CALDWELL COUNTY MISSOURI













HAZARD MITIGATION PLAN 2017-2022

Caldwell County
M I S S O U R I
Hazard Mitigation Plan

EFFECTIVE
2017-2022

Produced for

Caldwell County

By the

Green Hills Regional Planning Commission

ghrpc.org

1104 Main St.
Trenton, MO 64693

Phone (660) 359-5636
Fax (660) 359-3096

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U.S. Department of Homeland Security
FEMA Region VII
9221 Ward Parkway, Ste. 300
Kansas City, MO 64114-3323

FEMA

January 31, 2017

Mr. Ron Walker, Director
State Emergency Management Agency
P. O. Box 116
Jefferson City, Missouri 65102

Subject: Review of the Caldwell County Hazard Mitigation Plan

Dear Mr. Walker:

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

Prior to the expiration of the plan the community will be required to review and revise their plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval in order to continue to be eligible for mitigation project grant funding.

Plan Name	Date Submitted	Date Approved	Date of Plan Adoption	Date of Plan Expiration	Review Status
Caldwell County	January 26, 2017	January 26, 2017	November 9, 2016	January 26, 2022	Approved

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

Sincerely,

Kenneth Sessa, Acting Director
Mitigation Division

CONTRIBUTORS

Caldwell County Hazard Mitigation Planning Committee

Jurisdictional Representatives

Name		Title	Department	Jurisdiction/Agency/Organi
C.R.	Motzinger	Presiding Commissioner	Commission/EMD	Caldwell County
Kenny	Rogers	Mayor	City	Braymer
Matt	Sievering	Mayor	City	Breckenridge
Betty	Vasmer	Appointed City Rep	City	Cowgill
Gene	Vanlperen	Administrator	City	Hamilton
Richard	Evans	City Clerk	City	Kidder
David	Bethel	W/WW Superintendant	City	Kingston
Jeff	Ienis	Mayor	City	Polo
Don	Regan	Superintendant	Admin	Braymer C-4 School
Brent	Skinner	Superintendant	Admin	Breckenridge R-I School
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Troy	Stemberger	Superintendant	Admin	Mirable C-1 School
Debbie	Ellis	Superintendant	Admin	New York R-IV School
Don	Wilburn	Superintendant	Admin	Polo R-VII School

EXECUTIVE SUMMARY

The purpose of hazard mitigation is to reduce or eliminate long-term risk to people and property from hazards. Caldwell County and the participating jurisdictions and school districts developed this multi-jurisdictional local hazard mitigation plan update to reduce future losses from hazard events. The plan is an update 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 geographic area of Caldwell County. There are 16 jurisdictions within it's borders:

Caldwell County	City of Braymer	City of Breckenridge	City of Cowgill
City of Hamilton	City of Kidder	City of Kingston	City of Polo
Braymer C-4	Breckenridge R-1	Cowgill R-VI	Hamilton R-II
Kingston 42	Mirable C-1	New York R-IV	Polo R-VII

Caldwell County and the entities listed above developed a Multi-Jurisdictional Hazard Mitigation Plan that was approved by FEMA in 2011. This current planning effort serves to update that previously approved plan.

The plan update process followed a methodology prescribed by FEMA, which began with the formation of a Mitigation Planning Committee (MPC) comprised of representatives from Caldwell County and participating jurisdictions. The MPC updated the risk assessment that identified and profiled hazards that pose a risk to Caldwell County and analyzed jurisdictional vulnerability to these hazards. The MPC also examined the capabilities in place to mitigate the hazard damages, with emphasis on changes that have occurred since the previously approved plan was put in place. 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. In addition, man-made and technological hazards not previously addressed were added to the plan update.

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

1. Manage the development of land and buildings to minimize the risk of loss due to natural hazards
2. Protect structures and their occupants and contents from the damaging effects of natural hazards
3. Educate and inform the public about the risk of hazards and the techniques available to reduce the danger to life and property
4. Preserve and restore the beneficial functions of the natural environment and promote sustainable, environmentally friendly community development
5. Improve the efficiency, timing, and effectiveness of warning, response, and recovery efforts for natural hazard disasters
6. Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where feasible, cost effective, and environmentally sound

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

PREREQUISITES

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 C, and a model resolution is included on the following page.

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

Caldwell County	City of Braymer	City of Breckenridge	City of Hamilton	City of Kingston
City of Polo	City of Cowgill		City of Kidder	
Braymer C-4	Breckenridge R-1	Cowgill R-VI	Hamilton R-II	
Kingston 42	Mirable C-1	Polo R-VII		

A model resolution can be found on the following page:

(*LOCAL GOVERNING BODY/SCHOOL DISTRICT*), Missouri

RESOLUTION NO. _____

A RESOLUTION OF THE (*LOCAL GOVERNING BODY /SCHOOL DISTRICT*) ADOPTING THE CALDWELL COUNTY ALL-HAZARD MITIGATION PLAN (UPDATED 2015)

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-hazard mitigation plan, hereby known as the *St. Louis Regional All-Hazard Mitigation Plan (Updated 2015),* 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*) 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:

Section 1. In accordance with (local rule for adopting resolutions), the (*local governing body/school district*) adopts the *Plan*.

ADOPTED by a vote of___in favor and____against, and____abstaining, this_____day of ___,_____.

By (Sig): _____

Print name: _____

ATTEST:

By (Sig.): _____

Print name: _____

APPROVED AS TO FORM:

By (Sig.): _____

Print name: _____

1 INTRODUCTION AND PLANNING PROCESS

1 INTRODUCTION AND PLANNING PROCESS 1

1.1 Purpose *1*

1.2 Background and Scope *1*

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1.1 Purpose

Hazard mitigation is "any action taken to reduce or eliminate the long-term risk to human life and property from natural hazards". We understand that hazard events will continue to occur, and at their worst can result in death and destruction of property and infrastructure. The work done to minimize the impact of hazard events to life and property is called Hazard Mitigation. Caldwell County and the participating jurisdictions and school districts developed this multi-jurisdictional local hazard mitigation plan update to reduce future losses from hazard events.

1.2 Background and Scope

This document is the 5-year update of a plan that was approved in 2012. 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 following local governments and school districts participated in both the original plan as well as the plan update, which allows them to adopt the plan and secure eligibility for Hazard Mitigation Grant Funding they could not otherwise obtain*.

Caldwell County	City of Braymer	City of Breckenridge	City of Cowgill
City of Hamilton	City of Kidder	City of Kingston	City of Polo
Braymer C-4	Breckenridge R-1	Cowgill R-VI	Hamilton R-II
Kingston 42	Mirable C-1	New York R-IV	Polo R-VII

In addition to securing grant funding eligibility, the plan is useful for incorporating hazard mitigation planning and principals into other documents, such as zoning regulations and land use plans.

* the Disaster Mitigation Act of 2000 (Public Law 106-390) and the implementing regulations set forth by the Interim Final Rule published in the *Federal Register* on February 26, 2002, (44 CFR §201.6) and finalized on October 31, 2007. (Hereafter, these requirements and regulations will be referred to collectively as the Disaster Mitigation Act or DMA). The regulations established the requirements for local hazard mitigation plans are in the Robert T. Stafford Disaster Relief and Emergency Act (Public Law 93-288).

1.3 Plan Organization

This latest (2017) update document involved review, evaluation, and amendment of the existing Plan. It addresses the same natural hazards that were addressed in the original Plan, with Man-made/technological hazards not addressed except in the context of cascading damages.

Following is a breakdown of the organization of the 2012 Caldwell county Hazard Mitigation Plan Update.

- 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

Table 1.1. Changes Made in Plan Update

In **Section 1** the history of the original plan and the process of updating it were outlined.

In **Section 2** (Profile and Capabilities) All Census and economic demographic data was updated.

In **Section 3** (Risk Assessment) All Hazard Event Data was updated and new risk and vulnerability analysis were performed using the new data.

In **Section 4**, (Mitigation Strategy) The following actions from the existing plan were discarded :

- Encourage the inclusion of safe rooms in the construction of all new public buildings.
- Take the appropriate steps to facilitate the elevation or relocation of structures which suffer repetitive losses despite flood proofing.
- Continue to support the legal requirement of the disclosure by real estate sellers of the presence of floodplains or other hazard areas to potential buyers.
- Continue to support river/stream corridor restoration by observing “best management practices” prescribed by the Missouri Department of Conservation for construction projects in or near streams and rivers .
- Support the individual communities in maintaining existing storm warning systems as well those communities without who are seeking funding for storm sirens.
- Continue to encourage the ownership and use of NOAA Radios. In the past, the LEPC has purchased such radios and given them to schools and daycares. Similar programs may be undertaken in the future; efforts to foster public knowledge of these radios and their availability are also included in this action.
- Continue Disaster Response planning as currently undertaken by the county LEPC.
- Support School Districts in annual assessments and updates of their all-hazards plan
- Individual communities with adequate existing storm water drainage systems will continue to maintain them.

The following new actions were added to the plan;

Action	Jurisdiction(s)
Develop a detailed county-wide inventory of emergency shelters	Caldwell County
Develop Community Shelter Plans	City of Hamilton, City of Kingston, City of Polo, City of Braymer, City of Breckenridge, City of Kidder, City of Cowgill
a. Develop a Shelter Plan b. Incorporate shelter improvements and a proposed storm shelter into existing capital improvement plans	Hamilton R-II School District
Conduct a County-wide analysis of gaps in municipal siren coverage	City of Hamilton, City of Kingston, City of Polo, City of Braymer, City of Breckenridge, City of Cowgill, City of Kidder
Develop a Storm-Siren Protocol	City of Hamilton
Implement the Red-Cross “Pillowcase Project”	Hamilton R-II School District, Kinston 42 School District, Cowgill R-VI School District, Mirable C-1 School District, New York R-IV School District
Develop a system of public notification with protocols	Caldwell County (911)
Develop a geographic information system	City of Hamilton
Develop a unified County Response Plan for the Caldwell County Detention Center	Caldwell County 911, Caldwell County Sherriff, City of Kingston
Develop a plan to mitigate potential contamination of the proposed Otter Creek lake by hazmat incidents on Hwy 36	Caldwell County
Develop a pipeline security plan	Caldwell County
Participate in the “Great American Shake Out” Earthquake Drill	Hamilton R-II School District, Kinston 42 School District, Cowgill R-VI School District, Mirable C-1 School District, New York R-IV School District

In **Section 5** (Plan Maintenance) the plan maintenance processes was revamped and detailed to include annual, quarterly, and spontaneous plan review meetings.

1.4 Planning Process

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

- Assisted in establishing a Mitigation Planning Committee (MPC) as defined by the Disaster Mitigation Act (DMA),
- Ensured the updated plan met the DMA requirements as established by federal regulations and followed the most current planning guidance of the Federal Emergency Management Agency (FEMA),
- Facilitated the entire plan development process,
- Identified the data that MPC participants could provide and conducted the research and documentation necessary to augment that data,
- Assisted in soliciting public input,
- Produced the draft and final plan update in a FEMA-approvable document, and coordinated the Missouri State Emergency Management Agency (SEMA) and (FEMA) plan reviews.

Table 1.2. Jurisdictional Representatives Caldwell County Hazard Mitigation Planning Committee (HMPC)

Name		Title	Department	Jurisdiction/Agency/Organi
C.R.	Motzinger	Presiding Commissioner	Commission/EMD	Caldwell County
Kenny	Rogers	Mayor	City	Braymer
Matt	Sievering	Mayor	City	Breckenridge
Betty	Vasmer	Appointed City Rep	City	Cowgill
Gene	Vanlperen	Administrator	City	Hamilton
Richard	Evans	City Clerk	City	Kidder
David	Bethel	W/WW Superintendant	City	Kingston
Jeff	Ienis	Mayor	City	Polo
Don	Regan	Superintendant	Admin	Braymer C-4 School
Brent	Skinner	Superintendant	Admin	Breckenridge R-I School
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Andrea	Hieronymus	Superintendant	Admin	Kingston 42 School
Troy	Stemberger	Superintendant	Admin	Mirable C-1 School
Debbie	Ellis	Superintendant	Admin	New York R-IV School
Don	Wilburn	Superintendant	Admin	Polo R-VII School

1.4.1 Multi-Jurisdictional Participation

Hazard mitigation is defined as “sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards” and its purpose is to lessen the negative impact of a disaster on community’s economic, social, and environmental well-being.

Outreach programs that increase the public’s awareness of hazard risks, projects to protect critical facilities, and the removal of structures from flood hazard areas are all examples of

mitigation actions. Local mitigation actions and concepts can also be incorporated into land use plans and building codes.

Local governments have the responsibility to protect the health, safety, and welfare of their citizens. Proactive mitigation policies and actions help reduce risk and create safer, more disaster-resilient communities. Mitigation is an investment in a community's future safety and sustainability by facilitating;

- The protection of public safety and prevention of loss of life and injury.
- The reduction of harm to existing and future development.
- The prevention of damage to a community's unique assets.

The importance of active public participation in such an endeavor is obvious, but can be difficult to obtain in reality. A paper published in the Journal of Environmental Planning and Management in 2003* notes "*the disquieting reality that citizens are not always interested in participating, and that some types of plans fail to receive public attention."* The paper goes on to state that involving the public in technical decision making is often *"a formidable challenge".* Nowhere is this difficulty more apparent than in small rural communities like those in North Central Missouri.

Local Government jurisdictions were invited to participate in the planning process via email and follow up phone contact (Appendix A, public participation documentation). Committee members were placed on a contact list featuring email and text notifications and were directed to the Caldwell County Hazard Mitigation Facebook page.

Jurisdictions that are represented by a multi-jurisdictional plan are required to participate in the planning process and formally adopt the plan. Each jurisdiction participated in the plan update by meeting minimal requirements as described in the next paragraph. Each participating jurisdiction will formally adopt the mitigation plan within 90 days of receiving "approvable pending adoption' status by FEMA.

* *Journal of Environmental Planning and Management,46(5), 733–754, September 2003*
DAVID R. GODSCHALK*, SAMUEL BRODY† & RAYMOND BURBY*

Minimum participation requirements for a jurisdiction to be able to adopt the plan include:

- Provision of sufficient information to support plan development, such as filling out a survey or otherwise providing information via email and voice communications
- Attending at least one planning meeting
- Undertaking of at least one mitigation action

Table 1.3. Jurisdictional Participation in Planning Process

Jurisdiction	Kick-off Meeting	Meeting #1	Meeting #2	Meeting # 3	Data Collection Response	Undertaking at least one mitigation action	Provided input and data via email/phone	Cleared to adopt plan
Caldwell County	✓	✓	✓	×	×	✓	✓	✓
Braymer	×	×	✓	×	×	✓	✓	✓
Breckenridge	✓	×	×	×	×	✓	✓	✓
Cowgill	×	×	×	✓	×	✓	✓	✓
Hamilton	×	✓	✓	×	×	✓	✓	✓
Kidder	×	×	×	✓	×	✓	✓	✓
Kingston	✓	×	✓	×	✓	✓	✓	✓
Polo	✓	×	×	×	✓	✓	✓	✓
Braymer C-4 School	✓	✓	×	×	✓	✓	✓	✓
Breckenridge R-I	×	×	✓	×	✓	✓	✓	✓
Cowgill R-VI School	×	×	×	✓	✓	✓	✓	✓
Hamilton R-II School	✓	✓	✓	×	✓	✓	✓	✓
Kingston 42 School	×	×	✓	×	×	✓	✓	✓
Mirable C-1 School	×	×	×	✓	×	✓	✓	✓
New York R-IV	×	×	×	✓	✓	✓	✓	✓
Polo R-VII School	✓	×	×	✓	×	✓	✓	✓

1.4.1 The Planning Steps

The initial "Scoping" process of the planning effort consisted of soliciting local jurisdictions for a representative to attend the Kick-off meeting. This was conducted during the first week of July, 2016 and consisted of phone solicitations and a detailed email explaining the Hazard Mitigation Planning process and the importance of jurisdictional participation.

The Kick-off meeting was scheduled for Monday, July 18th and was held at 1:00 PM at the Nazarene Church in Kingston, and lasted approximately one hour (see Appendix B for copies of emails sent and minutes of the meeting). Attendees were tasked with contacting stake holders from their communities and neighboring jurisdictions and inviting them to give input and attend the follow up meeting.

There was phone contact with the representatives during the process outside of the scheduled meetings, as MPC members asked questions, discussed issues, and provided data for the planning effort.

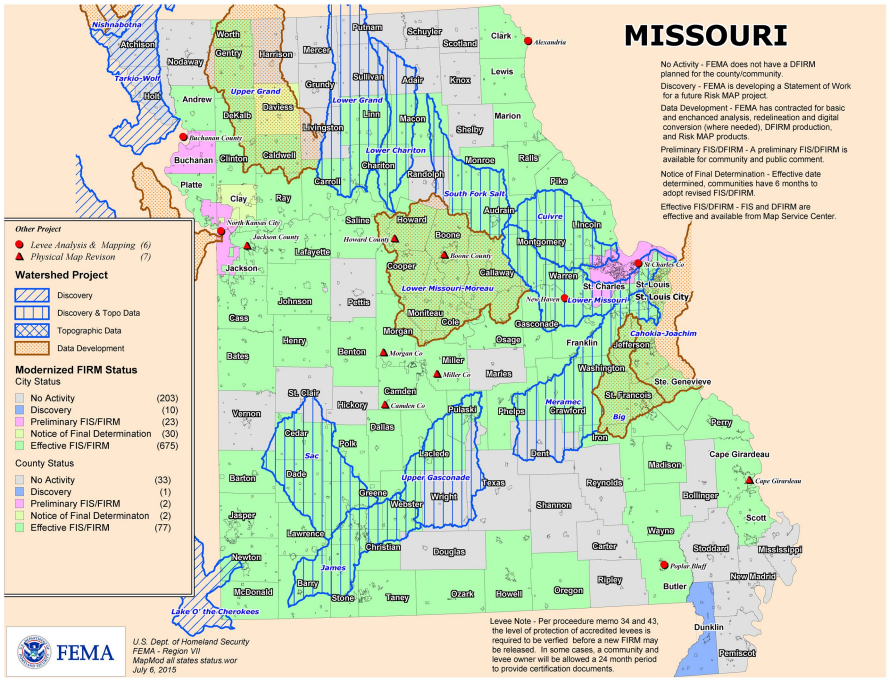
Table 1.4. Schedule of MPC Meetings

Meeting	Topic	Date
Informational "Scoping"	Mass email and follow up phone contacts, detailed description of Hazard Mitigation, the planning process, and the importance of Jurisdictional participation.	07/01/16-07/07/16
Kick-off Meeting	Committee core group meeting, overview of Hazard mitigation planning, hand out materials and "homework". Sign up for text caster, brief discussion of the face book page.	07/18/16
Planning Meeting # 1	A short repeat of the overview aimed at attendees who did not attend the kick off will be followed by a brief review of the old plan and discussion about updated demographic and hazard information.	08/15/2016
Planning Meeting #2	New Plan Development – what elements should remain, which should be altered, what should be added.	09/19/2016
Planning Meeting #3	Overview of the rough draft of the completed plan, review of the maintenance and update process, discussion of resolutions of adoption.	10/24/16

A Facebook page was established for the Hazard Mitigation Plan and was shared on the local community "swap and shop" Facebook pages which reach not only Caldwell County but surrounding counties as well. Each meeting was advertised up to a week in advance and was posted about, again on the day of the meeting. A link to the completed plan draft was posted for comment on December 1st, 2016. All public participation documentation is found in Appendix B.

Coordination with FEMA Risk MAP Project

Caldwell County participates in NFIP, though none of its communities do. Floodplain maps completed as part of the Upper Grand Watershed project show little in the way of exposure to flood waters affecting the communities of Caldwell County (see map – Section 3, page 42.) Though two communities (Braymer and Kingston) do have floodplains inside their incorporated limits, there are no structures located in those areas. It is for this reason that none of these communities participate in NFIP.



Integration of Other Data, Reports, Studies, and Plans

There are no dams in Caldwell County which have had studies performed on them. Dams are discussed in the Dam Failure portion of the risk and vulnerability analysis in section 4.

Assessing the Hazards: Identify and Profile Hazards

- During meeting #2 the HMPC identified and profiled their hazards, which was accomplished by reviewing:
  - previous disaster declarations in the county
  - hazards in the most recent State Hazard Mitigation Plan
  - hazards identified in the previously approved hazard mitigation plan.

The results of this process can be reviewed in Section 4 of this document.

Assessing the Problems: Identify Assets and Estimate Losses

Assets were identified with demographic data from the US Census, Census of Agriculture, Division of Labor, GIS structure data, HAZUS, and Data Collection Questionnaires.

Loss estimates came from the 2010 State Hazard Mitigation Plan. These estimates were created using HAZUS software, which uses geo-referenced data to calculate the exposure for a selected area, characterizing the level or intensity of the hazard affecting the exposed area in order to calculate potential losses in terms of economic losses, structural damage, etc.

The HMPC committee reviewed the goals from the previously approved plan at the second meeting (November), and accepted those with no changes. They were;

1. Manage the development of land and buildings to minimize the risk of loss due to natural hazards.
2. Protect structures and their occupants and contents from the damaging effects of Natural Hazards.
3. Educate and inform the public about the risk of hazards and the techniques available to reduce danger to life and property.
4. Preserve and restore the beneficial functions of the natural environment and promote sustainable, “environmentally friendly” community development.
5. Improve the efficiency, timing, and effectiveness of warning, response, and recovery efforts for natural hazard disasters.
6. Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where feasible, cost effective, and environmentally sound.

Reviewing Possible Mitigation Actions and Activities

The HMPC met for the third time in December, in order to review the mitigation strategy from the previously approved plan and discuss changes and update. Committee members discussed progress (or lack of it) on various actions in the previously approved plans in their jurisdictions. HMPC members were encouraged to continue forward only those actions that substantively addressed long-terms risks identified in the risk assessment.

There were virtually no changes to any of the risks assessed in the plan, though additional hazards were added. The current plan addresses man-made and technological hazards as well as the natural hazards addressed in previous years. These new hazards are:

- Attack: Nuclear/ Conventional/Chemical/ Biological
- Civil Disorder
- Hazardous Materials release; Fixed Facility / Transportation incidents
- Mass Transportation Accident
- Public Health Emergencies/ Environmental Issues
- Special Events
- Terrorism
- Utility disruption/failure
- Electromagnetic Pulse (EMP)

Once again, the HMPC used a modified STAPLEE method to analyze and prioritize proposed actions.

Drafting the Action Plan

After reviewing past and proposed mitigation activities and prioritizing them with the STAPLEE process, a draft action plan was composed and went out with the minutes of the meeting to all those who attended. The actions were approved and work began on a plan draft for submission to SEMA/FEMA.

Adoption of the Plan

Adoption resolution examples were given to the jurisdictional representatives with instructions to return to their respective governing bodies and conduct the adoption by whatever means their community utilizes for such activities.

Implementing, Evaluating, and Revising the Plan

Part of the plan draft development included an outline of plan maintenance (chapter 5) was discussed and accepted by the HMPC. This process includes reviews annually and in the wake of any significant hazard event, as well as provisions for the five-year update process.

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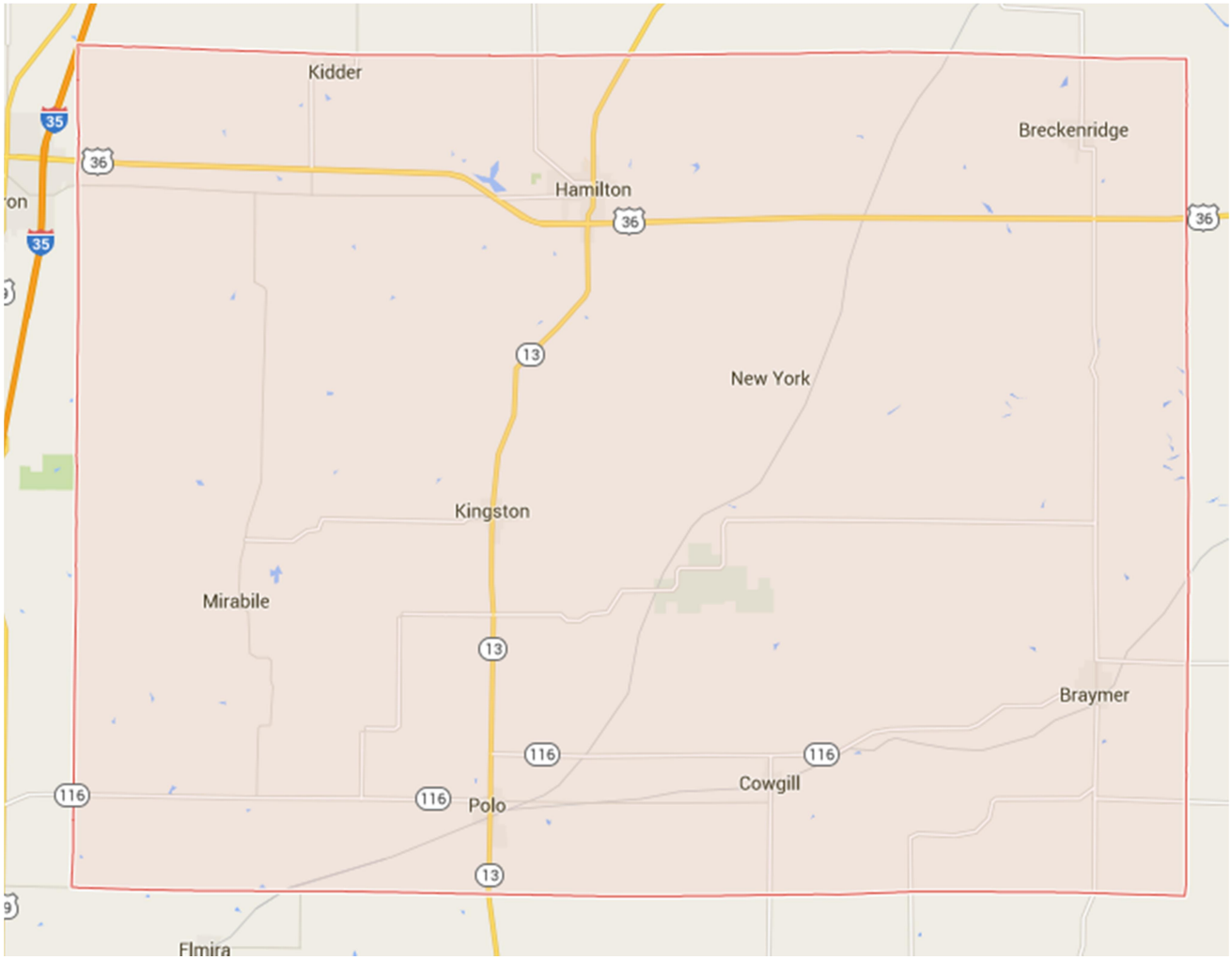
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2.1 Caldwell County Planning Area Profile

Caldwell County is located in north-western Missouri.

Figure 2.1. **Map of Caldwell County**





History

Prior to the coming of the European settlers, the territory now included in Caldwell County was thought to have been populated by the Missouri Indians. The presence of artifacts in many locations indicates that they made occasional camps within its boundary.

1821 The area that will one day be Caldwell County is a sparsely populated portion of Ray County. The first known European settler builds on Shoal Creek near what is now the city of Kingston. Other Ray County settlers join this "Shoal Creek Settlement".

1832 News of the Blackhawk War, greatly exaggerated, makes the locals nervous and a significant number depart, leaving the area somewhat depopulated.

A group of Mormons evicted from Jackson County form the settlement of Salem at Log Creek in Kingston Township

1836 The Missouri General Assembly creates Caldwell County with the understanding it will be dedicated to Mormon settlement. The Mormon settlement of Far West in Mirable Township becomes the county seat.



A portion of a map of Missouri, Circa 1834. What will one day be Caldwell County is noted as an "attachment" to Ray County

1838 THE MORMON WAR: At this time Far West has a population of approximately 4,000.

May 19th - Joseph Smith declares a site in Daviess County Missouri to be the home of Adam and Eve after they were exiled from the Garden of Eden, and that it will be a gathering place on judgment day. A Mormon settlement called Adam-ondi-Ahman is established there. Mormon settlers begin to migrate from Caldwell County into Daviess County to the north and Carroll County to the east.

July 30th - In the wake of the Mormon purchase of every parcel in the town of DeWitt in Carroll County, the citizens of Carroll County hold a vote on whether or not the Mormons should be allowed to settle in the County. It is an overwhelming "no" vote. The Mormons refuse to simply abandon property they had already paid for.

August 6th - Local Daviess county residents, alarmed by the increasing Mormon population and growing power as a voting block, clash with Mormon settlers at what becomes known as the "Gallatin Election Day Battle". Thus begins the "Mormon War of 1838".

August 7th - The citizens of Carroll County vote to expel the Mormons from DeWitt by force, and muster the County Militia.

October 11th- After an 11 day siege by the Carroll County Militia, the Mormons living in DeWitt surrender and are expelled from the County to seek refuge in Far West.

October 27th - After an initial Mormon victory over a Ray county militia at the battle of Crooked River, Missouri Governor Lilburn Boggs issues Missouri Executive Order No. 44, otherwise known as the "Extermination Order". *"… the Mormons must be treated as enemies, and must be exterminated or driven from the State if necessary for the public peace - their outrages are beyond all description..."*

October 29th - A Militia unit from Livingston County kills 18 men and boys in a surprise attack on a Mormon settlement in eastern Caldwell County called Hauns' Mill. The survivors travel to Far West. The Mormons gather there and entrench themselves.

October 30th - Some 3,500 strong, and possessing artillery, a force of militia from a number of Missouri counties surround the now fortified settlement of Far West. Smith surrenders and the Mormon leaders are arrested. All weapons are confiscated and property seized. All Mormons in the state (estimated at 10,000) are expelled from Missouri. The population of Caldwell County falls to less than 1000 people, but soon rises with an influx of new settlers claiming unimproved land under the US Homestead Act, or purchasing former Mormon properties at drastically reduced cost.

1839 There is an outbreak of Typhoid in the county.

1843 The town of Kingston is laid out, and eventually becomes the county seat, leaving the far west a ghost town.

1848 There is an outbreak of smallpox in the county.

1855 A stage coach route is established between Gallatin and Lexington, along the state road that ran to Gallatin from Richmond. Hamilton is founded and serves as a stage station along the way.

1856 There is a scarlet fever outbreak in Fairview Township.

1858 Construction begins on the Hannibal and St. Joseph Railroad. Property values go up. The town of Breckenridge is founded on the rail line in Breckenridge Township.

1859 Construction of the Hannibal and St. Joseph Railroad is complete. Agriculture booms as farmers gain the ability to easily transport large quantities of crops and livestock to market.

1860 The Town of Kidder is founded in Kidder Township. The Courthouse in Kingston burns to the ground – all records except those of the probate court (which were stored at the Probate Judges residence) were destroyed. Circuit court records, County Court records, deeds and mortgages were all lost.

1861
-1865 The Civil War. Settlers arriving previous to the construction of the railroad predominately hail from southern states. The majority of those arriving afterward are from northern and eastern states, naturally leading to a strong division along partisan lines. Bitter quarrels develop

between neighbors, at times flaring into violence and lingering feuds after the war. While no pitched battles between large forces of regular troops occur in the county, there are a few short engagements between union garrisons and local partisans forces. The most noteworthy of these was "Thrailkills raid":

In July 1864, Confederate troops under the command of one Major Thrailkill, crossed the line of Ray County into Lincoln Township, to Tinney's Grove, then to Mandeville, then eventually Kingston. The outnumbered Union militia retreated to Hamilton, leaving Kingston undefended. The Confederates looted stores and broke open the vaults and safe in the court house, taking $8,000. They destroyed all papers pertaining to the enrolment of the militia, but left the other records unharmed. From Kingston the raiders moved on and looted Mirable before marching towards Plattsburg. The Union Militia gathered manpower from the upset citizens of the County and gave pursuit to Thrailkill, subsequently catching up with the Confederate Majors' forces at Union Mills and being roundly defeated by them.

1866 After the close of the war, the Hannibal and St. Joseph Line begins an Intensive advertising campaign in the east states to sell surplus railroad land throughout the Midwest. Subsequently a large immigration of settlers, mostly from the East, arrives in Caldwell County during the last half decade of the 1860s. Many families from the state of New York settle near each other at "York Settlement", which later becomes New York Township.

1868 The village of Polo is founded.

1870 There is an outbreak of diphtheria. An explosion at the Hamilton Mill kills several people. A series of fires destroys most of the wood frame buildings along Main Street in Hamilton, which are replaced with brick buildings.

1872-1874 The Hamilton public school is organized, as is the high school in Breckenridge. By 1874 there is a high school at Kingston, and the public school system in the county is well established.

1887 The Milwaukee Rail Road is constructed. Along the rail are founded the towns of Braymer in Mirable Township and Cowgill in Lincoln Township. The existing village of Polo is also on | this rail line.

1898 Spanish American War. The County's agricultural economy benefits from the sale of grain and horses to the US military.

1914 World War I.

1922 Missouri Route 8 is built, a highway is laid out which parallels the route of the old Hannibal and St. Joseph Railroad passing by Kidder, Hamilton, and Breckenridge. Missouri Route 13, running north/south through Polo, Kingston, and Hamilton, is laid out.

1929-1939 The Great Depression.

1929 October 29th: Black Tuesday; the stock market crash that marks the beginning of the Great Depression.

1930 Severe drought (The Dust Bowl) ravages the Midwest. Prices in general begin to decline, but wages hold steady until 1931, after which they begin to drop. Conditions are worst in farming areas like Caldwell County, as commodity prices plunge 40 to 60 percent.

1933 The economic decline of the great depression reaches its lowest point

1942-1945 World War II

1950-1953 Korean War Begins

1950 A drought year in Caldwell County and the region.

1952 Missouri's secondary highway system is put in place with the objective that there be state-maintained roads within two miles of more than 95% of all farm houses, and schools. Existing roads are improved and new roads are built, greatly expanding roadway infrastructure in the county.

1953 A prolonged drought begins for Caldwell County and the region that will not end until after 1958.

1955 An F3 Tornado touches down at the Clinton County line near Rout HH and travels east by north-east, creating a path of destruction from there to far west.

1956 Congress authorizes the National Interstate and Defense Highways Act of 1956. Route 8 becomes US Route 36.

1959-1975 The Vietnam War

1975 An F4 tornado touches down southeast of Hamilton and travels east by north east. Crossing Highway 36 at Breckenridge, it obliterates most of the eastern side of the town before passing on into Livingston County.

1970s-1980 The Farm Crisis. In the early years of the 1970's, prices for farm products are relatively high, with farmers totaling a net income of $33 billion. By 1977, record crops fall, and the cost of fuel, seed, pesticides, and other farm costs rise. In addition, real estate equity drops, drastically impacting the ability of many farmers to procure loans and bankroll their operations between harvests. By early 1984 farm indebtedness rises to $215 billion, double what it was in 1978, and fifteen times the 1950 level-the total of interest payments on farm loans exceeds total net farm income. Farm foreclosures rise dramatically, and the crisis has a ripple effect on rural economies like that of Caldwell County, negatively impacting the manufacture and sale of farm machinery, seed and fertilizer. Rural banks go into receivership. As more and more farmers go bankrupt, small town businesses see their profits plummet. In 1986, the Department of Agriculture calculates that every farm loss wipes out three non-farm jobs. It's described as the worst economic crisis since the Great Depression.

1988 A drought year for Caldwell County and the region.

1980s-
1990 Outsourcing of the Manufacturing Base. A trend associated with the terms "downsizing' or "corporate restructuring", the outsourcing of America's manufacturing base involves the purchase of inexpensive imported materials or outsourcing segments of the labor process to foreign soil. Procuring less expensive raw materials from third world countries with depressed economies, and locating production infrastructure in locations with no labor standards or environmental controls allow companies to retain millions of dollars that would otherwise be spent to provide living wages and benefits to American employees as well as to maintain health, safety, and environmental conditions. Facilitated by globalization measures like NAFTA, this trend causes severe economic harm to both urban areas and rural communities like Caldwell County.

1991 The 1st Gulf War

1993 The Great Flood of 1993 occurs in the American Midwest, along the Mississippi and Missouri | rivers and their tributaries, from April to October 1993. The flood is among the most costly and devastating to ever occur in the United States, with $15 billion in damages. The hydrographic basin affected covers approximately 320,000 square miles, and within this zone around 30,000 square miles are inundated. Caldwell County is not affected to the extent of more southern and less topographically diverse areas, but some roads are closed and there is significant property damage and crop loss.

1994 In December a prolonged period of heavy freezing rain occurred across the region, with ice accumulation from 0.5 to 1.0 inches on exposed objects, including trees, automobiles, and power lines. Widespread and heavy damage occurred to trees and utility lines, with over 75% of residents across the region without power at some time. Many entire counties were without power. Phone and cable television service were also out. Some damage also occurred to homes and automobiles when trees or limbs fell on them. Some minor fires were also started by downed lines. A few rural areas were without power for seven days or more. Travel was difficult, and some roads were blocked by fallen trees and utility lines.

1995 Widespread flooding again strikes the Midwest. The 500-year flood returns only 2 years after its last appearance. Most of the farm levees rebuilt in the past two years are again topped or breached, and some of the repairs made after the 1993 flood may have made the 1995 flood worse, with some locations experiencing more damage and higher river stages than in 1993.

1997 From the 10th through the 13th of January daytime temperatures through the period only reach the single digits, which is almost 30 degrees below normal. Night time low temperatures were in the single digits below zero. No record low temperatures were recorded but winds gusting up to 30 miles per hour on the afternoon of the 10th produced wind chills as low as 30 to 50 degrees below zero. On the 27th of the same month a mixture of sleet and freezing rain falls throughout the morning hours depositing 1 to 2 inches of ice before changing to snow. The snow is heavy at times through the early afternoon before tapering off, totaling 6 to 8 inches around the region. Temperatures fall from around 20 degrees in the morning into single digits above zero by late afternoon. Strong winds gusting up to 30 MPH produce 1 to 3 foot snow

drifts which make snow removal difficult for road crews. Also the very cold temperatures reduce the effectiveness of salting efforts.

1999 A drought year for Caldwell County and the region. In addition, two weeks of oppressive heat and humidity in late July sees temperatures exceed the 90 degree mark for 14 consecutive days. Dew points in the lower to middle 70s push afternoon heat indexes above 100 degrees each day. The heat wave is most intense from July 23rd through the 30th, as temperatures reach the upper 90s or top 100 degrees for 8 consecutive days, with afternoon heat indexes between 110 and 115 degrees.

2000 Through the latter third of August and into September, high temperatures in north central Missouri climb into the 90s, with stifling humidity helping to push the heat index to 105 to 110 degrees.

2001 9/11 Attacks on the World Trade Center.

War in Afghanistan begins

In early February a strong storm system moves across Northwest Missouri with a variety of winter weather. One quarter to one half inch of ice accumulation is reported, with snowfalls of 1 to 5 inches on top of the ice. Later that same month, another storm results in significant snowfall across northwest Missouri, with accumulations of 6 to 9 inches. In July oppressive heat and humidity cover all of northwest Missouri between the 6th and the 8th. Afternoon highs in the 90s combine with high dew points to produce heat indexes as high as 115 degrees, a cycle that is repeated in the same month from the 17th to the 24th and in the first week and on the 9th day of the following August.

2002 A long lived major ice and snow storm blasts much of the northwest, northern and central Missouri from late Tuesday, January 29th, until Thursday, January 31st. Ice accumulations of over an inch are observed and snow accumulations range from 8 to 14 inches. At one point 409,504 customers are without electrical power, and some residents are without power up to two weeks.

2003- War in Iraq begins

2003 Oppressive conditions cover the area from July 4th through July 5th. The combination of heat and humidity drives afternoon heat indices into the 105 degree range, a situation repeated on July 14th.

2005- Drought years for Caldwell County and the region. In 2005 oppressive heat and humidity prevails across from July 21st to July 25th. Afternoon heat indexes reach from 105 to 110 degrees. In 2006 heat indexes from 105 to 115 degrees occur from July 16th through July 20th and again from July 29th to August 1st. The first week of August in 2007 sees similar temperatures.

2007 Several rounds of freezing rain are observed in December. Temperatures in the upper 20s to lower 30 cause rapid accumulation of ice up to an inch. Numerous tree branches and power lines are downed. Around 165,000 residents are without power, some for almost two weeks.

2008 Torrential rains fall over much of the Midwest in a relatively small period of time. Over the 48-hour period beginning March 17, 2008, some areas receive over a foot of rain. With the ground already saturated, the new precipitation drains directly into the waterways, causing rivers and streams to swell beyond flood level, resulting in widespread flooding, events which occurred again in late July and early August. In mid-August, heat indices reach highs in excess of 112 degrees for several consecutive days.

2009 Caldwell County saw one of the coldest seasons since the winter of 1979-80, only three winters have had much below normal temperatures for the December through February period and this is the first time since the winter of 1981-82 that all three months reported below normal temperatures for the state. The cold temperatures provided numerous opportunities for snowfall across the state with portions of far northwestern Missouri reporting nearly 50 inches of snow. Some communities in northwestern Missouri reported a continuous blanket of snow on the ground for three months. A weather observer located in nearby Daviess County, reported 50.1 inches of snow. It was not only a cold winter, but a wet one as well and above normal precipitation across northern and central sections of Missouri set the stage for spring flooding.

2010 The summer was hotter than normal for all of Missouri with varying amounts of precipitation, ranging from excess to drought. Overall, the average summer temperature was 78.5°F, or 3.1°F above normal. Three consecutive months of above normal temperatures resulted in this summer being the ninth hottest in the past 116 years and the hottest since 1980. Summertime rainfall was variable and regionally, overall, June through August rainfall totals reached more than 25 inches in northern Missouri. The fall saw above normal temperatures and average precipitation.

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2011 The summer of 2011 was hot and the weather volatile, with an active spring storm season. Late in the afternoon of Sunday, May 22nd a catastrophic, mile wide EF5 multiple vortex Tornado struck Joplin Missouri – The tornado completely destroyed approximately 25% of the City and damaged the remaining 75% to various degrees. One hundred and fifty-eight people were killed and 1,250 people were injured. It was seventh-deadliest tornado strike in US history, and the single costliest, resulting in 2.8 Billion dollars of damages. Though this storm did not directly affect Caldwell County, the event was nationally televised and prompted a nationwide surge of interest in storm warning systems, safe rooms, and general weather awareness.

2012 A historic drought emerged early in the growing season and persisted into summer. More than 2/3 of the country was immersed in drought as summer progressed, a situation not experienced in nearly 60 years. Triple digit heat and record temperatures saw grass fires increased and burn bans were imposed across the state. The drought caused widespread crop and pasture losses, livestock stress, and declining stock water and hay supplies. Hydrological issues such as dry wells and stream beds, low river levels, and rural and urban water restrictions were increasingly common. The extreme conditions were adversely affecting gardens, lawns, trees and shrubs with numerous instances of vulnerable species succumbing to water and heat stress. Wildlife was impacted by the lack of healthy vegetation and dwindling water resources. Drought intensity continued unrelentingly until the remnants of Hurricane Isaac moved northward from Louisiana and Arkansas into southern Missouri on the last day of August.

2013 The hottest day of 2013 was September 8, with a high temperature of 102°F. The longest warm spell was from August 20 to September 2, constituting 14 consecutive days with warmer than average high temperatures. The coldest day of 2013 was December 7, with a low temperature of 5°F. The longest cold spell was from October 16 to October 29, constituting 14 consecutive days with cooler than average low temperatures.

2014 With few exceptions, the 2014 growing season was a benign one in Missouri, dominated by seasonable temperatures and sufficient precipitation. Weather conditions were favorable for crops, pastures and livestock as producers began anticipating a bin busting harvest toward the end of summer. One of the biggest hurdles for farmers was a period of extreme wetness in October that halted harvesting opportunities for much of the month. There were a couple widespread and significant rainfall events with extensive flooding reported across parts of northern and central Missouri during the month. Drier conditions, however, during the latter half of the month allowed harvest to resume by the end of October.

2015 The 2015 growing season was an extremely challenging one for farmers, with unprecedented wet conditions from May through July transitioning to drought in September and October. The wet May conditions limited fieldwork activity and planting opportunities across the state. – Caldwell County experienced some of the wettest conditions. The wet weather benefited pastures, which reported to be in good to excellent condition at the end of May, however the continued precipitation created chronic muddy conditions which posed major challenges, including difficulties cutting hay, flooded fields, nutrient loss, diseases and other factors.

Despite the wettest May-July on record, dry August and September conditions were beginning to show impacts across parts of the state. Pasture growth was hindered and grasses were beginning to brown. By the end of September, the Drought Monitor map indicated abnormally dry conditions over much of Missouri. The dryness intensified across Missouri in October, manifesting in increasing reports of grass fires and vegetative stress. Fall pasture growth continued to struggle due to the dry conditions and posed a potential burden to livestock producers in finding sufficient hay supplies to meet nutritional demands for their cattle over the winter.

Geography, Geology and Topography

Caldwell County covers 430 square miles (426 square miles of land and 3.2 square miles of water) consisting of a well-dissected plain having many ridges and valleys. The ridges are rounded, though in a few places some are almost flat. The valleys are numerous and range from small to moderately large. The hillsides are commonly have slopes of 9 to 14 percent but steeper slopes can be found, some rocky, and in most cases covered in timber. The valley floors – or stream bottoms- are generally large enough for farming and in most places are used for cultivated crops. Flooding and over washing may occur in nearly all of these areas. Shoal Creek, the largest stream in Caldwell County, is comparatively small and drains only about 45 square miles before entering the western part of the county. This stream and its many tributaries drain about 370 square miles of the total 432 square miles in the county. All of this area along the north edge of the county drained by Marrowbone Creek and Lick Fork is part of the Grand River Watershed. The only part of Caldwell County that is not part of the Grand River is the area west of Cowgill and south of Missouri highway 116. This area is drained by the Crooked River System (via a small stream).

Climate

Missouri has a continental type of climate marked by strong seasonality. In winter, dry-cold air masses, unchallenged by any topographic barriers, periodically swing south from the northern plains and Canada. If they invade, reasonably humid air, snowfall and rainfall result. In summer, moist, warm air masses, equally unchallenged by topographic barriers, swing north from the Gulf of Mexico and can produce copious amounts of rain, either by fronts or by convectional processes. In some summers, high pressure stagnates over Missouri, creating extended droughty periods. Spring and fall are transitional seasons when abrupt changes in temperature and precipitation may occur due to successive, fast-moving fronts separating contrasting air masses.

While winters are cold and summers are hot in Caldwell County, prolonged periods of extreme temperatures are unusual but do occur. Occasional periods of mild, above freezing temperatures are noted almost every winter. Conversely, during the peak of the summer season, occasional periods of dry-cool weather break up stretches of hot, humid weather. The average January temperature for the Caldwell County area is 14°, while the average July temperature is 88°. Mean annual rainfall in the Caldwell County area is 37 inches, while the average snowfall is 15 inches. This pronounced seasonality is due to strong continental influences.

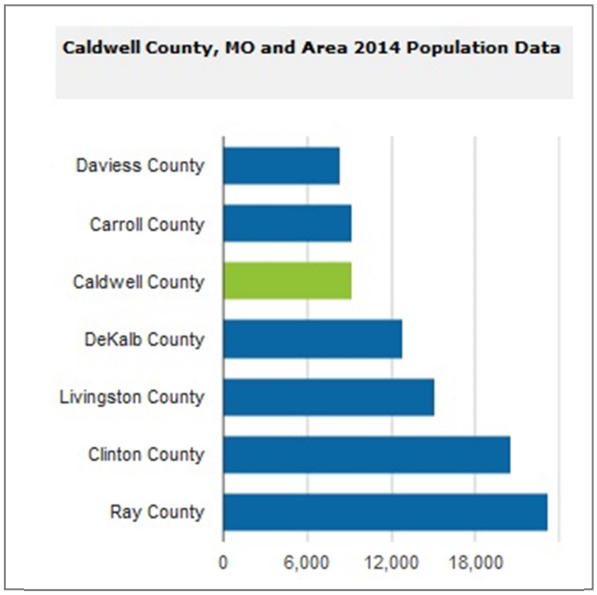
Snow has been known to fall in the region as early as October, and as late as May. However, most of it falls in December, January, and February. Winter Snowfall North of the Missouri river averages 18 to 24 inches. It is unusual for snow to stay on the ground for more than a week or two before it melts. Winter precipitation usually is in the form of rain, or snow, or both. Conditions sometimes are on the borderline between rain and snow, and in these situations freezing drizzle or freezing rain occurs. This does not usually happen more than five times in a winter season.

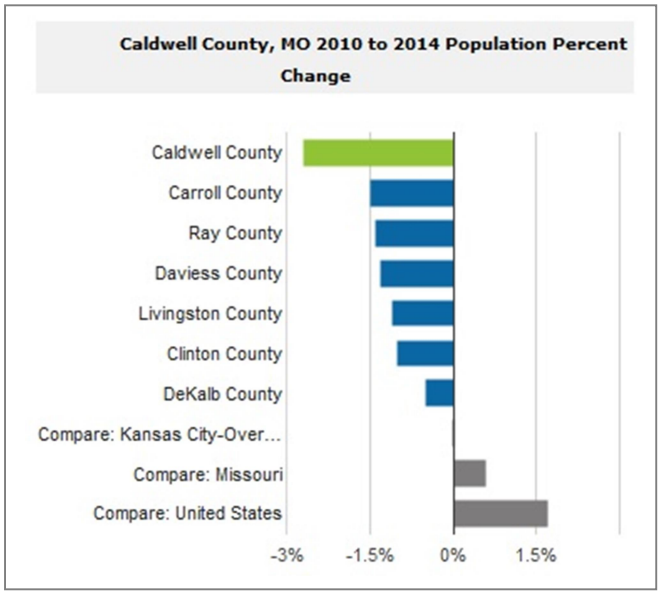
Spring, summer, and early fall precipitation comes largely in the form of showers or thunderstorms. Thunderstorms have been observed during the winter months, but they are most frequent from April to July. Hail also occurs in all regions and may occur throughout the year, but it is much less likely in winter. May has the greatest number of days with hail. Measurable precipitation occurs on an average of about 100 days a year. About half of these will be days with thunderstorms. Occasionally, these produce some very heavy rains.

