	Providing clearly marked map of Storm Shelters for vulnerable population during storms
Estimated Cost:	unsure
Benefits:	Protecting the public
Plan for Implementation	
Responsible Organization/Department:	City of Stewartsville
Supporting Organization/Department:	Churches of Stewartsville
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:	New
Report of Progress:	

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Action Worksheet	
Name of Jurisdiction:	Clarksdale
Risk / Vulnerability	
Hazard(s) Addressed:	Tornado, Severe Storm, High Winds, Earthquake
Problem being Mitigated:	We have a row of old brick, joined together buildings that are falling down, but owned by different parties that need to come down before the fall and hurt people.
Action or Project	
Applicable Goal Statement:	Take down dangerous buildings before someone gets hurt.
Action/Project Number:	
Name of Action or Project:	Dangerous buildings down
Mitigation Category:	
Action or Project Description:	Take down buildings before they fall and hurt people or property.
Estimated Cost:	$1000.00 - $2000.00 ?
Benefits:	Takedown building before they fall down in the next storm or high winds.
Plan for Implementation	
Responsible Organization/Department:	City Hall
Supporting Organization/Department	Mayor
Action/Project Priority:	High
Timeline for Completion:	ASAP
Potential Fund Sources:	Internal, Grants, ?
Local Planning Mechanisms to be Used in Implementation, if any:	City Council, & Mayor
Progress Report	
Action Status	
Report of Progress	

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Action Worksheet	
Name of Jurisdiction:	Clarksdale
Risk / Vulnerability	
Hazard(s) Addressed:	Tornado, Severe Storm, Flood, Earthquake
Problem being Mitigated:	Roads and sidewalks are filled with potholes, unlevel, broken or missing. Side of roads are jagged, falling into ditches. Hard to impossible to walk on or role gurneys or wheelchairs on to the ambulance.
Action or Project	
Applicable Goal Statement:	Safe roads and sidewalks for emergency personnel and citizens to navigate on when seeking shelter and emergency services.
Action/Project Number:	
Name of Action or Project:	Streets and sidewalks
Mitigation Category:	
Action or Project Description:	Replace streets and sidewalks in order for gurneys and wheelchairs and emergency personnel to easier access those that need help and get them to the vehicle.
Estimated Cost:	?
Benefits:	Easier to access emergency help.
Plan for Implementation	
Responsible Organization/Department:	City Hall
Supporting Organization/Department	Mayor
Action/Project Priority:	High
Timeline for Completion:	2 years
Potential Fund Sources:	Internal, Grants, ?
Local Planning Mechanisms to be Used in Implementation, if any:	City Council, & Mayor, Emergency personnel
Progress Report	
Action Status	
Report of Progress	

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better fit for ~~RTP~~ bike/ped plan
FEMA
not fundable

✓

ACTION WORKSHEET
*Highlighted items must be filled out by Jurisdiction

Action Worksheet	
Name of Jurisdiction:	City of Maysville
Risk / Vulnerability	
Hazard(s) Addressed:	Critical Service Interruption
Problem being Mitigated:	Water and Wastwater service interruption due to natural disaster
Action or Project	
Applicable Goal Statement:	Goal 3.2.b
Action/Project Number:	
Name of Action or Project:	Generator
Mitigation Category:	
Action or Project Description:	Purchase of portable generator capable of powering water distribution and wastwater removal.
Estimated Cost:	unknown
Benefits:	Source of power during natural disaster
Plan for Implementation	
Responsible Organization/Department:	Mayor / Board of Aldermen
Supporting Organization/Department:	
Action/Project Priority:	Highest Priority
Timeline for Completion:	2 years
Potential Fund Sources:	Grants
Local Planning Mechanisms to be Used in Implementation, if any:	unknown
Progress Report	
Action Status:	
Report of Progress:	

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ACTION WORKSHEET
*Highlighted items must be filled out by Jurisdiction

Action Worksheet	
Name of Jurisdiction:	Union Star
Risk / Vulnerability	
Hazard(s) Addressed:	flooding
Problem being Mitigated:	drainage
Action or Project	
Applicable Goal Statement:	~~improve overall drainage of stormwater~~ # 3
Action/Project Number:	3.2.c
Name of Action or Project:	street improvements
Mitigation Category:	3.2
Action or Project Description:	perform street improvements to further improve drainage throughout the community
Estimated Cost:	$500,000
Benefits:	mitigate flooding throughout the community
Plan for Implementation	
Responsible Organization/Department:	Union Star
Supporting Organization/Department:	MoKan
Action/Project Priority:	#1
Timeline for Completion:	3yrs
Potential Fund Sources:	CBDG
Local Planning Mechanisms to be Used in Implementation, if any:	
Progress Report	
Action Status:	
Report of Progress:	

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DeKalb County Multi-Jurisdictional Hazard Mitigation Plan

Appendix D:

Adoption Resolutions

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