Source: http://climate.missouri.edu/climate.php

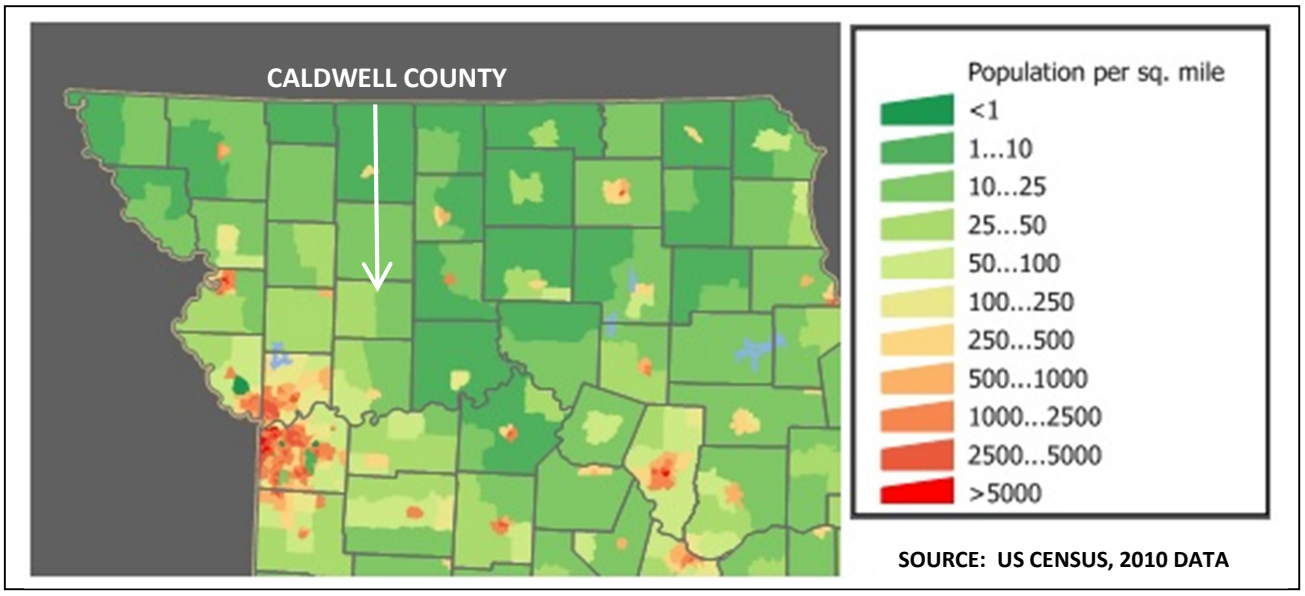
Population/Demographics

According to the demographics data released by the Census Bureau in December of 2015, Caldwell County has a population of 9,176 which is less than most other counties in the area. The county with the highest population in the area is Ray County, with a population of 23,166 which is 52% larger. Caldwell County's population declined 2.7% from 2010 to 2014. The average population change in the US is 1.7%, while Missouri's is 0.6%.





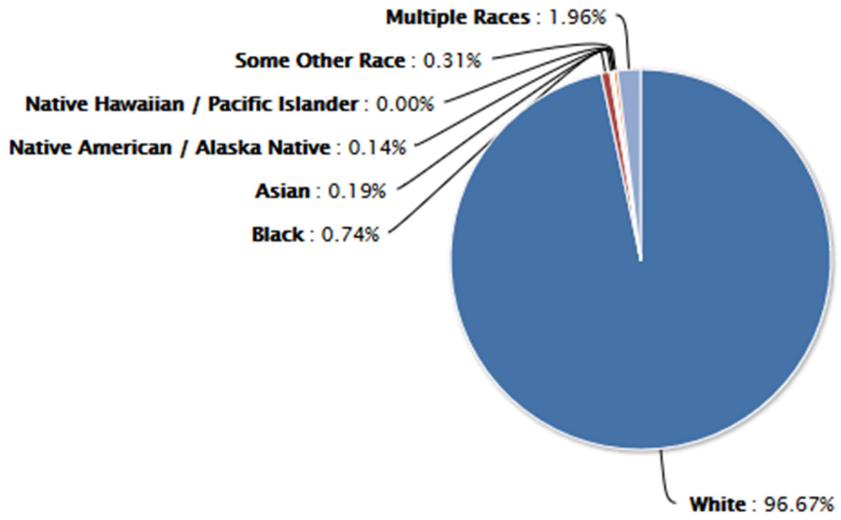
Caldwell County's population density averages 22 people per square mile, which is less than most other counties in the area. The next higher population density is Livingston County, which is about 31% larger with population density of 28.



Caldwell County Total Population by Gender

Report Area	Male	Female	Percent Male	Percent Female
Caldwell County,	4,594	4,582	50.07%	49.93%
Missouri	2,953,719	3,074,357	49%	51%
United States	154,515,152	159,591,920	49.19%	50.81%

Caldwell County Population by Race



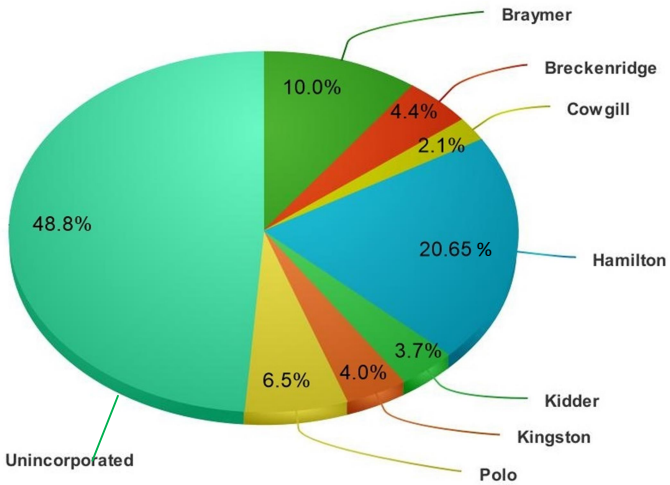
Caldwell County Total Population by Age Groups, Percent

Age 0-4	5.67%
Age 5-17	18.88%
Age 18-24	6.97%
Age 25-34	10.66%
Age 35-44	11.54%
Age 45-54	14.69%
Age 55-64	13.79%
Age 65+	17.81%

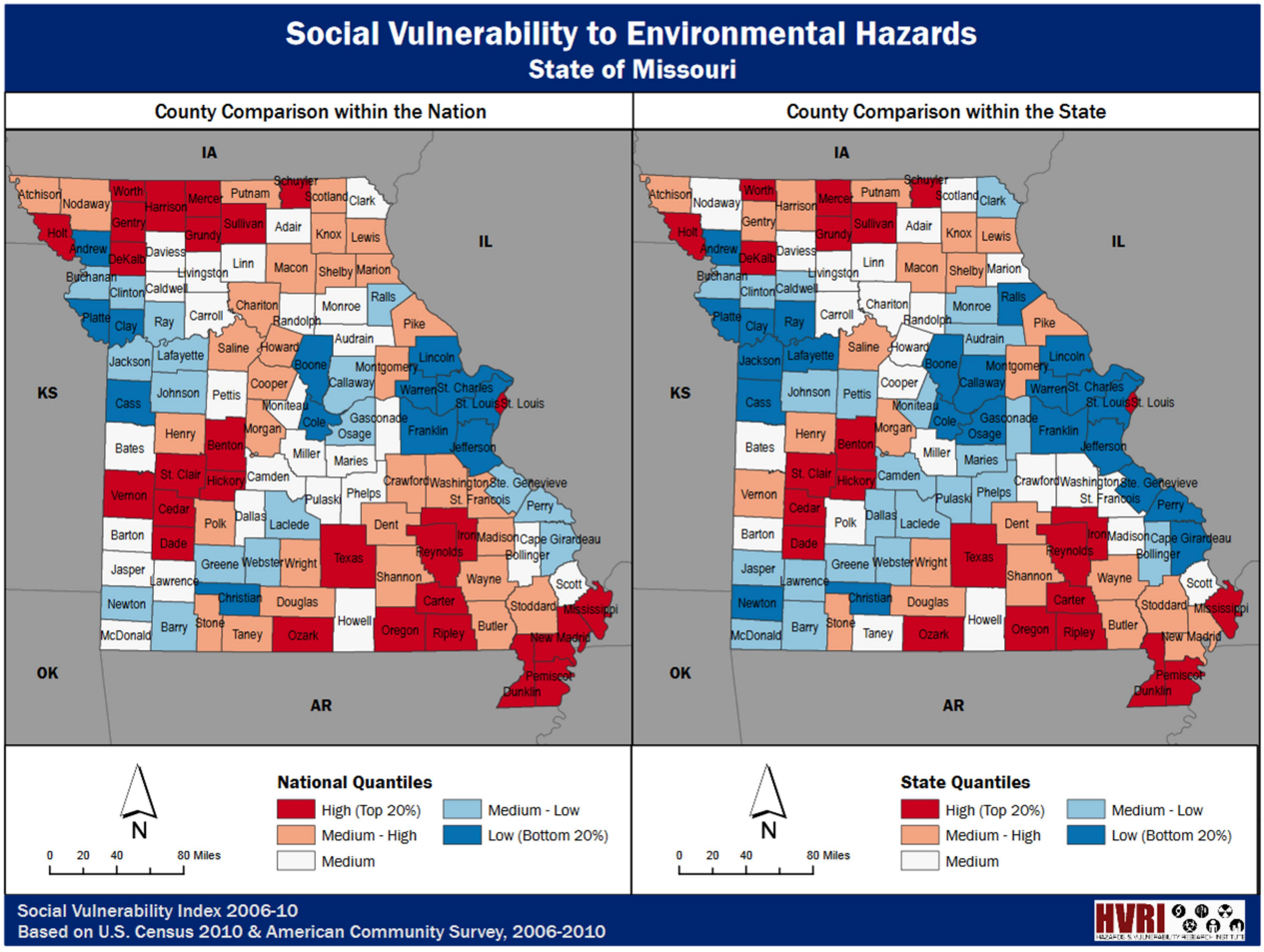
Caldwell County Population 2010 by Community

Jurisdiction	2010 Population
Caldwell County	9,424
City of Braymer	878
City of Breckenridge	383
City of Cowgill	188
City of Hamilton	1,808
City of Kidder	323
City of Kingston	348
City of Polo	575

Source: U.S. Bureau of the Census, Decennial Census, population includes the portions of these cities in adjacent counties



The University of South Carolina Hazard and Vulnerability Research Institute (HVRI) developed an index to evaluate and rank the ability to respond to, cope with, recover from, and adapt to disasters. The index synthesizes 30 socioeconomic variables which research literature suggests contribute to reduction in a community's ability to prepare for, respond to, and recover from hazards. SoVI ® data sources include primarily those from the United States Census Bureau. According to the SoVI rating and the map from the HVRI website (below), in terms of vulnerability to Environmental Hazards Caldwell County falls in the "medium" range, between the top 20 and bottom 20 percent of counties in the United States.

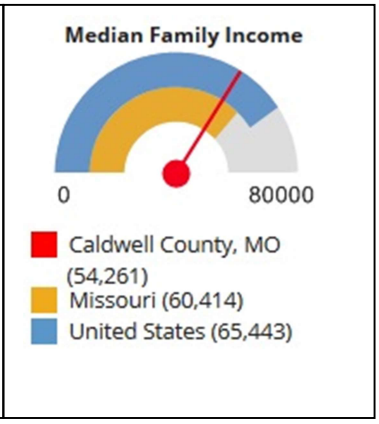


Income, Poverty, and Unemployment

Caldwell County Median Household Income

Report Area	Total Family Households	Average Family Income	Median Family Income
Caldwell Co.	2,589	$63,279	$54,261
Missouri	1,532,908	$77,368	$60,414
United States	76,958,064	$86,963	$65,443

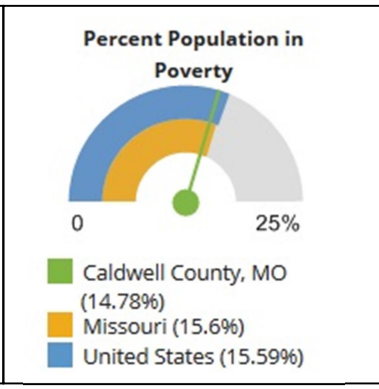
Note: This indicator is compared with the state average.
Data Source: US Census Bureau, American Community Survey.
2010-14. Source geography: Tract



Caldwell County Percent Below Poverty

Report Area	Total Population	Population in Poverty	Percent Population in Poverty
Caldwell Co.	8,950	1,323	14.78%
Missouri	5,847,086	912,291	15.6%
United States	306,226,400	47,755,608	15.59%

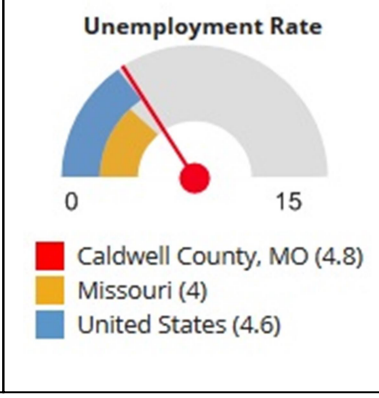
Note: This indicator is compared with the state average.
Data Source: US Census Bureau, American Community Survey.
2010-14. Source geography: Tract



Caldwell County Unemployment Rate

Report Area	Labor Force	Number Employed	Number Unemployed	Unemployment Rate
Caldwell County, MO	4,578	4,358	220	4.8
Missouri	3,149,511	3,022,367	127,144	4
United States	159,938,718	152,603,936	7,334,782	4.6

Note: This indicator is compared with the state average. Data Source: US Department of Labor, Bureau of Labor Statistics.
2016 - May. Source geography: County



Labor Statistics

In civilian labor force, total, percent of population age 16 years+, 2010-2014 : 57.7%

Subject	Caldwell County Number	Caldwell County Percent	Missouri
Total Full-time and Part-time employment (BEA), 2013			
Total Employment	4,670		3,579,873
Farm employment	910	19.5	2.8
Local government	583	12.5	7.7
Retail Trade	436	9.3	10.4
Construction	432	9.3	5.1
Other services, except public administration	405	8.7	5.8
Real estate and rental and leasing	263	5.6	3.8
Finance and insurance	256	5.5	5.4
Transportation and warehousing	240	5.1	3.4
Administrative and waste services	214	4.6	5.6
Professional and technical services	140	3.0	5.5

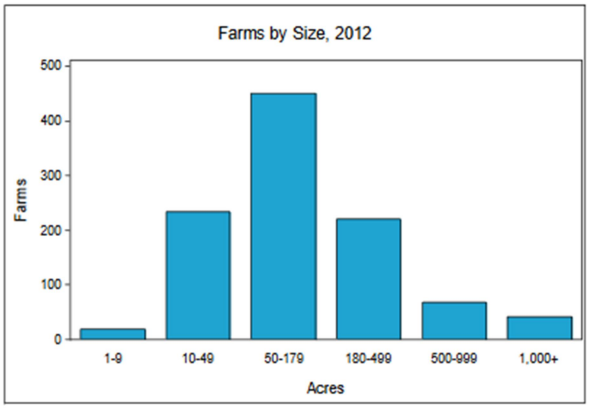
UM Extension Social and Economic Profile, Caldwell County, MO

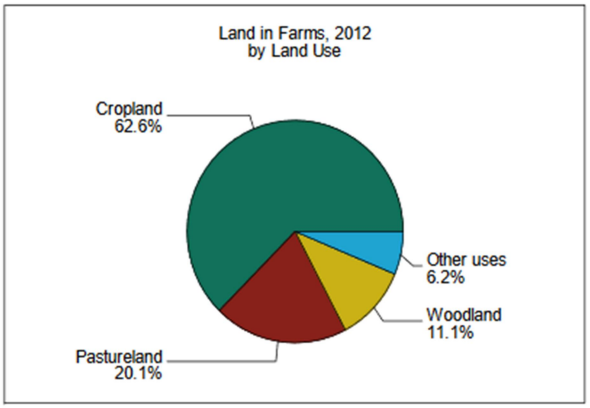
Travel to Work Data from the ACS ACS			
Workers 16+ Who Commute to Work	3,603		2,625,653
Drive Alone to work	2,959	77.4	81.4
Take Public Transportation	1	0.0	1.4
Walk to Work	82	2.1	2.0
Work at Home	222	5.8	4.2
Average Commuting Time	33		23

Missouri Census Data Center (MCDC) ACS Profile Report: 2009-2013 (5-year estimates)

Agriculture

	2012	2007	% change
Number of Farms	1,035	1,048	- 1
Land in Farms	244,528 acres	250,108 acres	- 2
Average Size of Farm	236 acres	239 acres	- 1
Market Value of Products Sold	$38,855,000	$43,385,000	- 10
Crop Sales $24,241,000 (62 percent) Livestock Sales $14,614,000 (38 percent)			
Average Per Farm	$37,541	$41,398	- 9
Government Payments	$5,312,000	$4,923,000	+ 8
Average Per Farm Receiving Payments	$7,227	$6,443	+ 12





Source – 2012 Census of Agriculture

FEMA Hazard Mitigation Assistance Grants in Planning Area

The only jurisdiction currently working towards an application for Hazard Mitigation Assistance is the Polo School district, which plans to storm proof a newly constructed early-childhood education building.

2.2 Jurisdictional Profiles and Mitigation Capabilities

Caldwell County

By Missouri Statute **(**Section 48.020.1) Caldwell County is defined as a 3rd Class County, meaning its assessed valuation is less than six hundred million dollars. It is governed by an elected board of Commissioners composed of a presiding commissioner and two associate commissioners. Other positions within Caldwell County's government include:

- Assessor
- Circuit Clerk
- County Clerk
- Collector
- Coroner
- Emergency Manager
- Prosecuting Attorney
- Public Administrator
- Recorder
- Sherriff
- Treasurer

Mitigation Initiatives/Capabilities

The Capabilities of Caldwell County and it's communities to conduct planning and implement actions through that venue is quite limited, both by budgetary concerns and the political climate of the area. The County doesn't have planning and zoning, and even though most communities have ordinances, they tend to be outdated, with little to no enforcement.

The County Emergency Management Director (EMD) plans and directs disaster response or crisis management activities, provides disaster preparedness training, and prepares emergency plans and procedures for natural (e.g., hurricanes, floods, earthquakes), wartime, or technological (e.g., nuclear power plant emergencies or hazardous materials spills) disasters or hostage situations. The EMD is also the County Floodplain Manager, charged with the daily implementation of flood loss reduction activities including enforcing the community's flood damage prevention ordinance and related policies of the community, and any of the activities related to administration of the National Flood Insurance Program (NFIP).

Mitigation Capabilities Summary Table

CAPABILITIES	Caldwell County	City of Braymer	City of Breckenridge	City of Cowgill	City of Hamilton	City of Kidder	City of Kingston	City of Polo
Planning Capabilities								
Comprehensive Plan	✓	X	X	X	✓	X	X	X
Builder's Plan	X	X	X	X	X	X	X	X
Capital Improvement Plan		X	X	X	X	X	X	X
Local Emergency Plan	✓	X	X	X	✓	X	X	X
County Emergency Plan	✓	✓	✓	✓	✓	✓	✓	✓
Local Recovery Plan	X	X	X	X	X	X	X	X
County Recovery Plan	X	X	X	X	X	X	X	X
Local Mitigation Plan	✓	X	X	X	X	X	X	X
County Mitigation Plan	✓	✓	✓	✓	✓	✓	✓	✓
Local Mitigation Plan (PDM)	X	X	X	X	X	X	X	X
County Mitigation Plan (PDM)	X	X	X	X	X	X	X	X
Debris Management Plan	X	X	X	X	X	X	X	X
Economic Development Plan	X	X	X	X	✓	X	X	X
Transportation Plan	✓	X	X	X	X	X	X	X
Land-use Plan	✓	X	X	X	X	X	X	X
Flood Mitigation Assistance (FMA) Plan	X	X	X	X	X	X	X	X
Watershed Plan	✓	X	X	X	X	X	X	X
Firewise or other fire mitigation plan	X	X	X	X	X	X	X	X
School Mitigation Plan	X	X	X	X	X	X	X	X
Critical Facilities Plan (Mitigation/Response/Recovery)	X	X	X	X	X	X	X	X
Policies/Ordinance								
Zoning Ordinance	✓	X	X	X	✓	X	X	X
Building Code	✓	✓	X	X	✓	X	✓	X
Floodplain Ordinance	✓	X	X	X	X	X	X	X
Subdivision Ordinance	✓	X	X	X	✓	X	X	✓
Tree Trimming Ordinance	✓	X	X	X	✓	X	X	✓

CAPABILITIES	Caldwell County	City of Braymer	City of Breckenridge	City of Cowgill	City of Hamilton	City of Kidder	City of Kingston	City of Polo
Nuisance Ordinance	✓	✓	✓	✓	✓	X	X	✓
Storm Water Ordinance	✓	X	X	X	✓	X	X	X
Drainage Ordinance	✓	X	X	X	✓	X	X	X
Site Plan Review Requirements	X	X	X	X		X	X	X
Historic Preservation Ordinance	X	X	X	X		X	X	X
Landscape Ordinance	✓	X	X	X	✓	X	X	X
Program								
Zoning/Land Use Restrictions	✓	X	X	X	✓	X	X	X
Codes Building Site/Design	✓	X	X	X	✓	X	X	X
National Flood Insurance Program (NFIP) Participant - Nondelegated	X	X	X	X	X	X	X	X
NFIP Participant - Delegated	✓	X	X	X	X	X	X	X
NFIP Community Rating System (CRS) Participating Community	X	X	X	X	X	X	X	X
Hazard Awareness Program	X	X	X	X	X	X	X	X
National Weather Service (NWS) Storm Ready	X	X	X	X	X	X	X	X
Building Code Effectiveness Grading (BCEGs)	X	X	X	X	X	X	X	X
ISO Fire Rating	X	X	X	X	✓	X	X	X
Economic Development Program	X	X	X	X	X	X	X	X
Land Use Program	X	X	X	X	X	X	X	X
Public Education/Awareness	X	X	X	X	X	X	X	X
Property Acquisition	X	X	X	X	X	X	X	X
Planning/Zoning Boards	X	X	X	X	✓	X	X	X
Stream Maintenance Program	X	X	X	X	X	X	X	X
Tree Trimming Program	X	X	X	X	X	X	X	X
Engineering Studies for Streams (Local/County/Regional)	X	X	X	X	X	X	X	X
Mutual Aid Agreements	X	X	X	X	✓	X	X	X

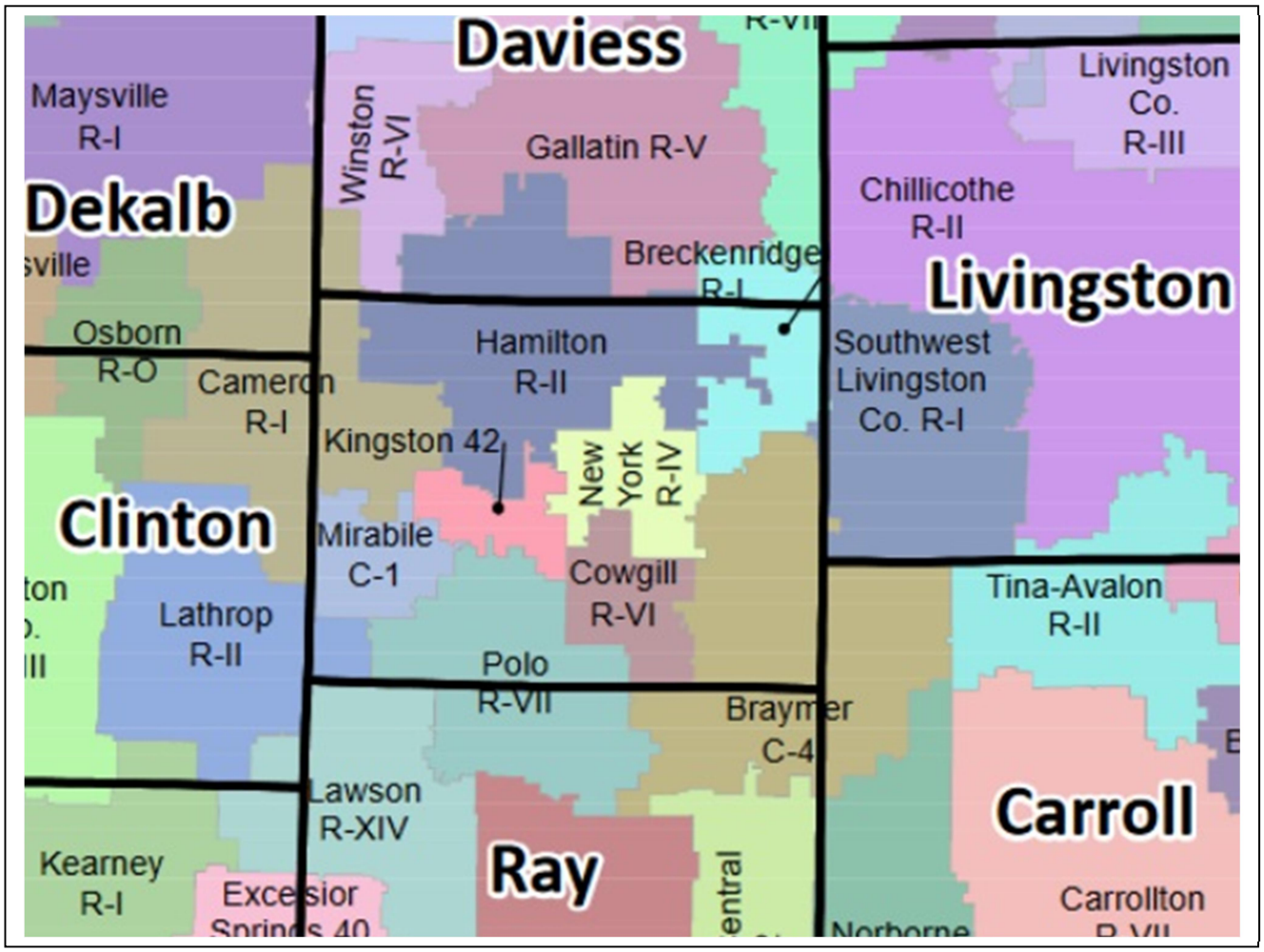
CAPABILITIES	Caldwell County	City of Braymer	City of Breckenridge	City of Cowgill	City of Hamilton	City of Kidder	City of Kingston	City of Polo
Studies/Reports/Maps								
Hazard Analysis/Risk Assessment (Local)	✓	✓	✓	✓	✓	✓	✓	✓
Hazard Analysis/Risk Assessment (County)	✓	✓	✓	✓	✓	✓	✓	✓
Flood Insurance Maps	✓	X	X	X	X	X	✓	X
FEMA Flood Insurance Study (Detailed)	X	X	X	X	X	X	X	X
Evacuation Route Map	X	X	X	X	X	X	X	X
Critical Facilities Inventory	X	X	X	X	X	X	X	X
Vulnerable Population Inventory	X	X	X	X	X	X	X	X
Land Use Map	X	X	X	X	X	X	X	X
Staff/Department								
Building Code Official	X	X	X	X	✓	X	X	X
Building Inspector	X	X	X	X	✓	X	X	X
Mapping Specialist (GIS)	X	X	X	X	X	X	X	X
Engineer	X	X	X	X	X	X	X	X
Development Planner	X	X	X	X	X	X	X	X
Public Works Official	X	X	X	X	X	X	X	X
Emergency Management Coordinator	✓	X	X	X	✓	X	X	X
NFIP Floodplain Administrator	X	X	X	X	X	X	X	X
Bomb and/or Arson Squad	X	X	X	X	X	X	X	X
Emergency Response Team	X	X	X	X	X	X	X	X
Hazardous Materials Expert	X	X	X	X	X	X	X	X
Local Emergency Planning Committee	✓	✓	✓	✓	✓	✓	✓	✓
County Emergency Management Commission	✓	✓	✓	✓	✓	✓	✓	✓
Sanitation Department	X	X	X	X	✓	X	X	X
Transportation Department	X	X	X	X	X	X	X	X
Economic Development Department	X	X	X	X	X	X	X	X
Housing Department	X	X	X	X	X	X	X	X
Planning Consultant	X	X	X	X	X	X	X	X
Regional Planning Agencies	✓	✓	✓	✓	✓	✓	✓	✓

CAPABILITIES	Caldwell County	City of Braymer	City of Breckenridge	City of Cowgill	City of Hamilton	City of Kidder	City of Kingston	City of Polo
Historic Preservation	X	X	X	X	X	X	X	X
Non-Governmental Organizations (NGOs)								X
American Red Cross	X	X	X	X	X	X	X	X
Salvation Army	X	X	X	X	X	X	X	X
Veterans Groups	X	X	X	X	X	X	X	X
Environmental Organization	X	X	X	X	X	X	X	X
Homeowner Associations	X	X	X	X	X	X	X	X
Neighborhood Associations	X	X	X	X	X	X	X	X
Chamber of Commerce	X	X	X	X	✓	X	X	X
Community Organizations (Lions, Kiwanis, etc.	✓	✓	✓	✓	✓	✓	✓	✓
Financial Resources								
Apply for Community Development Block Grants	✓	✓	✓	✓	✓	✓	✓	✓
Fund projects through Capital Improvements funding	X	X	X	X	X	X	X	X
Authority to levy taxes for specific purposes	✓	✓	✓	✓	✓	✓	✓	X
Fees for water, sewer, gas, or electric services	X	✓	✓	✓	✓	✓	✓	X
0Impact fees for new development	X	X	X	X	X	X	X	X
Incur dept through general obligation bonds	✓	✓	✓	✓	✓	✓	✓	X
Incur debt through special tax bonds	✓	✓	✓	✓	✓	✓	X	✓
Incur debt through private activities	✓	✓	✓	✓	✓	✓	✓	✓
Withhold spending in hazard prone areas	✓	✓	✓	✓	✓	✓	X	✓

Source: Data Collection questionnaires and phone audits

Public School District Profiles and Mitigation Capabilities

As can easily be seen in the map below, Caldwell County is served by many school districts. Some of these districts are located wholly within Caldwell County and have all their school campuses and infrastructure inside the County. Others do not. Any school district whose boundaries intersect with that of Caldwell County was invited to be part of the Hazard Mitigation Planning process.



School District Profiles

Braymer C-4 (013-061)

Phone: 660-645-2284
Fax: 660-645-2780
E-mail: dregan@braymerc4.net

400 Bobcat Avenue
Braymer, MO 64624-9750

County-District Code: 013-061
County: Caldwell

Supervisory Area: H
MSIP: Accredited

Assessed Valuation: $0
Tax Levy: $0.0000

			Enrollment (Prior Year)		
	Schools	Cert. Staff	Residents	Non-Res.	Total
Elementary Schools	1	20	189	0	189
Middle Schools	0	0	0	0	0
Jr. High Schools	0	0	0	0	0
High Schools	1	16	139	4	143
Total	2	36	328	4	332

Name	Title	Yrs in District
Mr. Larry Shoe	Pres. of Bd.	
Mrs. Vickie Davidson	Secy. of Bd.	
Mr. Don Regan	Supt.	9
Mrs. Tina Gladieux	Secy. To Supt.	4
Mrs. Traci Heussner	Prof. Dev. Chairperson	

Braymer High (1050)

400 Bobcat Avenue Braymer, MO 64624-9750
Phone: 660-645-2284 Fax:660-645-2780

Grade Span: 07-12

Principal: Mr. Mitchel S Barnes (8 years in district)
E-mail: mbarnes@braymerc4.net

Braymer Elem. (4020)

400 Bobcat Avenue Braymer, MO 64624-9750
Phone: 660-645-2284 Fax:660-645-2780

Grade Span: PK-06

Principal: Mrs. Lyndsey Hall (11 years in district)
E-mail: lhall@braymerc4.net

Breckenridge R-I (013-054)

Phone: 660-644-5715
Fax: 660-644-5710
E-mail: bskinner@breckenridger1.org

400 W Colfax St.
Breckenridge, MO 64625-9608

County-District Code: 013-054
County: Caldwell

Supervisory Area: H
MSIP: Accredited

Assessed Valuation: $0
Tax Levy: $0.0000

			Enrollment (Prior Year)		
	Schools	Cert. Staff	Residents	Non-Res.	Total
Elementary Schools	1	16	37	0	37
Middle Schools	0	0	0	0	0
Jr. High Schools	0	0	0	0	0
High Schools	1	13	27	0	27
Total	2	29	64	0	64

Name	Title	Yrs in District
Mrs. Terri Adams	Pres. of Bd.	
Mrs. Rosemary Sayers	Secy. of Bd.	
Mr. Brent Skinner	Supt.	10
Mrs. Angela D Eller	Secy. To Supt.	16
Mrs. Lori L Alexander	Bkpr.	16
Mrs. Brenda Toot	Prof. Dev. Chairperson	

Breckenridge High (1050)

400 W Colfax St. Breckenridge, MO 64625-9608

Grade Span: 07-12

Phone: 660-644-5715 Fax:660-644-5710

Principal: Mr. Brent Skinner (10 years in district)

E-mail: bskinner@breckenridger1.org

Breckenridge Elem. (4020)

400 W Colfax St. Breckenridge, MO 64625-9608

Grade Span: PK-06

Phone: 660-644-5715 Fax:660-644-5710

Principal: Mr. Brent Skinner (10 years in district)

E-mail: bskinner@breckenridger1.org

Cowgill R-VI (013-058) (Elementary District)

Phone: 660-255-4415
Fax: 660-255-4224
E-mail: bvassmer@cowgillr6.org

341 E 6th St.
341 E 6th Street
Cowgill, MO 64637-0049

County-District Code: 013-058
County: Caldwell

Supervisory Area: H
MSIP: Accredited

Congressional District: 05, 06
House District: 8
Senate District: 21

Assessed Valuation: $0
Tax Levy: $0.0000
District Information

			Enrollment (Prior Year)		
	Schools	Cert. Staff	Residents	Non-Res.	Total
Elementary Schools	1	12	36	0	36
Middle Schools	0	0	0	0	0
Jr. High Schools	0	0	0	0	0
High Schools	0	0	0	0	0
Total	1	12	36	0	36

Name	Title	Yrs in District
Mr. Paul Pulley	Pres. of Bd.	
Mrs. Toi Cox	Secy. of Bd.	
Mrs. Betty Vassmer	Supt.	8
Mrs. Toi Cox	Secy. To Supt.	10
Mrs. Toi Cox	Prof. Dev. Chairperson	

Cowgill Elem. (4020)

341 E 6th St. Cowgill, MO 64637-0049
Phone: 660-255-4415 Fax:660-255-4224

Grade Span: PK-07

Principal: Mrs. Betty Vassmer (8 years in district)
E-mail: bvassmer@cowgillr6.org

Hamilton R-II (013-055)

Phone: 816-583-2134
Fax: 816-583-2139
E-mail: fordt@hamilton.k12.mo.us

County-District Code: 013-055
County: Caldwell

Congressional District: 06
House District: 2 , 8
Senate District: 12 , 21

419 S Hughes
P.O. Box 130
Hamilton, MO 64644-0130

Supervisory Area: H
MSIP: Accredited

Assessed Valuation: $0
Tax Levy: $0.0000

District Information

			Enrollment (Prior Year)		
	Schools	Cert. Staff	Residents	Non-Res.	Total
Elementary Schools	1	34	297	0	297
Middle Schools	1	20	137	2	139
Jr. High Schools	0	0	0	0	0
High Schools	1	29	214	25	239
Total	3	83	648	27	675

Name	Title	Yrs in District
Mr. Darrin Kipp	Pres. of Bd.	
Mrs. Margie R Cox	Secy. of Bd.	
Mr. Troy E Ford	Supt.	8
Mrs. Margie R Cox	Secy. To Supt.	36
Mr. Lysander Overstreet	Prof. Dev. Chairperson	

Penney High (1050)

903 N Davis P.O. Box 130 Hamilton, MO 64644-0130
Phone: 816-583-2136 Fax:816-583-2319

Grade Span: 09-12

Principal: Mr. Tim L Schieber (18 years in district)
E-mail: schieber@hamilton.k12.mo.us

Hamilton Middle (3000)

903 N Davis P.O. Box 130 Hamilton, MO 64644-0130
Phone: 816-583-2173 Fax:816-583-2686

Grade Span: 06-08

Principal: Mr. Dave Richman (8 years in district)
E-mail: richman@hamilton.k12.mo.us

Hamilton Elem. (4020)

7650 N.W. Harley Road P.O. Box 130 Hamilton, MO 64644-0130
Phone: 816-583-4811 Fax:816-583-7919

Grade Span: K-05

Principal: Mrs. Billie F Mcgraw (2 years in district)
E-mail: mcgraw@hamilton.k12.mo.us

Kingston 42 (013-062) (Elementary District)

Phone: 816-586-3111
Fax: 816-586-3903
E-mail: andrea.hieronymus@kingston42.com

139 E Lincoln
Kingston, MO 64650-8102

County-District Code: 013-062
County: Caldwell
Congressional District: 06
House District: 8
Senate District: 21

Supervisory Area: H
MSIP: Accredited
Assessed Valuation: $0
Tax Levy: $0.0000
District Information

			Enrollment (Prior Year)		
	Schools	Cert. Staff	Residents	Non-Res.	Total
Elementary Schools	1	11	33	0	33
Middle Schools	0	0	0	0	0
Jr. High Schools	0	0	0	0	0
High Schools	0	0	0	0	0
Total	1	11	33	0	33

Name	Title	Yrs in District
Ms. Angela Bethel	Pres. of Bd.	
Mrs. Jennifer H Noble	Secy. of Bd.	
Mrs. Andrea Hieronymus	Superintendent	5
Mrs. Jennifer Noble	Secretary	12
Mrs. Renee Gregory	Prof. Dev. Chairperson	

Kingston Elem. (4020)

139 E Lincoln Kingston, MO 64650-8102
Phone: 816-586-3111 Fax:816-586-3903

Grade Span: PK-08

Principal: Mrs. Andrea R Hieronymus (5 years in district)
E-mail: Andrea.Hieronymus@Kingston42.com

Mirabile C-1 (013-060) (Elementary District)

Phone: 816-586-4129
Fax: 816-586-2029
E-mail: troystemberger@gmail.com

2954 S.W. State Route D
Polo, MO 64671-8729

County-District Code: 013-060
County: Caldwell

Supervisory Area: H
MSIP: Accredited

Congressional District: 06
House District: 8
Senate District: 21

Assessed Valuation: $0
Tax Levy: $0.0000
District Information

			Enrollment (Prior Year)		
	Schools	Cert. Staff	Residents	Non-Res.	Total
Elementary Schools	1	10	56	0	56
Middle Schools	0	0	0	0	0
Jr. High Schools	0	0	0	0	0
High Schools	0	0	0	0	0
Total	1	10	56	0	56

Name	Title	Yrs in District
Mr. John R Howard	Pres. of Bd.	
Ms. Katy E Habrock	Secy. of Bd.	
Mr. Troy D Stemberger	Supt.	3
Mrs. Katy E Habrock	Secy. To Supt.	10
Miss Dana Still	Prof. Dev. Chairperson	

Mirabile Elem. (4020)

2954 S.W. State Route D Polo, MO 64671-8729
Phone: 816-586-4129 Fax:816-586-2029

Grade Span: PK-08

Principal: Mr. Troy D Stemberger (3 years in district)

E-mail: troystemberger@gmail.com

New York R-IV (013-057) (Elementary District)

Phone: 816-583-2563
Fax: 816-583-4065
E-mail: nyr4@centurytel.net

6061 N.E. State Route U
Hamilton, MO 64644-9801

County-District Code: 013-057
County: Caldwell
Congressional District: 06
House District: 8
Senate District: 21

Supervisory Area: H
MSIP: Accredited
Assessed Valuation: $0
Tax Levy: $0.0000
District Information

			Enrollment (Prior Year)		
	Schools	Cert. Staff	Residents	Non-Res.	Total
Elementary Schools	1	10	23	0	23
Middle Schools	0	0	0	0	0
Jr. High Schools	0	0	0	0	0
High Schools	0	0	0	0	0
Total	1	10	23	0	23

Name	Title	Yrs in District
Mr. Dan Dixon	Pres. of Bd.	
Mrs. Karen Young	Secy. of Bd.	
Mrs. Debra A Ellis	Supt.	29
Mrs. Karen Young	Secy. To Supt.	4

New York Elem. (4020)

6061 N.E. State Route U Hamilton, MO 64644-9801
Phone: 816-583-2563 Fax:816-583-4065

Grade Span: K-08

Principal: Mrs. Debra A Ellis (29 years in district)
E-mail: nyr4@centurytel.net

Polo R-VII (013-059)

Phone: 660-354-2326
Fax: 660-354-2910
E-mail: wilburnd@polo.k12.mo.us

County-District Code: 013-059
County: Caldwell

Congressional District: 05, 06
House District: 39 , 8
Senate District: 21

300 W School St.
300 W School Street
Polo, MO 64671-9352

Supervisory Area: H
MSIP: Accredited

Assessed Valuation: $0
Tax Levy: $0.0000

District Information

			Enrollment (Prior Year)		
	Schools	Cert. Staff	Residents	Non-Res.	Total
Elementary Schools	1	20	160	0	160
Middle Schools	1	19	143	3	146
Jr. High Schools	0	0	0	0	0
High Schools	1	23	118	21	139
Total	3	62	421	24	445

Name	Title	Yrs in District
Mr. Allen Henry	Pres. of Bd.	
Mrs. Rochelle J Myers	Secy. of Bd.	
Mr. Donald L Wilburn	Supt.	3
Mrs. Bonnie L Roberts	Secy. To Supt.	22
Mrs. Rochelle J Myers	Bkpr.	15
Mrs. Rebecca A Chambers-Arway	Prof. Dev. Chairperson	

Polo High (1050)

300 W School St. Polo, MO 64671-9352 Grade Span: 09-12
Phone: 660-354-2524 Fax:660-354-2738

Principal: Mr. Kyle T Ross (8 years in district)
E-mail: Rossk@polo.k12.mo.us

Polo Middle (3000)

300 W School St. Polo, MO 64671-9352 Grade Span: 05-08
Phone: 660-354-2200 Fax:660-354-3162

Principal: Mrs. Monica R Palmer (4 years in district)
E-mail: Palmerm@polo.k12.mo.us

Polo Elem. (4020)

300 W School St. Polo, MO 64671-9352 Grade Span: K-04
Phone: 660-354-2200 Fax:660-354-3162

Principal: Mrs. Monica R Palmer (4 years in district)
E-mail: Palmerm@polo.k12.mo.us

Summary of School District Mitigation Capabilities

Capability	Braymer C-4	Breckenridge R-1	Cowgill R-VI	Hamilton R-II	Kingston 42	Mirable C-1	New York R-IV	Polo R-VII
Planning Elements								
Master Plan	X	X	X	X	✓	X	X	X
Capital Improvement Plan/Date	X	X	X	✓	X	X	X	X
School Emergency Plan	✓	✓	✓	✓	✓	✓	✓	✓
Personnel Resources								
Full-Time Building Official (Principal)	✓	✓	✓	✓	✓	✓	✓	✓
Emergency Manager	X	✓	✓	X	✓	✓	X	✓
Grant Writer	X	X	X	X	✓	X	X	X
Public Information Officer	✓	✓	✓	X	✓	✓	X	✓
Financial Resources								
Capital Improvements Project Funding	✓	X	X	✓	✓	X	X	X
Local Funds	✓	✓	✓	✓	✓	✓	✓	✓
General Obligation Bonds	X	X	X	✓	✓	X	X	X
Special Tax Bonds	X	X	X	X	✓	X	X	X
Private Activities/Donations	✓	X	X	X	✓	X	X	X
State And Federal Funds/Grants	✓	X	X	✓	✓	X	✓	X
Other								
Public Education Programs	✓	✓	✓	✓	✓	✓	✓	✓
Privately Or Self-Insured?	✓	✓	✓	✓	✓	✓	✓	✓
Fire Evacuation Training	✓	✓	✓	✓	✓	✓	✓	✓
Tornado Sheltering Exercises	✓	✓	✓	✓	✓	✓	✓	✓
Public Address/Emergency Alert System	✓	✓	✓	✓	✓	✓	✓	✓
NOAA Weather Radios	✓	✓	✓	✓	✓	✓	✓	✓
Lock-Down Security Training	✓	✓	✓	✓	✓	✓	✓	✓
Mitigation Programs	X	X	X	X	X	X	X	X
Tornado Shelter/Saferoom	X	X	X	X	X	X	X	✓
Campus Police	X	X	X	X	X	X	X	X

3 RISK ASSESSMENT

3.1 Hazard Identification 3
Review of Existing Mitigation Plans 3
Review Disaster Declaration History 5
Research Additional Sources 6
Hazards Identified 8
Multi-Jurisdictional Risk Assessment 9

3.2 Assets at Risk 9
Critical and Essential Facilities and Infrastructure 9
Other Assets 11

3.3 Future Land Use and Development 14

3.4 Hazard Profiles, Vulnerability, and Problem Statements 15

Natural Hazards

Dam Failure 17
Drought 24
Earthquakes 28
Extreme Heat 34
Fires (Urban/Structural and Wild) 38
Flooding (Flash and River) 41
Thunderstorm/High Winds/Lightning/Hail 48
Tornado 53
Winter Weather/Snow/Ice/Severe Cold 57

Man Made/Technological Hazards

Attack 63
Civil Disorder 68
Cyber Attack 75
Hazardous Materials Release 78
Mass Transportation Incident 83
Public Health Emergencies / Environmental Issues 85
Special Events 94
Terrorism 97
Utility Failure 109
Electromagnetic Pulse (EMP) 112

Risk Assessment

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

This chapter is divided into four main parts:

- **Section 3.1 Hazard Identification** identifies the hazards that threaten Caldwell County and provides a factual basis for elimination of hazards from further consideration;
- **Section 3.2 Assets at Risk** provides Caldwell County's total exposure to natural hazards, considering critical facilities and other community assets at risk;
- **Section 3.3 Future Land Use and Development** discusses areas of planned future development
- **Section 3.4 Hazard Profiles and Vulnerability Analysis** provides more detailed information about the hazards impacting Caldwell County. For each hazard, there are three sections: 1) Hazard Profile provides a general description and discusses the threat to Caldwell County, 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 assets at risk to natural hazards; and 3) Problem Statement briefly summarizes the problem and develops possible solutions.

3.1 Hazard Identification

3.1.1 Review of Existing Mitigation Plan

Hazards Included

For the Caldwell County Mitigation Plan Update, the hazards discussed in original plan were reviewed to determine if changes were warranted. The planning committee determined that conditions in the planning area remained largely unchanged and therefore all of the hazards addressed in the previous plan should be addressed in the update. Those hazards are:

- Thunderstorm: High Winds/ Hail/ Lightning/ Tornado
- Flood: Riverine/Flash Flooding
- Severe Winter Weather: Extreme Cold/ Ice Storm/ Heavy Snowfall
- Drought
- Heat wave
- Earthquake
- Dam Failure
- Fire

While previous Hazard Mitigation Plans addressed only “natural” hazards, the planning committee decided to upgrade the Caldwell County plan to include man made and technological hazards in its analysis. The new hazards included in the plan update are:

- Attack: Nuclear/ Conventional/Chemical/ Biological
- Civil Disorder
- Hazardous Materials release; Fixed Facility / Transportation incidents
- Mass Transportation Accident
- Public Health Emergencies/ Environmental Issues
- Special Events
- Terrorism
- Utility disruption/failure
- Electromagnetic Pulse (EMP)

Hazards Excluded and Why

Landslides and land subsidence/sinkholes, according to the USGS website, these are not likely to occur in Caldwell County due to the type of soil and substructure in Northern Missouri. A map from the Missouri Geological Survey (right) highlights this point.



Coastal storms - hurricanes or tsunamis- were excluded, for obvious reasons.

Geothermal activity is not present in or near the County, and was therefore excluded.

Levees were briefly considered, but because there are no major regulated levee systems in the County and virtually no available data on unregulated levees they were omitted from the plan.

Nuclear Facilities were not considered, as the closest nuclear facilities were in excess of 50 miles, which per the 2013 update of the State Hazard Mitigation Plan is the radius of potential contamination hazard for water and soil in the event of a catastrophic incident.

3.1.2 Review of Disaster Declaration History

Disasters always occur at the local level. For some types of natural disasters, like slow rising floods, warning is available. Other disasters, like tornadoes, may happen with little or no warning. The citizens in the area where the event occurs and their local governments and voluntary agencies are the first to have to cope with the damage. The local government maintains control of all assets used in the response and recovery efforts, regardless of the source of those assets. Local governments must plan and prepare for this role with the support of the State and Federal government. When a local jurisdiction does not have the resources it needs to respond to a disaster, it turns to the State government for assistance. The State government may have many local jurisdictions requesting aid at the same time. State governments serve as agents for the local jurisdictions if Federal disaster assistance is needed. Local governments cannot directly access Federal program. When a disaster strikes and is so severe that the local governments and the State governments together cannot provide the needed resources, then the Federal government becomes the source for those resources. The Federal Emergency Management Agency (FEMA) is the Federal agency that coordinates the activation and implementation of the Federal Response Plan (FRP), so the States work with FEMA to access Federal programs and support.

Table 3.1. FEMA Disaster Declarations that included Caldwell County Missouri, 2005-2015

Disaster Number	Declaration Description/ Date	Disaster Event Period	Individual Assistance (IA) Public Assistance (PA)
1708	Severe Storms and Flooding/ June 11, 2007	May 05. 2007 – May 18, 2007	IA
1736	Severe Winter Storms/ December 27, 2007	December 6, 2007 – December 15, 2007	PA
1934	Severe Storms, Flooding, and Tornadoes/ August 17, 2010	June 12, 2010 – July 31, 2010	PA
1961	Severe winter storm and blizzard / March 23, 2011	January 31, 2011-February 05, 2011	PA
4238	Severe Storms, Tornados, Strait Line Winds, Flooding/ August 7, 2015	May 15, 2015-July 27, 2015	PA

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

3.1.3 Research Additional Sources

Many different sources were used to compile and analyze data on natural hazards in Caldwell County:

- Missouri Hazard Mitigation Plans (2010 and 2013)
- Previously approved planning area Hazard Mitigation Plan (2011)
- Federal Emergency Management Agency (FEMA)
- Missouri Department of Natural Resources (MDNR)
- National Drought Mitigation Center Drought Reporter
- US Department of Agriculture's (USDA) Risk Management Agency Crop Insurance Statistics
- National Agricultural Statistics Service (Agriculture production/losses)
- Data Collection Questionnaires completed by each jurisdiction
- State of Missouri GIS data
- Environmental Protection Agency
- Flood Insurance Administration

- Hazards US (HAZUS)
- Missouri Department of Transportation
- Missouri Division of Fire Marshal Safety
- Missouri Public Service Commission
- National Fire Incident Reporting System (NFIRS)
- National Oceanic and Atmospheric Administration's (NOAA) National Climatic Data Center (NCDC);
- Pipeline and Hazardous Materials Safety Administration
- Caldwell 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 (citations given in the sources in the body of the plan)

The only centralized source of data for many of the weather-related hazards is the National Oceanic and Atmospheric Administration's (NOAA) National Climatic Data Center (NCDC). Although it is usually the best and most current source, there are limitations to the data which should be noted. The NCDC 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 NCDC 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 NCDC should be cautious as the NWS does not guarantee the accuracy or validity of the information. The NCDC 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.

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

3.1.4 Hazards Identified

The hazards considered under this plan are Damn Failure, Drought, Earthquake, Extreme Heat, Fire (Structural/Urban/Wildland), Flooding (Riverine and Flash), Severe Winter Weather (Blizzard, Ice Storm, and Severe Cold), Thunderstorms (High Winds, Hail, and Lighting), Tornado, Attack, Civil Disorder, Hazardous Materials Release, Mass Transportation Incident, Public Health Emergency/ Environmental Issues, Special Events, Terrorism, Utility Failure, and EMP

Not all hazards impact every jurisdiction. Table 3.2 provides a summary of the jurisdictions impacted by each hazard. An "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 Heat	Fires (Structural/Urban/Wild)	Flooding (River and Flash)	Severe Winter Weather	Thunderstorm/Lightning/Hail/High Wind	Tornado	Severe Winter Weather	Attack	Civil Disorder	Hazardous Material Release	Mass Transportation Incident	Public Health Emergency Environmental Issues	Special Events	Terrorism	Utility Failure	Electromagnetic Pulse (EMP)
Caldwell County	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
City of Braymer	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X
City of Breckenridge	-	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X
City of Cowgill	-	X	X	X	X	-	X	X	X	X	X	X	X		X	X	X	X	X
City of Hamilton	-	X	X	X	X	-	X	X	X	X	X	X	X	X	X	X	X	X	X
City of Kidder	-	X	X	X	X	-	X	X	X	X	X	X	X		X	X	X	X	X
City of Kingston	-	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X
City of Polo	-	X	X	X	X	-	X	X	X	X	X	X	X		X	X	X	X	X
Braymer C-4	-	X	X	X	X	-	X	X	X	X	X	X	X		X	X	X	X	X
Breckenridge R-1	-	X	X	X	X	-	X	X	X	X	X	X	X		X	X	X	X	X
Cowgil R-VI	-	X	X	X	X	-	X	X	X	X	X	X	X		X	X	X	X	X
Hamilton R-II	-	X	X	X	X	-	X	X	X	X	X	X	X		X	X	X	X	X
Kingston 42	-	X	X	X	X	-	X	X	X	X	X	X	X		X	X	X	X	X
Mirable C-1	-	X	X	X	X	-	X	X	X	X	X	X	X		X	X	X	X	X
New York R-IV	-	X	X	X	X	-	X	X	X	X	X	X	X		X	X	X	X	X
Polo R-VII	-	X	X	X	X	-	X	X	X	X	X	X	X		X	X	X	X	X

3.1.5 Multi-Jurisdictional Risk Assessment

Each hazard has a profile in which the risks are assessed on a planning area wide basis. Some hazards, like flooding, vary in risk across the planning area. Discussions of these variations are included in each profile as they apply.

The planning area is fairly uniform in terms of climate, topography, and building construction characteristics. Small communities have greater population and structure density and therefore have greater vulnerability to weather-related hazards. There is little variation in development trends across the planning area, as the Caldwell County area as a whole and each of its communities has slowly lost population over the last decade and some major employers have gone. The County is overwhelmingly rural; with the primary vulnerable assets being crops and livestock. These matters are discussed in greater detail in the vulnerability sections of each hazard.

The hazards that vary across the planning area in terms of risk include dam failure, flash flood, grass or wildland fire, levee failure, river flood, and flash flood. These differences are detailed in each hazard profile under a separate heading.

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. Since the previously approved plan, better data has become available in the form of a structures dataset which recorded all structures present during the data collection period from 2010 to 2014 – all structures visible on high resolution imagery were analyzed and classified. Not only can this data be used within a GIS to depict buildings that may lie within a hazard area, it offers the ability to display those structures by their type and purpose, which makes identifying critical infrastructure much easier. New flood mapping products have also recently become available.

3.2.1 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. **Table 3.3** includes a summary of the inventory of critical and essential facilities and infrastructure in the planning area.

- 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 3.3. Inventory of Critical/Essential Facilities and Infrastructure by Participating 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
Caldwell County	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	X	X	✓	X	X	✓	X	X	X	X	X	✓
City of Braymer	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	X	X	X	X	✓	✓	✓	X	✓	X	X	✓
City of Breckenridge	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	X	X	X	X	X	✓	✓	X	✓	X	X	✓
City of Cowgill	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	X	X	✓	X	X	✓	✓	X	✓	X	X	✓
City of Hamilton	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	X	X	X	✓	✓	✓	X	✓	X	✓	✓
City of Kidder	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	X	X	X	X	X	✓	✓	X	X	X	X	✓
City of Kingston	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	X	X	X	X	✓	X	X	✓	X	X	✓
City of Polo	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	X	X	X	✓	✓	✓	X	✓	X	X	✓
Braymer C-4	X	X	X	X	X	✓	X	X	X	X	X	X	X	X	X	X	X	X	X	✓	X	X	X
Breckenridge R-1	X	X	X	X	X	✓	X	X	X	X	X	X	X	X	X	X	X	X	X	✓	X	X	X
Cowgil R-VI	X	X	X	X	X	✓	X	X	X	X	X	X	X	X	X	X	X	X	X	✓	X	X	X
Hamilton R-II	X	X	X	X	X	✓	X	X	X	X	X	X	X	X	X	X	X	X	X	✓	X	X	X
Kingston 42	X	X	X	X	X	✓	X	X	X	X	X	X	X	X	X	X	X	X	X	✓	X	X	X
Mirable C-1	X	X	X	X	X	✓	X	X	X	X	X	X	X	X	X	X	X	X	X	✓	X	X	X
New York R-IV	X	X	X	X	X	✓	X	X	X	X	X	X	X	X	X	X	X	X	X	✓	X	X	X
Polo R-VII	X	X	✓	X	X	✓	X	X	X	✓	X	X	X	X	X	X	X	X	X	✓	X	X	X

Source: Data Collection Questionnaires; GIS data

3.2.2 Other Assets

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

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

Threatened and Endangered Species:

Common Name	Scientific Name	State Rank	State Status	Federal Status
Indiana Bat	*Myotis sodalis*	Critically Imperiled	Endangered Species	Endangered
Chapman's purpl top tridens	Tridens Flavus Var. Chapmanii	Imperiled	Not ranked	Not Ranked
Hairy-Fruited Sedge	Carex trichocarpa	Critically Imperiled	Unranked	unranked
Trout-perch (Sand Minnow)	Percopsis omiscomaycus	Critically Imperiled	Species of Concern	unranked

Source: U.S. Fish and Wildlife Service, Missouri Department of Conservation

Natural Resources:
The Missouri Department of Conservation (MDC) provides a database of lands the MDC owns, leases, or manages for public use. **Table 3.4** to provide the names and locations of parks and conservation areas in Caldwell County.

Table 3.4. Conservation areas in Caldwell County

Area Name	Type	Location
Bonanza	Conservation Area	From Kingston, take Highway 13 south 2 miles, then Route F east 5 miles.
This area contains forest, old fields, cropland, and grassland. Facilities/features: primitive camping, fishable ponds, numerous fishless ponds, and four permanent streams (Crabapple Creek, Shoal Creek, Brush Creek, and Log Creek). Because of its size and diversity of habitat, Bonanza Conservation Area is managed for a wide range of game and nongame wildlife species. The area's open fields are managed by farming, haying and controlled burning. Other habitat management includes tree, shrub and grass plantings and selective timber harvest. Native grasses have been planted and managed to improve nesting habitat and winter cover.		

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. There are a number of historical sites in Caldwell County. They include the Courthouse, Far West, and the Haun's Mill site.

In 1838, the County Seat was moved from the abandoned Mormon settlement of Far West to the town of Kingston, where a 1 and ½ story log building described in written accounts as "not very attractive" served as the first courthouse. A new courthouse was built sometime between 1847 and 1854, an ostensibly more attractive two-story brick building which was destroyed by a suspicious fire in 1860. Its replacement, described as "a large, commodious, two-story brick building with an old colonial portico in front" was also destroyed by fire in 1896. In 1898 a new Courthouse was commissioned. The Stanberry Press Brick Co. bid the job for $24,827, to be completed in seven months. The building is still in use today and listed on the National Register of Historic Places.



Haun's Mill was established on the banks of Shoal Creek in Fairview Township, Caldwell County, Missouri in 1835–1836 by Jacob Haun, an early Mormon settler. By October of 1838 there were approximately 75 Mormon families living there. On Oct. 30th, 1838 at the peak of "The Mormon War", a militia unit from Livingston County attacked Haun's Mill with the intention of driving the Mormons out. There, eighteen men and boys determined to fight took up positions in the blacksmith shop and were killed in the ensuing gun battle. Their bodies were thrown down a well and the well filled. The survivors sought shelter at Far West. There is a historical site marker located in the approximate vicinity of Haun's Mill and the old well where the dead were buried. The burial site had originally been marked, but in 1941 an unwitting landowner moved the capstone, and now the exact location of the well is unknown.



Far West Monument of the Church of Jesus Christ of Latter Day Saints

Far West became a ghost town soon after the departure of most of the Mormon population.

The county seat was moved to Kingston, Missouri and many of the log houses in Far West were relocated.

Today Far West is a historic site seven miles south of U.S. Highway 36 on State Route D. The Church of Jesus Christ of Latter Day Saints maintains a historic site there.

Economic Resources:

Table 3.5. Major (more than 100) Non-Government Employers in Caldwell County

Employer Name	Main Locations	Product or Service
Missouri Star Quilt Company	Hamilton	The Missouri Star Quilt Company opened for business in 2008, initially selling only a few quilting supplies and offering machine quilting services. They soon expanded their operation to online sales, facilitated by the creation of a YouTube channel featuring quilting tutorial videos which currently (August of 2016) has had more than 86 million views. The company now employs over 150 people and is the largest employer in Caldwell County. Their warehouse operation ships thousands of packages a day to customers all over the world, and the brick and mortar shop has become a tourist attraction drawing national and international visitors.

Source: Major Employer database maintained by the Green Hills Regional Planning Commission

Agriculture

Agriculture is a (arguably "the") major element of the local economy in Caldwell County, a 39 million dollar industry involving 89% of the County's total land area as of the 2012 census of agriculture. Approximately one third of agricultural production in the County involves livestock, with the remainder in crop production.

3.3 Future Land Use and Development

The potential for future development can sometimes be estimated using population data. An increase in population will spur a need for additional housing and attract commercial development. Caldwell County has experienced negligible population change in the last five years.

Jurisdiction	Population 2010	Population 2015	Percent change
Caldwell County	9,424	9,014	- 4.4
Braymer	880	878	- 0.2
Breckenridge	384	383	- 0.3
Cowgill	188	188	0
Hamilton	1,812	1,808	- 0.2
Kidder	323	323	0
Kingston	349	348	- 0.3
Polo	575	575	0

Such limited population growth or decline is generally not accompanied by any significant increases or decreases in the number of housing units.

A proposed recreational lake (Otter Creek) designed to increase regional water supply in a drought-vulnerable part of the State may see an increase in home construction associated with prime real estate around the lake area, but it's difficult to estimate with any accuracy.

School District's Future Development

None of the participating school districts indicated plans for any significant development in the next five years, though Hamilton had vague plans for a multi-purpose building for which they will pursue safe room funding.

3.4 Hazard Profiles, Vulnerability, and Problem Statements

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

Hazard Profiles

Each hazard identified 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 district.

Geographic Location: This section describes the geographic location of the hazard in the planning area. When possible, maps will be used to indicate the specific locations of the planning area that are vulnerable to the subject hazard. For many hazards, the entire planning area is at risk.

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

Previous Occurrences: This section includes available information on historic incidents and their impacts. Historic event records are the best available data for probability calculations. Tables are a good way to convey this data. Records from the previous 20 years (as available) will be used for hazards that are random in occurrence, such as tornadoes. Probability calculations for Hazard occurring more than once annually will include data for the previous 10 years. In the case of events which occur many times annually, data may be limited by criteria such as severity (for example, the NCDC data for hail is limited to events with hail sizes of 2.0” and above).

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

Vulnerability Assessments

Following the hazard profile for each hazard will be the vulnerability assessment. The vulnerability assessment further defines and quantifies populations, buildings, critical facilities, and other community assets at risk to damages from natural hazards, where available. The vulnerability assessments will be based on the best available county-level data, which is in the Missouri Hazard Mitigation Plan (2010). The county-level assessments in the State Plan were based on the following sources:

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

The vulnerability assessments in the Caldwell County's plan will also be based on:

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

Vulnerability Overview

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

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

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

Problem Statements

Each hazard analysis 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.

3.4.1 Dam Failure

Hazard Profile

Hazard Description

A Dam is described by the National Dams Safety Act as an artificial barrier which impounds or diverts water and (1) is more than six feet high and stores 50 acre feet or more, or (2) is 25 feet or more high and stores more than 15 acre feet. Dam failure is the catastrophic structural failure of a dam. This type of hazard is usually the result of neglect, poor design, or structural damage caused by a major event such as an earthquake or strain from prolonged, heavy precipitation. 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.

Data on Dams in Caldwell County has been drawn from two sources; a listing maintained by the Missouri Department of Natural Resources (MoDNR) and the Army Corps of Engineers' National Dam Inventory (NID). Each has its own system of classifying dams. Neither the MDNR nor the NID hazard potential classification references the condition of the dam.

Table 3.6. MDNR Dam Hazard Classification Definitions

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

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

Table 3.7. NID Dam Hazard Classification Definitions

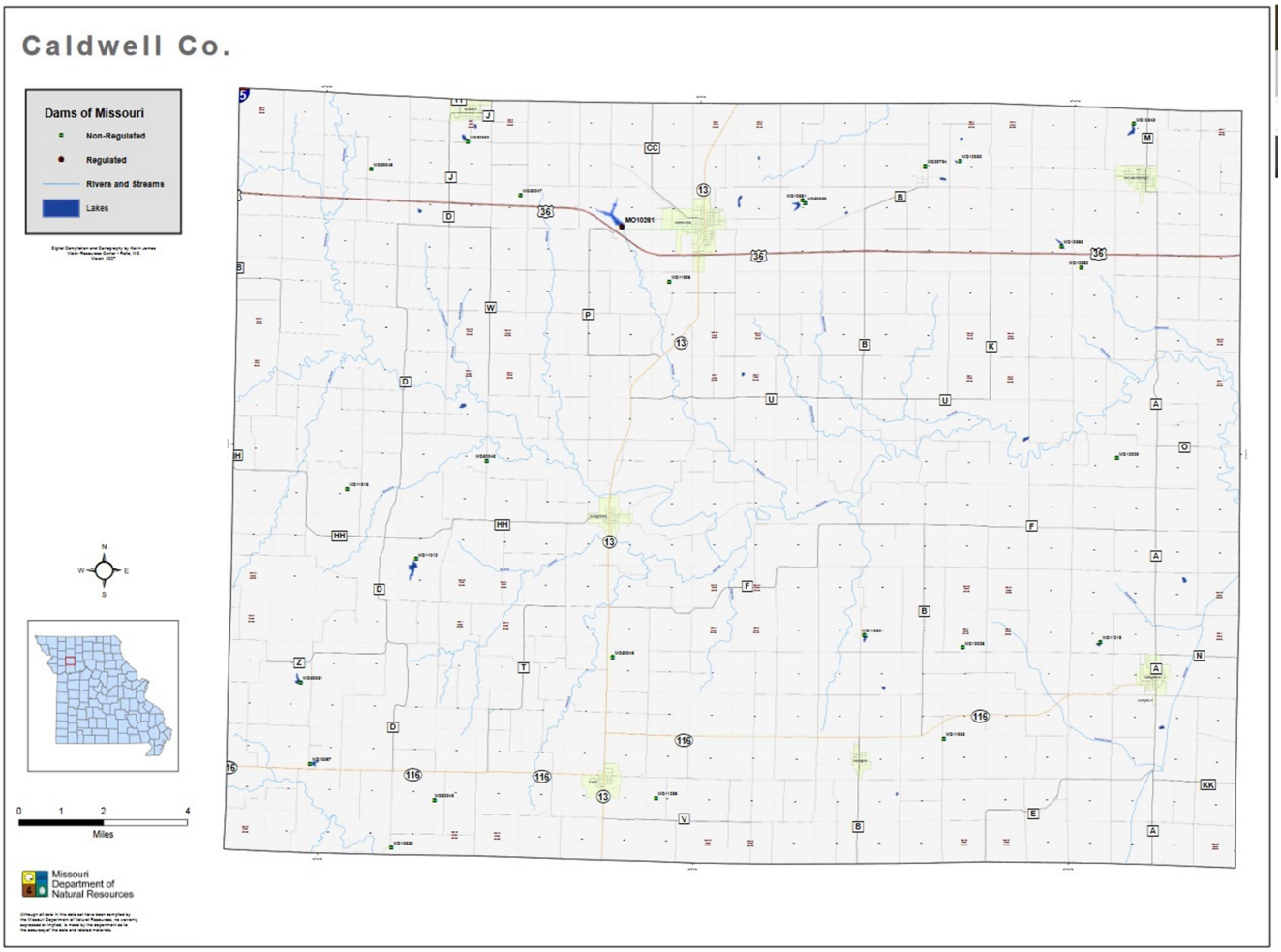
Hazard Class	Definition
Low	or mis-operation results in no probable loss of human life and low economic and/ or environmental losses (primarily limited to owner's property)
Significant	Failure or mis-operation results in no probable loss of human life but can cause economic loss.
High	failure or mis-operation will probably cause loss of human life

Source: National Inventory of Dams

The risk analysis includes information about **all** High Hazard and Class I dams from both the NID and the MDNR databases.

Geographic Location

Dams in Planning Area



According to the Missouri DNR there are 25 dams in Caldwell County, of which only one (The Hamilton City Water Plant Dam) is regulated. The US Army Corps National Inventory of Dams (NID) lists 26, only one of them is of significant requires permitting and inspection: The Hamilton City Water Plant Dam.

The US Army Corps of Engineers National Dam Inventory lists 26 dams in Caldwell Count, 6 rated as high hazard and 20 as low hazard. With the exception of the Hamilton City Water Plant Dam, none of these high hard dams appear to be near any development or significant infrastructure.

Figure 3.2: locations of NID dams located in the planning area.

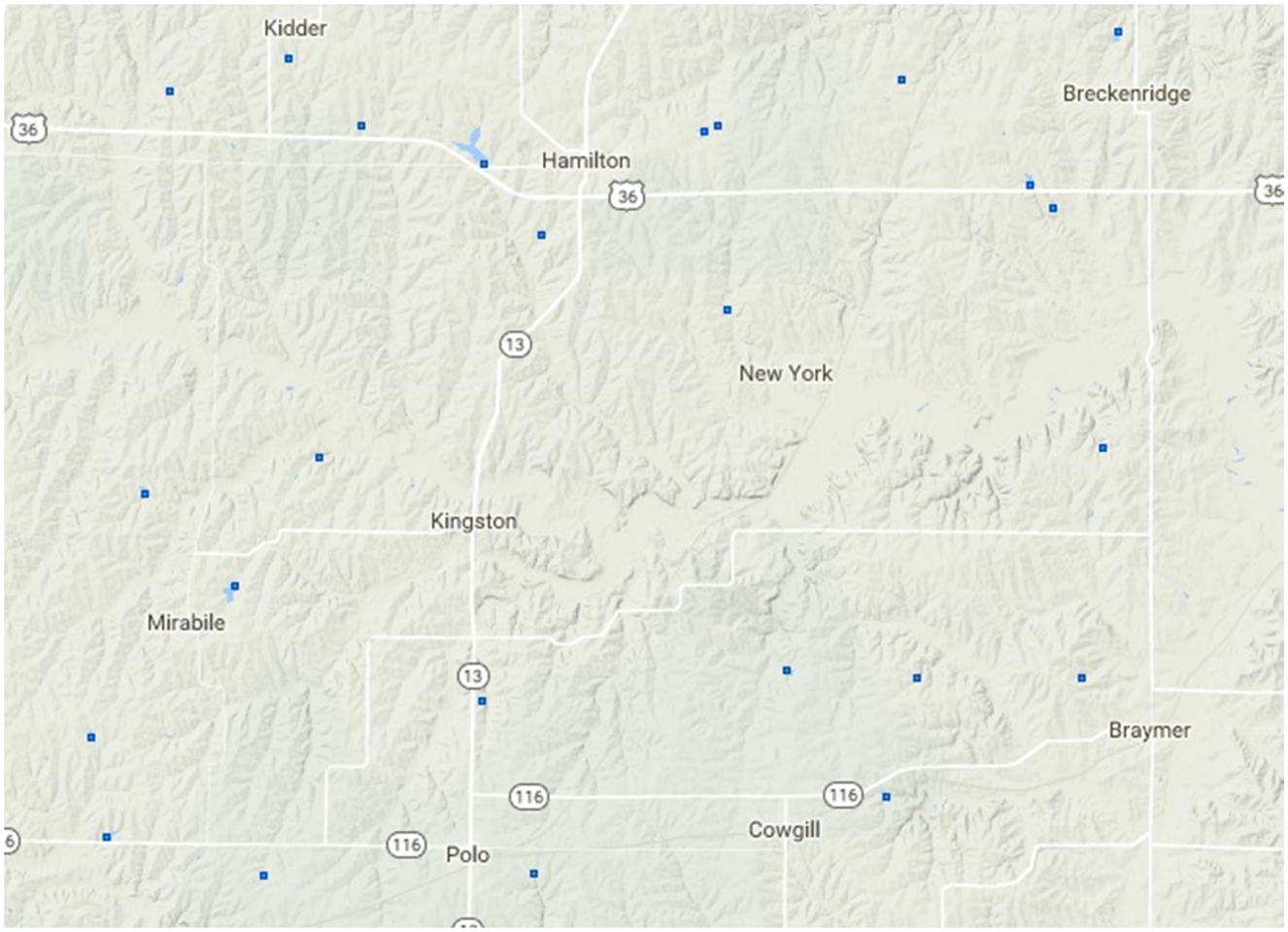


Table 3.17 High Hazard Dams in the Caldwell County Planning Area

Dam Name	Emergency Action Plan (EAP)AP	Dam Height (Ft)	Normal Storage (Acre-feet)	River	Nearest Downstream City	Distance To Nearest City (Miles)
Hamilton Water Plant Dam	Unknown	40	76	Tom Creek	NA	1.0

Sources: Missouri Department of Natural Resources/ Army Corps of Engineers NID

Figure 3.1. Hamilton Water Plant Dam: Areas Impacted in the event of breach.



Severity/Magnitude/Extent

The severity/magnitude of dam failure would be similar in some cases to the impacts associated with flood events (see the flood hazard vulnerability analysis and discussion). Based on the hazard class definitions, failure of any of the High Hazard/Class I dams could result in a serious threat of loss of human life, serious damage to residential, industrial or commercial areas, public utilities, public buildings, or major transportation facilities. Catastrophic failure of any high hazard dams has the potential to result in greater destruction due to the potential speed of onset and greater depth, extent, and velocity of flooding.

There are no dams in Caldwell County for which inundation maps are available. It does appear however that most areas below the various dams in the county are rural, sparsely populated areas. The exception to this is the Hamilton Water Plant Dam – analysis of the local topography indicates that a breach could affect Hwy 36.

Previous Occurrences

According to Stanford University's National Performance of Dams Program, there were 82 dam incidents in Missouri from 1975 to 2013. Of these 82 incidents, 17 percent were failures. According to that same database, none of these incidents involved any high hazard dams in Caldwell County.

Probability of Future Occurrence

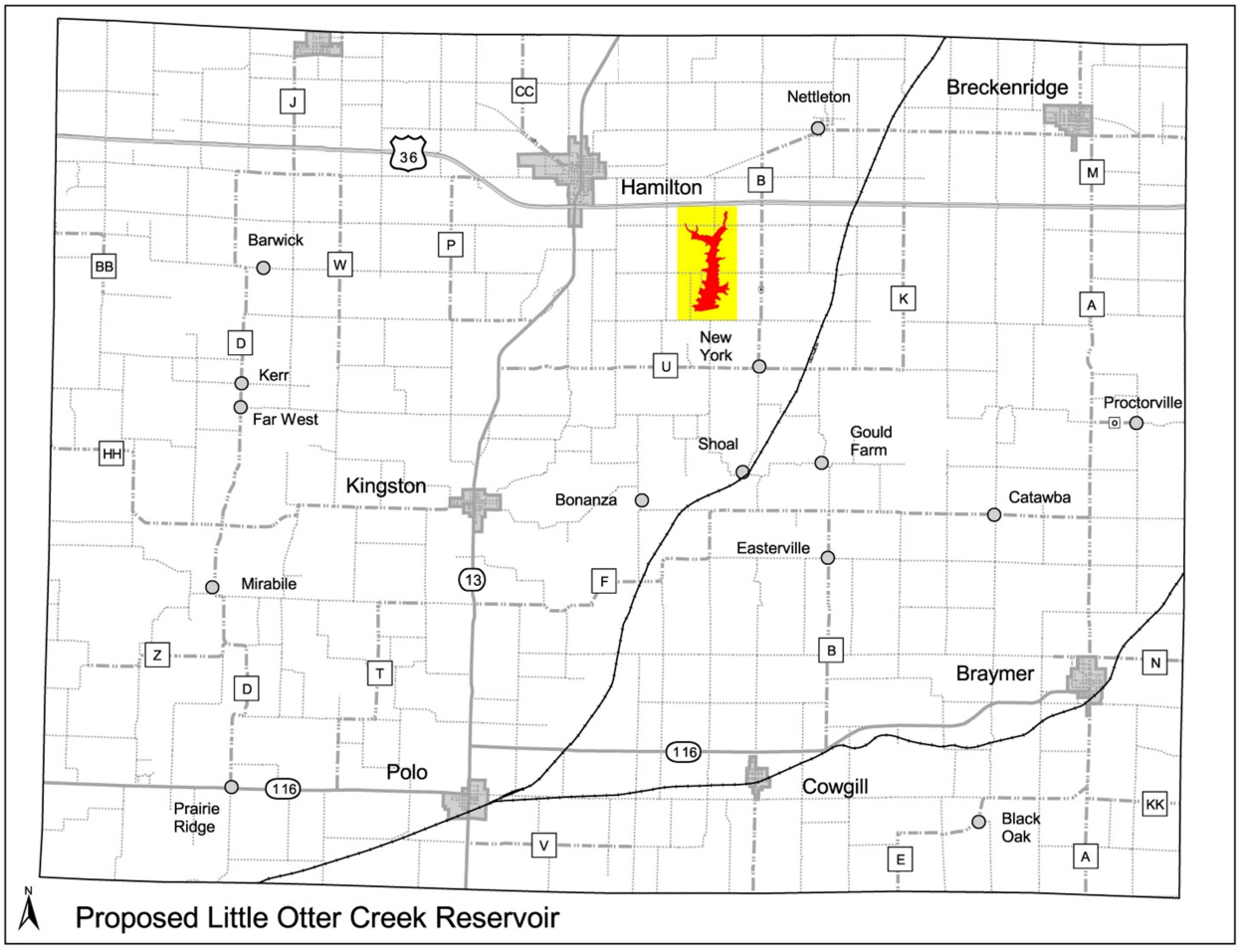
As there are no records of dam failure in Caldwell County on which to calculate probability, such a calculation is not possible.

Vulnerability

Vulnerability to dam failure is limited to a very few areas in Caldwell County, significant risk seems to be confined to a section of Hwy 36 immediately south of the Hamilton City Lake Dam.

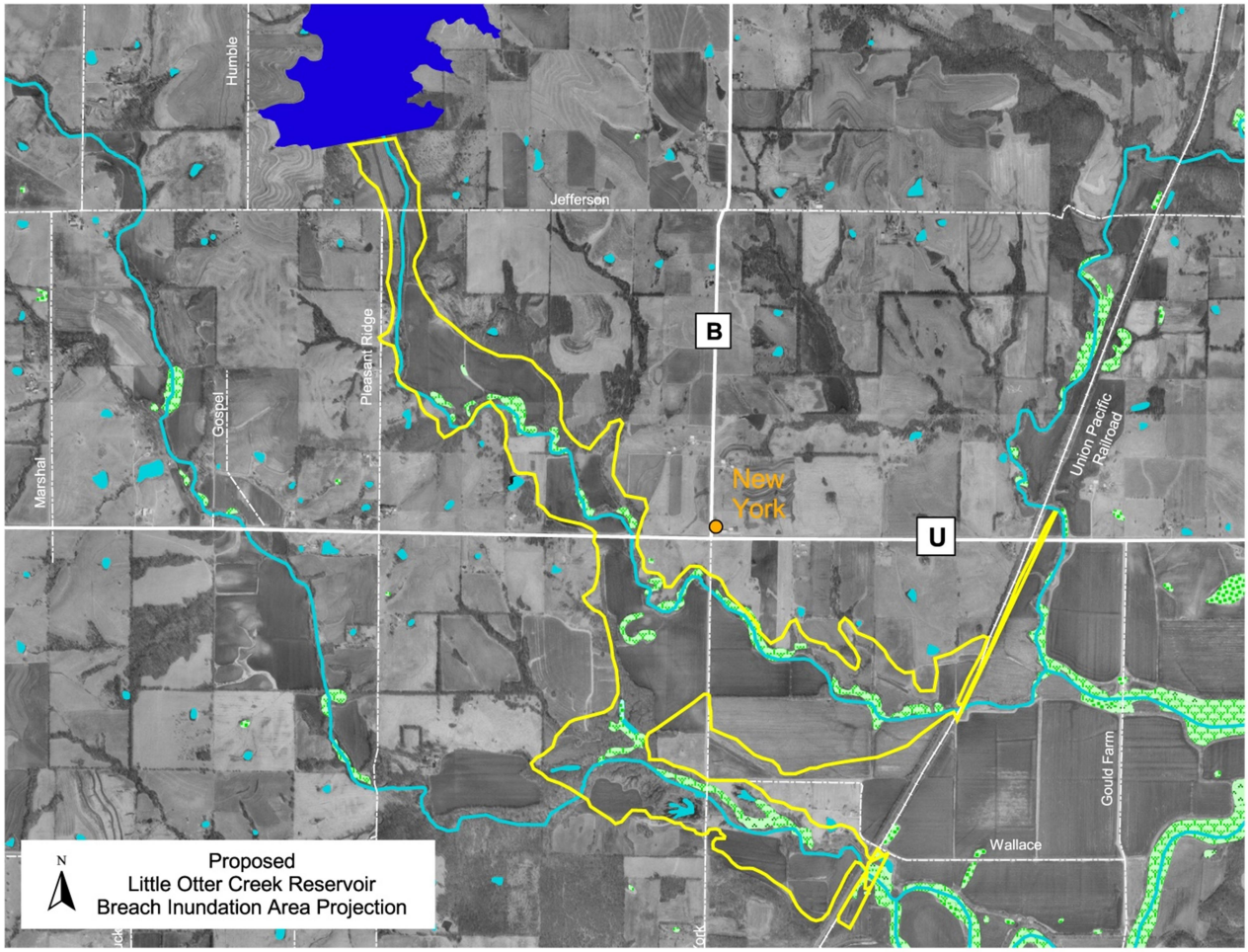
Impact of Future Development

Since 1990 the County has been working towards the construction of a 362 acre lake in the Little Otter Creek Watershed (see maps, below). The proposed lake will be a large reservoir functioning first and foremost to provide water storage for the county, but also to reduce flood damages in the areas south of the lake, provide recreational opportunities and increase wildlife habitat.



The reservoir dam, as planned, is designated as a “Class C” hazard, which indicated that it is located where failure may cause loss of life or significant damage to structures, important infrastructure, and

main transportation lines. It is so designated due to the presence of residential structures, highways, and a railroad in the floodplain south of the dam (see inundation map, below).



Future development in this area will be tightly regulated according to Federal Floodplain management regulations.

There will be a vegetated emergency spillway designed to carry run-off from storms exceeding the 100-year flood return period with minimal damage to the spillway channel.

An emergency action plan must be prepared by the County Commission before construction beings on the reservoir. This plan will outline and define procedures to be implemented in the event that critical conditions develop, including the responsibilities of key personnel who will take any necessary and immediate action as circumstances warrant. The plan should also address the issue of hazards presented to the water supply by the proximity of US Highway 36 (i.e. a transportation related hazardous materials incident).

Potential Losses to Existing Development:

There does not seem to be any significant commercial, industrial, or residential development at risk from dam failure in Caldwell County. The risk that does exist pertains to a section of Hwy 36 just south of the City Lake Dam and whatever traffic might be in the hazard area during a breach, which is an unknown factor that is difficult to quantify. Economic impacts to the area associated with the closure of a major highway and repair activities are likewise difficult to project.

Hazard Summary by Jurisdiction

Jurisdiction	Vulnerability
Caldwell County	A small section of Hwy 36 is vulnerable to impacts from a breach in the Hamilton Dam
City of Braymer	No impacts
City of Breckenridge	No impacts
City of Cowgill	No impacts
City of Hamilton	A small section of Hwy 36 is vulnerable to impacts from a breach in the Hamilton Dam
City of Kidder	No impacts
City of Kingston	No impacts
City of Polo	No impacts
Braymer C-4	No impacts
Breckenridge R-1	No impacts
Cowgil R-VI	No impacts
Hamilton R-II	No impacts
Kingston 42	No impacts
Mirable C-1	No impacts
New York R-IV	No impacts
Polo R-VII	No impacts

Problem Statement

Areas of risk in Caldwell County are very limited and for the most part the only significant potential for impacts is the Hwy 36 Corridor immediately south of the Hamilton City Lake Dam, which could involve the close of a major highway, harm to vehicles and people within the hazard zone in the event of a breach, and lengthy, expensive repairs to the roadway and the dam itself.

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.

Data sources: http://www.drought.unl.edu/ http://droughtreporter.unl.edu/

Geographic Location

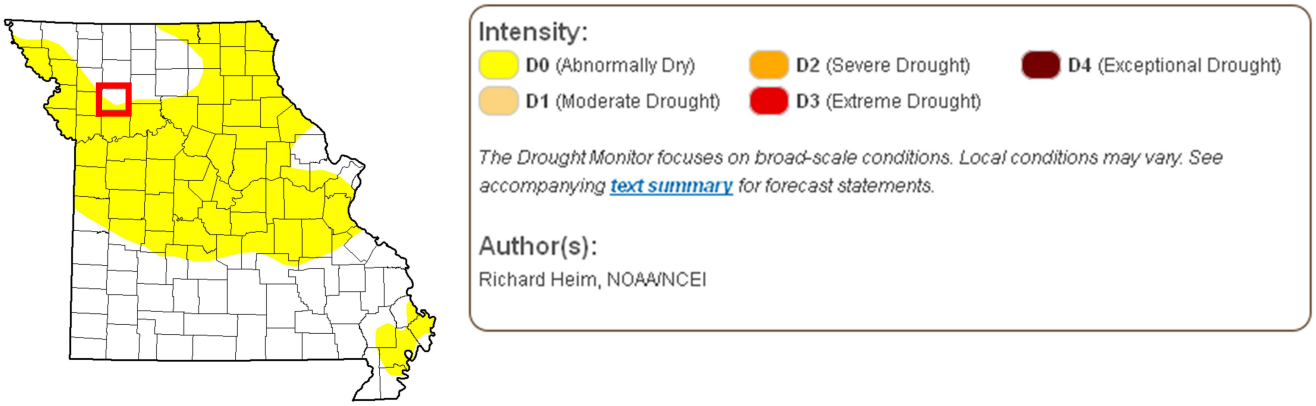
Because of the broad scope of drought, all of Caldwell County is susceptible to this hazard. Agricultural land is extremely vulnerable to drought impacts, and according to US Census data 89% of Caldwell County total land area is classified as farmland, making the impact of drought one that is felt acutely felt by County residents.

Severity/Magnitude/Extent

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. In Caldwell County and Northern Missouri in general, drought has an especially significant effect on drinking water supplies. Ground water is scarce and unreliable in Northern Missouri and most water systems in the region obtain water from surface sources. During prolonged periods of drought, reservoirs may become depleted and stream levels may drop so low that water can't be pumped from them – they may even go completely dry. The impacts of this can be severe.

Figure 3.2. U.S. Drought Monitor Map of Missouri on Thursday November 19, 2015



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

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.

Previous Occurrences

Twelve drought events were reported to NCDC between 1954 and 2014. April 2000 was the driest on record in the state of Missouri, according to the Midwestern Climate Center. The lowest rainfall totals occurred in parts of west central Missouri, where WFO Pleasant Hill received 0.30 inches of precipitation, and Sweet Springs picked up only 0.47 inches. At Kansas City International Airport, 0.65 inches of rain fell during the month, making it the driest April recorded in Kansas City.

April's dry weather represented a continuation of long-term drought dating back to July 1999, as rainfall deficits in most locations exceeded 10 inches and the U.S. Drought Monitor showed most of northern and western Missouri in a severe drought. According to the Missouri State Climatologist, 1999-2000 was the 5th driest July-through-April period on record. The areas hardest hit by the long-term drought were along Missouri's northern border, where rainfall deficits had reached 15 to 20 inches. 2012 saw the worst drought in 25 years. Dry conditions, which started in the spring, intensified during the month of July and continued expanded across Missouri. There were yearly rainfall deficits of 10 to 15 inches. Below normal precipitation continued through July, and Carrollton reported 1.30 inches of rain for the month. The drought continued to intensify though August and the Caldwell County again saw yearly rainfall deficits in the 10 to 15 inch range. That below normal precipitation continued through August, with Carrollton reporting only 1.10 inches of rain for the month. The remnants of Hurricane Isaac brought some much needed relief to drought conditions across the area on the 1st of September, which eased the drought conditions somewhat, but drought remained through September and on into October.

Probability of Future Occurrence

According to the National Climatic Data Center, from 1954-2016, Caldwell County has experienced a total of 10 drought events. The probability of a drought event in any given year is 20%. Long-range outlooks and predicted impacts of climate change can indicate an increased chance of drought.

Vulnerability

Caldwell County has severe drought vulnerability. Surface water sources usually become inadequate during extended drought. The groundwater resources are normally poor, and typically supply enough water only for domestic needs. Irrigation is generally not feasible. When irrigation is practical, groundwater withdrawal may affect other uses. Surface water sources are used to supplement irrigation supplied by groundwater sources.

Past losses in Caldwell County, 2011 - 2015

Total Crop Loss to Drought, in dollars	Acres Affected
$ 17,361,014.27	84,859.83

Potential Losses to Existing Development

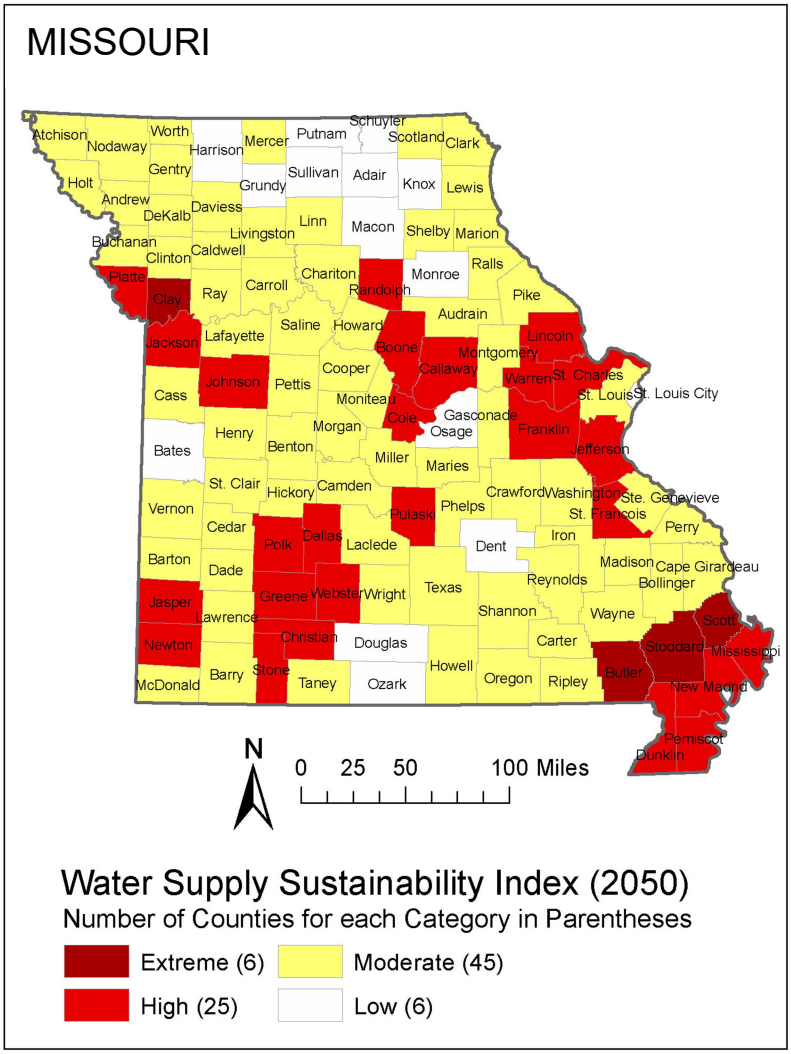
Determining the direct and indirect costs associated with drought is difficult because of the broad impacts of drought and the difficulty of establishing when droughts begin and end.

Impact of Future Development

For the most part there is no development in the County that will affect the impacts of drought on crops. The proposed lake project will alleviate some of the drinking water issues and perhaps enable greater water use for cattle watering, but will likely not facilitate a large scale increase in irrigation or otherwise impact the affect of drought on crops.

Impact of Climate Change

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



Hazard Summary by Jurisdiction

There is no variance by jurisdiction to this threat. Drought conditions would be the same in small communities 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.

Problem Statement

Caldwell County has severe drought vulnerability. Surface water sources usually become inadequate during extended drought. The groundwater resources are normally poor, and typically supply enough water only for domestic needs. Irrigation is generally not feasible. When irrigation is practical, groundwater withdrawal may affect other uses. Surface water sources are used to supplement irrigation supplied by groundwater sources. The proposed lake project will alleviate some of the drinking water issues and perhaps have some positive impact on the availability of water for agricultural use, but will likely not facilitate a large scale increase in irrigation or otherwise impact the affect of drought on crops.

3.4.3 Earthquakes

Hazard Profile

Hazard Description

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

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

Geographic Location

While the history of the New Madrid fault line and it's potential for another major earthquake is well known and much studied, that threat lies far enough away from Caldwell County that the effects of such an event would be negligible. However, another buried feature named the Nemaha uplift and its associated Humbolt fault stretch from central Oklahoma to southeast Iowa across eastern Kansas and southeastern Nebraska could have an effect on Northwestern Missouri, though still probably not as far away from the epicenter as Caldwell County. However, no Mercalli Intensity scale projections seem to be available for this area.

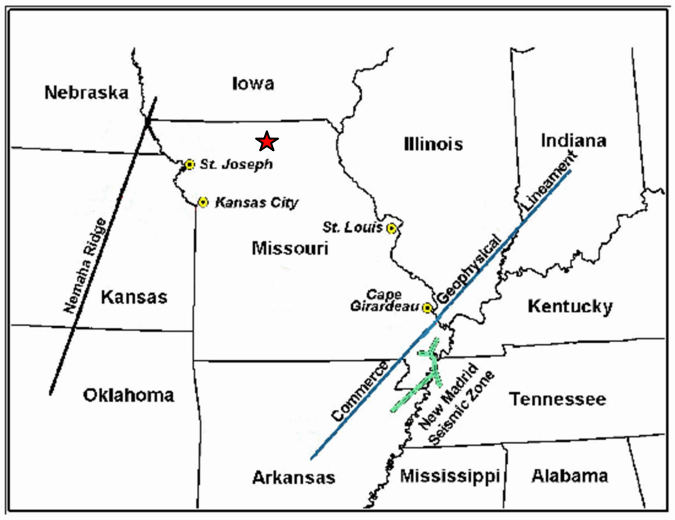
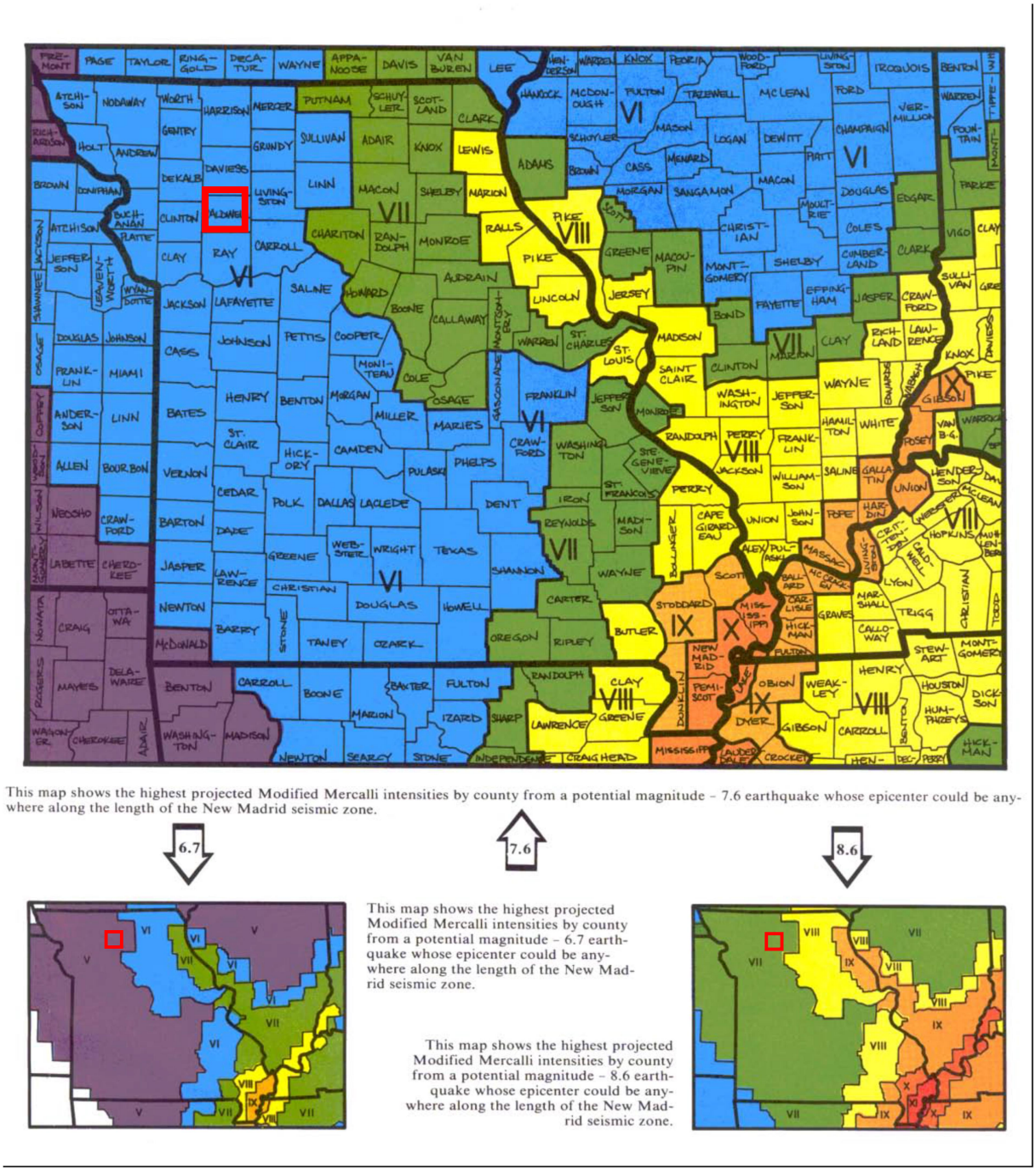


Figure 3.3. Impact Zones for Earthquake Along the New Madrid Fault



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

Source: http://sema.dps.mo.gov/docs/programs/Planning,%20Disaster%20&%20Recovery/State%20of%20Missouri%20Hazard%20Analysis/2012-State-Hazard-Analysis/Annex_F_Earthquakes.pdf

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.

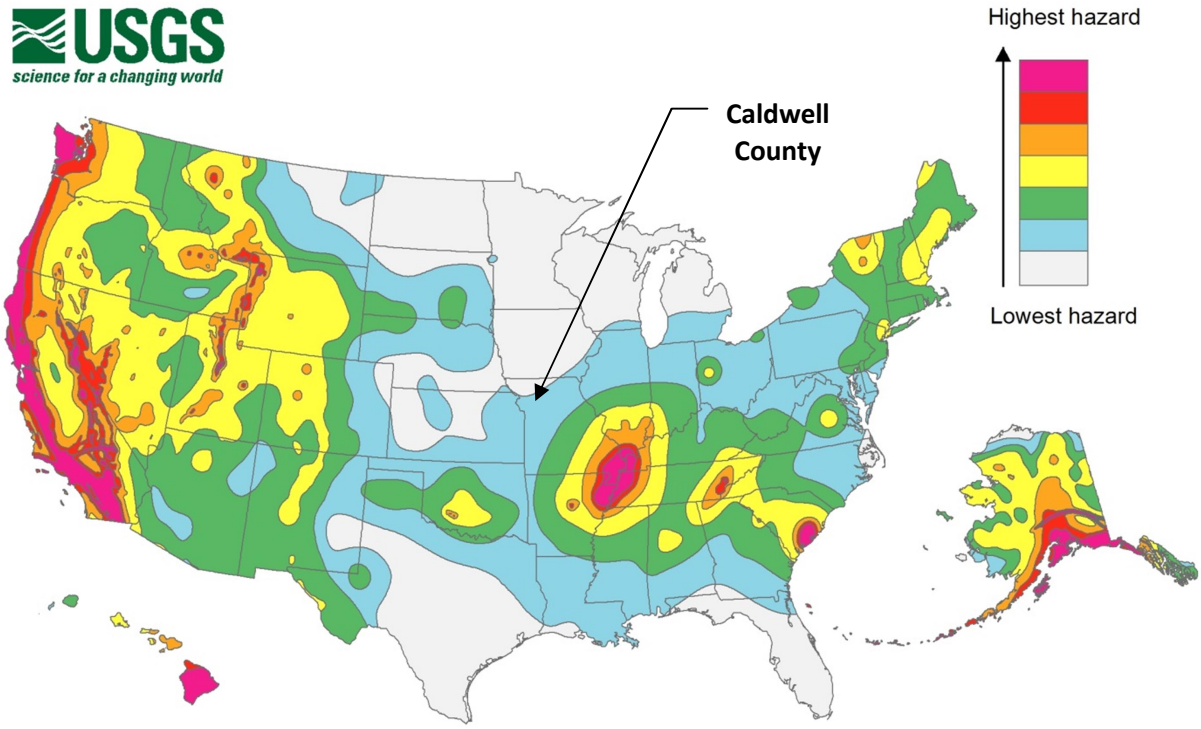
XI Few if any masonry structures remain standing. Large, well-built bridges are destroyed. Wood frame structures are severely damaged, especially near epicenters. Buried pipelines are rendered completely useless. Railroad tracks are badly bent. Water mixed with sand, and mud is ejected in large amounts.

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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JEFFERSON CITY, MO 65102
Telephone: 573-526-9100

Figure 3.4. United States Seismic Hazard Map



Source: United States Geological Survey at http://earthquake.usgs.gov/hazards/products/conterminous/2014/HazardMap2014_lg.jpg

Severity/Magnitude/Extent

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

Richter Magnitude Scale

The Richter Magnitude Scale was developed in 1935 as a device to compare the size of earthquakes. The magnitude of an earthquake is measured using a logarithm of the maximum extent of waves recorded by seismographs. Adjustments are made to reflect the variation in the distance between the various seismographs and the epicenter of the earthquakes. On the Richter Scale, magnitude is expressed in whole numbers and decimal fractions. For example, comparing a 5.3 and a 6.3 earthquake shows that the 6.3 quake is ten times bigger in magnitude. Each whole number increase in magnitude represents a tenfold increase in measured amplitude because of the logarithm. Each whole number step in the magnitude scale represents a release of approximately 31 times more energy.

Modified Mercalli Intensity Scale

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

Previous Occurrences

There have been 0 earthquakes recorded in Caldwell County since 1931.
http://www.homefacts.com/earthquakes/Missouri/Caldwell-County.html

Probability of Future Occurrence

There is an estimated .24% chance of a major earthquake within 50km of Caldwell County, MO within the next 50 years.
http://www.homefacts.com/earthquakes/Missouri/Caldwell-County.html

Hazard Summary by Jurisdiction

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

Impact of Future Development

Future development is not expected to increase the risk other than contributing to the overall exposure of what could become damaged as a result of an event.

Vulnerability

The 2010 State Hazard Mitigation Plan quantified the population and building exposed to potential hazards by county, providing a numeric breakdown for Caldwell County derived from inventory data associated with FEMA's loss estimation software HAZUS-MH MR4.

Building Loss Total ($)	Loss Ratio	Income Loss Total ($)	Total Loss ($)	Loss Ratio Rank (of 115 Total)
4	0.001	2,000	6,000	101

Potential Losses to Existing Development

HAZUS building inventory counts are based on the 2000 census data adjusted to 2006 numbers using the Dun & Bradstreet Business Population Report. Inventory values reflect 2006 valuations, based on RSMeans (a supplier of construction cost information) replacement costs. Population counts are 2008 estimates from the U.S. Census Bureau.

Problem Statement

The risk of direct impacts to Caldwell County from an earthquake event are extremely low (0.24% Chance). However, counties with little in the way of direct impact will be, at least initially, affected by demands for emergency response assets and sheltering resources.

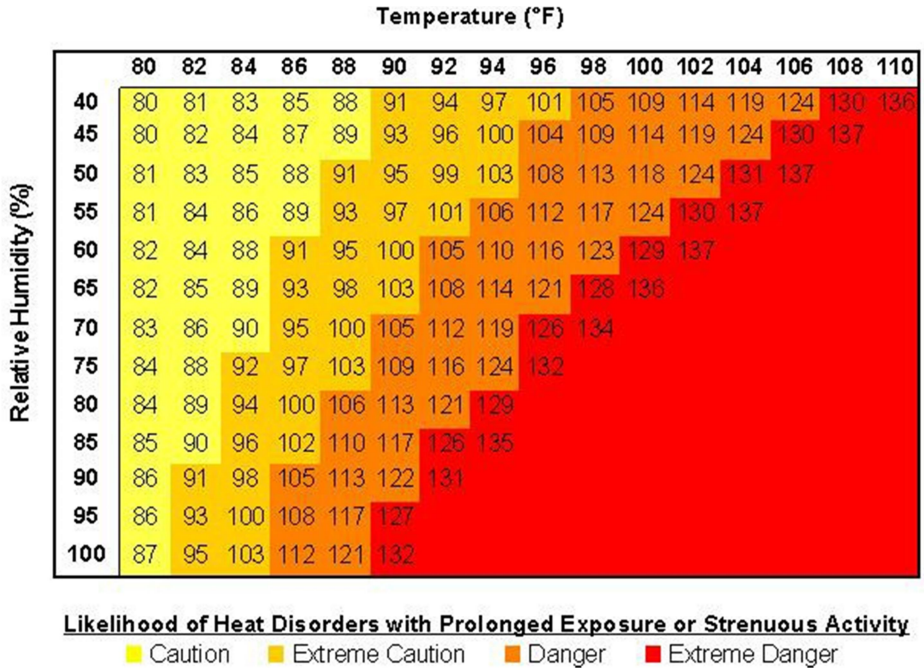
3.4.4 Extreme Heat

Hazard Profile

Hazard Description

Extreme temperature events, both hot and cold, can impact human health and mortality, natural ecosystems, agriculture and other economic sectors. The remainder of this section profiles extreme heat. Extreme cold events are profiled in combination with Winter Storms under "Severe Winter Weather". According to information provided by FEMA, extreme heat is defined as temperatures that hover 10 degrees or more above the average high temperature for the region and last for several weeks. Ambient air temperature is one component of heat conditions, with relative humidity being the other. The relationship of these factors creates what is known as the apparent temperature. The Heat Index chart shown in **Figure 3.5** uses both of these factors to produce a guide for the apparent temperature or relative intensity of heat conditions.

Figure 3.5. Heat Index (HI) Chart



Source: National Weather Service (NWS)
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.

Geographic Location

Heat is an area-wide hazard event, and that the risk of extreme heat does not vary across the planning area.

Severity/Magnitude/Extent

Extreme heat can cause stress to crops and animals and strain electricity delivery infrastructure overloaded during peak use of air conditioning. Another type of infrastructure damage from

extreme heat is road damage. When asphalt is exposed to prolonged extreme heat, it can cause buckling of asphalt-paved roads, driveways, and parking lots.

From 1988-2011, there were 3,496 fatalities in the U.S. attributed to summer heat. This translates to an annual national average of 146 deaths. The National Weather Service stated that among natural hazards, no other natural disaster—not lightning, hurricanes, tornadoes, floods, or earthquakes—causes more deaths.

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

Table 3.8. Typical Health Impacts of Extreme Heat

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

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

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

Previous Occurrences

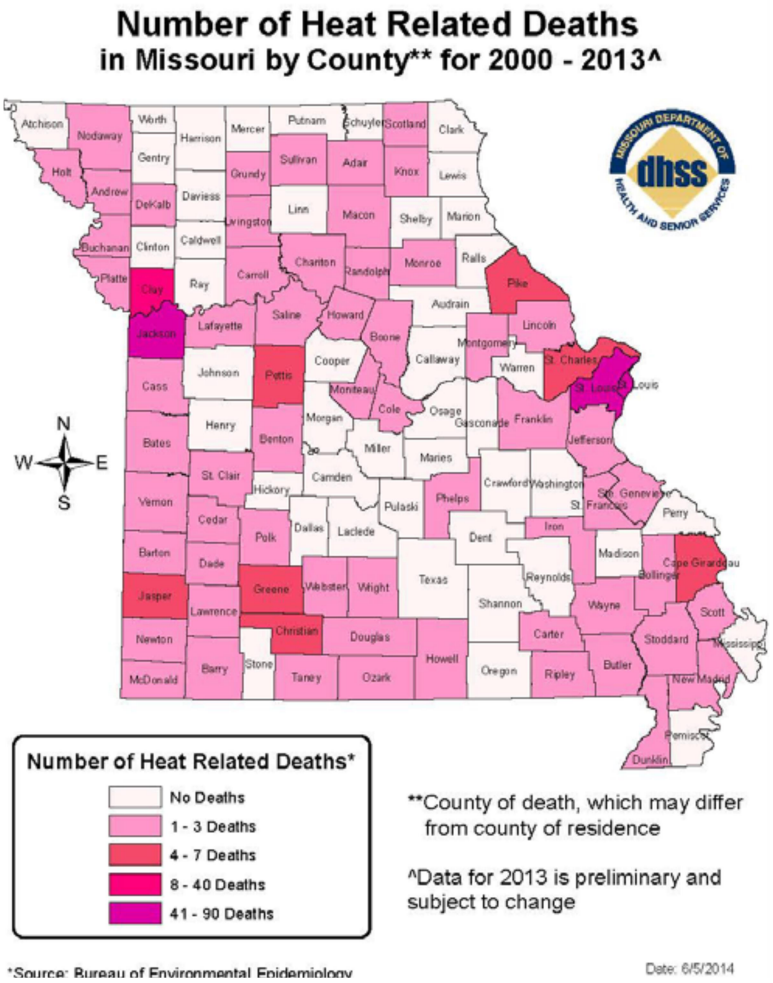
NCDC's storm event database contains record of 2 event reported between 05/01/1956 and 05/31/2016 (21946 days)

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

In 2013 an unusually strong upper level ridge of high pressure, dominated the central United States with very hot and dry conditions, from July 18th through 25th 2012. High temperatures in the 100 to 110 degree range, combined with humidity, produced afternoon and early evening heat indices in the 100 to 110 degree range. Overnight low temperatures were in the 70s to lower 80s.

No deaths or illnesses in Caldwell County were reported to NCDC for either of these events. This is corroborated by a map from the Bureau of Environmental Epidemiology showing deaths by Missouri County between 2000 and 2013 (The most recent sample period that's been mapped).

Figure 3.6. Heat Related Deaths in Missouri 2000 - 2013



Probability of Future Occurrence

Based on the number of recorded past events in a 60 year period (1956-2016) the future probability of extreme heat events in Caldwell County is 3.3% This number is very low and may be less reflective of reality and more symptomatic of data limitations, such as underreporting in the NCDC data.

Vulnerability

All Missouri communities are vulnerable to the impacts of extreme heat, but those with a higher percentage of elderly may be more at risk due to the heightened vulnerability of that segment of the population; elderly individuals often live alone and have other complicating medical conditions – additionally, they may lack air conditioning or refuse to incur higher utility expenses by using it. Caldwell County is one of those communities with higher risk to the effects of extreme heat events, as 19.1% of the total population is over 65 years of age, according to the US Census.

Potential Losses to Existing Development

Extreme heat can impact agriculture in a significant way, especially as extreme heat events often coincide with drought (see drought section).

Impact of Future Development

Population growth can result in increases in the age-groups that are most vulnerable to extreme heat, and increases the strain on electricity infrastructure, as more electricity is needed to accommodate the growing population. While there is some population growth in Caldwell County (models show a decline over the previous decades) the elderly population is growing, as modern medicine continues to extend the average life span.

Hazard Summary by Jurisdiction

Those at greatest risk for heat-related illness and deaths include children up to five years of age, people 65 years of age and older, people who are overweight, and people who are ill or on certain medications. To determine jurisdictions within the planning area with populations more vulnerable to extreme heat, demographic data was obtained from the 2010 census on population percentages in each jurisdiction comprised of those under age 5 and over age 65. Data was not available for overweight individuals and those on medications vulnerable to extreme heat.

Table 3.9. County Population Under Age 5 and Over Age 65, 2010 Census Data

Jurisdiction	% Population Under 5 yrs	% Population 65 yrs and over
Caldwell County	5.2	19.1
City of Braymer	10.4	18.4
City of Breckenridge	6.1	12.9
City of Cowgill	7.8	22.9
City of Hamilton	5.5	24.2
City of Kidder	6.9	18.7
City of Kingston	2.5	17.0
City of Polo	4.7	14.4

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

Problem Statement

All areas of the Caldwell County are at equal risk to the hazards of extreme heat –however, those with larger numbers of children and elderly among the population may be more vulnerable. The communities of Braymer, Hamilton and Cowgill are most vulnerable according to these criteria.

3.4.5 Wildland Fire

Hazard Profile

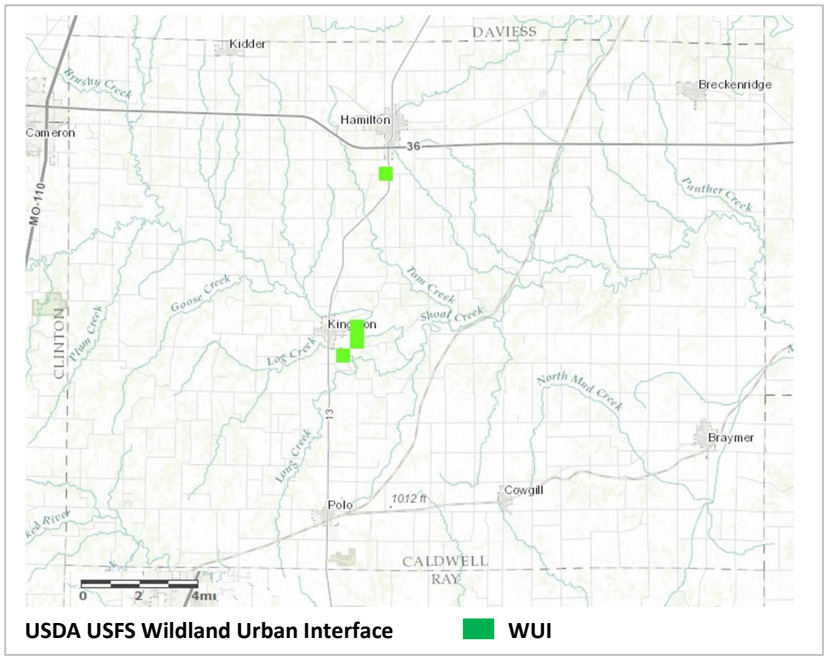
Hazard Description

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

Most wildfires 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 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. 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 wildfires is higher in communities with more wildland–urban interface (WUI) areas. The WUI refers to the zone of transition between unoccupied land and human development - 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. The map (right) indicates that the risk in Caldwell County is low, with only small areas near Kingston and Hamilton designated as areas of wildland-urban interface



Severity/Magnitude/Extent

Wildland fires 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. They are typically a result of human activity rather than lightning or some other natural event, and 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, the extensive stands of evergreens found in the western US that fuel the large fire storms seen on television news stories do not exist in Caldwell County. While very unusual, crown fires can and do occur in Missouri native hardwood forests during prolonged periods of drought combined with extreme heat, low relative humidity, and

high wind. Tornadoes, high winds, wet snow and ice storms in recent years have placed a large amount of woody material on the forest floor that causes wildfires to burn hotter and longer. These conditions also make it more difficult for fire fighters 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.
Source: http://www.firewisemissouri.org/wildfire-in-missouri.html

Previous Occurrences

The 2010 State Hazard Mitigation plan utilized data from the Missouri Department of Conservation to analyze past wildfire events. In a four year period, Caldwell County experienced 59 wildfires that destroyed over fifteen hundred acres, an average of more than 11 fires per year and an average loss of 28 acres per event.

Wildfires 2004-2008	Average annual # of Wildfires	Likelihood Rating 1-5	Acres Burned	Average Annual Acres burned	Total Buildings Damaged
59	11.8	1 (lowest)	1564.98	313	2

Probability of Future Occurrence

With an average of three wildfire events annually, the statistical likelihood of future wildfire events in any given year is 100%.

Vulnerability

While Caldwell County's copious pasture, crop, and woodland is vulnerable to wildfire – the risk to human lives and property is more limited to a few areas near the communities of Hamilton and Kingston (as depicted by the map on page 3.40).

Potential Losses to Existing Development

There is an average of 11 wildfires per year in Caldwell County, with an average of 28 acres burned per fire. The cost of that is dependent on whether the area was pasture or cropland, but there is some potential for agricultural loss. Losses to "development" per se don't seem to be a significant hazard; in the four-year study period investigated by the 2010 State Hazard Mitigating Plan, only buildings were damaged.

Impact of Future Development

Development in Caldwell County is gradual and tends to be on a modest scale, mostly associated with agricultural concerns and the increased economic stimulation in the City of Hamilton resulting from the meteoric success of the County's largest employer, the Missouri Star Quilt company. The County has long been, and continues to be, a "bedroom community" with many of its inhabitants commuting to the KC Metro area for employment. The largest planned development in the County is a large man-made lake, which will remove a sizeable acreage of formerly at-risk vegetated area. However, even taking all that into consideration, vulnerability to wildfire will remain relatively unchanged.

Hazard Summary by Jurisdiction

Hamilton and Kingston have the only designated wildland-urban interface areas in the County. These areas indicated increased risk for these two communities compared to the County overall.

Problem Statement

Caldwell County does experience wildland fire events on a regular basis, but the acreage destroyed in these events is relatively small and no structures are recorded to have been destroyed. The risk of more seriously damaging events is fairly low, though it is higher for Hamilton and Kingston.

3.4.6 Flooding (Flash and River)

Profile

Hazard Description

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

Dam and levee failure, which may cause flooding, are discussed in the separate hazard profiles, and will not ill 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.

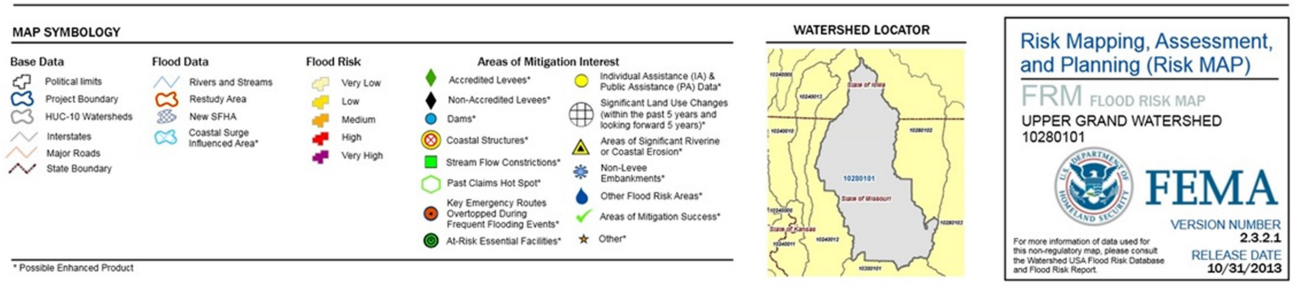
Most flash flooding is caused by slow-moving thunderstorms or thunderstorms repeatedly moving over the same area. Flash flooding is a dangerous form of flooding which can reach full peak in only a few minutes. Rapid onset allows little or no time for protective measures. Flash flood waters move at very 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 a slower developing river and stream flooding.

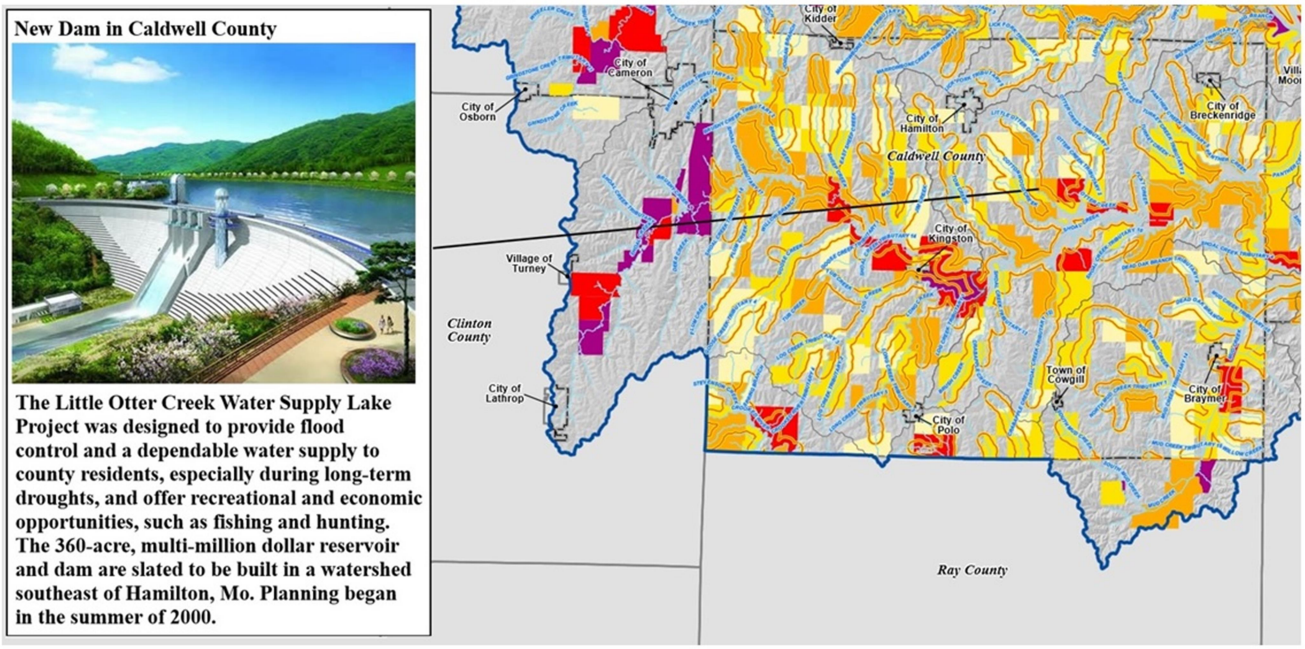
In certain areas, aging storm sewer systems are not designed to carry the capacity currently needed to handle the increased storm runoff. Typically, the result is water backing into basements, which damages mechanical systems and can create serious public health and safety concerns. This combined with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

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

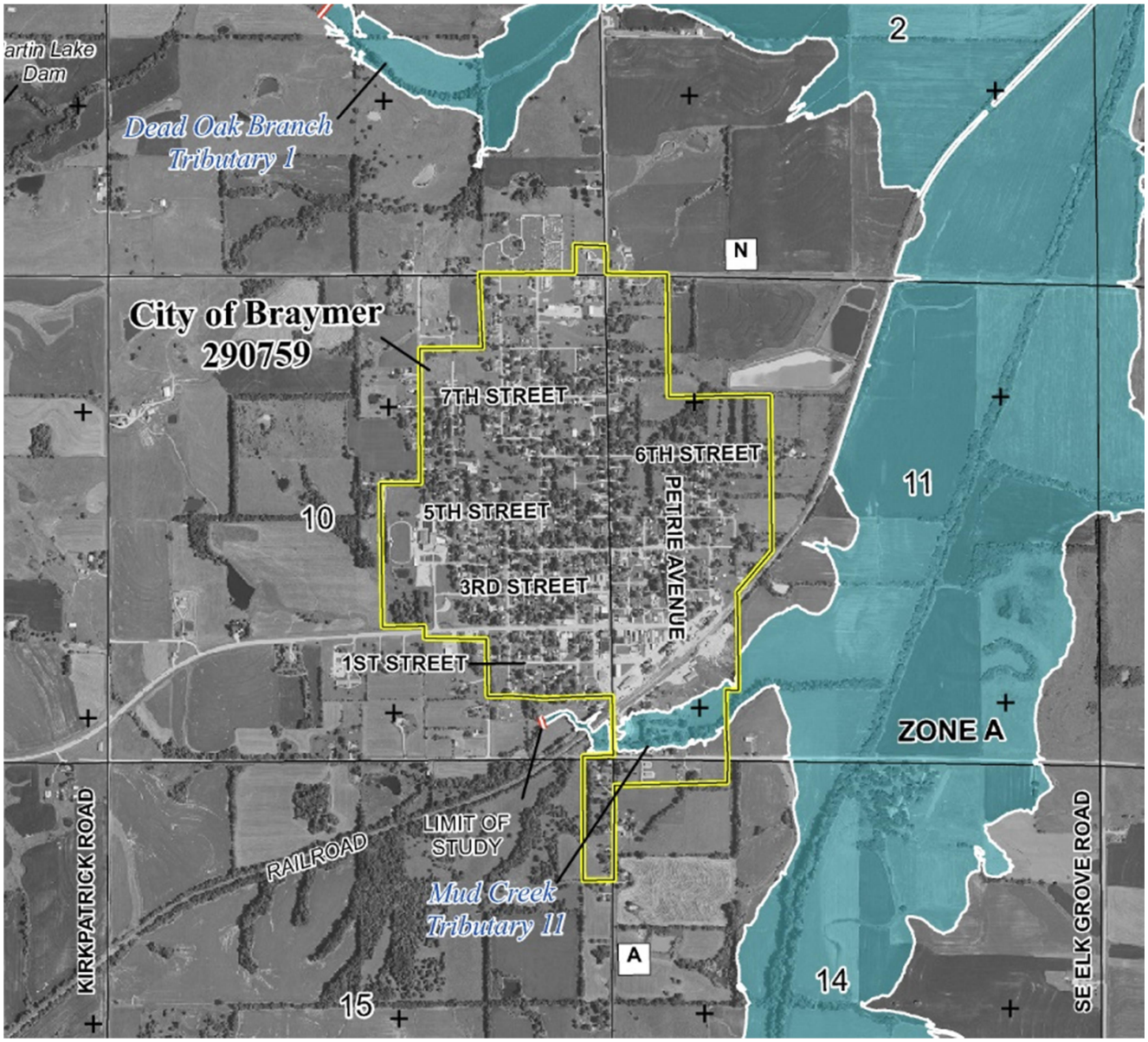
Geographic Location

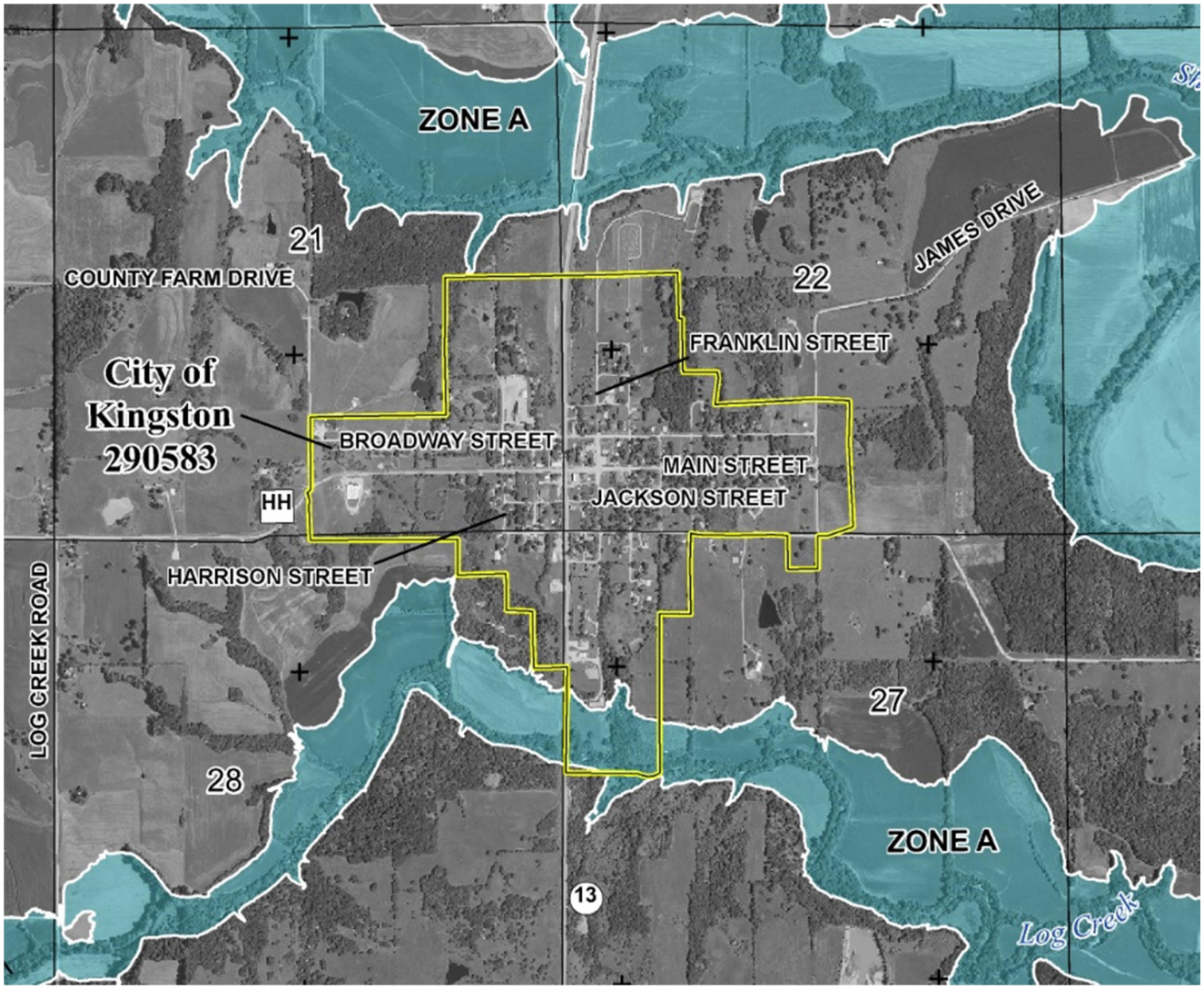
FEMA's Risk Map program mapped Caldwell County (and others) as part of a flood risk analysis of the Upper Grand River Watershed. While the County does have some areas at high flood risk, they are unpopulated rural areas generally devoid of structures, though there may be some roadways affected if these areas suffer inundation (see map, below).





Flooding is most likely to occur in Special Flood Hazard Areas (SFHAs). Flood Plain maps and other products are available for Caldwell County (see appendix). The maps indicate that there appear to be very few (perhaps no) structures in those flood prone areas, and most communities in the county are located well away from those areas. There are two exceptions; Braymer and Kingston. Although flood zones are present in or near these communities no structures seem to be at risk.





According to NCDC there were NO flooding events in Caldwell County in the last 50 years, but there were 10 flash flood events. Flash flooding occurs in SFHAs and low-lying areas. They also occur in areas without adequate drainage to carry away the amount of water that falls during intense rainfall events.

Severity/Magnitude/Extent

Missouri has a long and active history of flooding over the past century, according to the 2010 State Hazard Mitigation Plan. Flooding along Missouri's major rivers generally results in slow-moving disasters. River crest levels are forecast several days in advance, allowing communities downstream sufficient time to take protective measures, such as sandbagging and evacuations. Nevertheless, floods exact a heavy toll in terms of human suffering and losses to public and private property. By contrast, flash flood events in recent years have caused a higher number of deaths and major property damage in many areas of Missouri.

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

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

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

National Flood Insurance Program (NFIP) Participation

Jurisdiction	Participating?	Effective Mat Date
Caldwell County	Yes	06/16/15
City of Braymer	No	-
City of Breckenridge	No	-
City of Cowgill	No	-
City of Hamilton	No	-
City of Kidder	No	-
City of Kingston	No	-
City of Polo	No	-

NFIP Policy Holders – Policies in Force	Insurance in Force	Written Premiums in Force
5	345,000	972

Caldwell County will continue to participate in the National Flood Insurance Program, but the communities within its jurisdiction will likely remain non participants in the program for the foreseeable future, as most do not have flood hazard areas in their proximity and those who do are only experience flooding in areas devoid of structures or vulnerable infrastructure.

Repetitive Loss/Severe Repetitive Loss Properties

Repetitive Loss Properties are those properties with at least two flood insurance payments of $5,000 or more in a 10-year period. As of 9/30/15 (The last time the Bureau Net database was updated) there are no repetitive losses for Non-Mitigated properties for Caldwell. There are no repetitive loss (Mitigated) or validated properties for Caldwell County.

Previous Occurrences

Since 1957 Missouri has had 40 Major Disaster Declarations involving flooding. Caldwell County itself, in the last 20 years, has had no recorded incidents of riverine flooding and 10 recorded instances of flash flooding.

Probability of Future Occurrence

There is no recorded history of riverine flooding in Caldwell County on which to base an estimate of the probability of future occurrence. Table 3.19 shows 10 flash flood events in a 50 year period, indicating a 20% chance of future occurrence.

Vulnerability

The 2010 State Hazard Mitigation Plan used HAZUS-MH to create vulnerability estimates.

HAZUS vulnerability data
Source: 2010 State Hazard Mitigation Plan

Total Direct Building and Income Loss

Structural Damage	$535, 000	Contents Damage	$245,000
Inventory Loss	-	Total Direct Loss	$780,000
Total income Loss	$1,000	Total Direct and income Loss	$781,000
Calc Loss ratio	0.14%	# Bldgs Risk	0
		# Substantially damaged	0

Displaced People and Shelter Needs

Displaced People	62	Shelter Needs	1

Potential Losses to Existing Development

An analysis of county flood maps indicated that few, if any, structures are located in flood-prone areas. Potential losses are limited to agricultural elements such as crops and livestock.

Impact of Future Development

Development in floodplain areas is strictly regulated and flood should not prove to be a risk for future development. However, the development of a large Army Corps lake in the county could cause significant changes to drainage and hydrology in the area. These changes should be documented in the Engineering and Environmental documents generated during the process of the Dam's construction and should be taken into account by the County Flood Plain Manager and outlined in future updates of the Caldwell County Hazard Mitigation Plan.

Hazard Summary by Jurisdiction

Flood hazard vulnerability varies by jurisdiction, as made evident by Flood Insurance Rate Maps, which shows flood hazard areas. No school district campuses appear to be located in any vulnerable area, nor any critical facilities or even structures. The main effect of flooding in Caldwell county seems to be limited to road closure and danger to motorists who may be unaware of inundated roadways.

Problem Statement

Analysis of the topography, hydrography, and hazard event history of Caldwell County and it's communities make plain that prolonged, large scale riverine flooding such as that which occurs in counties long the Missouri and Mississippi rivers is not a hazard residents are familiar with. However, flash flooding can and does occur there, and can cause damage to agricultural assets, disrupt travel, and pose a serious life threat.

3.4.7 Thunderstorm/High Winds/Lightning/Hail

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 and tornadoes, which are discussed separately.

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 such strikes have been known to fall more than 10 miles away from the rainfall area. Thunder is simply the sound that lightning makes. Lightning is a huge discharge of electricity that shoots through the air causing vibrations and creating the sound of thunder.

Hail

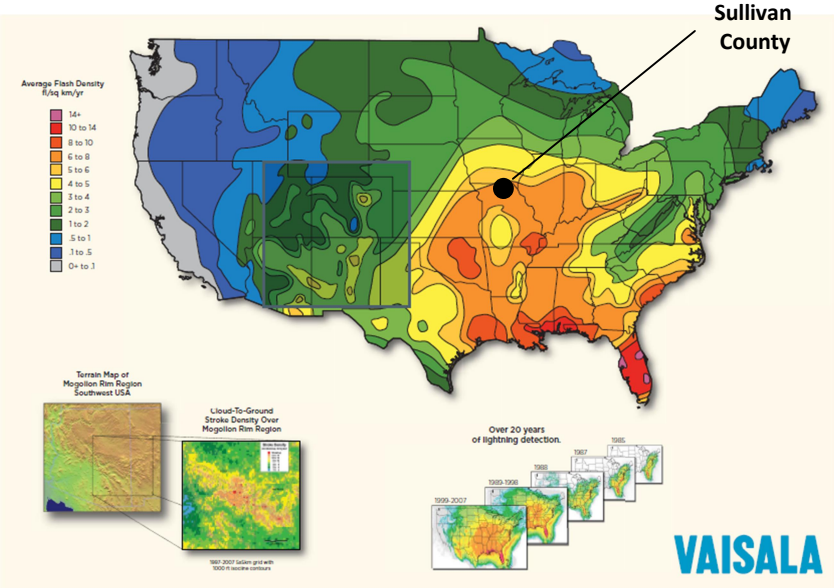
According to the National Oceanic and Atmospheric Administration (NOAA), hail is precipitation that is formed when thunderstorm updrafts carry raindrops upward into extremely cold atmosphere causing them to freeze. The raindrops form into small frozen droplets. They continue to grow as they come into contact with super-cooled water which will freeze on contact with the frozen rain droplet. This frozen droplet can continue to grow and form hail. As long as the updraft forces can support or suspend the weight of the hailstone, hail can continue to grow before it hits the earth.

At the time when the updraft can no longer support the hailstone, it will fall down to the earth. For example, a ¼" diameter or pea sized hail requires updrafts of 24 miles per hour, while a 2 ¾" diameter or baseball sized hail requires an updraft of 81 miles per hour. According to the NOAA, the largest hailstone in diameter recorded in the United States was found in Vivian, South Dakota on July 23, 2010. It was eight inches in diameter, almost the size of a soccer ball. Soccer-ball-sized hail is the exception, but even small pea-sized hail can do damage.

Geographic Location

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

Figure 3.7. Location and Frequency of Lightning in Missouri



Source: National Weather Service, http://www.lightningsafety.noaa.gov/stats/08_Vaisala_NLDN_Poster.pdf. Note: indicate location of planning area with a colored square or arrow.

Figure 3.8. Wind Zones in the United States



Source: FEMA 320, Taking Shelter from the Storm, 3rd edition, http://www.weather.gov/media/bis/FEMA_SafeRoom.pdf

Severity/Magnitude/Extent

Severe thunderstorm losses are usually attributed to the associated hazards of hail, downburst winds, lightning and heavy rains. Losses due to hail and high wind are typically insured losses that are localized and do not result in presidential disaster declarations. However, in some cases, impacts are severe and widespread and assistance outside state capabilities is necessary. Hail and wind also can have devastating impacts on crops. Severe thunderstorms/heavy rains that lead to flooding are discussed in the flooding hazard profile. Hailstorms cause damage to property, crops, and the environment, and can injure and even kill livestock. In the United States, hail causes more than $1 billion in damage to property and crops each year. Even relatively small hail can shred plants to ribbons in a matter of minutes. Vehicles, roofs of buildings and homes, and landscaping are also commonly damaged by hail. Hail has been known to cause injury to humans, and (rarely) fatalities. In general, assets in the County vulnerable to thunderstorms with lightning, high winds, and hail include people, crops, vehicles, and built structures. Although this hazard 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.lightningsafety.noaa.gov/ & http://www.lightningsafety.noaa.gov/stats/08_Vaisala_NLDN_Poster.pdf

Based on information provided by the Tornado and Storm Research Organization (TORRO), **Table 3.10** below describes typical damage impacts of the various sizes of hail.

Table 3.10. 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 tables below summarize past thunderstorm* crop damages as indicated by crop insurance claims.

Table 3.11. Crop Insurance Claims Paid for Thunderstorm Damages*, 2011 - 2015
Source: USDA Risk Management Agency, Insurance Claims, http://www.rma.usda.gov/data/cause.htm

Acres Affected	Monetary Loss
47597	$ 323.27

The onset of thunderstorms with lightning, high wind, and hail is generally rapid. Duration is less than six hours and warning time is generally six to twelve hours. Nationwide, lightning kills 75 to 100 people each year. Lightning strikes can also start structural and wildland fires, as well as damage electrical systems and equipment.

Previous Occurrences

Table 3.32 NCDC Events recorded from 1956-2016

Hazard	Number of Events	Death	injuries	Property Damage	Crop Damage
Thunderstorm Wind	64	0	0	211 K	0 K
Hail	85	0	0	80 K	20 K
Lighting	0 reported	-	-	-	-

Probability of Future Occurrence

Thunderstorm wind: 100%
Hail: 100%
Lighting: Data insufficient to postulate future probability.

Vulnerability

Housing Units/ Sqrmi	Total Building Exposure ($)	Crop Exposure (2007 Census of Agriculture)	Social Vulnerability Index (1-5)
10.5	498,566,000	19,267,000	2

Potential Losses to Existing Development

There is significant potential for losses to existing development, particularly crops, which will take damage from events of less severity than is required to cause damage to structures.

Future Development

Additional development results in the exposure of more households and businesses vulnerable to damages from severe thunderstorms/ high winds/lightning/hail. However, there is only marginal commercial or industrial development occurring in Caldwell County.

Hazard Summary by Jurisdiction

Thunderstorm /high winds/lightning/hail events are area-wide, NCDC data did not seem to indicate that any particular community had significantly higher vulnerability than any other, beyond larger communities having more structures that could be damaged.

Problem Statement

The county is vulnerable to the high winds, lighting, and hail associated with thunderstorms – particularly winds and hail, which can cause extensive damage to agricultural assets, particularly crops.

3.4.8 Tornado

Hazard Description

The NWS defines a tornado as "a violently rotating column of air extending from a thunderstorm to the ground." It is usually spawned by a thunderstorm and produced when cool air overrides a layer of warm air, forcing the warm air to rise rapidly. Often, vortices remain suspended in the atmosphere as funnel clouds. When the lower tip of a vortex touches the ground, it becomes a tornado. High winds not associated with tornadoes are profiled separately under Thunderstorm/High Wind/Hail/Lightning.

Essentially, tornadoes are a vortex storm with two components of winds. The first is the rotational winds that can measure up to 500 miles per hour, and the second is an uplifting current of great strength. The dynamic strength of both these currents can cause vacuums that can overpressure structures from the inside.

A typical tornado can be described as a funnel-shaped cloud in contact with the earth's surface that is "anchored" to a cloud, usually a cumulonimbus. This contact on average lasts 30 minutes and covers an average distance of 15 miles. The width of the tornado (and its path of destruction) is usually about 300 yards. However, tornadoes can stay on the ground for upward of 300 miles and can be up to a mile wide. The National Weather Service, in reviewing tornadoes occurring in Missouri between 1950 and 1996, calculated the mean path length at 2.27 miles and the mean path area at 0.14 square mile.

The average forward speed of a tornado is 30 miles per hour but may vary from nearly stationary to 70 miles per hour. The average tornado moves from southwest to northeast, but tornadoes have been known to move in any direction. Tornadoes are most likely to occur in the afternoon and evening, but have been known to occur at all hours of the day and night.

Geographic Location

Tornados can occur anywhere in Caldwell County.

Severity/Magnitude/Extent

Tornadoes are the most violent of all atmospheric storms and are capable of tremendous destruction. Wind speeds can exceed 250 miles per hour and damage paths can be more than one mile wide and 50 miles long. Tornadoes have been known to lift and move objects weighing more than 300 tons a distance of 30 feet, toss homes more than 300 feet from their foundations, and siphon millions of tons of water from water bodies. Tornadoes also can generate a tremendous amount of flying debris or "missiles," which often become airborne shrapnel that causes additional damage. If wind speeds are high enough, missiles can be thrown at a building with enough force to penetrate windows, roofs, and walls. However, the less spectacular damage is much more common.

Tornado magnitude is classified according to the EF- Scale (or the Enhance Fujita Scale, based on the original Fujita Scale developed by Dr. Theodore Fujita, a renowned severe storm researcher). The EF- Scale (see **Table 3.12**) 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 3.12. 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 3.13**. 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 3.13. Enhanced Fujita Scale with Potential Damage

Enhanced Fujita Scale			
Scale	Wind Speed (mph)	Relative Frequency	Potential Damage
EF0	65-85	53.5%	Light. Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over. Confirmed tornadoes with no reported damage (i.e. those that remain in open fields) are always rated EF0).
EF1	86-110	31.6%	Moderate. Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	111-135	10.7%	Considerable. Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes complete destroyed; large trees snapped or uprooted; light object missiles generated; cars lifted off ground.
EF3	136-165	3.4%	Severe. Entire stores of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some
EF4	166-200	0.7%	Devastating. Well-constructed houses and whole frame houses completely levelled; cars thrown and small missiles generated.
EF5	>200	<0.1%	Explosive. Strong frame houses levelled off foundations and swept away; automobile-sized missiles fly through the air in excess of 300 ft.; steel reinforced concrete structure badly damaged; high rise buildings have significant structural deformation; incredible phenomena will occur.

Source: NOAA Storm Prediction Center, http://www.spc.noaa.gov/efscale/ef-scale.html

Enhanced weather forecasting has provided the ability to predict severe weather likely to produce tornadoes days in advance. Tornado watches can be delivered to those in the path of these storms several hours in advance. Lead time for actual tornado warnings is about 30 minutes. Tornadoes have been known to change paths very rapidly, thus limiting the time in which to take shelter. Tornadoes may not be visible on the ground if they occur after sundown or due to blowing dust or driving rain and hail.

Previous Occurrences

There are some limitations to data compiled by the NOAA's National Climatic Data Center (NCDC). Prior to 1993, only really destructive tornadoes were recorded in the NCDC database. In addition, 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 NCDC. 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 3.14. (7) Recorded Tornadoes in Caldwell County, 1966 – 2016

Year	Beginning Location	Ending Location	Length (miles)	Width (yards)	F/EF Rating	Death	Injury	Property Damage	Crop Damages
2015	Northern Ray County	2m E of Polo	1.76	100	1	0	0	-	-
2009	4m W of Kidder	4m W of Kidder	0.1	35y	0	0	0	-	-
1991	-	39.52/-94.05	.2	50	0	0	0	-	-
1975	-	39.73/-94.00	.7	20	1	0	0	2.5 K	-
1975	-	39.70/-93.97	11.4	400	**4**	1	3	2.5 M	-
1974	-	39.57/-93.93	27.4	100	1	0	0	25 K	-
1967	-	**39.55/-94.05**	2	100	0	0	0	25 K	-

Source: National Climatic Data Center, http://www.ncdc.noaa.gov/stormevents/

Probability of Future Occurrence

Based on the number of past occurrences there is a 14% probability of a tornado event in Caldwell County in any given year.

Vulnerability

Figure 3.9. Map Tornado Alley in the U.S. Source: http://www.tornadochaser.net/tomalley.html



Caldwell County (and all of Missouri) lies in a region of the U.S. with high frequency of dangerous and destructive tornadoes referred to as "Tornado Alley". The term appeared in 1952 as the title of a research project focusing on severe weather in parts of Texas, Oklahoma, Kansas, South Dakota, Iowa, Missouri, New Mexico, Colorado, North Dakota, and Minnesota - it is largely a media driven term, although tornado climatologists distinguish peaks in activity in various areas and storm chasers have long recognized the Great Plains "tornado belt".

In the 2010 State Hazard Mitigation Plan, four factors were used to determine tornado vulnerability. This vulnerability analysis measured the likelihood of future tornado impacts, average annual property loss ratio (total building exposure value divided by average annualized historic losses), population change (percent change) and housing change (percent change). Scales were created to rank these factors; 1 = moderate, 2 = high, 3 = very high.

# of Tornados	Likelihood of Occurrence	Probability Rating	Total $ Exposure	Annualized Historic Loss	Loss ratio
8	13.66	1	498, 566, 000	149,196	0.030 %

Loss Ratio Rating	Population Growth % Change	Pop Change Rating	Housing % Change	Housing Ratio Rating	Total Vulnerability
1	3.1 %	1	4.83%	1	Moderate

Potential Losses to Existing Development

Bearing in mind the rural population density in Caldwell County and a historical record involving predominately weaker tornadoes, the potential for losses to existing development in Caldwell County does exist but is far greater in communities (where building density is higher) than in the unincorporated areas of the County, especially in the context of critical facilities like schools.

A tornado event could occur anywhere in the planning area, but some jurisdictions would suffer heavier damages because of the high concentration of structures. These areas are also where critical facilities like school campuses are located.

Problem Statement

Tornados can and have occurred in Caldwell County, and they are more or less completely random. The risk of tornado is the same for all parts of the county, but the vulnerability of damage is greater in those areas where people and structures are concentrated in higher numbers.

3.4.9 Winter Weather/Snow/Ice/Severe Cold

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

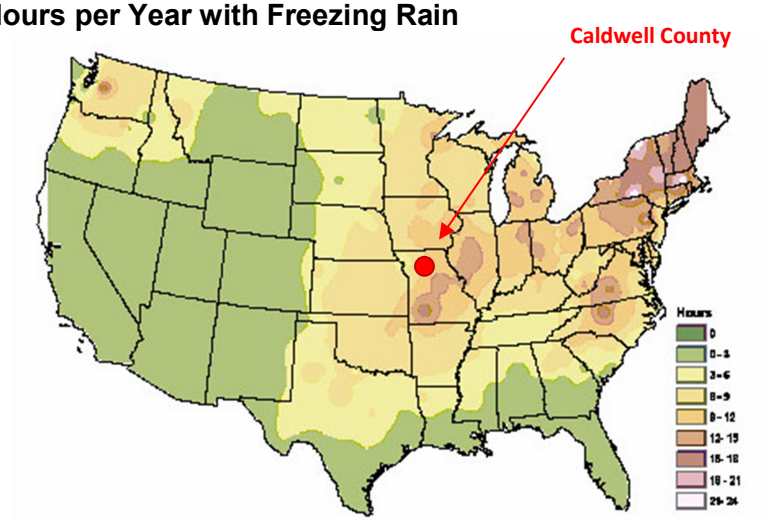
The entire county is vulnerable to heavy snow, ice, extreme cold temperatures and freezing rain.

Figure 3.12 shows the zone in which the county located, and how many hours of freezing rain is indicated annually.

Source: American Meteorological Society. "Freezing Rain Events in the United States."

http://ams.confex.com/ams/pdfpapers/71872.pdf

Figure 3.10. NWS Statewide Average Number of Hours per Year with Freezing Rain



Severity/Magnitude/Extent

Severe winter storms include extreme cold, heavy snowfall, ice, and strong winds which can push the wind chill well below zero degrees in the planning area. Heavy snow can bring a community to a standstill by inhibiting transportation (in whiteout conditions), weighing down utility lines, and by causing structural collapse in buildings not designed to withstand the weight of the snow.

Repair and snow removal costs can be significant. Ice buildup can collapse utility lines and communication towers, as well as make transportation difficult and hazardous. Ice can also become a problem on roadways if the air temperature is high enough that precipitation falls as freezing rain rather than snow.

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

The National Institute on Aging estimates that more than 2.5 million Americans are elderly and especially vulnerable to hypothermia, with the isolated elders being most at risk. About 10 percent of people over the age of 65 have some kind of bodily temperature-regulating defect, and 3-4 percent of all hospital patients over 65 are hypothermic.

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

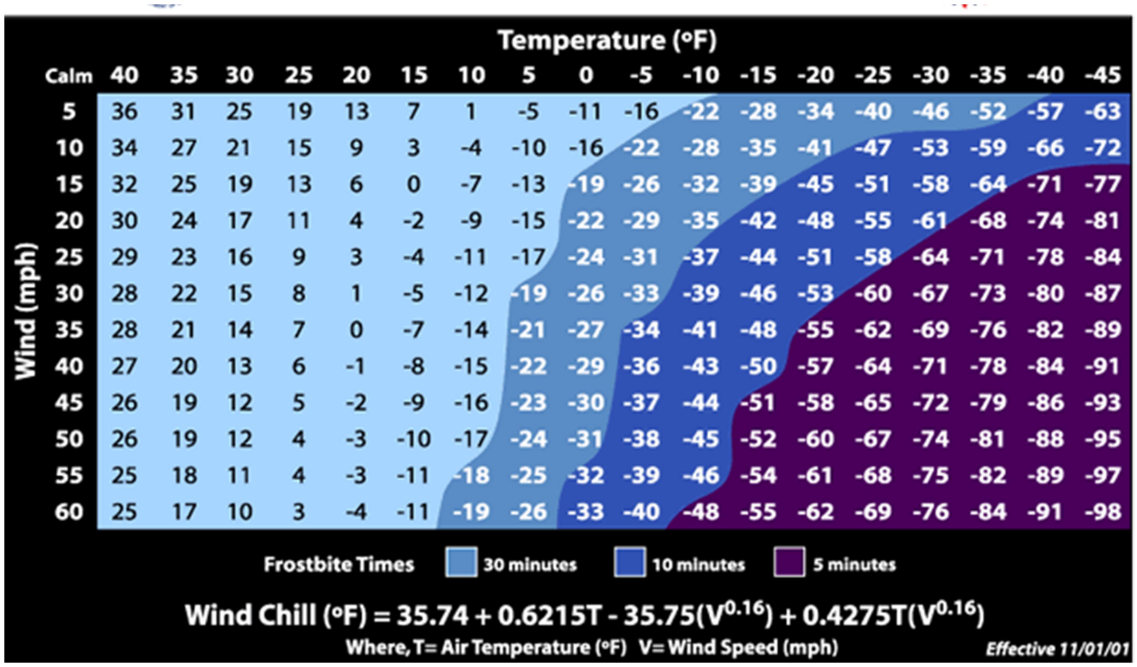
Buildings with overhanging tree limbs are more vulnerable to damage during winter storms when limbs fall. Businesses experience loss of income as a result of closure during power outages. In general heavy winter storms increase wear and tear on roadways though the cost of such damages is difficult to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

Overhead power lines and infrastructure are also vulnerable to damages from winter storms. In particular ice accumulation during winter 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.

Wind can greatly amplify the impact of cold ambient air temperatures. Provided by the National Weather Service**, Figure 3.17** below shows the relationship of wind speed to apparent temperature and typical time periods for the onset of frostbite.

Figure 3.11. Wind Chill Chart



Source: National Weather Service, http://www.nws.noaa.gov/om/winter/windchill.shtml

Winter storms, cold, frost and freeze take a toll on crop production in the planning area. Table 3.18 shows the USDA's Risk Management Agency payments for insured crop losses in Caldwell County as a result of winter weather for the past 5 years.

Table 3.15. Crop Insurance Claims in Caldwell County as a result of Cold Conditions and Snow 2004-2014

Acres Affected	Monetary Loss
1206.324	$ 136,124.68

Source: USDA Risk Management Agency

Previous Occurrences

Table 3.16. NCDC Caldwell County Winter Weather Events Summary, 1966 – 2016 (40 total)

Type of Event	Number of Events	Magnitude	# of Injuries	Property Damages	Crop Damages
Blizzard	1	-	0	0	0
Cold/Wind Chill	2	-	0	0	0
Extreme Cold/ Wind Chill	2	-	0	0	0
Heavy Snow	5	-	0	0	0
Ice Storm	5	-	0	10 K	0
Sleet	0	-	-	-	-
Winter Storm	20	-	0	200 K	0
Winter Weather	5	-	0	0	0

Source: NCDC, data accessed [insert date]

Blizzard

In December of 2009 a powerful storm system brought heavy snow, ice and even blizzard conditions, to a large portion of the central plains. A review of the snow storm archives, found this storm unusual in that it was the first snow storm that blizzard conditions were reported - wind speeds of 35 mph greater and wind-driven snow reducing visibilities to 1/4 mile or less sustained for three hours or more - to affect the forecast domain of the National Weather Service in Pleasant Hill, Missouri since the office opened in the 1992. In February of 2011 another historic winter storm impacted a wide swath of the central and eastern United States, one of the strongest blizzards ever to impact the region. Blizzard conditions were observed across the county, with frequent wind gusts up to 45 mph, visibilities less than 1/4 of a mile, and heavy snow. Travel was nearly impossible, with the blowing and drifting snow, and the very low visibilities.

Cold/ Wind Chill

In January of 1997 very cold arctic air settled over Northwest and West Central Missouri from the 10th through the 13th. Daytime temperatures through the period only reached the single digits which is almost 30 degrees below normal. Nighttime low temperatures were in the single digits below zero. Winds gusting up to 30 MPH on the afternoon of the 10th produced wind chills as low as 30 to 50 below zero.

Extreme Cold/ Wind Chill

In October of 2000, an unusually strong early season Arctic high pressure system resulted in temperatures that did not climb out of the 40s, with lows that dropped below freezing for 5 consecutive days

Heavy Snow

One of the worst snow storms in local history occurred in April of 1990, when heavy wet snow fell across the Northern third of Missouri throughout the day on the 10th followed by a second band of snow during the early morning hours of the 11th. Since temperatures were near or slightly over freezing during the snowfall, some of the snow melted quickly but 6 to 12 inches of snow accumulated with well over a foot in many locations. Livestock loss and farm damage, as well as residential structure damage was also reported around Northern Missouri. Numerous school closures and non-injury auto accidents were reported as a result of the snowstorm.

Ice Storm

In December of 2007 a slow moving storm system, brought a long duration of freezing rain to a large portion of the nations mid section. Several rounds of freezing rain were observed from December 9th through the 11th. Canadian high pressure kept cold air at the surface with readings in the upper 20s to lower 30s. Very warm and moist air aloft was transported north ahead of the storm system. The result of these two ingredients led to several rounds of freezing rain. Ice rapidly accumulated on many surfaces, especially trees and power lines. Ice accumulation was particularly devastating along and north of the Missouri River. Ice accumulations of 3/4 of an inch were common, with isolated accumulations around an inch. Numerous tree branched and power lines were downed. Thousands of residents were without power, some for almost two weeks. There were also numerous traffic accidents due to the icy roads.

Winter Storm

A major winter storm impacted much of Kansas and Missouri on February 21 of 2013, with very heavy snow and some sleet and freezing rain. Some areas received up to a foot of snow, placing this snow storm among the largest snow events in recent memory. Many locations reported thunder with heavy snow and sleet, with snowfall rates as high as 3 inches per hour! Green City measured 6 inches of snow. The very heavy snowfall rates created havoc on area roadways and many travelers became stuck and stranded. Many roads became clogged with stalled vehicles, essentially closing them down. Many motorists abandoned their cars altogether leaving roadways littered with snow-covered vehicles. Four days later another major winter storm swept through the Plains, resulting in the second round of heavy snows that the region had experienced in under a week. Temperatures near freezing, led to a heavy wet snow. As snowfall rates increased overnight, snow rapidly began to accumulate, sticking to trees and power lines and resulting in numerous power outages across the area. Unlike the event from 5 days prior, the heaviest snow fell overnight, rather than in the morning- this allowed road crews open access to the highways during the peak of the event, even though they still struggled to keep up with snowfall rates, as much as 2 inches per hour. By morning most roads were snow-covered, but the combination of snow decreasing in intensity and more people choosing to stay home resulted in far less motor vehicle accidents than the earlier event. Snowfall totals from around the area ranged from 9 to 15 inches.

Winter Weather

Winter weather is a designation indicating less extreme winter events than those classified as a "Winter Storm"- milder temperatures, less precipitation. For instance, a strong cold front with unseasonably cold temperatures moved through the area during the day on May 2, 2013. An upper level storm system then passed across western Missouri, during the evening and overnight hours of May 2 and 3, 2013. Rain changed to snow across western Missouri, with the heaviest band, setting up from Bethany southwest through southeastern Kansas City. Snowfall amounts ranged from two to six inches in this band, with trace to two inches on either side.

Probability of Future Occurrence

Forty winter weather events affected Caldwell County between 1966 and 2016. This indicates the chances of a winter event affecting Caldwell County in any given year is 80%.

Vulnerability

In the 2010 State Hazard Mitigation Plan, seven factors were considered in determining the overall severe winter storm vulnerability; housing density, likelihood of occurrence, building exposure, crop exposure, average annual property loss ratio, average annual crop insurance claims, and social vulnerability. To complete the analysis using these factors, a rating value of 1-5 was assigned to the data with 1 being the lowest, and five the highest.

Housing Unites per Sqr. Mi	Total $ Building Exposure	$ Crop Exposure (2007)	Social Vulnerability Index (1-5)	Total Incidents	Total $ Property Losses	Total $ insurance Paid
10.5	498,566,000	19,267,000	5	22	5,651,309	213,274

Potential Losses to Existing Development

NCDC reflects property damage totaling $210,000 over fifty years. Under-reporting and other data limitations may have caused this figure to be low, but the fact remains that most damages associate with severe winter weather involve automobile accidents and injuries incurred as people try to travel through the winter environment or compensate for the low temperatures, rather than directly being a result of the winter weather. Potential losses in Caldwell County due to severe winter weather are on the low side, comparative to the damages that may accompany hazard events like tornados and hail storms.

Future Development

Due to the limited nature of development in Caldwell County, accurately estimating the impact of future events isn't feasible.

Hazard Summary by Jurisdiction

Severe Winter Weather tends to affect all jurisdictions equally.

Problem Statement

Caldwell County does have some vulnerability to severe winter weather, particularly in regards to transportation concerns. Excessive snowfall can overwhelm road crews, hamper emergency response, and bring commerce to a temporary halt.

CBRNE Attack (Chemical, Biological, Radiological, Nuclear or high yield Explosive)

Hazard Description

Of all the possible disasters and hazards that can be imagined, a strategic CBRNE (Chemical, Biological, Radiological, Nuclear or high yield Explosive) attack could have the most devastating and far-reaching consequences. The use of these weapons against the United States is unlikely; however, as long as such weapons exist, there is always a chance that they could be used. The potential for traditional war related attacks, using conventional weapons, is a scenario that is more likely to occur, based on currently available information.

Although the threat of all-out nuclear war has been significantly reduced with the dissolution of the former Soviet Union, several scenarios still exist that might subject a jurisdiction to widespread radioactive contamination or high-levels of radiation exposure. While the threat of nuclear attack has diminished over the past several years, concerns over the use of chemical and biological warfare agents have increased. Recent events, such as the September 11, 2001, terrorist attacks on the World Trade Center buildings in New York City and the Pentagon in Washington DC, along with the anthrax-related attacks in 2001, have increased both the public and the policy maker's awareness of the vulnerability of the United States to future attacks involving CBRNE. Attacks against the United States as a whole, and against individual states or local entities, can be categorized as originating from either domestic or international sources. However, because the impacts on life and property would largely be the same regardless of the source of such an attack, similar preparedness, response, and recovery activities apply.

CBRNE weapons have often been used to terrorize an unprotected population, instead of actual use as weapons of war. However, the potential damage that can occur in the event of such an attack is extensive, particularly to human health. A single nuclear weapon detonation could cause widespread destruction, and all aforementioned types of attacks could cause extensive casualties. It could affect the entire population in the vicinity of the impacted area, and some areas would experience direct weapons effects: blast, heat, and initial nuclear radiation. Other areas would experience indirect weapons effects, primarily radioactive fallout. As long as world leaders maintain rational thinking, the probability of an attack by a nation-state remains low, but does not rule out attack by a terrorist group. Secondary effects of these attacks, which could strain the country and state, include lack of adequate shelter, food, water, health and medical facilities and personnel, and mortuary services; disruption of communication systems; power outages and other critical infrastructures.

The population is vulnerable to two separate categories of effects associated with these types of attacks: direct and indirect.

Direct Effects

These are effects directly associated with detonation or use of the weapon.

Conventional Weapons : Direct effects of conventional weapons generally are related to injuries inflicted by penetration of ammunition rounds or shrapnel from exploding ordnance (mortars, etc.). Injuries from shock waves/blast overpressure near the targets may also occur, along with damage caused by fires produced from incendiary warheads, grenades, and other munitions. In addition, some injuries may occur as a result of flying or falling debris where the weapons are used. Heavy artillery use can also damage roadways and buildings and disrupt utility services for lengthy periods of time.

Chemical and Biological Weapons : Direct effects of chemical weapons involve initial spread of agents and fragmentation of the weapons. Chemical agents are toxins used to produce neurological and pulmonary injuries or death. Biological agents are infectious microbes used to produce illness or death. They can be dispersed as aerosols or airborne particles directly onto a population, producing an immediate effect (a few seconds to a few minutes for chemical agents) or a delayed effect (several hours to several days for biological agents). Severity of injuries depends on the type and amount of the agent used and duration of exposure. Because some biological agents take time to grow and cause disease, an attack using this type of agent may go unnoticed for several days.

Nuclear Weapons: Direct effects include intense heat, blast energy, and high-intensity nuclear radiation. These effects generally will be limited to the immediate area of the detonation (up to 22 miles), depending on weapon size, altitude of burst, and atmospheric conditions.

Agroterrorism: The direct effect of agroterrorism is the intentional introduction of a contagious animal disease or fast spreading plant disease that affects livestock and food crops and disrupts the food supply chain. Agroterrorism could cause disease in livestock, crops, and in some cases (anthrax, or monkey pox, for example), humans. Diseases that can be transmitted to humans from animals are called zoonotic. It would not only require the agriculture industry to destroy livestock and food crops, but also affect the consumer confidence in the food supply resulting in tremendous economic damage for, potentially, an extended period. The food supply could be severely affected not only for the immediate area and the United States, but the world market, since the United States exports huge quantities of food to other nations. Recently, the federal government recognized the vulnerability of the agricultural/food supply presidential decision directives and encouraged complementary state and local actions.

Radiological Weapon : Direct effects of a radiological weapon are the same as a conventional high explosive, but with the added danger posed by exposure to radiological materials. A radiological dispersion device (RDD) or “dirty bomb” will contaminate an area by spreading radiological dust and debris over a large area.

Explosive Weapon (large amount of high explosive) : The direct results of an explosive weapon are immense destruction caused by the blast and could result in multiple fatalities. Instances of these effects include Oklahoma City, Kobhar Towers, the marine barracks in Lebanon, and the African Embassy bombings.

Indirect Effects

These are effects not directly associated with the detonation and use of the weapon.

Conventional Weapons : Unexploded ordinance throughout a battle zone or explosion hazards to those in the area can persist after warfare has ended. Many conventional munitions also contain toxic compounds that can leach into surrounding soils and groundwater if left in place.
Chemical and Biological Weapons—Indirect effects are generally limited to downwind areas. They can be geographically widespread and vary in intensity—depending on weapon size, type of chemical or biological agent, and wind patterns. The spread of these agents can contaminate food and water supplies, destroy livestock, and ravage crops.

Nuclear Weapon : When a nuclear weapon detonates, intense heat, blast, and overpressure will cause severe injuries and fatalities in the surrounding area and radiation poisoning at more distant locations. A detonation near or on the ground draws up large quantities of earth and debris into a mushroom cloud. This material becomes radioactive, and the particles can be carried by wind hundreds of miles before they drop back to earth as “fallout.” In an attack, many areas of the United States would probably escape fallout altogether or experience non life-threatening levels of radiation. However, because weather that determines where fallout will land is so unpredictable, no locality in the United States is free from risk of receiving deadly radiation levels after a strategic attack. Less than lethal exposures will result in longer-term effects on health and contamination of food, water, and food production.

Agroterrorism : Agroterrorism’s indirect effects are loss of breeding stock to replenish herds and flocks, loss of seed crops, and possibly loss of land use for a long period of time depending on the disease involved. Agroterrorism has a high probability of creating an economic disaster for states highly vested in food production, and potentially the nation.

Radiological Weapon : The indirect effect of an RDD is inability to use the contaminated area for a short to long period of time, depending on the identity of the radioactive material. Because radioactive material from an RDD can penetrate wood, asphalt, concrete, and masonry (and radioactive dust and particles can enter the smallest crevices), decontamination will be extremely difficult or impossible.

Explosive Weapon (large amount of high explosive) : The indirect effect of an explosive weapon is the fear, terror, and lasting psychological damage to survivors and other individuals. The information in Table 3.3.12b is from the Impact Analysis of Potential for Detrimental Impacts of Hazards done for the Emergency Management Accreditation Program.

Geographic Location

Given the nature of the hazard, this type of event could occur in any location.

Previous Occurrences

In 2007 a graduate student threatened the University of Missouri-Rolla with the claim of a bomb and anthrax. This threat shut down the university for several hours and canceled classes for the day. While it ultimately proved to be false threats from a disgruntled student, police encountered him holding a bag, claiming it was a bomb and armed with a knife. After decontaminating the student and clearing the dorms it was determined that no evidence of anthrax existed.

In 2012, a robot was used to inspect and eliminate an IED at Lone Pine Trailer Park in Pettis County near Sedalia. County Sherriff were service routine arrest warrants when they spotted a handgun in a nearby parked car. While retrieving the weapon the sheriff spotted the IED and immediately cleared the area. The state police bomb squad handled the elimination of the IED.

The following is a listing of incidents that occurred in Missouri between 2004 and 2012:

	2004	2005	2006	2007	2010	2011	2012
Bombings	20	11	28	13	24	46	32
Attempted Bombings	6	0	0	2	-	-	-
Incendiary Bombings	3	2	4	1	46	317	391
Total Injured	1	0	3	0	23	46	106
Total Killed	2	0	0	0	16	15	49
Total Incidents of Thefts of Explosives	2	4	2	5	1	3	-

Source: United States Bomb Data Center; http://www.atf.gov/explosives/groups/usbdc/ & ATF's BATS database.

Measure of Probability and Severity

The use of these weapons against the United States is unlikely; therefore *the probability is rates as "low".* Because of the potential devastation and significant secondary effects caused by this type of attack, *the potential severity is rated "high*

Vulnerability

The entire county is equally exposed to this risk, but those areas with greater population density have a greater vulnerability.

Potential Losses to Existing Development

Depending on the exact nature of the threat, losses could range from sever to catastrophic, impacting not only lives and property but damaging the environment of a large area for an extremely long period of time.

Impact of Future Development

Given the limited nature of development in Caldwell County, it's difficult to quantify the impacts of hazards on future infrastructure.

Hazard Summary by Jurisdiction

Due to the fact that such attacks generally target heavily populated areas, the County does not have the level of risk that nearby parts of the KC metropolitan area have – however, it could be assumed that the more populated the area, the greater it's risk of such a hazard. The City of Hamilton, being the largest community and something of an economic center point would therefore possess the highest risk and most vulnerability to such a hazard.

Problem Statement

Given the nature of this type of event and the huge range of variables involved and a potential for massive impacts, it's difficult to predict or plan for.

Civil Disorder

Hazard Description

Civil disorder is a term that generally refers to groups of people purposely choosing not to observe a law, regulation, or rule, usually in order to bring attention to their cause, concern, or agenda. In Missouri, state statutes define civil disorder as "any public disturbance involving acts of violence by assemblages of three or more persons, which cause an immediate danger of or results in damage or injury to the property or person of any other individual."

Civil disorder can take the form of small gatherings or large groups blocking or impeding access to a building or disrupting normal activities by generating noise and intimidating people. They can range from a peaceful sit-in to a full-scale riot in which a mob burns or otherwise destroys property and terrorizes individuals. Even in its more passive forms, a group that blocks roadways, sidewalks, or buildings interferes with public order. In the 1990s, abortion clinics, for example, were targets for these disruptive-type activities.

Throughout this country's history, incidents that disrupted the public peace have figured prominently. The constitutional guarantees allow for ample expression of protest and dissent, and in many cases collide with the preamble's requirement of the government "to ensure domestic tranquility. The balance between an individual's and group's legitimate expression of dissent and the right of the populace to live in domestic tranquility requires the diligent efforts of everyone to avoid such confrontations in the future. In the United States, a crowd itself is constitutionally protected under "the right of the people to peacefully assemble." However, assemblies that are not peaceable are not protected, and this is generally the dividing line between crowds and mobs. The laws that deal with disruptive conduct are generally grouped into offenses that disturb the public peace. They range from misdemeanors, such as blocking sidewalks or challenging another to fight, to felonies, such as looting and rioting.

Missouri law makes "promoting civil disorder in the first degree" a class C felony, according to Section 574.070 of the Revised Missouri Statutes. As stated in one provision of the law, "Whoever teaches or demonstrates to any other person the use, application, or construction of any firearm, explosive, or incendiary device capable of causing injury or death to any person, knowing or intending that such firearm, explosive or incendiary device be used in furtherance of a civil disorder, is guilty of promoting civil disorder in the first degree."

Types of Crowds: A crowd may be defined as a casual, temporary collection of people without a strong, cohesive relationship. Crowds can be classified into four general categories:

- Casual Crowd—A casual crowd is merely a group of people who happen to be in the same place at the same time. Examples of this type include shoppers and sightseers. The likelihood of violent conduct nearly nonexistent.

- Cohesive Crowd—A cohesive crowd consists of members who are involved in some type of unified behavior. Members of this group are involved in some type of common activity, such as worshiping, dancing, or watching a sporting event. Although they may have intense internal discipline (e.g., rooting for a team), they require substantial provocation to arouse to action.

- Expressive Crowd—An expressive crowd is one held together by a common commitment or purpose. Although they may not be formally organized, they are assembled as an expression of common sentiment or frustration. Members wish to be seen as a formidable influence. One of the best examples of this type is a group assembled to protest something.

- Aggressive Crowd—An aggressive crowd is made up of individuals who have assembled for a specific purpose. This crowd often has leaders who attempt to arouse the members or motivate them to action. Members are noisy and threatening and will taunt authorities. They tend to be impulsive and highly emotional and require only minimal stimulation to arouse them to violence. Examples of this type of crowd include demonstrations and strikes.

Types of Mobs: A mob can be defined as a large disorderly crowd or throng. Mobs can be emotional, loud, tumultuous, violent, and lawless. Like crowds, mobs have different levels of commitment and can be classified into four categories:

- Aggressive Mob—An aggressive mob is one that attacks, riots, and terrorizes. The object of violence may be a person, property, or both. An aggressive mob is distinguished from an aggressive crowd only by lawless activity. Examples of aggressive mobs are the inmate mobs in prisons and jails, mobs that act out their frustrations after political defeat, or violent mobs at political protests or rallies.

- Escape Mob—An escape mob is attempting to flee from something such as a fire, bomb, flood, or other catastrophe. Members of escape mobs have lost their capacity to reason and aregenerally impossible to control. They are characterized by unreasonable terror.

- Acquisitive Mob—An acquisitive mob is one motivated by a desire to acquire something. Riots caused by other factors often turn into looting sprees. This mob exploits a lack of control by authorities in safeguarding property. Examples of acquisitive mobs would include the looting in South Central Los Angeles in 1992, or food riots in other countries.

- Expressive Mob—An expressive mob is one that expresses fervor or revelry following some sporting event, religious activity, or celebration. Members experience a release of pent up emotions in highly charged situations. Examples of this type of mob include the June 1994 riots in Canada following the Stanley Cup professional hockey championship, European soccer riots, and those occurring after other sporting events in many countries, including the United States.

Although members of mobs have differing levels of commitment, as a group they are far more committed than members of a crowd. As such, a “mob mentality” sets in, which creates a cohesiveness and sense of purpose that is lacking in crowds. Thus, any strategy that causes individual members to contemplate their personal actions will tend to be more effective than treating an entire mob as a single entity.

Geographic Location

The entire county, due to it’s low population density, has a very low risk to this hazard – however, recent events such as the Bundy Ranch Standoff, the Occupation of the Federal Wildlife Refuge Building in Burns Oregon, and Native American protests against the Dakota Access Oil Pipeline demonstrate that civil disorder CAN occur in remote rural locations.

Past Events

Unfortunately Missouri has not avoided a nationwide trend of consistent riotous behavior or disruptive civil disorder, as other states have witnessed in the past several decades.

On **August 9, 2014**, in Ferguson, Missouri the fatal shooting of a black suspect by a white police officer sparked protests and riots. As the case was ongoing, police established curfews and deployed riot squads to maintain order.

On August 10 some people began looting businesses, vandalizing vehicles, and confronting police officers who sought to block off access to several areas of the city. At least 12 businesses were looted or vandalized and a QuikTrip convenience store and gas station was set on fire, leading to over 30 arrests. The people arrested face charges of assault, burglary, and theft. Police used a variety of equipment, including riot gear and helicopters, to disperse the crowd by 2:00 a.m. Two police officers suffered minor injuries during the events

On August 11, police fired tear gas to disperse a crowd at the burnt shell of the QuikTrip convenience store, set on fire by looters the night before. According to reports, gunshots were fired in Ferguson and five people were arrested. Some protesters threw rocks at police officers. The police responded by firing tear gas and bean bag rounds at protesters.



Ferguson Police respond to civil unrest, August 17, 2014

On August 12, at a protest in Clayton some protestors threw bottles at officers, prompting the use of tear gas to disperse the crowd. The following day, a SWAT team of around 70 officers arrived at a protest demanding that protesters disperse. That night, police used smoke bombs, flash grenades, rubber bullets, and tear gas to disperse the crowd.

As night fell on August 13, some protesters threw projectiles at police including Molotov cocktails, and police launched tear gas and smoke bombs.

On Friday night, protests continued near the QuikTrip until police arrived at around 11:00 p.m. At around 1:30 a.m. Saturday morning, rioters broke into and looted the Ferguson Market & Liquor store as well as other nearby businesses; after the initial break-in, a group of protesters and observers gathered near the storefronts of the looted businesses in an attempt to prevent further looting.

On August 18, after violent clashes during the imposed curfew, Governor Nixon issued an Executive Order calling in the National Guard to "help restore peace and order and to protect the citizens of Ferguson. Nixon also announced that there would be no curfew on the night of August 18. That night, after several hundred protesters, some of whom were seen throwing bottles, charged toward a

wall of police 60 wide and five deep, members of the crowd pushed them back including clergymen and community leaders locking arms, averting a more serious confrontation. Seventy-eight individuals were arrested.

On the evening of September 28, a large crowd protested. Bottles and rocks were thrown at officers. Support from other police forces was requested. Eight protesters were arrested on failure to disperse and resisting arrest charges.

On October 2, 2014 St. Louis County Police and Missouri State Highway Patrol arrested more than a dozen people, who were charged with offenses that included failure to comply with police, noise ordinance violations and resisting arrest.

On October 13, protesters attempted to cross police lines to meet with officers at the Ferguson Police Department. Dozens of protesters, estimated to be over 50, were arrested.

On November 21, two alleged members of the New Black Panther Party were arrested for buying explosives they planned to detonate during protests. Those suspects were also indicted for purchasing two pistols under false pretenses.

On November 24, the grand jury decided not to indict the police officer who had fatally shot the black suspect in Ferguson. Following the announcement there were peaceful protests as well as rioting. A dozen buildings were burned down; there was gunfire, looting, vandalism, and destruction of two St. Louis County Police patrol cars, as well as burning of various non-police cars. Police in Ferguson deployed tear gas and ordered protesters in the street to disperse. There were 61 people arrested in Ferguson on charges including burglary and trespassing. In the hours following the grand jury decision, over 25 buildings and businesses were set on fire in the towns of Ferguson and Dellwood; many more were looted. In one case, firefighters evacuated the scene of a fire due to gunshots being heard, and for the same reason could not respond to other fires.

2015

In the early morning hours of March 12 two police officers were shot outside the Ferguson police station. An "intense manhunt" was launched for the person or persons responsible for the shooting.

On March 14 twenty year-old black male Jeffrey L. Williams was arrested in connection with the shooting.

On April 29 looting resumed in Ferguson in the wake of black suspect being killed by Police in Baltimore, Maryland. Two people were shot in the neck and a third was shot in the leg, with all three victims being in stable condition. Six people were arrested, one for shooting one of the victims and five for looting a Mobil gas station. Four police cars were damaged after rocks were thrown at them. Several items were also set on fire.

On the night of August 9, the anniversary of the Police Shooting in Ferguson, two groups of suspected looters began firing at each other during a demonstration. Four plain-clothed officers in an unmarked sports utility vehicle responded to the scene. There, they shot a man who allegedly opened fire on them with a stolen 9mm SIG Sauer handgun. The suspect, identified as Tyrone Harris Jr., was hospitalized in "critical and unstable" condition. Three hours after the shooting, two teenagers were wounded in an apparent drive-by shooting as they were walking near a memorial

dedicated to Brown. A journalist was also attacked and robbed in a parking lot, while three police officers were injured by protesters. Following the violence, officials placed St. Louis County under a state of emergency on August 10, which was lifted three days later. Protests continued that day and into the night, with one such event shutting down Interstate 70. More than 100 protesters were arrested during the demonstrations. Early in the morning of August 11, more than 20 additional protesters were arrested. Ferguson continues to be the site of unrest.

The most notable incident in Missouri previous to Ferguson was the full scale riot that broke out at the Men's State Penitentiary in Jefferson City at about 6:00 p.m. on September 22, 1954 after an inmate released several prisoners. At 7:00 p.m., all available state highway patrolmen were directed to report to the penitentiary as quickly as possible to quell the riot. Several buildings and vehicles were burning at that time, and some 500 inmates were loose, hurling bricks, yelling, and attempting to escape. Both chapels were ablaze, as well as several prison shops and factories.

When the riot was over, 2,000 police officers and National Guardsmen were on duty at the prison, 3 inmates had been killed and 21 wounded by gunfire. One other prisoner was murdered by stabbing and beating, and eight others were injured in fighting with each other. Five buildings were completely destroyed, and two others partially destroyed, resulting in more than $10 million in losses to state property.

Caldwell County itself has seen Civil unrest on a number of occasions in the past, the first being the events of what's known as the "Mormon war" (which is generally seen as having begun in earnest after the "Gallatin Election Day Battle") and various conflicts between partisan elements in the US Civil War.

Probability and Severity

Given the urban nature of large scale Civil Disturbances historically and the predominately rural nature of Caldwell County, *the probability of such events is rated as low*.

Should Caldwell County experience future incidents of disruptive civil disorder or rioting, *the severity of a given event could range from low to high*, depending on many factors. A spirited demonstration that gets out of hand may result in several arrests, minor damage to property (police vehicles with broken windows, etc.), some injuries, and manpower/overtime costs for police, fire, and other response services. To a greater extent, the threat of urban or intercity riots has the potential for millions of dollars in property damage, possible loss of life, and serious injuries, and extensive arrests. Sustaining police at the scene for extended periods, and possibly mobilizing state highway patrol and National Guard units, can add to the extensive manpower costs.

Impact of the Hazard

When rioting does break out, it generally proves extremely difficult for first-responder law enforcement authorities to quell the mob promptly. The rules of constitutional law set stringent limits on how police officers can behave toward the people they try to arrest. Restraint also plays a crucial part in avoiding any action that "fans the flames." Initial police presence is often undermined because forces may be staffed below the peak loads needed to bring things back under control. As a result, the riot may continue until enough state police or National Guard units arrive to bolster the arrest process and subsequently restore order. In many cases, damage to life and property may already be extensive.

The table below is an Impact Analysis of Potential for Detrimental Impacts of Hazards done for the Emergency Management Accreditation Program.

EMAP Impact Analysis: Civil Disorder

Subject	Detrimental Impacts
Health and Safety of Persons in the Area at Time of Incident	Localized impact expected to be severe for unprotected personnel and moderate to light for protected personnel.
Health and Safety of Personnel Responding to the Incident	Localized impact expected to be severe for unprotected personnel and moderate to light for protected personnel.
Continuity of Operations	Damage to facilities/personnel in the area of the incident may require temporary relocation of operations.
Property, Facilities, and Infrastructure	Localized impact to facilities and infrastructure in the area of the incident. Some severe damage possible.
Delivery of Services	Localized disruption of lines of communication and destruction of facilities may postpone delivery of some services.
The Environment	May cause extensive damage in isolated cases and some denial or delays in the use of some areas. Remediation needed.
Economic and Financial Condition	Local economy and finances adversely affected, possibly for an extended period of time, depending on damage.
Regulatory and Contractual Obligations	Regulatory waivers may be needed. Fulfillment of some contracts may be difficult. Impact may reduce deliveries.
Reputation of or Confidence in the Entity	Ability to respond and recover may be questioned and challenged if planning, response, and recovery not timely and effective.

Vulnerability

Potential Losses to Existing Development

Dependent on the size and nature of the civil disturbance, any structures in the area are at risk to damage and casualties may be a possibility.

Impact of Future Development

Due to the limited nature of development in Caldwell County, it's difficult to quantify possible future assets which may be affected by this hazard.

Hazard Summary by Jurisdiction

Urban communities are at a much higher risk to this hazard than those in less populated rural areas. The larger the community, the larger the vulnerability as there are more people and property that may be harmed.

Problem Statement

In the wake of numerous urban riots in the late 1960s and beyond, a unique approach in law enforcement began to emerge as a viable means to reduce the risk of such future riots. Known as "community policing," its philosophy rests on the belief that reducing and controlling serious crime requires the police to pay renewed attention to all problems that allow serious crime to occur. In its comprehensive report following the devastating 1967 Detroit riot for example, the Kerner Commission noted that police "cannot, and should not, resist becoming involved in community service matters."

The benefits to law enforcement and public order, the commission says, include the following:

- Because of their "front-line position" police will be better able to identify problems in their community that may lead to disorder.
- They will be better able to handle incidents requiring police intervention.
- Willing performance of such work can gain police the respect and support of the community.
- Development of non-adversary contacts can provide the police with a vital source of information and intelligence concerning the communities they serve.

While this mindset may have been revolutionary in urban areas but was more or less the customary way of conducting police business in small rural communities. In addition, the culture of rural Missouri is not particularly conducive towards civil unrest – however, as we have seen with incidents involving grazing rights in Nevada and Pipeline easements in North Dakota, isolated rural areas are not exempt from the possibility of civil unrest and the actors involve may not necessarily be locals.

Cyber Disruption

Hazard Description

Cyber disruption is best described as an interruption or disruption of the normal operations, use and/or function of a cybernetic system. Disruptions can typically fall into two very general categories; un-intentional disruption and intentional disruption.

Un-intentional disruptions are the more common type of disruption as they usually occur when a portion of the system fails. This can look like a typo or mistake in the code used to design the system or a physical failure of hardware or network. Disruption can also be a cascading effect of a failure of other systems supporting the network, i.e. power.

Intentional disruption is typically a directed 'attack' on a cybernetic system to achieve an intended goal, which is usually malicious in intent. These types of disruptions are the most worrisome to governments as they pose the potential to cause irreparable harm to the function and capability of critical systems or supporting systems that are used in daily operations. The FBI defines this intentional disruption as a threat: "a cyber-threat is any circumstance or event with the potential to adversely impact operations (including mission, functions, image, or reputation), agency assets, or individuals through an information system via unauthorized access, destruction, disclosure, modification of information, and/or denial of service."

Past Events

Even though it's an emerging hazard, it has not gone unnoticed. Recognizing the national reliance on cyberspace and the interdependent nature of the Nation's current cyber infrastructure, President Obama commissioned the Cyberspace Policy Review. This report was released on May 29, 2009 and builds on the Comprehensive National Cyber Security Initiative (CNCI). The report calls for the development of a National Cyber Security Incident Response Plan (NCIRP). In 2010, the Department of Homeland Security (DHS) issued the Interim Version in September 2010 of the NCIRP. In November 2011, DHS Secretary Janet Napolitano signed the DHS Blueprint for Cyber Future.

As cyber disruption it is still a very new hazard, the reporting and tracking of disruptive events is difficult. In most cases, it is not required to report an event, and when it is reported most of the information is protected due to the sensitive nature of the systems that were disrupted. However, there currently exist a number of complex databases that track historical cyber disruptions. Each system makes use of its own definitions and tracking methods. As of the release of this plan one database lists that 392,223 cyber-attacks have occurred since November 2010, which was when they started tracking such events. There have been some notable disruption events that did attain national attention:

- A recent famous cyber event was during the 2012 election when 255,238 requests for absentee ballots in Miami-Dade Florida were discovered to be the first officially documented time that an election was attempted to be altered by cyber-attacks.
- In early January of 2013, a series of US bank websites were taken down by denial of service attacks, including Capital One, 5th3rd, and PNC banks
- In May of 2011, Lockheed Martin was attacked but it was detected and as a result 100,000 accounts were locked as a precaution.

Over all, it is apparent that cyber disruption attacks vary in sources, type, and target. As such it can be difficult to protect and plan for.

Probability and Severity

The probability of a cyber-disruption is high. Every second of every day, there will always exist a possibility for both intentional and un-intentional disruptions. To date, historical events within Missouri have tended to be un-intentional. The number of targets for intentional cyber-attacks would seem at this time to be limited to a couple power plants and government databases. Though there are targets, Missouri is not aware of a current threat against any of the critical facilities or databases. Moving forward, awareness of the growing threat from both domestic and international cyber-attacks does impress the need to develop robust defense and counter attack systems to protect against the increasing likelihood of an attack.

The projected severity of a Cyber Disruption ranges from low to high depending upon the system disrupted and the intention of the attacker. Some systems have redundant capabilities or are not critical to daily operations. As such the severity of a disruption to that system is low. However, there are other systems that are integral to operations, contain sensitive information, or provide access/control to critical systems. A disruption to those systems would have a severe impact on the state.

It is difficult to quantify an exact probability or severity of a disruption due to the limited information available and the many unknown factors. The intent of an intentional disruptor could range from something as minor as leaving a message to a major issue with sensitive data collection or control of a critical facility. The probability of an error or failure is also hard to quantify as most systems are properly update, replaced, and maintained as needed. Usually it is an extenuating circumstance that drives a failure, which cannot be measured.

Impact of the Hazard

Thought a Cyber Disruption can have limited impacts within a system's own operations, it also can have extended cascading affects throughout multiple systems. The system that is disrupted and the source of the disruption are major factors in the impact. If it is an intentional disruption and the system is critical then the impact has the potential to quite devastating. Some examples of cyber disruption impacts include:

- Failure of a medical research database: Localized impact with typically limited impacts that can be recovered due to database backups.
- Government intranet failure due to hardware: Though very disrupting, this event usually doesn't have long term impacts.
- Breach of sensitive database for the justice offices: The information could be altered, added to, or publicly shared causing wide-spread long-term impacts.
- Utility services remotely accessed and controlled: The attacker could drastically impact not only the government, critical facilities, and public services but also the public itself.

Vulnerability

While many people from small communities may feel that “cyber attack” is really just a concern for huge financial institutions, corporations, and government installations, this is not the case. In August of 2011, the “hacktivist” collective known as Anonymous breached 70 law enforcement computer systems, defacing websites and exposing sensitive information, such as email, tips on suspected crimes and profiles of gang members. This didn’t occur at federal, state or large metropolitan law enforcement departments –the attackers targeted small, mostly rural police and sheriff offices. Cyber-attacks can happen in any state or locality.

Small jurisdictions tend not to have IT staff at all, let alone security specialists to oversee data protection on a round-the-clock basis. In 2011, a National Association of State Chief Information Officers (NASCIO) survey found that half of states responding spent less than 3 percent of their IT budget on security. When it seems to be such a low priority at the State Level, where there IS a budget for such things, one can extrapolate what cyber security must look like in sparsely populated rural communities.

Nonetheless, those same small-town agencies are increasingly running critical services on computers that can be easily shut down by hackers, cybercriminals or just a disgruntled employee.

Likewise, while small businesses have not historically been the target of cybercrime, 2015 saw a drastic change, according to Toni Allen, UK head of client propositions at the British Standards Institute (BSI); “The latest Government Security Breaches Survey found that nearly three-quarters (74%) of small organizations reported a security breach in the last year; an increase on the 2013 and 2014 survey.” This sharp rise indicates that small businesses are specifically targeted by digital attackers, most likely because of their typically lax or even nonexistent cyber security.

Potential Losses to Existing Development

At best cyber-attacks are disruptive, and can inhibit the normal function of systems for days or longer. At worst, they can result in the corruption or complete loss of data on a massive scale.

Impact of Future Development

Commercial and industrial development in Caldwell County is relatively minimal, making it difficult to project any significant change in terms of vulnerability.

Hazard Summary by Jurisdiction

Communities that have government infrastructure or commercial concerns are more vulnerable to cyber-attack and more likely to be targets. The Cities of Kingston (the County Seat) and Hamilton (the commercial hub) have a significantly higher risk than other communities in the county. Schools also can be targets.

Problem Statement

Cyber Disruption is an emerging hazard that has gained an increasing notoriety as the vulnerability to disruption grows parallel with the dependence on cybernetic system even in small rural communities.

Hazardous Materials Release (Fixed Facility/Transpiration Incidents, Clandestine Labs)

Hazard Description

A hazardous material is any substance or material in a quantity or form that may pose a reasonable risk to health, the environment, or property. The category hazardous material includes incidents involving substances such as toxic chemicals, fuels, nuclear wastes and/or products, and other radiological and biological or chemical agents. For the purposes of this analysis, only accidental or incidental releases of hazardous materials from two different kinds of incidents are addressed: fixed facility incidents and transportation-related accidents. In consideration of recent worldwide and national events, incidents involving terrorism or national attacks, which involve hazardous materials of any type, are addressed in other sections of this plan.

Generally, with a fixed facility, the hazards are pre-identified, and the facility is required by law to prepare a risk management plan and provide a copy to the local emergency planning committee (LEPC) and local fire departments. Missouri Tier II forms must also be filed with the Missouri Emergency Response Commission (MERC) at the State Emergency Management Agency (SEMA.) For specific site plans, each county LEPC is required by law to maintain a copy of these plans.

The exact location of a hazardous materials accident is not possible to predict. The close proximity of railroads, highways, airports, waterways, pipelines, and industrial facilities to populated areas, schools, and businesses could put a large number of individuals in danger at any time. In addition, essential service facilities, such as police and fire stations, hospitals, nursing homes, and schools near major transportation routes in the State are also at risk from potential hazardous materials transportation incidents.

Federal Highway Administration statistics indicate that 1 of 10 motor vehicles is engaged in the transport of hazardous materials of some type. The U.S. Army Corps of Engineers also indicates that over 9,000 tons of petroleum products and over 200,000 tons of chemicals and related products are shipped annually by river barge via the Missouri River between Omaha and Kansas City. Previous estimates have indicated that, nationwide, over four billion tons of hazardous materials are shipped each year by various transportation modes. Approximately 20 flights each day out of Lambert Airport in St. Louis carry nuclear medicines, and Tri-State Motor Transit Company of Joplin has approximately 25 shipments of high explosives each week.

Commercial carriers traverse the continental United States. Even arterial highways in Missouri are maintained to provide more favorable traveling conditions than in other central states. Also, the locations of nuclear facilities in relation to mines and fuel processing plants result in shipments of radioactive products and wastes across Missouri.

Missouri is at the crossroads for rail and truck transport of nuclear waste to the Yucca Mountain, Nevada, test site. Truck shipments alone will affect 25 different states, 266 counties, and two Indian reservations. This will be a potentially large waste shipping campaign from as many as 19 nuclear reactors through other corridor states to Nevada.

The railroad systems in Missouri transport voluminous types and amounts of hazardous materials on their 6,351 miles of rails that traverse the State. Though individual cars may be placarded to reveal contents such as hazardous materials, only estimates can be obtained concerning volumes of such materials, because only the interstate traffic is counted or measured. Interstate shipments are accounted for where they originate and terminate.

Increased use and transport of materials across the country has created serious problems for emergency services personnel. Many factors can increase the magnitude of an otherwise simple transportation accident into an incident of potential hazard to high numbers of people. Following are potential factors to be considered:

- Over 14,000 different chemicals are estimated as being shipped by the various transportation modes. Some types of highly toxic chemicals do not require placarding if shipped in quantities of less than 1,000 pounds, even though lesser quantities could devastate a small town.

- Only a few emergency response organizations in the larger cities and counties near the more metropolitan areas have had training for handling peacetime radiological problems. With recent federal grants and programs in place to provide funding for training, exercises, and equipment for state Homeland Security Response Teams and local responders, the general capabilities of hazardous materials response personnel and teams statewide is expected to improve

Railroads throughout Missouri may carry radioactive material shipments, the switching yards at St. Louis and Kansas City process more of these transcontinental trains than any other yards in the country.

During any radiological emergency, regardless of the cause, local officials and emergency responders will likely require state or federal support in the detection, monitoring, and analysis of radiological data for decision-making.

Geographic Location

Due to the ubiquitous presence of HAZMAT transport vehicles on both rail and highways throughout the country, it can easily be said that the areas most prone to HAZMAT incidents are those with the highest volume of traffic – In Caldwell County this is particularly Hwy 36 and to a lesser extent Hwy 13, as well as the rail passing through the south of the County. Various fixed facility (predominately ag related) are also areas of risk.

Past Events

The Environmental Protection Agency (EPA) maintains a National Priority List (NPL) which serves primarily informational purposes, identifying for the States and the public those known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States and its territories. The NPL is intended primarily to guide the EPA in determining which sites warrant further investigation. Inclusion of a site on the NPL does not in itself reflect a judgment of the activities of its owner or operator, it does not require those persons to undertake any action, nor does it assign liability to any person. The NPL serves primarily informational purposes, identifying for the States and the public those sites or other releases that appear to warrant remedial actions.

In Missouri, there are currently 30 active NPL sites, none of which are located in Caldwell County.

The Missouri Department of Natural Resources' role in emergency response is to minimize damages in a hazardous substance emergency, with the highest priority being the protection of people and then the environment. The department's mandate to address environmental emergencies includes "any chemical, petroleum, or other material spilled on to the land, water, or

atmosphere" that might impact the public health/safety and/or the environment. The Missouri "Spill Bill"* (Section 260.500 to 260.550 RSMo) requires the department to maintain a 24-hour EER Hotline, and provides the authority to initiate a cleanup or provide cleanup oversight for chemical releases.

Under the Missouri Spill Bill (260.500 – 260.550 RSMo) responsible parties/spillers are required to report releases of hazardous substances to the department's 24-Hour Environmental Emergency Response (EER) Hotline 573-634-2436 or to the National Response Center 800-424-8802. EER Duty Officers maintaining the EER Hotline provide technical assistance regarding the chemical and necessary cleanup actions, work with the responsible party/spiller to ensure that proper cleanup is completed and impact to the public health and environment is minimized, conduct notifications to various agencies, and determine if an on-site response is needed by EER staff. EER Duty Officers complete an EER Incident Report into the Missouri Environmental Emergency Response Tracking System (MEERTS) on each incident reported on the 24-Hour Environmental Emergency Response Hotline or via fax from the National Response Center. Once the EER Incident Report is finalized, it is made available.

During the period from 2000-2012, an average annual 3,198 incidents were reported through MEERTS for hazardous substance emergencies/releases in Missouri.

Caldwell County Hazmat incidents 1993 -2012	
Number of Rail yard/Railroad Incidents	Number of Fixed Facility Incidents
4	12

The Missouri Highway Patrol's Division of Drug and Crime Control serves as the collection and entry point for statewide methamphetamine laboratory seizures. The department's involvement in the methamphetamine laboratory crisis in Missouri began in 1997. Law enforcement agencies were being inundated with large quantities of hazardous waste, chemicals and debris associated with the production of methamphetamine. At the direction of the governor, the Missouri Methamphetamine Enforcement and Environmental Protection Task Force was formed to address this and other issues related to the burgeoning problem. Numerous local, state and federal agencies and organizations banded together and, under the direction of the Meth/Special Projects Unit, created the Clandestine Drug Lab Collection Station (CDLCS) Program. Local fire service and law enforcement agencies operate collection stations throughout the State with technical and financial assistance provided by the department.

The Meth/Special Projects Unit provides a variety of supplies, personal protective equipment and air monitoring equipment to law enforcement at no cost. Examples of packaging/cleanup supplies available include 5-gallon chemical overpack buckets, hazardous materials labels, eye wash bottles, safety goggles, safety glasses, absorbent material, pH paper, hand sanitizer, etc. Personal protective equipment includes chemical protective coveralls, boot covers, nitrile gloves, air-purifying respirators, cartridges, self-contained breathing apparatus and air cylinders. Drager pumps and tubes along with organic vapor meters and multi-gas meters have been provided to collection station operators, drug task forces and law enforcement agencies throughout the State. Inquiries concerning supplies and equipment procurement may be made by e-mail or by calling 573-526-3349. Information about the Meth/Special Projects Unit can be found at http://www.dnr.mo.gov/env/esp/meth-special-projects.htm

There has been 1 meth lab seizure in Caldwell County since 2011, and that was in 2016.

Probability and Severity

Hazardous Materials Fixed-Facility Accident

The probability of occurrence is rated as moderate. With the new regulations from EPA and the Occupational Health and Safety Administration, along with more stringent state laws and employee awareness training, this rating may be lowered to low or raised to high based on past performance. This rating means the probability of occurrence is possible during the expected lifetime of the facility.

The severity of consequences is rated as moderate but may be either low or high depending on the type and amount of chemical released. This means the chemical is expected to move into the surrounding environment at a concentration sufficient to cause serious injuries and/or death, unless prompt and effective corrective actions are taken. Injuries and/or death would be expected only for personnel exposed over an extended period or when individual personal health conditions create complications.

Hazardous Materials Transportation Accident

The probability of occurrence is rated as high because of the large volume of hazardous materials being hauled over the highways and railways in Missouri. This rating means that the probability of occurrence is considered sufficiently high as to assume that an event will occur at least once within any mode of transportation (including water, pipeline, and air) during a three-year HSEES reporting period.

The severity of the consequences is rated as moderate, but may be either low or high depending on the location of the accident and the time of day. This rating means injuries and/or death are expected only for exposed personnel over extended periods of time or when individual personal health conditions create complications.

Vulnerability

Vulnerability is high due to the amount of roadway in the county, the ubiquitous nature of HAZMAT products being transported, and agricultural use of HAZMAT products in Agricultural pursuits. The majority of HAZMAT fixed facilities in the County are ag-related. The areas most prone to HAZMAT incidents are those with the highest volume of traffic, particularly Hwy 36 and to a lesser extent Hwy 13.

Potential Losses to Existing Development

HAZMAT events don't necessarily present a great threat of direct loss to existing development – they do constitute temporary health hazards and have the potential to close off areas to public use and through traffic for considerable periods of time. The effects of this range from minor inconvenience to a major issue if such an event were to cause a shutdown of Hwy 36.

Impact of Future Development

Commercial and industrial development in Caldwell County is relatively minimal, making it difficult to project any significant change in terms of vulnerability.

Hazard Summary by Jurisdiction

The areas most prone to HAZMAT incidents are those with the highest volume of traffic, particularly Hwy 36 and to a lesser extent Hwy 13 – therefore, of Caldwell County's communities, the Cities of Hamilton, Kingston, and Polo are at greater risk to this hazard.

Problem Statement

Caldwell County, like the entire State of Missouri is susceptible to this type of hazard, depending on a number of factors such as the type of chemical, amount released/spilled, method of release, location of release, time of day, and weather conditions.

This hazard could have a significant impact on the public health, the environment, private property, and the economy. The impact of this type of disaster will likely be localized to the immediate area surrounding the incident. The initial concern will be for people, then the environment. If contamination occurs, the spiller is responsible for the cleanup actions and will work closely with the Missouri Department of Natural Resources, EPA, and the local jurisdiction to ensure that cleanup is done safely and in accordance with federal and state laws.

Local government (county or municipal) is more often directly impacted by hazardous materials incidents than state or federal government. Local responders are generally the first on scene for any incident. Therefore, they have the responsibility for treating any injured victims and transporting them to a hospital for more complete medical care. Also, local first responders have the initial responsibility for controlling exposure of emergency workers and the public to any radioactive materials and to contain the spread of radioactive contamination as much as possible. While cleanup of any actual spill of radioactive materials rests with the shipper (in most cases), local responders may be required to provide site control for several hours until the responsible parties arrive on the scene.

Any disaster or emergency incident, such as an earthquake or a flood, could result in additional concerns when it involves hazardous materials. For example, during the floods of 1993, a large propane tank farm in St. Louis was threatened by rising floodwaters, forcing evacuations of nearby residents in several areas. Another hazardous materials incident related to the 1993 floods involved an on-going ammonia release from the La Roche Industries, Inc., facility near Crystal City, Missouri, caused by power failure and failure of the cooling system on a large ammonia tank, which ultimately resulted in off-gassing of ammonia through the tank's pressure relief check valves. The ammonia cloud over the plant led to a declaration of restricted air space in the plant vicinity for several days. In addition, thousands of chemical containers ranging from household products and 55-gallon drums to 10,000-gallon fuel storage tanks were displaced statewide as a result of the flood damage. A federal disaster declaration was issued, the Federal Response Plan (FRP) was implemented, and Emergency Support Function #10—Hazardous Materials Annex was activated to support the statewide response to hazardous materials incidents like these and others that resulted from the flooding.

Each emergency event will need to be evaluated on an incident-specific basis, and top priority must be given to the protection of the public, then the environment, and property. Tier II Forms are filed and maintained by the Missouri Emergency Response Commission at SEMA. Site specific plans are on file with each county's local emergency planning commission. Transportation and evacuation routes are addressed in the Caldwell County Emergency Operations Plan.

Mass Transportation Incident

Hazard Description

For the purpose of this plan, mass transportation is defined as the means, or system, that transfers large groups of individuals from one place to another. This profile addresses only transportation accidents involving people, not materials. Thus, mass transportation accidents include public airlines, railroad passenger cars, metro rail travel, tour buses, city bus lines, school buses, riverboat casinos, and other means of public transportation. Commercial motor vehicles are defined as trucks having six or more tires on the power unit, buses or school buses having occupant capacities of 16 or more, and vehicles displaying hazardous materials placards.

Missouri serves as a transportation crossroad for the United States. Missouri, being centrally located in the nation, is a natural hub for many major airlines (approximately 10 airports in the State carry passengers) and other types of tourist and business travel. Many cross-country travelers use Missouri terminals to connect with transport changes. The state's airways, railways, and highways are used as nonstop thoroughfares as well.

Normally, the largest numbers of people are transported during the morning and evening rush hours. Amtrak, the State's major passenger rail carrier, uses tracks that cross the entire state from east to west. Although Amtrak has experienced a decline in passengers during this decade, it continues to carry a large number of passengers daily. The peak periods are related to holidays or special events.

Tour bus travel in the State is on the increase. With Branson continuing to expand, more bus traffic in the State can be expected. With the new tourism development in Hamilton and the existing tourist economy in nearby Jamesport (in Daviess County) increased bus traffic can be expected in Caldwell County as well.

Geographic Location

The localities most prone to Mass transportation incidents are those traffic ways with high volumes of traffic – in Caldwell County this is Hwy 36 in particular, and to a lesser extent Hwy 13. In addition, the Railroad in Caldwell County passes through the Community of Braymer, Cowgill, and Polo

Past Events

Commercial Vehicles

Commercial motor vehicles have been involved in a significant number of Missouri traffic accidents. Statistics from the Missouri State Highway Patrol Statistical Analysis Center show that in 2011, 9.2 percent of all traffic accidents involved a commercial motor vehicle, compared to 8 percent in 2007.Of fatal traffic accidents, 15.2 percent involved a commercial motor vehicle, decreasing from 16 percent in 2007. A total of 120 persons were killed and 3,479were injured in commercial motor vehicle-related accidents in 2011. In 2007, 168 persons were killed and 5,284 injured in commercial motor vehicle related accidents. In 2011, accidents involving buses and school buses resulted in four fatalities, compared to six fatalities in 2007.

Railroads

On May 14, 1997, about 9:00 p.m., a Missouri and Northern Arkansas Railroad (M&NA) train, the Cotter North local, was traveling northbound in non-signaled territory when it entered a siding track and collided with an unattended and unoccupied Branson Scenic Railway (BSR) excursion train. The collision occurred in downtown Branson, Missouri, on the M&NA Aurora Subdivision at milepost (MP) 447.3. When the collision occurred, the lead locomotive unit of the striking train derailed and caught fire. Also, both locomotive units of the parked train derailed. Both train crewmembers of the M&NA train sustained minor injuries. The costs associated with the accident were $410,625. Though this incident didn't affect Caldwell County it did demonstrate the kind of event that could happen anywhere in the State, even Caldwell County.

Probability and Severity

Based on the latest available information, *the probability and severity of a mass transportation accident are both rated as moderate.*

Vulnerability

Potential Losses to Existing Development

Mass traffic incidents typically don't involve to much damage to development, so much as injuries, deaths, and disruption of services associated with the normal flow of traffic on a major traffic way.

Impact of Future Development

Commercial and industrial development in Caldwell County is relatively minimal, making it difficult to project any significant change in terms of vulnerability.

Hazard Summary by Jurisdiction

The areas most prone to HAZMAT incidents are those with the highest volume of traffic, particularly Hwy 36 and to a lesser extent Hwy 13 – therefore, of Caldwell County's communities, the communities of Hamilton and Kingston are at the greatest risk. Due to the presence of a railroad, the communities of Braymer, Cowgill, and Polo are also at risk.

Problem Statement

A mass transportation accident, which could include those involving buses, could burden a local jurisdiction's available medical services. To minimize this problem, mutual aid agreements with adjoining jurisdictions should be developed between ambulance services and the hospitals. This type of hazard could involve hazardous materials or a fire, which would compound the impacts of the incident. Severe weather could also hamper response efforts.

Public Health Emergency/ Environmental Issues

Hazard Description

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

Public health emergencies can occur as primary events by themselves, or they may be secondary to another disaster or emergency, such as tornado, flood, or hazardous material incident. The common characteristic of most public health emergencies is that they adversely impact, or have the potential to adversely impact, a large number of people. Public health emergencies can be worldwide or localized in scope and magnitude. Deadly outbreaks can kill or sicken thousands of people across the county or around the globe, as in the case of the Spanish Flu epidemic of 1918–1919.

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

Environmental concerns addressed in this profile focus on air and water pollution, because contamination of those media can have widespread impacts on public health and devastating consequences. Particular issues of primary concern associated with sources of air and water pollution change over time depending on recent industrial activity, economic development, enforcement of environmental regulations, new scientific information on adverse health effects of particular contaminants or concentrations, and other factors.

Geographic Area

Geography can affect the development and spread of environmental issues, especially as it pertains to contamination of the air, soil, or water. Public health emergencies seem to revolve more around population density and patterns of movement than geography per se, and it can be said that more densely populated areas are at a higher risk of experiencing an epidemic if a disaease vector is present within them.

Past Events

Influenza Pandemics

Since the early 1900s, three lethal pandemics have swept the globe, although none have compared to the infamous Spanish Flu event of 1918–1919, which killed more than 20 million people. Its primary victims were mostly young, healthy adults. The 1957 Asian Flu pandemic killed about 70,000 people in the United States, mostly the elderly and chronically ill. The 1968 Hong Kong Flu pandemic killed 34,000 Americans. In addition to those three pandemics, several "pandemic scares" have occurred; the Swine Flu of 1976, Russian Flu of 1977, and Avian Flu of 1997 are notable flu scares that occurred in the twentieth century.

Avian Flu (H5N1)

The Avian flu (H5N1) is a Type A influenza virus that occurs mainly in birds and is highly contagious among birds. The Avian Flu virus was especially virulent, and made an unusual jump from chickens to humans. At least 18 people were infected, and six died in the outbreak. Since 2003, a growing number of human H5N1 cases have been reported in Asia, Europe, and Africa. More than half of the people infected with the H5N1 virus have died. Most of these cases are all believed to have been caused by exposure to infected poultry. There has been no sustained human-to-human transmission of the disease, but the concern is that H5N1 will evolve into a virus capable of human-to-human transmission. Scientists are concerned that as H5N1 continues to evolve, it could make humans more susceptible to infection. Since humans have little or no immune protection against H5N1, such a change could spark an influenza pandemic with potentially high rates of illness and death. For treatment (and prevention) of human infection with avian influenza A viruses, the Center for Disease Control and World Health Organization currently recommend oseltamivir or zanamivir, two of four prescription antiviral medications currently licensed for use in the United States.. Researchers are working to produce alternative treatments. Thailand has begun a phase 1 clinical trial to test an H5N1 avian, or bird, influenza vaccine in a needle-free, nasal spray form. This trial is a result of international collaboration with health agencies around the world, including the U.S. Department of Health and Human Services' Biomedical Advanced Research and Development Authority (BARDA). The study and data analysis is expected to be complete by May 2013.

Smallpox

Smallpox is a contagious, sometimes fatal, infectious disease. There is no specific treatment for smallpox disease, and the only prevention is vaccination. Smallpox is caused by the variola virus that emerged in human populations thousands of years ago. It is generally spread by face-to-face contact or by direct contact with infected bodily fluids or contaminated objects (such as bedding or clothing). A person with smallpox is sometimes contagious with onset of fever, but the person becomes most contagious with the onset of rash. The rash typically develops into sores that spread over all parts of the body. The infected person remains contagious until the last smallpox scab is gone. Smallpox outbreaks have occurred periodically for thousands of years, but the disease is now largely eradicated after a worldwide vaccination program was implemented. After the disease was eliminated, routine vaccination among the general public was stopped. The last case of smallpox in the United States was in 1949.

It should be noted that after recent terrorist events in the United States, there is heightened concern that the variola virus might be used as an agent of bioterrorism. For this reason, the U.S. government is taking precautions for dealing with a smallpox outbreak

St. Louis Encephalitis

In the United States, the leading type of epidemic flaviviral encephalitis is St. Louis encephalitis (SLE), which is transmitted by mosquitoes that become infected by feeding on birds infected with the virus. SLE is the most common mosquito-transmitted pathogen in the United States. There is no evidence to suggest that the virus can be spread from person to person.

Between 1964 and 2010, there were 4,693 confirmed cases of SLE in the United States. Seventy-seven of these cases were in Missouri. According to the Center for Disease Control, there was one case of SLE in Missouri in 2010. It should be noted, however, that less than 1 percent of SLE infections are clinically apparent, so the vast majority of infections remain undiagnosed. Illnesses range from mild headaches and fever to convulsions, coma, and paralysis. The last major outbreak of SLE occurred in the Midwest from 1974 to 1977, when over 2,500 cases were reported in 35 states. The most recent outbreak of St. Louis encephalitis was in 2001 in Monroe and West Monroe, Louisiana, with 63 reported cases. The disease is generally milder in children than in adults, with the elderly at highest risk for severe illness and death. Approximately 3 to 30 percent of cases are fatal; no vaccine against SLE exists.

Meningitis

Meningitis is an infection of fluid that surrounds a person's spinal cord and brain. High fever, headache, and stiff neck are common symptoms of meningitis, which can develop between several hours to one to two days after exposure. Meningitis can be caused by either a viral or bacterial infection; however, a correct diagnosis is critically important, because treatments for the two varieties differ. Meningitis is transmitted through direct contact with respiratory secretions from an infected carrier. Primary risk groups include infants and young children, household contact with patients, and refugees. The disease is of most concern in Africa, where 213,658 cases were reported during 1996–1997, with 21,830 deaths. In the United States, periodic outbreaks continue to occur, particularly among adolescents and young adults. About 2,600 people in the United States get the disease each year. According to the Missouri Department of Health and Senior Services, there were 23 cases in Missouri in 2010. Generally, 10 to 14 percent of cases are fatal, and 11 to 19 percent of those who recover suffer from permanent hearing loss, mental retardation, loss of limbs, or other serious effects. Two vaccines are available in the United States.

Lyme Disease

Lyme disease was named after the town of Lyme, Connecticut, where an unusually large frequency of arthritis-like symptoms was observed in children in 1977. It was later found that the problem was caused by bacteria transmitted to humans by infected deer ticks, causing an average of more than 16,000 reported infections in the United States each year (however, the disease is greatly under reported). Lyme disease bacteria are not transmitted from person to person. Following a tick bite, 80 percent of patients develop a red "bulls-eye" rash accompanied by tiredness, fever, headache, stiff neck, muscle aches, and joint pain. If untreated, some patients may develop arthritis, neurological abnormalities, and cardiac problems, weeks to months later. Lyme disease is rarely fatal. During early stages of the disease, oral antibiotic treatment is generally effective, while intravenous treatment may be required in more severe cases.

In the United States, Lyme disease is mostly found in the northeastern, mid-Atlantic, and upper north central regions, and in several counties in northwestern California but has been reported in every state. In 2005, 23,305 cases of Lyme disease were reported to the Centers for Disease Control and Prevention. According to the DHSS, in 2010, Missouri showed a decreasing trend for the occurrence of Lyme disease with five cases, the lowest since 2009 when 10 cases were reported. There have been no reported cases of Lyme disease that originated in Missouri.

West Nile Virus

West Nile virus is a flavivirus spread by infected mosquitoes and is commonly found in Africa, West Asia, and the Middle East. It was first documented in the United States in 1999. Although it is not known where the U.S. virus originated, it most closely resembles strains found in the Middle East. It is closely related to St. Louis encephalitis and can infect humans, birds, mosquitoes, horses, and other mammals.

Most people who become infected with West Nile virus will have either no symptoms or only mild effects. However, on rare occasions, the infection can result in severe and sometimes fatal illness. There is no evidence to suggest that the virus can be spread from person to person.

An abundance of dead birds in an area may indicate that West Nile virus is circulating between the birds and mosquitoes in that area. Although birds are particularly susceptible to the virus, most infected birds survive. The continued expansion of West Nile virus in the United States indicates that it is permanently established in the Western Hemisphere. As of December 11, 2012, 48 states have reported West Nile virus infections in people, birds, or mosquitoes. A total of 5,387 cases of West Nile virus disease in people, including 243 deaths, have been reported to CDC. The 5,387 cases reported thus far in 2012 is the highest number of West Nile virus disease cases reported to CDC through the second week in December since 2003. Eighty percent of the cases have been reported from 13 states (Texas, California, Louisiana, Illinois, Mississippi, South Dakota, Michigan, Oklahoma, Nebraska, Colorado, Arizona, Ohio, and New York) and a third of all cases have been reported from Texas.

Severe Acute Respiratory Syndrome (SARS)

SARS is a respiratory illness that has recently been reported in Asia, North America, and Europe. Although the cause of SARS is currently unknown, scientists have detected in SARS patients a previously unrecognized coronavirus that appears to be a likely source of the illness. In general, humans infected with SARS exhibit fevers greater than 100.4°F, headaches, an overall feeling of discomfort, and body aches. Some people also experience mild respiratory symptoms. After two to seven days, SARS patients may develop a dry cough and have trouble breathing.

The primary way that SARS appears to spread is by close person-to-person contact; particularly by an infected person coughing or sneezing contaminated droplets onto another person, with a transfer of those droplets to the victim's eyes, nose, or mouth. The global outbreak of 2003 was contained. There were no confirmed cases in Missouri.

H1N1 Influenza (Pandemic Influenza)

The H1N1 virus, also known as the swine flu, is a respiratory disease of pigs caused by type A influenza viruses that regularly cause outbreaks of influenza in pigs. This virus is a unique grouping

of influenza virus genes never previously seen in either animals or people. The virus genes are a combination of genes most closely related to North American swine-lineage H1N1 and Eurasian lineage swine-origin H1N1 influenza viruses. Due to this combination, initial reports referred to the virus as a swine origin influenza virus. However, investigations of initial human cases did not identify exposures to pigs and quickly it became apparent that this new virus was circulating among humans and not among U.S. pig herds.

The new flu virus spread quickly across the United States and the world in the spring of 2009. The first U.S. case of H1N1 was diagnosed on April 15, 2009. By April 21, the Centers for Disease Control and Prevention (CDC) was working to develop a vaccine for this new virus. The U.S. government declared H1N1 a public health emergency on April 26. By June, 18,000 cases of H1N1 had been reported in the U.S. Additionally, 74 countries were affected by the pandemic. H1N1 vaccine supply was limited in the beginning. People at the highest risk of complications got the vaccine first. By November 2009, 48 states had reported cases of H1N1, mostly in young people. That same month, over 61 million vaccine doses were ready. Reports of flu activity began to decline in parts of the country, which gave the medical community a chance to vaccinate more people. 80 million people were vaccinated against H1N1, which minimized the impact of the illness. The CDC estimates that 43 million to 89 million people had H1N1 between April 2009 and April 2010. They estimate between 8,870 and 18,300 H1N1 related deaths. On August 10, 2010 the World Health Organization (WHO) declared an end to the global H1N1 flu pandemic.

According to the September 1, 2009 H1N1 Virus Briefing document produced by the Missouri Department of Health and Senior Services, the H1N1 virus, also known as swine flu, first emerged in Mexico in March 2009 and caused illness in people worldwide. As of August 23, 2009, the World Health Organization reported over 209,438 laboratory-confirmed cases of H1N1 with 2,185 deaths. Missouri saw its first H1N1 case in April 2009. Since then, the State reported hundreds of confirmed cases and eleven deaths. In Missouri, as well as worldwide, the illness associated with this new virus continued to be similar to the seasonal flu. Most people who have become ill have recovered without requiring medical treatment. However, the virus has been shown to be particularly aggressive in some segments of the population not usually affected by the regular flu. These groups include pregnant women, schoolage children, and those with underlying chronic health conditions, such as obesity or asthma.

The H1N1 flu outbreak was serious. In late March and early April 2009, cases of human H1N1 infection were first reported in Southern California and near San Antonio, Texas. For comparison, only 12 human cases of swine flu were detected in the U.S. from December 2005 to February 2009, with no deaths occurring. The last swine flu outbreak in the U.S. was in 1976.
On Friday, April 24, 2009 the State health department issued a Health Advisory to Missouri's medical community and to public health departments. The Health Advisory asked hospital intensive care units to collect influenza specimens from patients with flu-like illness, confirmed influenza, bacterial pneumonia, or lower respiratory illness with fever. The department also asked the existing network of key health care providers to collect specimens from outpatients suffering from those symptoms.

The World Health Organization declared this outbreak a worldwide influenza pandemic. The declaration was based on the spread of the virus throughout the world, not on the severity of the illness. The Missouri Department of Health and Senior Services prepared for such a pandemic with its Missouri Pandemic Influenza Response plan. Additional activities included enhanced surveillance for the H1N1 virus by requiring immediate, detailed reporting of all diagnosed or suspected cases;

conducting more frequent analysis of surveillance data; and activating additional surveillance providers. The State Public Health Laboratory in Jefferson City is a state-of-the-art facility that handles many kinds of infectious agents.

Environmental Issues

Although Missouri has never had an environmental disaster of large proportions, there are many instances where hazardous substances can impact the environment with considerable consequences to either air or water. Floods often temporarily interrupt community water supplies, creating the need for emergency potable water for thousands of people. In July 1993, for example, St. Joseph's municipal water plant was forced to shut down for an extended period when contaminated floodwater threatened to enter the system. Floodwaters also disrupt wastewater treatment facilities, resulting in the discharge of raw or improperly treated sewage. Periodically, water pollutants cause fish kills in Missouri streams, and excessive air pollutants associated with smog in large metropolitan areas create public health problems.

In 1983, the town of Times Beach, located in St. Louis County, was evacuated due to dioxin contamination. Dioxin is chemical compound found to cause severe health effects when high levels of exposure occur. In the 1920s and 30s, the town was a summer resort but had since become a lowmiddle class town. Due to the dust problem from unpaved roads, a local waste hauler was hired to spray waste oil in and around the town on the dirt roads. The waste hauler had also been hired by a local company to dispose of toxic waste. The toxic waste came from a facility in western Missouri that had once produced Agent Orange during the Vietnam War. The hauler was unaware of the dioxin content and mixed it with the oil being sprayed. A problem first arose when 62 horses died after the mixture was sprayed in a stable to mitigate dust. On December 5, 1982, the Meramec River flooded causing an evacuation due to more than 95% of the town being under ten feet of water. On December 23, 1982 the EPA announced that dangerous levels of dioxin were found in the soil around Times Beach. By 1985, the Times Beach was evacuated. It was later found that the waste contained 2,000 times the amount of dioxin content of Agent Orange. It was the largest civilian exposure to dioxin in the county's history.

Air Pollution Staff in the State of Missouri Air Quality Monitoring section operates approximately 140 instruments at 40 locations around the State as part of a network to monitor air pollutants known to affect people's health. In addition, staff conducts special air quality studies. Because of high amounts of ozone, carbon dioxide, nitrogen compounds, and other vehicular pollutants in the St. Louis metropolitan area, vehicles registered in the counties of St. Louis, St. Charles, and Jefferson, as well as St. Louis City, are required to have their exhaust systems routinely checked to determine whether emissions standards are being achieved. In addition, all service stations around St. Louis are now required to have new gas nozzles that recapture gasoline vapors, thus preventing them from being released to the atmosphere. These vapors (unburned hydrocarbons) chemically react with nitrogen oxides when exposed to the sunlight and form ozone, which is the basis for smog.

Water Pollution

The Missouri Department of Natural Resources also maintains the State's water quality management plan and has developed individual plans for each drainage basin in Missouri.

According to the 2012 Water Quality Report, state concerns include the following:

- Channelization has caused aquatic habitat degradation in 32 percent of Missouri's streams and contributes to flooding, high water velocities, and streambank erosion as they try to recreate their natural sinuosity.
- Eutrophication of large, recreationally important reservoirs continues to be a concern.
- Abandoned lead-zinc mines and their tailings continue to impact waters decades after mining has ceased. Missouri's Superfund Program is addressing some of these concerns.
- Additional ground water protection measures are needed.
- There are 427 Class I confined animal feeding operations in Missouri.
- The data on fish that have been collected and the data on invertebrates that are still being collected indicate that many of these communities throughout the State are suffering from degraded quality of aquatic habitat.

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

Probability and Severity

Probability: High Severity: In 2012 there was concern among health officials that there was a high probability of a dangerous new strain of the influenza virus sometime in the future. In fact, they believed that worldwide influenza outbreak on the scale and severity of the Spanish Flu was not farfetched. Catastrophic consequences were predicted. A much larger percentage of the world's population is clustered in cities, making them ideal breeding grounds for epidemics. Additionally, the explosive growth in air travel means the virus could literally be spread around the globe within hours. Under such conditions, there may be very little warning time. Most experts believe we will have just one to six months between the time that a dangerous new influenza strain is identified and the time that outbreaks begin to occur in the United States. Outbreaks are expected to occur simultaneously throughout much of the nation, preventing shifts in human and material resources that normally occur with other natural disasters. These and many other aspects make influenza pandemic unlike any other public health emergency or community disaster.

Vulnerability

Potential Losses to Existing Development

Environmental and public health emergencies generally have more of a direct impact on human health and morbidity than hard assets and infrastructure, but both can also have impacts on the local economy and some types of commercial and industrial development, especially residential realty and business concerns that rely on natural resources for their income stream, like agriculture and tourism - both of which are very important elements of Caldwell County's economy.

Impact of Future Development

Commercial and industrial development in Caldwell County is relatively minimal, making it difficult to project any significant change in terms of vulnerability.

Hazard Summary by Jurisdiction

While no particular community really has a greater risk to this hazard, schools tend to experience higher rates of infectious disease transmission than the general population, akin to that of nursing homes, prisons, and other institutional settings.

Problem Statement

For planning purposes, it is reasonable to assume a rapid movement of a pandemic flu virus from major metropolitan areas to rural areas of the State, especially those rural areas in close proximity to metropolitan areas, like Caldwell County. The effect of a pandemic on individual communities would likely be relatively prolonged—weeks to months. The impact of the next pandemic could have a devastating effect on the health and well-being of Missouri citizens and the American public. For such an outbreak in the future, the Centers for Disease Control and Prevention estimate that in the United States alone:

- Up to 200 million persons will be infected
- Between 40 and 100 million persons will become clinically ill
- Between 18 and 45 million persons will require outpatient care
- Between 300,000 and 800,000 persons will be hospitalized
- Between 88,000 and 300,000 people will die nationwide
- Effective preventive and therapeutic measures, including vaccines and antiviral agents, likely will be in short supply, as well as some antibiotics to treat secondary infections
- Economic losses from the next pandemic may range from $500 to $675 billion, depending on the attack rate (Reuters)

Preparing for, responding to and recovering from pandemic influenza will require a strategy with many similarities to other disease outbreaks, be they naturally occurring or resulting from terrorist actions. The time-honored public health activities to lessen the impact on morbidity and mortality such as education, vaccination, prophylaxis, isolation/quarantine and the closure of public facilities are common to all, despite the particular disease of concern. In addition, clear, concise communication with the public, within the Missouri Department of Health and Senior Services (DHSS), and with other agencies remains a critical component, as does the ability of the involved agencies to achieve collaboration and coordination. By its very nature, an influenza pandemic, once

started, will not be stopped until it has run its course. This course can be shortened and weakened by many things, with vaccination being the gold standard for protecting the population. Pandemic plans describe strategies of preparedness, response and recovery to attempt to decrease illnesses and deaths during the pandemic period to manageable levels (i.e., that do not overwhelm the critical infrastructures of the State), and to promote community resiliency and rapid recovery.

DHSS has emergency pandemic flu response plans in place, internally, and as part of the State response through the Missouri State Emergency Operations Plan (SEOP) that have been tried, tested and exercised for all aspects of response and recovery, including those mentioned above relating to disease surveillance, investigation and control. Where necessary, details or public information templates unique to pandemic influenza have been added into plans. The current pandemic plan gives background information related to pandemic influenza, outlines the DHSS concept of operations for response, lists primary and support functional areas and provides technical support annexes outlining the available resources (i.e., “tools”) available to temper the pandemic and promote community resiliency and recovery. Components of other all-hazard plans incorporated through partnership with the State Emergency Management Agency and other local, state, and federal agencies are expected to be utilized in accordance with need.

A broad, diverse and geographically dispersed group of agencies and organizations, representing the length, breadth and interests of the State collaborated with the DHSS in working to prepare for pandemic influenza. With committees organized under the umbrella of the Missouri Homeland Security Advisory Council, over four hundred representatives from hospitals, livestock corporations, local public health agencies (LPHAs), other state agencies, funeral homes, laboratories, financial institutions, fire departments, local and state governments, school boards, utility companies, universities, nursing homes and coroner’s offices, among others, engaged with DHSS providing input and expertise to produce the Missouri Pandemic Influenza Response Plan.

DHSS has primary responsibility to safeguard the health of the people of the State and all its subdivisions and will respond in the event of pandemic influenza to attempt to limit the impact on public health by reducing morbidity and mortality. These actions may also limit the impact on the social and economic infrastructure of the State. DHSS will serve to support the LPHAs in this effort, and lead the State-level response of a coordinated multitude of federal, state and private organizations and agencies. DHSS reserves the flexibility to modify the plan during the pandemic in response to the actual behavior of the disease and the effectiveness of the ongoing response. Lessons learned from previous waves will be incorporated going forward and modifications in planning may be made across all sectors to meet the key goals in public health and critical infrastructure support. Such changes will be rapidly and effectively communicated from DHSS to all partnered agencies and organizations per the communications plan to ensure best practices are consistently implemented statewide.

Local emergency management officials should identify pollution hazard areas so that in case of a natural disaster, recovery steps will not be delayed. Pollution of public drinking water, for example, can cause severe problems with reentry and recovery. If alternate sources of safe drinking water can be identified, or relocation of water intakes can eliminate polluted drinking water, then recovery can be quicker, and local resources can be used to address other problems.

With the increases in motor vehicle registrations throughout the State, the levels of nitrocarbon emissions will naturally rise. Combinations of smog and carbon monoxide levels will also increase. In sufficient quantities, these pollutants can have deleterious effects on the health of thousands of Missourians.

Special Events

Hazard Description

Significant special events may include any type of event where large groups of people are gathered together, regardless of the cause or purpose of the event, where expanded security and other resources are required above and beyond the resources typically available to local and/or state government. In such instances, event sponsors, in conjunction with local and state authorities, are responsible for coordinating the event and requesting Federal assistance, if necessary.

Special events may be motivated by political, economic or social causes or large holiday events such as an annual Fair, where large numbers of people crowd onto a small area.

The perception of inherent dangers and threats facing this country and Missouri has changed significantly since the terrorist attacks of September 11, 2001. In keeping with the framework of the National Response Plan, Emergency Operations Plans should consider special events as described herein. Past events in Missouri, though none have affected Caldwell County specifically, offer lessons about some of the potential impacts on security and medical resources that a special event could have.

Anytime a large number of people are congregated in one area, an incident resulting from just about any of the hazards could have devastating impacts. For example, consider the impact a sudden, severe hailstorm could have on the population visiting the Fair. A hailstorm such as this struck the north St. Louis County area in April 2001, causing thousands of dollars of damage to residences and vehicles. This storm produced baseball-size (and larger) hailstones, which killed many pets and nearly all the waterfowl residing at local park ponds. An incident such as this could have devastating impacts if it were to suddenly strike a fairgrounds and find hundreds of people in attendance and without shelter.

The potential impact a terrorist attack incident could impose at such an event is exponentially greater. Medical services would likely be overwhelmed with the number of injuries.

Geographic Area

Special events generally occur in populated communities, so any community that hosts sporting events, music concerts, fairs or festivals has some vulnerability to this hazard.

Past Events

Pope John Paul II visited St. Louis, Missouri, on January 26 and 27, 1999. This pastoral visit included 30 hours of speeches, parades, prayer services, and a papal mass for about 104,000 people at the St. Louis America's Center, which filled every available seat in the center, including the Edward Jones Dome and adjoining convention exhibit hall. This mass is billed as the largest U.S. indoors gathering ever and was designated a National Special Security Event. This two-day series of events also included a welcome address by President Bill Clinton and ceremonial farewell meeting with Vice-President Al Gore and was attended by many state officials, including Missouri Governor Mel Carnahan.

Event activities were spread throughout the St. Louis metropolitan area, from the Lambert–St. Louis International Airport to the downtown area and the grounds of the Gateway Arch on the Mississippi

Riverfront. This was undoubtedly the largest single special event to occur in Missouri in recent years, with security concerns reaching to national and international levels. Close coordination between local, state, and Federal law enforcement agencies is required to provide adequate security measures for events like this. The potential for hazards from mass transportation accidents was also elevated for this event, as one quote said, "Seemingly every school bus in the region was enlisted to transport people from suburban pickup points down into St. Louis America's Center for the papal mass." Fortunately, this event was conducted without any major incidents.

The Hyatt Regency Hotel at Union Station in St. Louis hosted the World Congress meeting of the World Agricultural Forum May 18 to 20, 2003. The forum brought together agriculture industry leaders and world leaders to discuss the future of global agriculture. Mindful of Seattle's experience with violent protestors who disrupted the World Trade Organization (WTO) meeting there in December 1999, St. Louis police were braced for any possible problems that could arise from hundreds or even thousands of protestors descending on St. Louis for this event. Four Seattle police officers were invited to St. Louis to talk about what happened at the 1999 WTO event (50,000 demonstrators overwhelmed 400 Seattle officers and protestors smashed windows and vandalized cars as police fought back with rubber bullets and tear gas). Washington, DC, police were also invited to St. Louis to share their experiences with riots during protests of major global conferences in their city. Although St. Louis police were not anticipating the same level or intensity of violence as in Seattle, they did have intelligence reports that some visitors would be in St. Louis who were involved in the Seattle protests and other demonstrations.

Another conference, called Biodevastation 7, was scheduled immediately prior to the World Agricultural Forum (May 16 to 18, 2003) in St. Louis, which involved a gathering of opponents to genetic engineering. An organizer with the group had indicated that 200 to 800 people were expected to attend the Biodevastation 7 conference and that there would be 200 to 2,000 protestors at the World Agricultural Forum. During this time period, in nearby Creve Coeur, Missouri, extra police were also on hand at the Monsanto property for the annual Creve Coeur Days. Monsanto, an agriculture industry leader, is a host of the annual celebration, which includes carnival rides and game booths on its property. Creve Coeur police coordinated a plan with St. Louis police to gather information about possible protests at this event. A local international security consulting firm was in charge of security for the World Agricultural Forum conference. They worked with St. Louis police and other law enforcement agencies to prepare for possible protests at the event. Close coordination between these agencies helped to ensure that St. Louis was prepared to provide adequate security for the event and the international visitors to the city. Other than a couple of minor incidents between police and activists in the days leading up to the conference, no incidents were reported. A protest outside the conference on May 18 drew only a few hundred demonstrators, all peaceful, and only a handful of demonstrators were present during the event's two days.

Probability and Severity

Due to the annual nature of the county fair and a recent increase in tourism in the county, the *probability is rated as high* that the county could be host to a special event that will require significant security and other emergency planning considerations. The overall *probability that a disastrous incident from any cause would occur in conjunction with a designated special event or special security event is considered moderate*.

The severity of incidents occurring in conjunction with designated special events could range from low to high, depending on many factors. The severity of these incidents will be a function of the

number of people attending these events and the type and severity of the specific hazards that affect the events. Considerations of severity could range from a hoax bomb scare or terrorist threat where no one is physically injured and without any property damage to a full-scale disaster affecting a large number of people gathered at one time with mass injuries and property damage by natural, accidental, terrorist, or criminal causes.

Vulnerability

Potential Losses to Existing Development

With special events, the potential damages to existing development will be the same as those outlined in the individual hazards in this plan – the concern is that there is a concentration of people who may be located in harm's way – for instance, a Tornado striking a community represents a certain potential loss in hard assets and human casualties. A Tornado striking a community during a major festival when there is a significant temporary increase in human population and that population is largely located outside would have the same potential for loss of hard assets but a greatly increased threat to human life safety.

Impact of Future Development

Commercial and industrial development in Caldwell County is relatively minimal, making it difficult to project any significant change in terms of vulnerability.

Hazard Summary by Jurisdiction

Vulnerability to this hazard is similar for any community where special events may occur.

Problem Statement

As with the measure of probability and severity, the potential impact of hazards occurring in association with any special event must be evaluated as a function of the specific hazard that could cause the impact on a large number of people attending any event. Refer to the impact of the hazard discussions in other hazard profiles for more hazard-specific impact considerations. Regardless of the purpose or cause, special events will place a large number of people in one area at one time. Anytime people are crowded together in one place, an incident resulting from just about any of the hazards could have compounded and devastating impacts.

In such instances, event sponsors, in conjunction with local and state authorities, are responsible for coordinating the event and requesting assistance at the Federal level, if necessary. Local and state authorities are responsible for coordinating requirements from the organization sponsoring an event and determining resource shortfalls and submitting resource requests, through the existing structures and mechanisms, to the national level for consideration. Event sponsors are responsible for developing concepts for conducting the event, identifying resource requirements necessary to support the event, and submitting resource requests to local and state governments for consideration.

Terrorism

Hazard Description

Terrorism, as defined by the Federal Bureau of Investigation (FBI) is, “the unlawful use of force or violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives.” 50 The effects of terrorism can vary significantly, including loss of life, injuries to people and properties, and disruptions in services (e.g., water supplies, public transportation, and communications).

According to the FBI, there are two primary types of terrorism: Domestic and international.

- *Domestic* Terrorism involves groups or individuals whose terrorist activities are directed at elements of US local, state or federal government or populations without foreign direction.

- *International* Terrorism involves terrorist activity committed by nations, groups or individuals who are foreign-based and/or directed by countries or groups outside the United States or whose activities transcend national boundaries.

Domestic Terrorism

According to the FBI, domestic terrorist groups are those with actual or potential terrorist intent represent interests that span the full spectrum of political and economic viewpoints, as well as social issues and concerns :

- White Supremacists or Right-Wing Terrorists—Right-wing terrorist groups often adhere to the principles of racial supremacy and embrace antigovernment, antiregulatory beliefs. Generally, extremist right-wing groups engage in activities that are protected by constitutional guarantees of free speech and assembly. Examples of this type of group include Aryan Nations, the Order, and Posse Comitatus. Missouri has seen some activity from these groups in the past few years. According to the Southern Poverty Law Center, Missouri has two extremist groups operating within its borders. Although a state statute against paramilitary training exists, one of these groups is also known to have such a facility in Missouri. In addition, several special gatherings of extremist groups have taken place within the State in recent years.

- Black Separatists—United States-based black separatist groups follow radical variants of Islam and in some cases express solidarity with al-Qa’ida and other international terrorist groups.

- Animal Rights and Environmental Terrorists—Operating under the umbrella of the Animal Liberation Front and Earth Liberation Front, these terrorists use a variety of tactics against their targets, including arson, sabotage/vandalism, theft of research animals, and the occasional use of explosive devices.

- Anarchists—The potential for violence by anarchists and other emerging revolutionary groups, such as the Anarchist Black Cross Federation (ABCF), will continue to be an issue for law enforcement. The stated goals of the ABCF are “the abolishment of prisons, the system of laws, and the capitalist state.” The ABCF believes in armed resistance to achieve a stateless and classless society. The ABCF has continued to organize, recruit, and train anarchists in the use of firearms.

- Anti-abortion Extremists—The FBI has investigated anti-abortion groups with potential violent anti-abortion extremists views and are linked to terrorism ideologies or groups that pose a current threat.

International Terrorism

The United States continues to face an ongoing challenge from international terrorism. In general terms, the international terrorist threat can be divided into three categories: loosely affiliated extremists operating under the radical jihad movement, formal terrorist organizations, and state sponsors of terrorism. Each of these categories, which represent threats to U.S. citizens and interests both abroad and at home, are described below:

- Loosely Affiliated Extremists — These are motivated by political or religious beliefs, and pose the most urgent threat to the United States.

- Formal Terrorist Organizations — These organizations are typically autonomous and have their own infrastructures, personnel, financial arrangements, and training facilities. • State Sponsors of Terrorism — This category includes countries known to sponsor terrorism and to view it as a tool of foreign policy. Currently, the U.S. Department of state recognizes four countries in this category: Iran, Sudan, Syria, and Cuba.

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Foreign Terrorist Organizations (FTOs) are foreign organizations that are designated by the Secretary of State in accordance with Section 219 of the Immigration and Nationality Act, as amended by the Antiterrorism and Effective Death Penalty Act of 1996. A list is compiled every two years.

Foreign Terrorist Organizations, per the Bureau of Counterterrorism, US Dept. of State	
Date Designated	**Name**
10/8/1997	Abu Nidal Organization (ANO)
10/8/1997	Abu Sayyaf Group (ASG)
10/8/1997	Aum Shinrikyo (AUM)
10/8/1997	Basque Fatherland and Liberty (ETA)
10/8/1997	Gama'a al-Islamiyya (Islamic Group) (IG)
10/8/1997	HAMAS
10/8/1997	Harakat ul-Mujahidin (HUM)
10/8/1997	Hizballah
10/8/1997	Kahane Chai (Kach)
10/8/1997	Kurdistan Workers Party (PKK) (Kongra-Gel)
10/8/1997	Liberation Tigers of Tamil Eelam (LTTE)
10/8/1997	National Liberation Army (ELN)
10/8/1997	Palestine Liberation Front (PLF)

10/8/1997	Palestinian Islamic Jihad (PIJ)
10/8/1997	Popular Front for the Liberation of Palestine (PFLF)
10/8/1997	PFLP-General Command (PFLP-GC)
10/8/1997	Revolutionary Armed Forces of Colombia (FARC)
10/8/1997	Revolutionary People's Liberation Party/Front (DHKP/C)
10/8/1997	Shining Path (SL)
10/8/1999	al-Qa'ida (AQ)
9/25/2000	Islamic Movement of Uzbekistan (IMU)
5/16/2001	Real Irish Republican Army (RIRA)
12/26/2001	Jaish-e-Mohammed (JEM)
12/26/2001	Lashkar-e Tayyiba (LeT)
3/27/2002	Al-Aqsa Martyrs Brigade (AAMB)
3/27/2002	Asbat al-Ansar (AAA)
3/27/2002	al-Qaida in the Islamic Maghreb (AQIM)
8/9/2002	Communist Party of the Philippines/New People's Army (CPP/NPA)
10/23/2002	Jemaah Islamiya (JI)
1/30/2003	Lashkar i Jhangvi (LJ)
3/22/2004	Ansar al-Islam (AAI)
7/13/2004	Continuity Irish Republican Army (CIRA)
12/17/2004	Islamic State of Iraq and the Levant (formerly al-Qa'ida in Iraq)
6/17/2005	Islamic Jihad Union (IJU)
3/5/2008	Harakat ul-Jihad-i-Islami/Bangladesh (HUJI-B)
3/18/2008	al-Shabaab
5/18/2009	Revolutionary Struggle (RS)
7/2/2009	Kata'ib Hizballah (KH)
1/19/2010	al-Qa'ida in the Arabian Peninsula (AQAP)
8/6/2010	Harakat ul-Jihad-i-Islami (HUJI)
9/1/2010	Tehrik-e Taliban Pakistan (TTP)
11/4/2010	Jundallah
5/23/2011	Army of Islam (AOI)
9/19/2011	Indian Mujahedeen (IM)
3/13/2012	Jemaah Anshorut Tauhid (JAT)
5/30/2012	Abdallah Azzam Brigades (AAB)
9/19/2012	Haqqani Network (HQN)
3/22/2013	Ansar al-Dine (AAD)
11/14/2013	Boko Haram
11/14/2013	Ansaru
12/19/2013	al-Mulathamun Battalion
1/13/2014	Ansar al-Shari'a in Benghazi

1/13/2014	Ansar al-Shari'a in Darnah
1/13/2014	Ansar al-Shari'a in Tunisia
4/10/2014	ISIL Sinai Province (formally Ansar Bayt al-Maqdis)
5/15/2014	al-Nusrah Front
8/20/2014	Mujahidin Shura Council in the Environs of Jerusalem (MSC)
9/30/2015	Jaysh Rijal al-Tariq al Naqshabandi (JRTN)
1/14/2016	ISIL-Khorasan (ISIL-K)
5/20/2016	Islamic State of Iraq and the Levant's Branch in Libya (ISIL-Libya)
7/2/2009	Kata'ib Hizballah (KH)
1/19/2010	al-Qa'ida in the Arabian Peninsula (AQAP)
8/6/2010	Harakat ul-Jihad-i-Islami (HUJI)
9/1/2010	Tehrik-e Taliban Pakistan (TTP)
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5/20/2016	Islamic State of Iraq and the Levant's Branch in Libya (ISIL-Libya)

Delisted Organizations		
Date Removed	**Name**	**Date Originally Listed**
10/8/1999	Democratic Front for the Liberation of Palestine -Hawatmeh Faction	10/8/1997
10/8/1999	Khmer Rouge	10/8/1997
10/8/1999	Manuel Rodriguez Patriotic Front	10/8/1997

	Dissidents	
10/8/2001	Japanese Red Army	10/8/1997
10/8/2001	Tupac Amaru Revolution Movement	10/8/1997
5/18/2009	Revolutionary Nuclei	10/8/1997
10/15/2010	Armed Islamic Group (GIA)	10/8/1997
9/28/2012	Mujahedin-e Khalq Organization (MEK)	10/8/1997
5/28/2013	Moroccan Islamic Combatant Group (GICM)	10/11/2005
7/15/2014	United Self Defense Forces of Colombia	9/10/2001
9/3/2015	Revolutionary Organization 17 November (17N)	10/8/1997
12/9/2015	Libyan Islamic Fighting Group (LIFG)	12/17/2004

Terrorism can take place in various forms, depending on the technological means available to the terrorist group, the nature of the issue motivating the attack, and the points of weakness of their target. Potential terrorist actions include the following:

- Bombings—Bombings have long been used in terrorist attacks and probably represent the most "traditional" form of terrorism. These types of incidents range from small-scale letter bombs to large-scale attacks on specific buildings. Other bomb-related incidents frequently involve "suicide bombers," who believe that by using themselves as the delivery and detonation method of a bomb attack they demonstrate their dedication to an ideology.

- Airline Attacks—In the past, terrorist acts involving aircrafts were generally limited to hijackings and bombings. However, the attacks on the World Trade Center buildings in New York City and the pentagon in 2001 brought a new avenue to light—the use of commercial aircrafts to attack infrastructure targets. Foreign surface-to-air missile attacks also present a threat to U.S. aircrafts.

- Weapons of Mass Destruction (WMD) Attacks—WMD attacks usually involve nuclear weapons or biological or chemical agents. Chemical and biological agents are infectious microbes or toxins used to produce illness or death. They can be dispersed as aerosols or airborne particles directly onto a population, producing an immediate effect (a few seconds to a few minutes) or a delayed effect (several hours to several days). Severity of injuries depends on the type and amount of the agent used and duration of exposure. Because some biological agents take time to grow and cause disease, an attack using this type of agent may go unnoticed for several days. Though less likely, a nuclear event has the potential to cause immense damage to infrastructure and cause large numbers of casualties. Even a small event such as an Improvised Nuclear Device (IND) explosion has the ability to destroy cities and cause the immediate and delayed death of 100,000 people.

- Infrastructure Attacks—These types of attacks can impact various potential targets, including water distribution systems and treatment plants, utility companies and services, emergency services, gas and oil production facilities, telecommunications centers, transportation

terminals, media facilities, government buildings, and religious institutions. The goal is to disrupt of remove critical services to the populace that is dependent upon them. Though the loss of life usually is limited, infrastructure attacks can have a wider direct effect on the populace.

- Cyberterrorism—Cyberterrorism pertains to attacks on computer-based systems that are designed to spread disinformation and propaganda, deny service to legitimate computer users, spread electronic viruses to corrupt vital data, or cause critical infrastructure outages. Political conflicts that have led to attacks on cyber systems include clashes between India and Pakistan, Israel and the Palestinians, the North Atlantic Treaty Organization, and Serbia.

- Agroterrorism—Agroterrorism involves intentional contamination of commercial produce or meat supplies. Because the United States supplies approximately 16 percent of the world's meat, 40 percent of its soybeans, and 41 percent of its corn, a deadly fungus or bacteria could be devastating. Of the 222 possible bioterrorism attacks that have occurred worldwide in the twentieth century, only 17 of these targeted commercial livestock or plants, according to the Institute for National Strategic Studies.

- Arson—Intentional fires have caused extensive damage during terrorist-related incidents in the past. These types of incidents may also be associated with bombings and usually target specific structures, such as churches. Although deliberately set fires have been reported at 15 churches in Missouri, none have been determined to be hate crime-related or terrorist-related incidents.

- Kidnappings/Assassinations—Kidnappings and assassinations may also be terrorist-related incidents, but because these events generally involve few individuals, their effect on emergency management operations may be minimal in terms of response.

After the attacks on September 11, 2001, parts of 22 domestic agencies were consolidated into one department, the U.S. Department of Homeland Security (DHS), to protect the nation against future terrorist threats. Roles of those agencies include analyzing threats and intelligence, guarding national borders and airports, protecting critical infrastructure, and coordinating response efforts for future emergencies. Many feel the creation of DHS is the most significant transformation of the U.S. government in the last 50 years.

The FBI is the lead federal agency for investigating terrorism. The FBI is authorized to open an investigation whenever, "facts or circumstances reasonably indicate that two or more persons are engaged in an enterprise for the purpose of furthering political or social goals wholly or in part through activities that involve force or violence and a violation of the criminal laws of the United States."

In any given year, the FBI engages in approximately 24 full-scale domestic terrorism investigations. The FBI maintains a state-of-the-art computer database known as the Terrorist Information System, which contains information on known or suspected terrorist groups and individuals. The system contains information on over 200,000 individuals and over 3,000 organizations.

An essential weapon in the battle against terrorists is the Joint Terrorism Task Force (JTTF). A national JTTF, located at FBI Headquarters, includes representatives from the U.S. Department of Defense, U.S. Department of Energy, FEMA, Central Intelligence Agency, Customs Service, Secret

Service, and the Immigration and Naturalization Service. Additionally, there are 66 local JTTFs where representatives from federal agencies, state and local law enforcement personnel, and first responders work together to track down terrorists and prevent acts of terrorism in the United States. There are two JTTFs in Missouri, one in Kansas City and one in St. Louis.

After terrorist-related events, communities may receive assistance from state and federal agencies operating within the existing Integrated Emergency Management System. FEMA is the lead federal agency for supporting state and local response to the consequences of terrorist attacks.

Past Events

The following section highlights noteworthy terrorist-related threats and actual attacks that have occurred in the United States since 1970.

In 1972, members of a U.S. fascist group called Order of the Rising Sun were found in possession of 30 to 40 kilograms of typhoid bacteria cultures, which they planned to use to contaminate water supplies in Chicago, St. Louis, and other large Midwestern cities.

In 1984, two members of an Oregon cult headed by Bhagwan Shree Rajneesh cultivated Salmonella bacteria and used it to contaminate restaurant salad bars in an attempt to affect the outcome of a local election. Although approximately 751 people became ill and 45 were hospitalized, there were no fatalities.

In February 1993, an improvised bomb exploded in a rental van parked on the second level of the World Trade Center's parking basement. The bomb contained approximately 1,200 to 1,500 pounds of a homemade fertilizer-based explosive, urea nitrate. The blast produced a crater 150 feet in diameter and five floors deep. Although the motive for the attack was never confirmed, it is believed that the suspect who masterminded the bombing was either backed by a loose network of militant Muslims or directed by Iraq. The incident, which killed 6 people and injured more than 1,000, was the most significant international terrorist act that had ever been committed on U.S. soil at that time.

In April 1995, a massive bomb exploded inside a rental truck parked near the Murrah Federal Building in Oklahoma City, destroying half the nine-story building and killing 168 people. The incident was traced to Timothy McVeigh, who was convicted of the bombing.

and executed by lethal injection in June 2001. He was the first federal prisoner to be executed in 38 years. McVeigh was a survivalist who believed individual rights (e.g., gun control) were being deprived by government agencies. Consequently, he was convinced he acted to defend the Constitution and saw himself as a crusader and hero. This was the worst terrorist event, either domestic or international in origin that had ever occurred in the United States at that time.

In March 1995, four members of the Minnesota Patriots Council, a right-wing militia organization advocating the violent overthrow of the U.S. government, were convicted of conspiracy charges under the Biological Weapons Anti-Terrorism Act of 1989 for planning to use ricin, a lethal biological toxin. The four men allegedly conspired to assassinate federal agents who served papers on one of them for tax violations.

In May 1995, a member of the neo-Nazi organization Aryan Nations was arrested in Ohio on charges of mail fraud. He allegedly misrepresented himself when ordering three vials of freeze-dried Yersinia Pestis, the bacteria that causes bubonic plague, from a Maryland biological laboratory.

In October 1995, the Amtrak Sunset Limited passenger train derailed near Hyder, Arizona. It was determined that the train track had been sabotaged, causing the train to derail and topple 30 feet from a bridge. A letter signed by the Sons of Gestapo was left at the scene. One person was killed and 83 others were injured in this incident.

In November 1995, members of the Tri-States Militia (a group composed of militia from at least 30 states) were arrested after being linked to five would-be terrorists whose bomb plots were thwarted by federal and state law enforcement agencies. The plots involved blowing up the Southern Poverty Law Center, offices of the Anti-Defamation League, federal buildings, abortion clinics, and gay community locations.

In July 1996, a pipe bomb exploded in Atlanta's Centennial Olympic Park as the city was hosting the summer Olympic Games. One person was killed and dozens were wounded

On September 11, 2001 there were a series of coordinated terrorist suicide attacks by Islamic extremists upon the United States of America. Nineteen terrorists (see link) affiliated with al-Qaeda hijacked four commercial passenger jet airliners. Each team of hijackers included a trained pilot.



Sept. 11, 2001 saw the deadliest terrorist attack on American soil in US History

The hijackers intentionally crashed two of the airliners (United Airlines Flight 175 and American Airlines Flight 11) into the World Trade Center in New York City, - one plane into each tower (1 WTC and 2 WTC), resulting in the collapse of both buildings soon afterward and extensive damage to nearby buildings. The hijackers crashed a third airliner (American Airlines Flight 77) into the Pentagon in Arlington County, Virginia, near Washington, D.C. Passengers and members of the flight crew on the fourth aircraft (United Airlines Flight 93) attempted to retake control of their plane from the hijackers; that plane crashed into a field near the town of Shanksville in rural Somerset County, Pennsylvania. In addition to the 19 hijackers, 2,974 people died as an immediate result of the attacks, and the death of at least one person from lung disease was ruled by a medical examiner to be a result of exposure to WTC dust. Another 24 people are missing and presumed dead. The victims were predominantly civilians. The New York City Fire Department lost 341 New York City Fire Department firefighters and 2 paramedics, while 23 New York Police Department, 37 Port Authority Police Department officers, and 8 private ambulance personnel were killed. There were 125 victims in the Pentagon. The dead included 8 children. The youngest victim was a 2 year-old child on Flight 175, the oldest an 82 year-old passenger on Flight 11. According to the Associated Press, the city identified over 1,600 bodies but was unable to identify the rest (about 1,100 people).

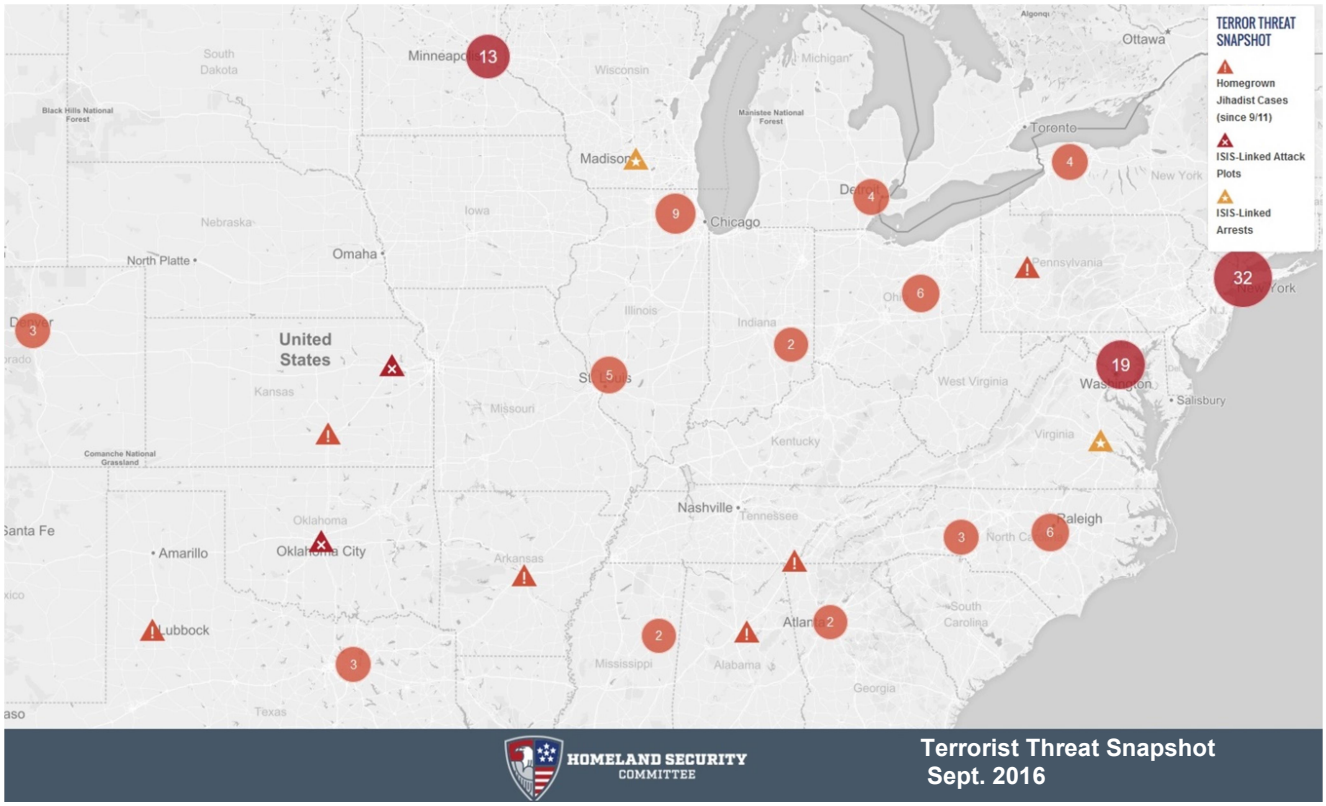
They report that the city has "about 10,000 unidentified bone and tissue fragments that cannot be matched to the list of the dead." Bone fragments were still being found in 2006 as workers prepared the damaged Deutsche Bank Building for demolition. The attacks created widespread confusion across the United States. All international civilian air traffic was banned from landing on US soil for three days; aircraft already in flight were either turned back or redirected to airports in Canada or Mexico. Unconfirmed and often contradictory reports were aired and published throughout the day. One of the most prevalent of these reported that a car bomb had been detonated at the U.S. State Department's headquarters, the Truman Building in Foggy Bottom, Washington, D.C.

Between early October and early December 2001, five people died from anthrax infection, and at least 13 others contracted the disease in Washington, DC; New York City; Trenton, New Jersey; and Boca Raton, Florida. Anthrax spores were found in a number of government buildings and postal facilities in these and other areas. Most of the confirmed anthrax cases were tied to contaminated letters mailed to media personalities and U.S. senators. Thousands of people were potentially exposed to the spores and took preventive antibiotics. Numerous mail facilities and government buildings were shut down for investigation and decontamination. In the wake of these incidents, federal, state, and local emergency response agencies across the United States responded to thousands of calls to investigate suspicious packages, unknown powders, and other suspected exposures. Almost all of the incidents turned out to involve no actual biohazard. Nevertheless, emergency responders typically treated each call as a potentially serious health and safety risk. During this tense time, in Missouri, the Department of Health and Senior Services (DHSS) issued numerous health alert advisories to local officials and the public, providing guidance on how to handle anthrax or suspicious letters and packages during a time of extremely heightened tensions. DHSS also instituted a surveillance system, contacting health providers to obtain public health information twice weekly, while also working to improve the public health infrastructure, information sharing, health communication networks, and hospital surge capabilities.

On October 2nd, 2002, a month long sniper spree terrorized the entire Washington DC area as a sniper duo gunned down 10 people at random. It ended when the law enforcement team lead by the Montgomery County SWAT, supported by the FBI and the State Police, arrested the shooters at a truck stop while sleeping in their modified vehicle. The car had been altered by the snipers to accommodate the ability to get into the truck and shoot through a hole without having to leave the vehicle. Their targets were random and varied in age and gender. They struck in both Maryland and Virginia.

Probability and Severity

While a terrorist attack is possible in Missouri; *the probability of such an attack is moderate*, taking into account that the nation has been on a high or elevated threat level since 2001. The Terror Threat Snapshot for September of 2016 WASHINGTON, D.C. – The Homeland Security Committee releases a monthly terrorist threat “snapshot” assessing the growing threat America, the West, and the world face from ISIS and other Islamist terrorists.



Their website contains a constantly updated map showing the site of terrorist related incidents, arrests and investigations as well as the latest "snapshot" report.

In September of 2016 some key points of the assessment were

- Islamist terrorists will continue to pose a significant threat to the United States and its allies
- ISIS and its supporters, undeterred by battlefield setbacks, have now been linked to 105 plots targeting Western interests globally.
- ISIS, al Qaeda, and other Islamist extremists have built a global network of sanctuaries they can leverage for directing and inspiring terrorist attacks.
- Radical Islamists are exploiting everything from social media applications, including encrypted technologies, to refugee flows to improve their ability to recruit adherents and conduct terror operations.

Should Missouri experience a terrorist attack, *the severity of such an attack could range from high to low depending on the attack*. For instance, if a building was destroyed and no casualties occurred, as long as it was not a critical facility, the severity of the attack would be low. However, if a terrorist group decided to contaminate a large urban area's water supply with a poisonous chemical, the severity of the attack could be very high due to the number of people directly affected by the attack, as well as damage to that community's sense of well-being. An attack of this nature could potentially result in mass hysteria and instability concerning the government's ability to protect its citizens.

Vulnerability

Due to the nature of terrorist acts, risk is generally predicated on population density. Attackers typically want to get as much "bang for their buck" as they can in terms of casualties. However, the psychological impact of an attack carried out in the rural heartland of America, shattering the complacency of "it can't happen here" thinking could be an attractive motivation. The risk of an attack may be lower in Caldwell County than it is in nearby Kansas City, where shopping malls and sports complexes offer convenient target-rich environments, but by no means can it be discounted.

The entirety of the County is equally vulnerable, but given the nature of terrorist attacks, more densely populated areas are at greater risk of attacks designed to harm people, while the entire county is vulnerable to agro terrorism that could be designed to harm the nation's food supply.

Potential Losses to Existing Development

Potential loss is dependent on the method of attack. This may range from conventional weapons, improvised explosives and weapons of mass destruction of various size, scope, and type (CBRN), sabotage of existing HAZMAT facilities or transportation to cause explosions or the release of toxic materials, or even cyber-attack. These potential effects of these hazards are outlined in the various sections of this plan.

Impact of Future Development

Hazard Summary by Jurisdiction

As greater population density translates to greater vulnerability, the risk to the communities of Caldwell County can be rated (in relation to each other) by their population:

Jurisdiction	Population 2010
Hamilton	1,808
Polo	575
Braymer	878
Breckenridge	383
Kingston	348
Kidder	323
Cowgill	188

Problem Statement

The threat of terrorism in the United States remains a concern. Although several different extremist groups have been identified in Missouri, there have been no indications of any specific recent terrorist activities in the state. The potential does remain, however, for new extremist and/or terrorist groups to move into the State at any time. As such vigilance on behalf of the state is important, as it would take longer to develop a defense against a new threat than it would be for new threats to evolve.

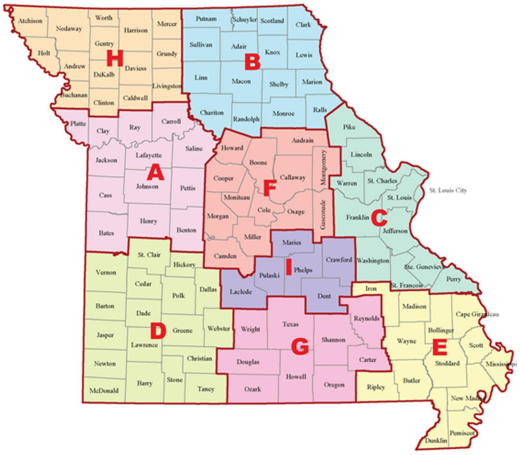
An open society such as ours remains a potential target for terrorists. Large cities with a variety of news media outlets represent more likely locations for terrorist acts, due to the general desire of terrorists to want their acts to reverberate in the news media and reach the largest audience possible. Since Missouri does not have large media markets compared to some states, it is not as likely a target for terrorist activity as those other states. However, the Oklahoma City bombing debunked the idea that rural America is completely safe from terrorists.

Terrorist acts could potentially undermine the confidence that people have in their own security and in their government's ability to protect them from harm. For example, instructions to make bombs are readily accessible to potential terrorists (including via the Internet), and the materials for their construction are readily available. Because bombs can be made so easily, the threat of a bomb should not be taken lightly. The threat of a bomb can disrupt a community almost as effectively as an actual bomb, while creating far fewer risks for the persons making the threat. Therefore, no matter how large or small the incident, a terrorist act can potentially have a major impact on a community.

To improve and assist in the homeland security efforts, Former Governor Blunt signed an executive order formalizing the merger of homeland security responsibilities into the Department of Public Safety. To assist in addressing the rising terror threats, Current Missouri Governor Jay Nixon named Jerry Lee to be director of the Department of Public Safety on Oct 18, 2011. Mr. Lee chairs a 17-member council made up of directors from other state departments and agencies. These include the State Emergency Management Agency, Department of Health and Senior Services, Department of Transportation, Department of Agriculture, Department of Natural Resources, Department of Economic Development, Missouri State Highway Patrol, Missouri State Water Patrol, Missouri National Guard, Missouri State Fire Marshall, Missouri State Public Service Commission, chief information officer of the State, and three members appointed by the governor. This council ensures that proper homeland security plans are in place at local and state levels while also examining how homeland security grant funds can best be coordinated and expedited.

Local communities are focused and engage in Missouri's Homeland Security Program through the establishment of regional advisory groups, called Regional Homeland Security Oversight Committees (RHSOCs). RHSOCs fall under the governance structure of the Homeland Security Advisory Council. Missouri's program is focused on establishing a common sense, logical governance structure and process to facilitate homeland security related decisions consistently across the State.

The SEMA Emergency Response Regions Map (right) displays the 9 Response Regions for Missouri. Caldwell County resides within Region H. Region H encompasses a variety of specialized response teams with enhanced capabilities for response to terrorist attacks, including incidents involving nuclear or radiological materials and biological and chemical agents.



Utility Failure

Hazard Description

Utility interruptions and failures may involve electrical power, natural gas, public water, and communications systems. All of these systems or combinations of these utility systems exist virtually throughout the County. Many utilities are localized and serve only one community, while other utilities serve a regional area. Utilities are often dispersed over a wide area, and many have facilities located throughout their service area. For example, many electric companies have multiple generating facilities, which can redistribute power via transmission lines as they are connected to load stations. Therefore, power can be redistributed, if needed, so that power is lost to as limited an area as possible. Many water companies have some type of back-up systems such as water impoundments, other deep wells, or hook-up arrangements with other water companies. Similar switching and rerouting capabilities may exist with communications and natural gas utilities. Utility systems exist everywhere and are subject to damage from digging, fire, traffic accidents, geomagnetic storms, and severe weather, including flooding and other day-to-day events. Many utilities use emergency batteries or generators to provide back-up power for high priority equipment.

Utility outages and interruptions can be very localized or region wide. Their greatest impact is generally on the very young or elderly, who can be expected to have greater health risks associated with resultant loss of heating/cooling systems and with the loss of medical equipment that requires a power source. Loss of communications can also adversely affect the provision of emergency services, making it difficult to contact the services for emergency assistance. In addition, utility outages can cause significant problems within the financial community, should there be a long-term loss of their data communications.

Geographic Location

As utilities exist everywhere and vast, complex, inter-dependent systems span the nation, the risk of Utility Failure is universal.

Past Events

Because utilities exist everywhere, damage to utilities may occur frequently. This may be due to a backhoe cutting a buried line, an accident involving a motor vehicle, a flood, geomagnetic storms, or other severe weather. Many of these interruptions or failures go unreported to the Public Service Commission (PSC), and no definitive reporting system exists. Therefore, limited statistical information is available.

During the flood of 1993, telecommunications companies proved their adaptability by using cellular service to replace wire line service in areas where service could not be restored in a timely manner. One local exchange company (LEC) used a trailer with cellular pay phones where the land lines were interrupted. Another company temporarily replaced analog subscriber carrier service with site-based cellular service. Short-haul portable microwave was also used to replace copper lines lost during the flood.

On January 30, 2002, a severe ice storm struck portions of western and northern Missouri, leaving devastation and darkened homes and businesses. Many news articles referred to this ice storm as the worst in Missouri's history. During the ice storm, ice accumulated on any object that was at or

below freezing, and the weight of the ice broke utility poles, conductors, tree limbs, and other objects that could not withstand the weight of the ice. Ice accumulations over an inch were reported in many areas. Many tree branches could not withstand the added weight of the ice and fell to the ground, striking whatever was in their path. Cars, homes, streets, properties, and electric power facilities were recipients of the falling trees and limbs. When the ice began to melt, the falling ice caused additional outages. Some electric customers experienced outages more than once during that period, as power was restored but interrupted again by falling limbs.

At the peak of outages, over 400,000 customers were without power. Within three days, most of these customers were returned to service, but many customers in more heavily damaged areas were without power for over a week. Utilities affected by the ice storm quickly mobilized all of their available crews and sought outside assistance. Work crews from 16 different states came to western Missouri in an effort to rapidly restore power to as many customers as possible.

In January 2009, a Canadian cold front with a lot of Gulf moisture pushed through Missouri bringing snow, sleet and freezing rain. Over two and one-half inches of ice covered most of the southeast portion of the state. Heavy ice accumulations caused over 3,800 AmerenUE transmission and distribution poles to break. Similar breakages were experienced by municipal and electric cooperative systems and transmission operators Entergy and Southwestern Power Administration, which deliver power to some municipalities in southeastern Missouri. Because of the extent of damage, some people were without power for up to three weeks.

In January 2011 the Missouri Department of Transportation (MODOT) conducted snow-clearing from approximately 1,200 miles of roads in 16 counties that requested help after experiencing record amounts of snow in last week's blizzard in counties that received record amounts of snow. Caldwell was one of sixteen counties that had record snow, and one of 44 that requested assistance from the state.

Probability and Severity

Because utilities exist throughout the State and are vulnerable to interruptions or failures, *there is a high probability that this hazard may occur at any time or any place* throughout Caldwell County and the State. In many cases, these are small isolated events, well within the capabilities of the local utility to address. Therefore, *the degree of severity of these day-to-day events may be considered low*. Due to long-range planning, regulation, and diligence of the utility operators, major interruptions resulting in a high degree of severity are few and far between.

Vulnerability

Potential Losses to Existing Development

Losses due to this hazard are rarely of the permanent variety such as the damages caused by tornadoes or similar hazards. The losses are disruption to service, damage to sensitive electronic equipment, computer data servers, and the like. On the commercial size, there can be loss of commodities if refrigeration is lost for an extended period of time.

Impact of Future Development

Commercial and industrial development in Caldwell County is relatively minimal, making it difficult to project any significant change in terms of vulnerability.

Hazard Summary by Jurisdiction

The County and all its communities are equally vulnerable to the effects of this hazard.

Problem Statement

Utility companies are generally well prepared to deal with day-to-day outages. The earthquake threat to statewide and multi-state utilities is the greatest concern to the integrity and operability of Missouri's utilities. Severe weather causes more frequent local, and occasionally widespread, utility outages. Manmade incidents, accidental or intentional, could significantly impact utility service. Geomagnetic storms could disrupt communications and affect utility services. (For more information on such hazards, see the next section in Electromagnetic Pulse).

Planning, regulation, mitigation, and mutual aid are all just a few tools available to reduce, speed recovery from, and prevent utility interruptions and failures.

Electromagnetic Pulse (EMP)

Hazard Description

An electromagnetic pulse (EMP), also sometimes called a transient electromagnetic disturbance, is a short burst of electromagnetic energy. Such a pulse's origination may be a natural occurrence or man-made and can occur as a radiated, electric or magnetic field or a conducted electric current, depending on the source.

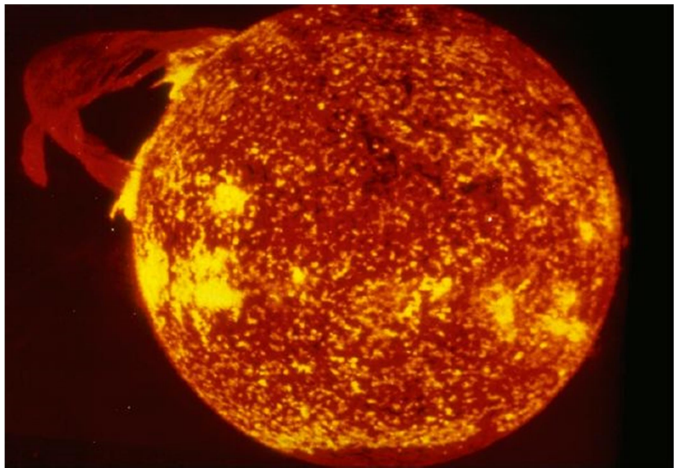
EMP interference is generally disruptive or damaging to electronic equipment and at higher energy levels a powerful EMP event such as a lightning strike can damage physical objects such as buildings and aircraft structures. Minor EMP events will cause low levels of electrical noise or interference which can affect the operation of susceptible devices, and at a high voltage level an EMP can induce a spark, for example from an electrostatic discharge when fuelling a vehicle. Such sparks have been known to cause fuel-air explosions and precautions must be taken to prevent them. A large and energetic EMP (such as that associated with lighting) can induce high currents and damage or disrupt electrical equipment.

The damaging effects of EMP have also led to the introduction of EMP weapons, from tactical missiles with a small radius of effect to nuclear bombs tailored for maximum EMP effect over a wide area. Different types of EMP can arise from both natural and man-made sources.

Different types of EMP event include:

- Lightning electromagnetic pulse (LEMP): The discharge is typically an initial huge current flow, at least mega-amps, followed by a train of pulses of decreasing energy.
- Electrostatic discharge (ESD): as a result of two charged objects coming into close proximity or even contact.
- Meteoric EMP. The discharge of electromagnetic energy resulting from either the impact of a meteoroid with a spacecraft or the explosive breakup of a meteoroid passing through the Earth's atmosphere.
- Coronal Mass Ejection (CME). A massive burst of gas and magnetic field arising from the solar corona and being released into the solar wind sometimes referred to as a Solar EMP.
- Nuclear electromagnetic pulse (NEMP), as a result of a nuclear explosion. A variant of this is the high altitude nuclear EMP (HEMP), which produces a pulse of a much larger amplitude and different characteristics due to particle interactions with the Earth's atmosphere and subsequently the Earth's magnetic fields driving an oscillation in electric current after the original pulse from the particle and ray interactions on the atmosphere.

Of these, one is both the most likely to occur and the most likely to have severe, widespread impacts: The CME.



The primary risk of a CME is the potential for the long-term loss of electric power and the cascading affects that it would have on other critical infrastructure sectors; however, other low-frequency, high-impact events are also capable of causing long-term power outages on a regional or national scale.

An extensive study by John Kapperman and William Radasky of the National Oceanic and Aeronautical Administration examined the resiliency of the U.S. electric grid, based on a study that went back to 2008. The study concluded large-scale blackouts caused by a major EMP event (such as a large CME) would affect more than 130 million people in the U.S. "for years." Such an event either would damage or destroy some 300 large extra-high-voltage transformers, resulting in a "prolonged recovery period with long-term shortages of electric power to the affected areas."

Dr. Vincent Peter Pry, a member of the congressional EMP Commission and executive director of the Task Force on National and Homeland Security, stated that a major event "could blackout the national electric grid for months or years and collapse all the other critical infrastructures -- communications, transportation, banking and finance, food and water -- necessary to sustain modern society and the lives of 310 million Americans". He also went so far as to warn of "existential threats that could kill 9 of 10 Americans through starvation, disease, and societal collapse."

EMP threatens all critical infrastructure sectors - those sectors that rely heavily on communications technology, information technology, the electric grid, or that use a SCADA system are particularly vulnerable but the complex interconnectivity among critical infrastructure sectors carries a serious potential for cascading failures, complicating not only the impact of the event but the recovery from it.

The Strategic National Risk Assessment identifies space weather as a hazard that poses significant risk to the security of the Nation, and the 2015 draft document "National Space Weather Strategy" indicates that reducing the Nation's vulnerability to space weather (the variations in the space environment between the sun and Earth that can affect infrastructure systems and technologies in space and on Earth) is a national priority. At this time DHS has not issued a National Planning Scenario for an EMP, but two of the stated goals in the draft Space Weather Strategy is to develop comprehensive guidance to support existing response and recovery constructs to manage space weather events and to improve mitigation efforts to focus on long-term vulnerability reduction and enhancing resilience to disasters. This includes a power outage response and recovery plan.

Geographic Location

Because of the ubiquitous nature of electrical power and electronic devices in our modern world and the vital nature of all the functions that are dependent on power, the risks of this hazard are equal across the nation, though more populous areas may experience greater negative social impacts on a more rapid timeline.

Past Events

The Solar Storm of 1859—known as the Carrington Event—was a powerful geomagnetic solar storm during which a solar coronal mass ejection hit Earth's magnetosphere and induced one of the largest geomagnetic storms on record, September 1–2, 1859. Worldwide reports on the effects of the geomagnetic storm of 1859 were compiled and published by American mathematician Elias Loomis, which support the observations of Carrington and Stewart. Aurorae were seen around the world, those in the northern hemisphere as far south as the Caribbean; those over the Rocky Mountains in the U.S. were so bright that their glow awoke gold miners, who began preparing breakfast because they thought it was morning. People in the northeastern United States could read a newspaper by the aurora's light. The aurora was visible as far from the poles as Sub-Saharan Africa (Senegal, Mauritania, perhaps Monrovia, Liberia), Monterrey and Tampico in Mexico, Queensland, Cuba, Hawaii, and even at lower latitudes very close to the equator, such as in Colombia. Telegraph systems all over Europe and North America failed, in some cases giving telegraph operators electric shocks. Telegraph pylons threw sparks. Some telegraph operators could continue to send and receive messages despite having disconnected their power supplies.

In June 2013, a joint venture from researchers at Lloyd's of London and Atmospheric and Environmental Research (AER) in the United States used data from the Carrington Event to estimate the current cost of a similar event to the U.S. alone at $0.6–2.6 trillion.

Since 1859, the earth has not suffered the effects of a CME of that size, though less powerful events are not rare. Some of the more recent ones are listed below. This data was obtained from http://www.solarstorms.org/SRefStorms.html

January 25, 1938 The Fatima Storm - The Great Aurora was seen over the whole of Europe and as far south as Southern Australia, Sicily, Portugal and across the Atlantic to Bermuda and Southern California. All transatlantic radio communication was interrupted. The pulse was responsible for delaying express trains on the Manchester to Sheffield line after electrical disturbance hit the signaling apparatus. Short wave radio sets were interfered with and the teletype system at the local office of the Western Union was started up by the phenomenon.

March 25, 1940 The Easter Sunday Storm - On Easter Sunday calls by millions of people were halted between 10:00 AM and 4:00 PM creating pandemonium at nearly all Western Union offices. A telephone cable between Fargo North Dakota and Winnipeg was found with its wires fused together, presumably from the voltage surges. Consolidated Edison of New York also reported 1,500 volt dips in three electrical generators in New York City located in Brooklyn and the Bronx. In Bangor Maine, lightning arresters were burned out as well. The New York Times noted that United Press reported earth currents at 400 Volts in Boston, 450 in Milwaukee, and more than 750 Volts near St. Louis. All tolled, the Associated Press's entire investment of 185,000 miles of leased wires were put out of service. Practically every long-distance telegraph or telephone office in the country was doing repair work in what was considered one of the worst such events in history. AT&T land lines had been badly disrupted by 600 volt surges on wires designed for 48 volts. In the Atlantic Cable between Scotland and Newfoundland, voltages up to 2,600 volts were recorded during the storm. Coast Guard radio stations were blocked,

although compasses were not affected. Excessive voltage in the Boston and Kene telegraph lines 'blew fuses'. In several instances fuses were 'blown' and vacuum tubes ran the risk of damage due to these influences

February 11, 1958 - Radio blackout cuts US off from the rest of the world. Aurora visible in Los Angeles, Tulsa, Boston, Seattle, Canada and Newfoundland. Voltages in electrical telegraph circuits exceeded 320 volts in Newfoundland. Intense red glow gave way to curtains and shimmering draperies. [New York Times, February 11, 1958, p. 62]. Although not seen over New York, it was so intense over Europe that people wondered about fires and warfare.

March 13, 1989 - The Quebec Blackout Storm - Astronomers were busily tracking "Active Region 5395" on the Sun when suddenly it disgorged a massive cloud of superheated gas on March 10, 1989. Three days later, and seemingly unrelated to the solar paroxicism, people around the world saw a spectacular Northern Lights display. Most newspapers that reported this event considered the spectacular aurora to be the most newsworthy aspect of the storm. Seen as far south as Florida and Cuba, the vast majority of people in the Northern Hemisphere had never seen such a spectacle in recent memory.

At 2:45 AM on March 13, electrical ground currents created by the magnetic storm found their way into the power grid of the Hydro-Quebec Power Authority. Giant capacitors tried to regulate these currents but failed within a few seconds as automatic protective systems took them off-line one by one. Suddenly, the entire 9,500 megawatt output from Hydro-Quebec's La Grande Hydroelectric Complex found itself without proper regulation. Power swings tripped the supply lines from the 2000 megawatt Churchill Falls generation complex, and 18 seconds later, the entire Quebec power grid collapsed. Six million people were affected as they woke to find no electricity to see them through a cold Quebec wintry night. People were trapped in darkened office buildings and elevators, stumbling around to find their way out. Traffic lights stopped working, Engineers from the major North American power companies were worried too. Some would later conclude that this could easily have been a $6 billion catastrophe affecting most US East Coast cities. All that prevented the cascade from affecting the United States were a few dozen capacitors on the Allegheny Network. [Newspaper Archive]

October 29, 2003 - The Halloween Storm - This Halloween Storm spawned auroras that were seen over most of North America. Extensive satellite problems were reported, including the loss of the $450 million Midori-2 research satellite. Highly publicized in the news media. A huge solar storm has impacted the Earth, just over 19 hours after leaving the sun. This is one of the fastest solar storm in historic times, only beaten by the perfect solar storm in 1859 which spent an estimated 17 hours in transit. A few days later on November 4, 2003 one of the most powerful x-ray flares ever detected, swamped the sensors of dozens of satellites, causing satellite operations anomalies….but no aurora. Originally classified as an X28 flare, it was upgrade to X34 a month later. In all of its fury, it never became a white light flare such as the one observed by Carrington in 1859. Astronauts hid deep within the body of the International Space Station, but still reported radiation effects and ocular 'shooting stars'.

Probability and Severity

It is difficult to calculate the probability of Occurrence for an event such as a CME. Space is large and the earth is a small moving target, and the sun's coronal mass ejections are random, both in size and trajectory. The earth has not been hit by a CME comparable to the Carrington Event for 157 years – however in 2013 such an event narrowly (in cosmic terms) missed the earth, passing through the earths orbital path a mere week after the earth had passed through on in its circuitous route. The general consensus among astrophysicists and government planners is that major EMP events are a low frequency, high consequence threat; therefore the probability of an EMP is rated as "low" and the severity as "high".

Vulnerability

Potential Losses to Existing Development

Losses due to this hazard are rarely of the permanent variety such as the damages caused by tornadoes or similar hazards. The losses are disruption to service, damage to sensitive electronic equipment, computer data servers, and the like.

Impact of Future Development

Commercial and industrial development in Caldwell County is relatively minimal, making it difficult to project any significant change in terms of vulnerability.

Hazard Summary by Jurisdiction

The County and all its communities are equally vulnerable to the effects of this hazard

Problem Statement

The National Defense Authorization Act for fiscal year 2006 reestablished the EMP Commission to continue its efforts "to monitor, investigate, and make recommendations, and report to Congress on the evolving threat to the United States from electromagnetic pulse attack resulting from the detonation of a nuclear weapon or weapons at high altitude." Those findings can be encapsulated with a sentence from the overview: "*unprecedented cascading failures of our major infrastructures could result. In that event, a regional or national recovery would be long and difficult and would seriously degrade the safety and overall viability of our Nation*."

Moreover, the Congressional Commission on the Strategic Posture of the United States independently re-examined the EMP threat, and concurred with the assessment and recommendations of the EMP Commission. So, too, did the National Academy of Sciences, the DOE–NERC report, and the FERC interagency report. In all, five commissions and major independent U.S. government studies have independently concurred with the EMP Commission's threat assessment and recommendations.

Not one official commission or U.S. government study dissents from this consensus.

And yet still, the Government Accountability Office released a report in April of 2016 detailing the political apathy and bureaucratic dysfunction obstructing EMP mitigation, stating that even though divisions within Homeland Security have been given specific tasks, these tasks have not been completed. There had been no identification of the electrical infrastructure that most need protecting, nor had the agencies coordinated strategies to address risks associated with EMPs, including research and development of equipment designed to mitigate damage.

As of the 2016 writing of this document the United States Government still has not addressed vulnerability to EMP in beyond the theoretical planning stage, and comprehensive guidance has not been provided to state and local authorities on planning or mitigation for EMP events of any scale. Additionally, congress has not yet passed any of the dozens of comprehensive legislation addressing the mitigation of EMP vulnerabilities that have come before them.

Until such time as guidance is available, there is little that County and City governments can do to mitigate a major EMP event. Continuity of government and the preservation of vital public services have to be the top priorities. It is the recommendation of this plan that the County and municipalities be aware of the threat and monitor the development of Federal guidance in order to incorporate that guidance into their emergency operations planning as it becomes available.

4 MITIGATION STRATEGY

4 MITIGATION STRATEGY 1
4.1 Goals 1
4.2 Identification and Analysis of Mitigation Actions 2
4.3 Implementation of Mitigation Actions 4

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.

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

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

4.1 Goals

This planning effort is an update to Caldwell County's existing hazard mitigation plan approved by FEMA five years previous. Therefore, the goals from the previous plan were reviewed to see if they were still valid, feasible, practical, and applicable to the defined hazard impacts. These goals are listed below:

1. Manage the development of land and buildings to minimize the risk of loss due to natural hazards.
2. Protect structures and their occupants and contents from the damaging effects of Natural Hazards.
3. Educate and inform the public about the risk of hazards and the techniques available to reduce danger to life and property.
4. Preserve and restore the beneficial functions of the natural environment and promote sustainable, "environmentally friendly" community development.
5. Improve the efficiency, timing, and effectiveness of warning, response, and recovery efforts for natural hazard disasters.
6. Apply engineered structural modifications to natural systems and public infrastructure to | reduce the potentially damaging impacts of hazards, where feasible, cost effective, and environmentally sound.

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 previously approved plan's goals were reviewed. It was determined that the broadly stated purposes were still valid for the 2016 Update.

The goals and the actions/projects proposed in the 2016 plan also were formed pursuant to these principles, stated below.

- To respond to the issues highlighted in the hazard risk and vulnerability sections of this plan.
- To recognize the capabilities, limitations, and resources available to each jurisdiction to implement the policies of this plan.
- To evaluate the broad range of alternative mitigation measures available
- To adapt policies that most effectively responds to the hazard issues facing each community.
- To implement priority policies according to a 5-year action plan

4.2 Identification and Analysis of Mitigation Actions

After reviewing the plan goals there was a lengthy discussion about new SEMA/FEMA guidelines for Plan updates. A problem with many plans on a national level was that some of the proposed actions from older plans were not substantive proposals fundable under FEMA's mitigation grants programs. When action item narrative is similar to "the community should consider . . . ", "the town will encourage . . ." or "the city will continue to . . ." – these usually are not really actions within regulatory definitions. Nor are they fundable with hazard mitigation grants. ." In addition, Substantive progress on these kinds of actions is not easily assessed. In short, such actions should not be carried forward into plan updates. Those actions are highlighted in yellow below.

SEMA believes that the creation of substantive actions/projects in future hazard mitigation plans is key to the success of risk reduction efforts throughout the state. Updated actions must reflect current conditions and progress made on previously proposed mitigation efforts. The 5-year plan update is an opportunity for each jurisdiction to adjust its actions to address current realities.

The actions of the previous plan were assessed for relevance and fundability prior to discussing their inclusion in the plan update, and this caused many of the actions in the old plan to be rejected or significantly re-worded. Table 4.1 provides a summary of the completed and deleted actions from the previous plan.

Table 4.1 Summary of Actions from the Previous Plan

Status: REMOVED RETAINED COMPLETED (REMOVED)

Status	Action form previous plan
Done But not in such a way as to be measured	Review and amend existing local planning documents to be certain vulnerability and environmental suitability of lands for future development has been addressed.
Done But not in such a way as to be measured	Ascertain that local plans address the vulnerability of designated hazard areas and encourage open space planning to create amenities for recreation and conservation of fragile resources.
In progress, Measurable via GHRPC TAC	Seek funding sources and technical assistance for conducting a more detailed analysis of the flood plain hazard areas in the vicinity of the cities of Kingston and Braymer.
TO BE REMOVED	Consider large lot size restrictions within designated flood zones
Done Measureable via Floodplain Ordinance	Evaluate additional land use restrictions within designated flood plains such as; the prohibition of storage of buoyant or hazardous materials, restricted development of floodways, etc.
Done Measurable via floodplain manager	Train local flood plain managers through programs offered through the State by FEMA.
Done Access to print products and digital products online	Maintain a library of technical materials to support local flood plain management.
Done Measureable via Floodplain Ordinance	Adopt and enforce floodplain management requirements, particularly those relating to the regulation of new construction in designated floodplains.
Progress made but unfinished A list needs to be generated	Investigate the current state of suitable shelter in Caldwell County; particularly in vulnerable areas, such as mobile home communities.
Insufficient	Investigate the availability of funding to construct tornado safe rooms in vulnerable areas where no sufficient shelter currently exists within an acceptable distance
TO BE REMOVED	Encourage the inclusion of safe rooms in the construction of all new public buildings.
Done Measureable via Floodplain Ordinance	Provide technical assistance to owners of pre-FIRM buildings to advise them of available retrofitting techniques.
Done Measureable via Floodplain Ordinance	Continuing to participate in FEMA's flood insurance program, ensuring that people with property in the floodplain are made aware that their property is in the floodplain and that there is an insurance program.
Done Measureable via Floodplain Ordinance	Continue to require mandatory flood-proofing of those buildings constructed in the floodplain after the enactment of regulations.
TO BE REMOVED	Take the appropriate steps to facilitate the elevation or relocation of structures which suffer repetitive losses despite flood proofing.
Incomplete	Use local libraries as a resource for distributing free information about hazards and hazard mitigation to interested parties.
Done Access to print products and digital products online	Obtain free copies of the latest FEMA flood maps and keep them on file in the courthouse for viewing and copying by any interested party.
TO BE REMOVED	Continue to support the legal requirement of the disclosure by real estate sellers of the presence of floodplains or other hazard areas to potential buyers.
Insufficient Detail Requires definitive items that can be measured	Support outreach to and education of the public regarding natural hazards and mitigation strategies via such efforts as carried out by the county LEPC (Local Emergency Planning Committee)
TO BE REMOVED	Continue to support river/stream corridor restoration by observing "best management practices" prescribed by the Missouri Department of Conservation for construction projects in or near streams and rivers .
TO BE REMOVED	Support the individual communities in maintaining existing storm warning systems as well those communities without who are seeking funding for storm sirens.
TO BE REMOVED	Continue to encourage the ownership and use of NOAA Radios. In the past, the LEPC has purchased such radios and given them to schools and daycares. Similar programs may be undertaken in the future; efforts to foster public knowledge of these radios and their availability are also included in this action.
TO BE REMOVED	Continue Disaster Response planning as currently undertaken by the county LEPC.
Progress made but further effort is required	Undertake a preliminary evaluation of existing facilities evacuation planning in the county. Following the findings of that evaluation, the county may create an addendum to their existing Emergency Response Plan regarding facilities evacuation plans.
Done Measurable by review of the EOP	Review the existing emergency response plan with health and safety maintenance planning in mind. Dependent on this review, the LEPC may make additions or changes to the existing plan.
TO BE REMOVED	Support School Districts in annual assessments and updates of their all-hazards plan
TO BE REMOVED	Individual communities with adequate existing storm water drainage systems will continue to maintain them.
Incomplete. There is currently no way to measure this action	Communities with no existing storm water drainage systems or systems that are inadequate will investigate funding resources and options to pursue the construction of such.
In progress, Measurable via GHRPC TAC	The County will work with individual communities, land owners, and State and Federal agencies to maintain existing flood control and drainage systems which protect large areas of land and substantial portions of the Transportation system, and seek funding assistance to design and implement flood control and drainage structures where a need for such has been demonstrated.

Based on the status updates it was determined that the old actions had either been completed or were not suitable for inclusion in the new plan.

The Committee was asked to propose new mitigation actions.

For a comprehensive range of mitigation actions to consider, the MPC reviewed the following information: A list of actions proposed in the previous mitigation plan, the current State Plan, and approved plans in surrounding counties, Key issues from the risk assessments, including the Problem Statements concluding each hazard profile and vulnerability analysis, State priorities established for Hazard Mitigation Assistance grants, open discussions, responses to Data Collection Questionnaires, and other efforts to involve the public in the plan development process.

Individual jurisdictions, including school, were encouraged to propose new mitigation strategies. They were encouraged to review the details of the risk assessment vulnerability analysis specific to their jurisdiction.

The MPC reviewed the actions from the previously approved plan in open discussion, using the STAPLEE format.

4.3 Implementation of Mitigation Actions

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

FEMA's STAPLEE methodology was used to assess the costs and benefits, overall feasibility of mitigation actions, and other issues impacting project. During the prioritization process, the MPC used a worksheet as a guide to assign scores. The worksheets posed questions based on the STAPLEE elements as well as the potential mitigation effectiveness of each action. Scores were based on the responses to the questions as follows:

Definitely yes = 3 points
Maybe yes = 2 points
Probably no = 1
Definitely no = 0

The following questions were asked for each proposed action.

S: Is the action socially acceptable?
T: Is the action technically feasible and potentially successful?
A: Does the jurisdiction have the administrative capability to successfully implement this action?
P: Is the action politically acceptable?
L: Does the jurisdiction have the legal authority to implement the action?
E: Is the action economically beneficial?
E: Will the project have an environmental impact that is either beneficial or neutral? (Score "3" if positive and "2" if neutral)

Will the implemented action result in lives saved? Will the implanted action result in a reduction of disaster damage?
The final scores are listed below in the analysis of each action. The worksheet can be found in Appendix B with the documentation for meeting 2. A single form was used to guide group discussion on all existing and propose measures rather than having each committee member fill one out separately. The STAPLEE final score for each action, absent other considerations, such as a localized need for a project, determined the priority. Low priority action items were those that had a total score of between 0 and 24. Moderate priority actions were those scoring between 25 and 29. High priority actions scored 30 or above. A blank STAPLEE worksheet is shown in Figure 4.1

Figure 4.1. The STAPLEE Worksheet

Score Key: Definitely yes = 3 points Maybe yes = 2 points Probably no = 1 Definitely no = 0

STAPLEE Criteria	Social		Technical			Administrative			Political			Legal			Economic				Environmental				TOTAL SCORE
Action	Community Acceptance	Affect of Segment of Population	Technical Feasibility	Long Term Solution	Secondary impacts	Staffing	Funding Allocated	Maintenance Operations	Political Support	Local Champion	Public Support	State Authority	Existing local Authority	Potential legal Challenges	Benefit of Action	Cost of Action	Contributions to economic goals	Outside funding required	Effect on endangered species	Effect on Haz-mat waste sites	Consistent with Environmental goals	Consistent with Federal laws	

2016 updated strategy

Action No:	**CCHM1601**
Description	**Develop a detailed county-wide inventory of emergency shelters and safe rooms**
Jurisdictions Selecting the Action:	Caldwell County
Responsible Agency/ Party:	Caldwell County Emergency Management
Partner Agencies	Red Cross
Mechanism of Implementation	Designation of a Shelter Coordinator
Problem(s) to be Mitigated:	Lack of readily available, organized and useful information on available shelters and safe rooms; With this inventory, 911 dispatch (directly to callers or through emergency responders on scene) could advise individuals displaced by disaster of the closest available shelter. In addition, emergency management and incident commanders will have access to information detailing the locations, assets, and limitations of shelters as they relate to the needs imposed by a given situation. The safe room data will enable responders to more quickly locate potential survivors in the wake of a catastrophic event. The coordinator will facilitate updates and further discussion on shelters and safe rooms at the quarterly plan maintenance meetings.
Process	• Appoint a shelter coordinator • Work with representatives from each community to develop a list of shelters and safe rooms: This list will contain, for example : ▪ Shelter/ Safe room location ▪ Contact Info ▪ Facility info including capacity and amenities (Showers, kitchen, segregated spaces, stored supplies) ▪ Whether the site has a generator or the capacity to interface with a portable generator
Applicable Goal(s)	Goal 5: Improve the efficiency, timing, and effectiveness of response and recovery efforts for disasters. Goal 6. Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where feasible, cost effective, and environmentally sound.
Hazards Addressed:	All hazards
Estimated Cost:	$0
Potential Funding Sources	NA
Cost/Benefit Discussion:	Being a matter that could be adequately handled by volunteers, there is great benefit at no cost
Prioritization Discussion:	As such an inventory does not yet exist, this project was seen as having a high priority
Priority	High
Timeline for Implementation/Completion:	2017-2018
Status of Action:	Pending
Report of Progress:	Emergency Management will assess the progress of this project in July of 2017 and again at the first LEPC/EM meeting scheduled in 2018.

Action No:	**CCHM1602**
Description	**Develop a community shelter plan**
Jurisdictions Selecting the Action:	Caldwell County, City of Braymer, City of Breckenridge, City of Cowgill, City of Hamilton, City of Kidder, City of Kingston, City of Polo
Responsible Agency/ Party:	City Council or appointed representative
Partners	Red Cross, Local Churches and Schools, Caldwell County Emergency Management
Mechanism of Implementation	Designation of a Municipal Shelter Coordinator who will develop an inventory of spaces available for use as emergency shelters and safe rooms, and develop a simple set of standard operating guidelines and procedures for activating and operating those shelters and safe rooms
Problem(s) to be Mitigated:	Lack of pre-disaster organization of sheltering options; With this action each jurisdiction will have multiple alternate shelters available and there will be an established protocol to put them into service. Providing this information to the County Shelter Coordinator will make it easier for responders from other jurisdictions to locate potential survivors in the wake of a catastrophic event. The community shelter coordinator will provide updates and participate in further discussion on shelters and safe rooms at the quarterly plan maintenance meetings.
Process	• Appoint a shelter coordinator for the City • Work with representatives from Community groups such as local churches and schools to designate spaces suitable for emergency sheltering. • Work with the County Shelter Coordinator to create and maintain the County-Wide shelter inventory. The inventory of shelters will contain, at a minimum, the following info: ▪ Shelter location ▪ Contact Info ▪ Facility info including capacity and amenities (Showers, Kitchen, Segregated spaces, stored supplies) *Note: Every designated shelter space need not be perfectly suited for sheltering at the onset – The sheltering plan can include actions such as pursuing funding (through fund-raising or seeking grants) to improve existing shelter areas that are less than ideal- funds and assistance may be sought for such items as electrical work to make a site able to seamlessly interface with a portable generator, obtaining an on-site generator, undertaking renovations and additions such as restrooms or showers stalls, and other actions which may be identified and incorporated into both the shelter plan and the Hazard Mitigation Plan*
Applicable Goal(s)	Goal 5: Improve the efficiency, timing, and effectiveness of response and recovery efforts for disasters. Goal 6. Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where feasible, cost effective, and environmentally sound.
Hazards Addressed:	All hazards
Estimated Cost:	$0
Potential Funding Sources	NA
Cost/Benefit Discussion:	Being a matter that could be adequately handled by volunteers or made part of an employee's existing duties, there is great benefit at no cost
Prioritization Discussion:	As there is no shelter inventory or any shelter plans in Caldwell County at the present time, this project was seen as having a high priority
Priority	High
Timeline for Implementation/Completion:	2017-2018
Status of Action:	Pending
Report of Progress:	Emergency Management will assess the progress of this project in July of 2017 and again at the first LEPC/EM meeting scheduled in 2018.

Action No:	**CCHM1602-B**
Description	**Shelter and Safe room Improvements**
Jurisdictions Selecting the Action:	Caldwell County, City of Braymer, City of Breckenridge, City of Cowgill, City of Hamilton, City of Kidder, City of Kingston, City of Polo, Braymer C-4, Breckenridge R-1, Cowgill R-VI, Hamilton R-II, Kingston 42, Mirable C-1, New York R-IV, Polo R-VII
Responsible Agency/ Party:	City Council/School Boards
Partners	Red Cross, Local Churches, Caldwell County Emergency Management
Mechanism of Implementation	City/School Emergency Operations Plan
Problem(s) to be Mitigated:	Power failure
Process	The local community shelter coordinator will use the shelter plan (created under CCHM1602**)** to determine which shelter spaces can be improved by acquiring a backup generator or by the completion of electrical work to make a site able to seamlessly interface with a portable generator, or renovations and additions such as restrooms or showers stalls. The Coordinator will prioritize these needs and subsequently seek grant funding for their construction.
Applicable Goal(s)	Goal 6. Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where feasible, cost effective, and environmentally sound.
Hazards Addressed:	All hazards
Estimated Cost:	$0
Potential Funding Sources	FEMA/SEMA, CDBG, USDA
Cost/Benefit Discussion:	Being a matter that could be adequately handled by volunteers or made part of an employee's existing duties, there is great benefit at no cost
Prioritization Discussion:	Given that a shelter plan must be completed to facilitate this action, this project was assigned a moderate priority
Priority	Moderate
Timeline for Implementation/Completion:	2018-2019
Status of Action:	Pending
Report of Progress:	Emergency Management will assess the progress of this project in July of 2018 and again at the first LEPC/EM meeting scheduled in 2019.

Action No:	**CCHM1603**
Description	**a. Develop a shelter plan** b. **Incorporate shelter improvements and a proposed storm shelter into existing Capital Improvement plans**
Jurisdictions Selecting the Action:	Hamilton R-II Schools
Responsible Agency/ Party:	Hamilton R-II Administration (Superintendent)
Partners	Red Cross, FEMA, Caldwell County Emergency Management
Mechanism of Implementation	
Problem(s) to be Mitigated:	a. While the school is currently one of the most likely sites for an emergency shelter in time of disaster, there is no established, well organized plan for how such operations would be conducted, especially if school were in session and the school wished to continue its normal academic operation while simultaneously operating as a shelter. b. The school currently has no tornado safe room.
Process	a. The school, with the assistance of the Red Cross (who can do a shelter assessment) and Caldwell County Emergency Management will develop a shelter plan addressing the use of its campus as an emergency shelter both when school is in session and when it is not. In addition, the school will include suggested improvements in its existing capital improvement plans. b. The school will amend its proposal for a multi-purpose building to make that structure a designated tornado safe room.
Applicable Goal(s)	a. Goal 5: Improve the efficiency, timing, and effectiveness of response and recovery efforts for disasters b. Goal 6: Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where feasible, cost effective, and environmentally sound.
Hazards Addressed:	a. All Hazards b. Tornado
Estimated Cost:	a. 0$ b. It is difficult to estimate the additional cost to a building which hasn't yet been designed. Depending on the size of the school and how a shelter is constructed, safe rooms can range in price from about $500,000 to $1 million.
Potential Funding Sources	Capital Improvement budget, Tax Levy, FEMA Grant Monies
Cost/Benefit Discussion:	The cost of a designated tornado safe room is extremely high, but upgrading a building already being constructed to be a storm resistant structure is much more cost effective.
Prioritization Discussion:	a. Having little cost associated with it; the committee saw no reason why this action shouldn't have a high priority. b. As this action involves capital improvement planning, which generally operates on a five-year cycle, this action was assigned a moderate priority
Priority	Moderate
Timeline for Implementation/Completion:	a. 2017 b. 2019
Status of Action:	a. Pending b. Pending
Report of Progress:	Caldwell County Emergency Management will assess this actions at the annual HMP committee meetings and again upon updating the HMP in 2021

Action No:	CCHM1604
Description	**County wide analysis of gaps in municipal siren coverage**
Jurisdictions Selecting the Action:	Caldwell County, City of Braymer, City of Breckenridge, City of Cowgill, City of Hamilton, City of Kidder, City of Kingston, City of Polo
Responsible Agency/ Party:	Caldwell County Emergency Management
Partners	Caldwell County 911
Mechanism of Implementation	Public survey
Problem(s) to be Mitigated:	Gaps in siren coverage
Process	Public surveys and sound tests
Applicable Goal(s)	Goal 3: Educate and inform the public about the risks of hazards and the techniques available to reduce danger to life and property.
Hazards Addressed:	Tornado
Estimated Cost:	$0
Potential Funding Sources	NA
Cost/Benefit Discussion:	There is no cost, and the benefit is that the county would know where there are gaps in siren coverage and determine where new sirens should be placed in the event that funding for additional sirens can be obtained.
Prioritization Discussion:	The committee felt this was a good project but due to the nature of grant applications and funding cycles it was not something that would result in rapid improvements.
Priority	Moderate
Timeline for Implementation/Completion:	2019
Status of Action:	Pending
Report of Progress:	Caldwell County Emergency Management will assess this action at the annual HMP meeting

Action No:	CCHM1605
Description	**City of Hamilton Storm Siren Protocol**
Jurisdictions Selecting the Action:	City of Hamilton
Responsible Agency/ Party:	Hamilton City Administrator
Partners	Caldwell County 911, Emergency Management, NWS
Mechanism of Implementation	Written protocol for use by the appropriate city personnel (Dispatch)
Problem(s) to be Mitigated:	Confusion about when to sound the sirens and for how long
Process	Develop a written protocol with emergency management and NWS
Applicable Goal(s)	Goal 3: Educate and inform the public about the risks of hazards and the techniques available to reduce danger to life and property.
Hazards Addressed:	Tornado
Estimated Cost:	$0
Potential Funding Sources	NA
Cost/Benefit Discussion:	There is no cost, and the benefit is that the storm sirens would only be sounded at appropriate times and intervals
Prioritization Discussion:	The committee felt this was a good project which could be accomplished quickly
Priority	High
Timeline for Implementation/Completion:	2017
Status of Action:	Pending
Report of Progress:	Caldwell County Emergency Management will assess this action at the annual HMP meeting

Action No:	CCHM1606
Description	**Implementation of the Red Cross Pillowcase Project**
Jurisdictions Selecting the Action:	Braymer C-4, Breckenridge R-1, Cowgill R-VI, Hamilton R-II, Kingston 42, Mirable C-1, New York R-IV, Polo R-VII
Responsible Agency/ Party:	School administration (Superintendent)
Partners	Red Cross, Caldwell County Emergency Management
Mechanism of Implementation	The Red Cross Pillowcase Project
Problem(s) to be Mitigated:	Lack of primary school education on disaster preparedness
Process	The Pillowcase Project, sponsored by Disney, is an hour long preparedness education program for children in grades 3 – 5, which teaches students about personal and family preparedness, local hazards, and basic coping skills. Red Cross volunteers lead students through a "learn, practice, share" framework to engage them in disaster preparedness. Upon completion, students receive a sturdy pillowcase in which to build their personal emergency supplies kit.
Applicable Goal(s)	Goal 3: Educate and inform the public about the risks of hazards and the techniques available to reduce danger to life and property.
Hazards Addressed:	All Natural Hazards
Estimated Cost:	$0
Potential Funding Sources	NA/ Red Cross
Cost/Benefit Discussion:	Because this action has no cost associated with it, it is 100% benefit
Prioritization Discussion:	The committee decided that this action should be implemented within the next school year and be repeated annually as long as the program is available
Priority	High
Timeline for Implementation/Completion:	2017
Status of Action:	Pending
Report of Progress:	Caldwell County Emergency Management will assess this action at the annual HMP meeting

Action No:	CCHM1607
Description	**Develop a system of public notification with protocols**
Jurisdictions Selecting the Action:	Caldwell County
Responsible Agency/ Party:	Caldwell County Emergency Management
Partners	Caldwell County 911
Mechanism of Implementation	Caldwell County 911 Dispatch
Problem(s) to be Mitigated:	Lack of a rapid, simple and effective way to rapidly inform the public of emergencies
Process	Do market research, make vendor contacts, get cost estimates, choose a method that's fiscally attainable
Applicable Goal(s)	Goal 3: Educate and inform the public about the risks of hazards and the techniques available to reduce danger to life and property.
Hazards Addressed:	All hazards
Estimated Cost:	Unknown at this time
Potential Funding Sources	Budget, grant funding
Cost/Benefit Discussion:	This cannot be determined until cost estimates are obtained
Prioritization Discussion:	This item was seen as a high priority
Priority	High
Timeline for Implementation/Completion:	2018
Status of Action:	Pending
Report of Progress:	Caldwell County Emergency Management will assess this action at the annual HMP meeting

Action No:	CCHM1608
Description	**Develop a Geographic Information System**
Jurisdictions Selecting the Action:	City of Hamilton
Responsible Agency/ Party:	City Manager, City of Hamilton
Partners	Green Hills Regional Planning Commission
Mechanism of Implementation	QGIS software and base data from the Missouri Spatial Data Information Service
Problem(s) to be Mitigated:	Lack of mapping capability in the City of Hamilton
Process	QGIS is robust GIS software available at no cost. The Missouri Spatial Data Information Service maintains a database of geographic information which can be used to create a base map which the city can use to develop its own datasets, such as utilities etc.
Applicable Goal(s)	Goal 1: Manage the development of land and buildings to minimize risk of loss due to natural hazards.
Hazards Addressed:	All Hazards
Estimated Cost:	$0
Potential Funding Sources	NA
Cost/Benefit Discussion:	Because this project has no cash outlay yet provides a valuable piece of information technology, it was found to have an excellent benefit to cost ratio
Prioritization Discussion:	Because the City of Hamilton has a current need to update its zoning map, this action was given a high priority
Priority	High
Timeline for Implementation/Completion:	2017
Status of Action:	Pending
Report of Progress:	Caldwell County Emergency Management will assess this action at the annual HMP meeting

Action No:	CCHM1609
Description	**Develop a unified County Response Plan for the Caldwell County Detention Center**
Jurisdictions Selecting the Action:	Caldwell County 911, Caldwell County Sheriff, City of Kingston
Responsible Agency/ Party:	Caldwell County Emergency Management
Partners	Missouri State Highway Patrol
Mechanism of Implementation	An annex to the Caldwell County Emergency Operations Plan
Problem(s) to be Mitigated:	Currently the Jail has a plan but no one else knows anything about it
Process	Emergency Management will put together a committee of agencies that may be required to respond to such an event and make sure the jail's emergency plan is disseminated to those agencies. Subsequent discussion may lead to the development of further plans by other agencies to augment or improve the existing plan
Applicable Goal(s)	Goal 5: Improve the efficiency, timing, and effectiveness of response and recovery efforts for natural hazards disasters.
Hazards Addressed:	All hazards
Estimated Cost:	$0
Potential Funding Sources	NA
Cost/Benefit Discussion:	The lack of cost means this action can only be beneficial
Prioritization Discussion:	The committee felt this action had a moderate priority
Priority	Moderate
Timeline for Implementation/Completion:	2018
Status of Action:	Pending
Report of Progress:	Caldwell County Emergency Management will assess this action at the annual HMP meeting

Action No:	CCHM1610
Description	**Develop a plan to prevent contamination of the future Otter Creek lake in the event of a Hazardous Materials Incident on that portion of Hwy 36 which is directly north and upstream of the lake**
Jurisdictions Selecting the Action:	Caldwell County
Responsible Agency/ Party:	Caldwell County Emergency Management
Partners	MoDOT, DNR, MERC,
Mechanism of Implementation	Incorporation into future land use plans
Problem(s) to be Mitigated:	Vulnerability of a public drinking water source to contamination associated with Hazmat incidents on Hwy 36, which is a major transportation corridor with high traffic volume.
Process	Emergency Management will put together a committee of stake holders, including MoDot, MoDNR, SEMA and MERC to develop a mitigation plan.
Applicable Goal(s)	Goal 1: Manage the development of land and buildings to minimize risk of loss due to natural hazards. Goal 6: Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where feasible, cost effective, and environmentally sound.
Hazards Addressed:	HAZMAT incident, Mass Transportation Incident
Estimated Cost:	$0
Potential Funding Sources	SEMA, MERC
Cost/Benefit Discussion:	Because there's little cost associated with planning and the process could result in beneficial mitigation, this action was found to be extremely beneficial
Prioritization Discussion:	Due to the fact that the planning and engineering phase for the proposed lake is still underway and from becoming a reality, the committee found this action to be somewhat less urgent that others
Priority	Low
Timeline for Implementation/Completion:	2020
Status of Action:	Pending
Report of Progress:	Caldwell County Emergency Management will assess the progress of this action at the annual HMP meeting

Action No:	CCHM1611
Description	**Develop a Pipeline Security Plan**
Jurisdictions Selecting the Action:	Caldwell County
Responsible Agency/ Party:	Caldwell County 911, Emergency Management
Partners	Pipeline company, representatives of local government and response agencies, Homeland Security/SEMA, MERC
Mechanism of Implementation	An annex to the Caldwell County Emergency Operations Plan
Problem(s) to be Mitigated:	Environmental and security risks which might result in a hazmat incident
Process	Emergency Management will put together a committee of stake holders to analyze potential security risks to the pipeline in the county and devise strategies to mitigate these risks
Applicable Goal(s)	Goal 6: Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where feasible, cost effective, and environmentally sound.
Hazards Addressed:	Hazmat, Terrorism
Estimated Cost:	$0
Potential Funding Sources	SEMA, MERC, Homeland Security
Cost/Benefit Discussion:	Because there's little cost associated with planning and the process could result in beneficial mitigation, this action was found to be extremely beneficial
Prioritization Discussion:	This action was felt to warrant immediate implementation
Priority	High
Timeline for Implementation/Completion:	2017
Status of Action:	Pending
Report of Progress:	Caldwell County Emergency Management will assess this action at the annual HMP meeting

Action No:	CCHM1612
Description	**Participate in the "Great American Shake Out" Earthquake Drill**
Jurisdictions Selecting the Action:	Braymer C-4, Breckenridge R-1, Cowgill R-VI, Hamilton R-II, Kingston 42, Mirable C-1, New York R-IV, Polo R-VII
Responsible Agency/ Party:	School District/Superintendent
Partners	FEMA/SEMA
Mechanism of Implementation	Incorporation into school activities
Problem(s) to be Mitigated:	Lack of awareness about earthquake hazards and how such an event may affect the region
Process	The Schools will incorporate an earthquake drill into a day with information and activities promoting awareness of seismic hazards and disaster preparedness
Applicable Goal(s)	Goal 3: Educate and inform the public about the risks of hazards and the techniques available to reduce danger to life and property.
Hazards Addressed:	Earthquake
Estimated Cost:	$0
Potential Funding Sources	NA
Cost/Benefit Discussion:	The lack of cost means this action can only be beneficial
Prioritization Discussion:	This action was felt to warrant immediate implementation
Priority	High
Timeline for Implementation/Completion:	2017
Status of Action:	Pending
Report of Progress:	Caldwell County Emergency Management will assess this action at the annual HMP meeting

Action No:	CCHM1613
Description	**Pursue funding to rebuild/Redesign bridges impacted by repetitive flooding on Far West Road and Rt. N, as well as to raise the road bed on Rt. A for the same reason**
Jurisdictions Selecting the Action:	Caldwell County
Responsible Agency/ Party:	County Commission
Partners	FEMA/SEMA/MoDot
Mechanism of Implementation	Regional Transportation Plan, County Road and Bridge Plan
Problem(s) to be Mitigated:	Frequent inundation of transportation routes
Process	The County will seek funding from MoDot as well as Hazard Mitigation funding.
Applicable Goal(s)	Goal 6: Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where feasible, cost effective, and environmentally sound.
Hazards Addressed:	Flooding
Estimated Cost:	$0
Potential Funding Sources	MoDot, FEMA
Cost/Benefit Discussion:	As the County had considered these measures without funding, it was decided that seeking grant funding was not only worthwhile but vital to the project's chances of ever coming to fruition.
Prioritization Discussion:	This action was felt to warrant immediate implementation
Priority	High
Timeline for Implementation/Completion:	2017
Status of Action:	Pending
Report of Progress:	Caldwell County Emergency Management will assess this action at the annual HMP meeting

Caldwell County 5-Year Plan Update (2016-2020): Summary and Timeline								
ID No.	Action	Jurisdiction(s)	Priority	Timeline				
				2017	2018	2019	2020	2021
CCHM1601	Develop a detailed county-wide inventory of emergency shelters and safe rooms	Caldwell County	High		●			
CCHM1602	Develop Community Shelter Plans and safe room inventories	Caldwell County, City of Braymer, City of Breckenridge, City of Cowgill, City of Hamilton, City of Kidder, City of Kingston, City of Polo	High		●			
CCHM1602	Safe Room/Shelter Improvements	Caldwell County, City of Braymer, City of Breckenridge, City of Cowgill, City of Hamilton, City of Kidder, City of Kingston, City of Polo, Braymer C-4, Breckenridge R-1, Cowgill R-VI, Hamilton R-II, Kingston 42, Mirable C-1, New York R-IV, Polo R-VII	Moderate			●		
CCHM1603	a. Develop a Shelter Plan b. Incorporate shelter improvements and a proposed storm shelter into existing capital improvement plans	Hamilton R-II School District	Moderate			●		
CCHM1604	Conduct a County-wide analysis of gaps in municipal siren coverage	Caldwell County, City of Braymer, City of Breckenridge, City of Cowgill, City of Hamilton, City of Kidder, City of Kingston, City of Polo	Moderate			●		
CCHM1505	Develop a Storm-Siren Protocol	City of Hamilton	High	●				
CCHM1606	Implement the Red-Cross "Pillowcase Project"	Braymer C-4, Breckenridge R-1, Cowgill R-VI, Hamilton R-II, Kingston 42, Mirable C-1, New York R-IV, Polo R-VII	High	●				
CCHM1607	Develop a system of public notification with protocols	Caldwell County (911)	High		●			
CCHM1608	Develop a geographic information system	City of Hamilton	Moderate	●				
CCHM1609	Develop a unified County Response Plan for the Caldwell County Detention Center	Caldwell County 911, Caldwell County Sherriff, City of Kingston	Moderate		●			
CCHM1610	Develop a plan to mitigate potential contamination of the proposed Otter Creek lake by hazmat incidents on Hwy 36	Caldwell County	Low				●	
CCHM1611	Develop a pipeline security plan	Caldwell County	High	●				
CCHM1512	Participate in the "Great American Shake Out" Earthquake Drill	Braymer C-4, Breckenridge R-1, Cowgill R-VI, Hamilton R-II, Kingston 42, Mirable C-1, New York R-IV, Polo R-VII	High	●				
CCHM1513	Pursue funding to rebuild /redesign bridges impacted by repetitive flooding on Far West Road and Rt. N, as well as to raise the road bed on Rt. A for the same reason	Caldwell County	High	●				

5 PLAN MAINTENANCE PROCESS

5 PLAN MAINTENANCE PROCESS 1

5.1 Monitoring, Evaluating, and Updating the Plan 1

5.1.1 Responsibility for Plan Maintenance 1

5.1.2 Plan Maintenance Schedule 1

5.1.3 Plan Maintenance Process 2

5.2 Incorporation into Existing Planning Mechanisms 3

5.3 Continued Public Involvement 3

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

5.1.1 Responsibility for Plan Maintenance

The Caldwell County Hazard Mitigation Committee is not a standing committee, and therefore responsibility for maintenance of the plan actions is delegated to individuals or entities as indicated in section 4 of this document. These entities are responsible for seeing that the actions which they have put in the plan are eventually implemented, if possible. These individuals or entities (or an appointed representative thereof) will meet annually as a "plan maintenance committee" with the Caldwell County Commission to evaluate the implementation of various actions within their jurisdiction. They will also meet after any major disaster event. These individuals will maintain vigilant monitoring of multi-objective, cost-share, and other funding opportunities to help their community or school district implement the plan's recommended actions for which no current funding exists, and keep the concept of mitigation in the forefront of decision making by identifying plan recommendations when other goals, plans, and activities overlap, influence, or directly affect increased vulnerability to disasters.

Like the planning committee, the maintenance committee is an advisory body and can only make recommendations to county, city, town, or district elected officials. Its primary duty is to see the plan successfully carried out and to report to the community governing boards and the public on the status of plan implementation and mitigation opportunities.

5.1.2 Plan Maintenance Schedule

The Maintenance Committee agrees to meet annually (On the Second Tuesday in May) as well as after any state or federally declared hazard event (as appropriate) to monitor progress and update the mitigation strategy. The Committee will also meet once quarterly to

discuss seasonal hazards. The Caldwell County Commission and/or County Emergency Management Director will be responsible for initiating the plan reviews and will invite members of the maintenance committee (or other designated responsible entity) to the meeting.

In coordination with all participating jurisdictions, a five-year written update of the plan will be submitted to the Missouri State Emergency Management Agency (SEMA) and FEMA Region VII per Requirement §201.6(c)(4)(i) of the Disaster Mitigation Act of 2000, unless disaster or other circumstances (e.g., changing regulations) require a change to this schedule.

5.1.3 Plan Maintenance Process

Progress on the proposed actions can be monitored by evaluating changes in vulnerabilities identified in the plan.

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
- Incorporation of ideas for new actions and changes in action prioritization.

In order to best evaluate any changes in vulnerability as a result of plan implementation, the participating jurisdictions will adopt the following process:

- Each proposed action in the plan identified an individual, office, or agency responsible for action implementation. This entity will track and report on an annual basis to the jurisdictional representative (or designated responsible entity) 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 representative (or designated responsible entity) 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 maintenance committee deems appropriate and necessary. Changes will be approved by the County Commission and the governing boards of the other participating jurisdictions.

5.2 Incorporation into Existing Planning Mechanisms

Participating jurisdictions that have the capability will incorporate the relevant mitigation actions into their existing plans and/or programs. Those existing plans and programs are discussed in sections 2 and 3 of this plan, generally limited to:

- Ordinances of participating jurisdictions;
- Caldwell County Emergency Operations Plan;
- Capital Improvement Plans and Budgets;
- School and Special District Plans and Budgets

The Maintenance Committee members will be responsible for insuring that the actions of the mitigation plan are incorporated into other planning frameworks in their individual jurisdictions, as appropriate. Conversely, those members will be responsible for integrating and incorporating pertinent information from other planning mechanisms in their jurisdiction into the Caldwell County hazard mitigation plan as warranted during the annual review and five year update processes.

Additionally, after the annual review of the Hazard Mitigation Plan, the Caldwell County Commission (and/or Emergency Management Director) will provide the updated Mitigation Strategy with current status of each mitigation action to all Mayors, City Clerks, and School District Superintendents of the participating jurisdictions.

5.3 Continued Public Involvement

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 Caldwell County Hazard Mitigation Planning Committee Facebook page following each annual review of the mitigation plan. When the Committee 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 Committee 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.

APPENDIX A

Data Collection Questionaries

Caldwell County Missouri
Multi-Jurisdictional
Hazard Mitigation Plan

Data Collection Questionnaire
For Local Governments

Jurisdiction: City of Kingston

Prepared by: David Bethel Water/Sewer Supt Co. Phone: (816) 632 - 9872

Date: / / 2016 Email: Kingstoncity@centurytel.net

Please complete this data collection questionnaire as accurately and completely as possible as this information will appear in the mitigation plan. A data collection questionnaire must be completed for each "jurisdiction" that wishes to be included in the plan. According to FEMA's definition a jurisdiction is any local government, including counties, municipalities, cities, towns, school districts, special districts, councils of government, and tribal organizations. Any of these entities as well as publicly funded colleges and universities that do not participate in the planning process **will not** be eligible applicants for FEMA mitigation funding programs. Please note: School Districts and other Educational Institutions should complete the Data Collection Questionnaire indicated "For School Districts and Educational Institutions".

Please return questionnaires by mail, email, or fax to:

Matthew D. Walker, Hazard Mitigation Planner
Green Hills Regional Planning Commission
1104 Main St. / Trenton, MO 64683
Phone (660) 359-5636 / Fax (660) 359-3096
email: mdw@ghrpc.org

CAPABILITY ASSESSMENT
&
INCORPORATION OF EXISTING PLANS, STUDIES, REPORTS AND TECHNICAL INFORMATION

The purpose of this section is to collect information to document existing capabilities as well as determine existing plans, studies, reports, and technical information that may need to be incorporated in the mitigation plan. Although some of this information may have been captured in your previous mitigation plan, it is important to ensure this information is current in the plan update

Please indicate which of the following your jurisdiction has in place. For elements that do not pertain to your type of public entity, please indicate with "N/A". If applicable, please provide a completion date for the element. If your jurisdiction does not have a particular element, and a higher level of government has the authority pertaining to your jurisdiction, please indicate this in the comments column. If your jurisdiction has any of the **underlined and bolded** elements, please provide a copy of the document to the contact listed on the front and indicate method in the comments column (i.e. available on the web, will email or mail).

Element	Yes, No, N/A	Comments
Planning Capabilities		
Comprehensive Plan	Date: ~~NA~~ NO	
Builder's Plan	Date: ~~NA~~ NO	
Capital Improvement Plan	Date: ~~NA~~ NO	
City Emergency Operations Plan	Date: ~~NA~~ NO	
County Emergency Operations Plan	Date: Yes	
Local Recovery Plan	Date: ~~NA~~ NO	
County Recovery Plan	Date: ~~NA~~ NO	
City Mitigation Plan	Date: NO	
County Mitigation Plan	Date: Yes	
Debris Management Plan	Date: NO	
Economic Development Plan	Date: NO	
Transportation Plan	Date: NO	
Land-use Plan	Date: NO	
Flood Mitigation Assistance (FMA) Plan	Date: NO	
Watershed Plan	Date: NO	
Firewise or other fire mitigation plan	Date: NO	
Critical Facilities Plan (Mitigation/Response/Recovery)	Date: NO	

Element	Yes, No, N/A	Comments
Policies/Ordinance		
Zoning Ordinance	NO	
Building Code	Version: Yes	
Floodplain Ordinance	Date: NO	
Subdivision Ordinance	NO	
Tree Trimming Ordinance	NO	
Nuisance Ordinance	NO	
Storm Water Ordinance	NO	
Drainage Ordinance	NO	
Site Plan Review Requirements	NO	
Historic Preservation Ordinance	NO	
Landscape Ordinance	NO	
Program		
Zoning/Land Use Restrictions	NO	
Codes Building Site/Design	NO	
Hazard Awareness Program	NO	
National Flood Insurance Program	NO	
Community Rating System (CRS) program under the National Flood Insurance Program (NFIP)?	If so, what is your current level rating? NO	
National Weather Service (NWS) Storm Ready Certification	NO	
Firewise Community Certification	NO	
Building Code Effectiveness Grading (BCEGs)	NO	
ISO Fire Rating	Rating: 9	
Economic Development Program	NO	
Land Use Program	NO	
Public Education/Awareness	NO	
Property Acquisition	NO	
Planning/Zoning Boards	NO	
Stream Maintenance Program	NO	
Tree Trimming Program	NO	
Engineering Studies for Streams (Local/County/Regional)	NO	
Mutual Aid Agreements	NO	
Studies/Reports/Maps		
Hazard Analysis/Risk Assessment (City)	NO	
Hazard Analysis/Risk Assessment (County)	NO	
Evacuation Route Map	NO	
Critical Facilities Inventory	NO	
Vulnerable Population Inventory	NO	
Land Use Map	NO	

Element	Yes, No, N/A	Comments
Staff/Department		Full Time or Part Time?
Building Code Official	Yes	
Building Inspector	Yes	
Mapping Specialist (GIS)	NO	
Engineer	NO	
Development Planner	NO	
Public Works Official	Yes	
Emergency Management Coordinator	NO	
NFIP Floodplain Administrator	NO	
Bomb and/or Arson Squad	NO	
Emergency Response Team	NO	
Hazardous Materials Expert	NO	
Local Emergency Planning Committee	Yes County Board Pres	
County Emergency Management Commission	NO	
Sanitation Department	NO	
Transportation Department	NO	
Economic Development Department	NO	
Housing Department	No	
Historic Preservation	NO	
Non-Governmental Organizations (NGOs)	Is there a local chapter? Yes or No	
American Red Cross	NO	
Salvation Army	NO	
Veterans Groups	NO	
Local Environmental Organization	NO	
Homeowner Associations	NO	
Neighborhood Associations	NO	
Chamber of Commerce	NO	
Community Organizations (Lions, Kiwanis, etc.	NO	
Financial Resources	Is your jurisdiction able to? Yes or No	
Apply for Community Development Block Grants	Yes	
Fund projects thru Capital Improvements funding	Yes	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric services	Yes	Water + Sewer
Impact fees for new development	NO	
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	NO	
Incur debt through private activities	Yes	Truck + Fire truck loan
Withhold spending in hazard prone areas	NO	

For plan updates, the plan maintenance process outlined in your previous plan requires all participating jurisdictions to incorporate the requirements of the mitigation plan into other planning mechanisms, when appropriate. A key element of effective implementation of mitigation is for the mitigation plan to be incorporated in existing authorities, policies, programs, and resources. Next to each applicable planning mechanism, indicate how your jurisdiction incorporated the previous mitigation plan. If no incorporation has occurred, please explain, including background information detailing any challenges preventing incorporation.

Planning Capabilities	Method of Incorporation Since Previous Plan or Challenges Preventing Incorporation
Comprehensive Plan	No Plans in Place
Builder's Plan	
Capital Improvement Plan	
Local Recovery Plan	
County Recovery Plan	
Debris Management Plan	
Economic Development Plan	
Transportation Plan	
Land-use Plan	
Watershed Plan	
Firewise or other Fire Mitigation Plan such as Community Wildfire Protection Plan	

Additional Questions

1. How is your government structure organized? (Commission, Mayor/City Council, how many members)

   Mayor / City Council - 1 mayor, 4 aldermen

2. List any past or ongoing public education or information programs, such as for responsible water use, fire safety, household preparedness, or environmental education.

   NA

3. List any other past or ongoing projects or programs designed to reduce disaster losses, these may include projects to protect critical facilities. Be sure to include pending or approved projects submitted for FEMA mitigation grants.

   Fema -

4. Describe any hazard-related concerns or issues regarding the vulnerability of special needs populations, such as the elderly, disabled, low-income, or migrant farm workers.

   None

5. How many outdoor warning sirens are in your community?

   0

   How are they activated (indicate responsible department/personnel)?

   NA

6. Does your community utilize any other warning systems such as Cable Override, Reverse 911, etc? If so, please describe.

   NO

7. Does your community have designated public tornado shelters/saferooms? If so, are they constructed in accordance with FEMA standards?

   NO

   Please provide address locations:

8. List residential, commercial and industrial development in your jurisdiction since last plan update.

   None

9. Describe development trends and expected growth areas. Is any new development expected to occur in the 100-year floodplain? Is any new development expected to occur in any other known hazard areas? If possible, please provide a map indicating potential/planned growth areas.

   NO

10. Are any new facilities or infrastructure planned for construction during the next five years? If so, please provide facility name and purpose along with proposed locations, if known.

    NO

11. Please list major employers in your jurisdiction with an estimated number of employees.

    CCDC

    est 20

12. Please list Mitigation Planning Committee members who served during the development of the previously approved plan. Was the process set forth for monitoring the implementation of the previously approved mitigation plan adhered to? Did the Committee meet as was specified in the previously approved plan? Why or why not?

David Bethel - Water/Sewer Supt. COH

13. Describe your jurisdiction's participation in the NFIP. Include information about how compliance with the NFIP is enforced locally.

NA

VULNERABILITY ASSESSMENT

The purpose of this worksheet is to assess the vulnerable buildings, populations, critical facilities, infrastructure, and other important assets in your community by using the best available data to complete the table. Use the table on the next page to compile a detailed inventory of specific assets at risk including critical facilities and infrastructure; natural, cultural, and historical assets; and economic assets. In the hazard specific column of the asset inventory table, indicate (by assigned abbreviation) which of the following hazards the asset is vulnerable to:

Riverine Flooding (Major & Flash)-**RF**
Dam Failure-**DF**
Levee Failure-**LF**
Earthquake-**EQ**
Land Subsidence / Sinkholes-**LSS**
Severe Thunderstorm (incl. winds, hail, lightning)-**ST**
Tornadoes-**T**
Severe Winter Weather (incl. snow, ice, severe cold)-**SWW**
Droughts-**D**
Extreme Temperatures-**ET**
Fires (structural, urban, and wild)-**F**
Attack (nuclear, conventional, chemical, and biological)-**A**
Civil Disorder-**CD**
Cyber Disruption-**CyD**
Hazardous Materials Release (fixed facility, accidents)-**HM**
Mass Transportation Accident-**MTA**
Nuclear Power Plants (emergencies & accidents)-**NPP**
Public Health Emergencies/Environmental Issues-**PH**
Special Events-**SE**
Terrorism-**TX**
Utilities (interruptions & system failures)-**U**

Critical Facilities and Infrastructure

A critical facility may be defined as one that is essential in providing utility or direction either during the response to an emergency or during the recovery operation. FEMA's HAZUS-MH loss estimation software uses the following three categories of critical assets. 'Essential facilities' are those that if damaged would have devastating impacts on disaster response and/or recovery. 'High potential loss facilities' are those that would have a high loss or impact on the community. Transportation and lifeline facilities are third category of critical assets; examples are provided below.

Essential Facilities	**High Potential Loss Facilities**	**Transportation and Lifeline**
Hospitals and other medical facilities	Power plants	Highways, bridges, and tunnels
Police stations	Dams/levees	Railroads and facilities
Fire station	Military installations	Bus facilities
Emergency Operations Centers	Hazardous material sites	Airports
	Schools	Water treatment facilities
	Shelters	Natural gas facilities and pipelines
	Day care centers	Oil facilities and pipelines
	Nursing homes	Communications facilities
	Main government buildings	

Economic Assets

Economic assets at risk may include major employers or primary economic sectors, such as agriculture, whose losses or inoperability would have severe impacts on the community and its ability to recover from disaster.

Asset Inventory

Please list critical facilities and other community assets, the square feet, values, and occupancy/capacity. If not applicable, enter "N/A"). In the last column, use the codes from the previous page to indicate hazards to which the asset is vulnerable. Add as many rows as needed. If this information is available in GIS format, please provide.

Critical Facilities

Name of Asset	Address	Square Feet	*Replacement Value (Insured)	Contents Value	Occupancy/ Capacity #	Hazards
Essential Facilities such as hospitals and other medical facilities, police and fire stations, Emergency Operations Centers						
Kingston Water Plant	980 NE James Dr	—	$900,000		NA	SWW, ST, U
Kingston Waste Water Plant	600 N. Franklin	—	$900,000	~~$900,000~~	NA	SWW, ST, U
Kingston Fire Dept	145. N Van Buren	—			NA	ST, T
Kingston Water Tower	497 E. Broadway	—	$400,000		NA	ST, T

Name of Asset	Address	Square Feet	*Replacement Value (Insured)	Contents Value	Occupancy/ Capacity #	Hazards
High Potential Loss Facilities such as power plants, dams/levees, military installations, hazardous materials sites, shelters, day care centers, nursing homes, main government buildings (Do not include schools—they will be reported by the school districts)						
None						
Transportation and Lifelines such as highways, bridges, and tunnels; railroads and facilities, bus facilities, airports, water treatment facilities, natural gas facilities and pipelines, oil facilities, oil facilities and pipelines, communications facilities						
Hwy 13		NA				SWW, ST
Kingston Water Plant	980 NE James Dr					SWW, ST, U
Kingston WasteWater Plant	800 N Franklin					SWW, ST, U

***If replacement cost data is not available, use the best available data (assessed valuation or other method for estimating cost) and explain any data deficiencies.**

Economic Assets (Major Employers, etc)

Asset	Address	Product/ Service	Value (if known)	Number of Employees	Hazards
None					

Matt, the only major employer in Kingston is the County (-Court House, CCDC). But I would say that 96% of the employs live outside of Kingston.

HISTORIC HAZARD EVENTS

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	City of Kingston
Type of event	
Nature and magnitude of event	
Location	
Date of event	
Injuries	
Deaths	
Property damage	
Infrastructure damage	
Crop damage	
Business/economic impacts	
Road/school/other closures	
Other damage	
Insured losses	
Federal/state disaster relief funding	
Opinion on likelihood of occurring again	
Source of information	
Comments	No Major Hazards That are Known

Jurisdiction	
Type of event	
Nature and magnitude of event	
Location	
Date of event	
Injuries	
Deaths	
Property damage	
Infrastructure damage	
Crop damage	
Business/economic impacts	
Road/school/other closures	
Other damage	
Insured losses	
Federal/state disaster relief funding	
Opinion on likelihood of occurring again	
Source of information	
Comments	

ASSESSMENT OF PREVIOUSLY PROPOSED ACTIONS

Jurisdiction: City of Kinston

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 progress made in the implementation of the action, if any. Some of the actions might have been ongoing in nature, such public information and education programs. When this is the case, indicate what activity has occurred during the previous five years, and indicate if this program is still viable enough that it should be carried on into the future.

If no progress has been made in the implementation of a given action, discuss why. Note that implementation is not a requirement. However, if no progress has been made, perhaps this is an action that would be appropriate to delete in the updated plan.

During review of the previously approved actions, consider whether any new actions should be proposed. Perhaps damages from a recent hazard event have indicated the need for new approaches to protect property and life. Review the problem statements from the updated plan for ideas. Also review the FEMA publication *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards (January 2013).*

Action # from previously approved plan	
Description of action	
Person or agency responsible for implementation	
Progress made on implementation since previous plan adoption	
If action is ongoing in nature, describe activities accomplished since previous plan adoption	
Reasons for progress or lack of progress	
Delete, modify, or carry the proposed action forward unchanged	

Jurisdiction: _____

Action # from previously approved plan	
Description of action	
Person or agency responsible for implementation	
Progress made on implementation since previous plan adoption	
If action is ongoing in nature, describe activities accomplished since previous plan adoption	
Reasons for progress or lack of progress	
Delete, modify, or carry the proposed action forward unchanged	

Action # from previously approved plan	
Description of action	
Person or agency responsible for implementation	
Progress made on implementation since previous plan adoption	
If action is ongoing in nature, describe activities accomplished since previous plan adoption	
Reasons for progress or lack of progress	
Delete, modify, or carry the proposed action forward unchanged	

Jurisdiction: _____

Action # from previously approved plan	
Description of action	
Person or agency responsible for implementation	
Designate into which of the following four categories the previously proposed action should be placed, including discussion of that designation.	
Completed since previous plan adoption, and description of progress	
Not Started/Continue in Plan Update, and discussion of reasons for lack of implementation	
In Progress/Continue in Plan Update, with a description of the progress made to date	
Deleted from the update, with a discussion of the reasons for deletion	

Multi-Jurisdictional

Hazard Mitigation Plan

Data Collection Questionnaire

For Local Governments

County: Caldwell

Jurisdiction: Polo

Return to: _____

Please complete this data collection questionnaire as accurately and completely as possible as this information will appear in the mitigation plan. A data collection questionnaire must be completed for each "jurisdiction" that wishes to be included in the plan. According to FEMA's definition a jurisdiction is any local government, including counties, municipalities, cities, towns, school districts, special districts, councils of government, and tribal organizations. Any of these entities as well as publicly funded colleges and universities that do not participate in the planning process **will not** be eligible applicants for FEMA mitigation funding programs. Please note: School Districts and other Educational Institutions should complete the Data Collection Questionnaire indicated "For School Districts and Educational Institutions".

Prepared by: Kim Thompson
Phone: 660-354-2363
Email: kthompson@greenhills.net
Date: 8-17-16

Please return questionnaires by mail, email, or fax to:

CAPABILITY ASSESSMENT
&
INCORPORATION OF EXISTING PLANS, STUDIES, REPORTS AND TECHNICAL INFORMATION

The purpose of this section is to collect information to document existing capabilities as well as determine existing plans, studies, reports, and technical information that may need to be incorporated in the mitigation plan. Although some of this information may have been captured in your previous mitigation plan, it is important to ensure this information is current in the plan update

Please indicate which of the following your jurisdiction has in place. For elements that do not pertain to your type of public entity, please indicate with "N/A". If applicable, please provide a completion date for the element. If your jurisdiction does not have a particular element, and a higher level of government has the authority pertaining to your jurisdiction, please indicate this in the comments column. If your jurisdiction has any of the **underlined and bolded** elements, please provide a copy of the document to the contact listed on the front and indicate method in the comments column (i.e. available on the web, will email or mail).

Element	Yes, No, N/A	Comments
Planning Capabilities		
Comprehensive Plan	Date: N/A	
Builder's Plan	Date:	
Capital Improvement Plan	Date:	
City Emergency Operations Plan	Date:	
County Emergency Operations Plan	Date:	
Local Recovery Plan	Date:	
County Recovery Plan	Date:	
City Mitigation Plan	Date:	
County Mitigation Plan	Date:	
Debris Management Plan	Date:	
Economic Development Plan	Date: N/A	
Transportation Plan	Date:	
Land-use Plan	Date:	
Flood Mitigation Assistance (FMA) Plan	Date:	
Watershed Plan	Date: N/A	
Firewise or other fire mitigation plan	Date:	
Critical Facilities Plan (Mitigation/Response/Recovery)	Date:	
Policies/Ordinance		
Zoning Ordinance	No	

Building Code	Version: No	
Floodplain Ordinance	Date: No	
Subdivision Ordinance	yes	
Tree Trimming Ordinance	yes	
Nuisance Ordinance	yes	
Storm Water Ordinance	No	
Drainage Ordinance	No	
Site Plan Review Requirements	No	
Historic Preservation Ordinance	No	
Landscape Ordinance	No	
Program		
Zoning/Land Use Restrictions	No	
Codes Building Site/Design	No	
Hazard Awareness Program	No	
National Flood Insurance Program	No	
Community Rating System (CRS) program under the National Flood Insurance Program (NFIP)?	If so, what is your current level rating? N/A	
National Weather Service (NWS) Storm Ready Certification	No	
Firewise Community Certification	No	
Building Code Effectiveness Grading (BCEGs)	No	
ISO Fire Rating	Rating: N/A	
Economic Development Program	N/A	
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	N/A	
Studies/Reports/Maps		
Hazard Analysis/Risk Assessment (City)	No	
Hazard Analysis/Risk Assessment (County)	N/A	
Evacuation Route Map	No	
Critical Facilities Inventory	No	
Vulnerable Population Inventory	No	
Land Use Map	No	

Staff/Department		Full Time or Part Time?
Building Code Official	No	
Building Inspector	No	
Mapping Specialist (GIS)	No	
Engineer	No	

Development Planner	No	
Public Works Official	No	
Emergency Management Coordinator	No	
NFIP Floodplain Administrator	No	
Bomb and/or Arson Squad	No	
Emergency Response Team	No	
Hazardous Materials Expert	No	
Local Emergency Planning Committee	No	
County Emergency Management Commission	N/A	
Sanitation Department	No	
Transportation Department	No	
Economic Development Department	No	
Housing Department	No	
Historic Preservation	No	
Non-Governmental Organizations (NGOs)	Is there a local chapter? Yes or No NO	
American Red Cross	No	
Salvation Army	No	
Veterans Groups	yes	
Local Environmental Organization	No	
Homeowner Associations	No	
Neighborhood Associations	No	
Chamber of Commerce	No	
Community Organizations (Lions, Kiwanis, etc.	No	
Financial Resources	Is your jurisdiction able to? Yes or No	
Apply for Community Development Block Grants	N/A	
Fund projects thru Capital Improvements funding	N/A	
Authority to levy taxes for specific purposes	N/A	
Fees for water, sewer, gas, or electric services	yes	
Impact fees for new development	N/A	
Incur debt through general obligation bonds	N/A	
Incur debt through special tax bonds	N/A	
Incur debt through private activities	No	
Withhold spending in hazard prone areas	N/A	

For plan updates, the plan maintenance process outlined in your previous plan requires all participating jurisdictions to incorporate the requirements of the mitigation plan into other planning mechanisms, when appropriate. A key element of effective implementation of mitigation is for the mitigation plan to be incorporated in existing authorities, policies, programs, and resources. Next to each applicable planning mechanism, indicate how your jurisdiction incorporated the previous mitigation plan. If no incorporation has occurred, please explain, including background information detailing any challenges preventing incorporation.

Planning Capabilities	Method of Incorporation Since Previous Plan or Challenges Preventing Incorporation
Comprehensive Plan	N/A
Builder's Plan	
Capital Improvement Plan	
Local Recovery Plan	
County Recovery Plan	
Debris Management Plan	
Economic Development Plan	
Transportation Plan	
Land-use Plan	
Watershed Plan	
Firewise or other Fire Mitigation Plan such as Community Wildfire Protection Plan	

Additional Questions

1. How is your government structure organized? (Commission, Mayor/City Council, how many members) 5
2. List any past or ongoing public education or information programs, such as for responsible water use, fire safety, household preparedness, or environmental education. None
3. List any other past or ongoing projects or programs designed to reduce disaster losses, these may include projects to protect critical facilities. Be sure to include pending or approved projects submitted for FEMA mitigation grants. None
4. Describe any hazard-related concerns or issues regarding the vulnerability of special needs populations, such as the elderly, disabled, low-income, or migrant farm workers. The need to get to a safe location.
5. How many outdoor warning sirens are in your community? None

   How are they activated (indicate responsible department/personnel)?
6. Does your community utilize any other warning systems such as Cable Override, Reverse 911, etc? If so, please describe. No
7. Does your community have designated public tornado shelters/saferooms? If so, are they constructed in accordance with FEMA standards? No

   Please provide address locations:
8. List residential, commercial and industrial development in your jurisdiction since last plan update. None
9. Describe development trends and expected growth areas. Is any new development expected to occur in the 100-year floodplain? Is any new development expected to occur in any other known hazard areas? If possible, please provide a map indicating potential/planned growth areas. None
10. Are any new facilities or infrastructure planned for construction during the next five years? If so, please provide facility name and purpose along with proposed locations, if known. None
11. Please list major employers in your jurisdiction with an estimated number of employees. None

12. Please list Mitigation Planning Committee members who served during the development of the previously approved plan. Was the process set forth for monitoring the implementation of the previously approved mitigation plan adhered to? Did the Committee meet as was specified in the previously approved plan? Why or why not? None

13. Describe your jurisdiction's participation in the NFIP. Include information about how compliance with the NFIP is enforced locally. None

VULNERABILITY ASSESSMENT

The purpose of this worksheet is to assess the vulnerable buildings, populations, critical facilities, infrastructure, and other important assets in your community by using the best available data to complete the table. Use the table on the next page to compile a detailed inventory of specific assets at risk including critical facilities and infrastructure; natural, cultural, and historical assets; and economic assets. In the hazard specific column of the asset inventory table, indicate (by assigned abbreviation) which of the following hazards the asset is vulnerable to:

Riverine Flooding (Major & Flash)-**RF**
Dam Failure-**DF**
Levee Failure-**LF**
Earthquake-**EQ**
Land Subsidence / Sinkholes-**LSS**
Severe Thunderstorm (incl. winds, hail, lightning)-**ST**
Tornadoes-**T**
Severe Winter Weather (incl. snow, ice, severe cold)-**SWW**
Droughts-**D**
Extreme Temperatures-**ET**
Fires (structural, urban, and wild)-**F**
Attack (nuclear, conventional, chemical, and biological)-**A**
Civil Disorder-**CD**
Cyber Disruption-**CyD**
Hazardous Materials Release (fixed facility, accidents)-**HM**
Mass Transportation Accident-**MTA**
Nuclear Power Plants (emergencies & accidents)-**NPP**
Public Health Emergencies/Environmental Issues-**PH**
Special Events-**SE**
Terrorism-**TX**
Utilities (interruptions & system failures)-**U**

Critical Facilities and Infrastructure

A critical facility may be defined as one that is essential in providing utility or direction either during the response to an emergency or during the recovery operation. FEMA's HAZUS-MH loss estimation software uses the following three categories of critical assets. 'Essential facilities' are those that if damaged would have devastating impacts on disaster response and/or recovery. 'High potential loss facilities' are those that would have a high loss or impact on the community. Transportation and lifeline facilities are third category of critical assets; examples are provided below.

Essential Facilities	**High Potential Loss Facilities**	**Transportation and Lifeline**
Hospitals and other medical facilities	Power plants	Highways, bridges, and tunnels
Police stations	Dams/levees	Railroads and facilities
Fire station	Military installations	Bus facilities
Emergency Operations Centers	Hazardous material sites	Airports
	Schools	Water treatment facilities
	Shelters	Natural gas facilities and pipelines
	Day care centers	Oil facilities and pipelines
	Nursing homes	Communications facilities
	Main government buildings	

Economic Assets

Economic assets at risk may include major employers or primary economic sectors, such as agriculture, whose losses or inoperability would have severe impacts on the community and its ability to recover from disaster.

Asset Inventory

Please list critical facilities and other community assets, the square feet, values, and occupancy/capacity. If not applicable, enter "N/A"). In the last column, use the codes from the previous page to indicate hazards to which the asset is vulnerable. Add as many rows as needed. If this information is available in GIS format, please provide.

Critical Facilities

Name of Asset	Address	Square Feet	*Replacement Value (Insured)	Contents Value	Occupancy/ Capacity #	Hazards
Essential Facilities such as hospitals and other medical facilities, police and fire stations, Emergency Operations Centers						

High Potential Loss Facilities such as power plants, dams/levees, military installations, hazardous materials sites, shelters, day care centers, nursing homes, main government buildings (Do not include schools—they will be reported by the school districts)						
Transportation and Lifelines such as highways, bridges, and tunnels; railroads and facilities, bus facilities, airports, water treatment facilities, natural gas facilities and pipelines, oil facilities, oil facilities and pipelines, communications facilities						

***If replacement cost data is not available, use the best available data (assessed valuation or other method for estimating cost) and explain any data deficiencies.**

Economic Assets (Major Employers, etc)

Asset	Address	Product/ Service	Value (if known)	Number of Employees	Hazards

HISTORIC HAZARD EVENTS

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	
Property damage	
Infrastructure damage	
Crop damage	
Business/economic impacts	
Road/school/other closures	
Other damage	
Insured losses	
Federal/state disaster relief funding	
Opinion on likelihood of occurring again	
Source of information	
Comments	

Jurisdiction	
Type of event	
Nature and magnitude of event	
Location	
Date of event	
Injuries	
Deaths	
Property damage	
Infrastructure damage	
Crop damage	
Business/economic impacts	
Road/school/other closures	
Other damage	
Insured losses	
Federal/state disaster relief funding	
Opinion on likelihood of occurring again	
Source of information	
Comments	

ASSESSMENT OF PREVIOUSLY PROPOSED ACTIONS

Jurisdiction: _____

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 progress made in the implementation of the action, if any. Some of the actions might have been ongoing in nature, such public information and education programs. When this is the case, indicate what activity has occurred during the previous five years, and indicate if this program is still viable enough that it should be carried on into the future.

If no progress has been made in the implementation of a given action, discuss why. Note that implementation is not a requirement. However, if no progress has been made, perhaps this is an action that would be appropriate to delete in the updated plan.

During review of the previously approved actions, consider whether any new actions should be proposed. Perhaps damages from a recent hazard event have indicated the need for new approaches to protect property and life. Review the problem statements from the updated plan for ideas. Also review the FEMA publication *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards (January 2013).*

Action # from previously approved plan	
Description of action	
Person or agency responsible for implementation	
Progress made on implementation since previous plan adoption	
If action is ongoing in nature, describe activities accomplished since previous plan adoption	
Reasons for progress or lack of progress	
Delete, modify, or carry the proposed action forward unchanged	

Jurisdiction:_____

Action # from previously approved plan	
Description of action	
Person or agency responsible for implementation	
Progress made on implementation since previous plan adoption	
If action is ongoing in nature, describe activities accomplished since previous plan adoption	
Reasons for progress or lack of progress	
Delete, modify, or carry the proposed action forward unchanged	

Action # from previously approved plan	
Description of action	
Person or agency responsible for implementation	
Progress made on implementation since previous plan adoption	
If action is ongoing in nature, describe activities accomplished since previous plan adoption	
Reasons for progress or lack of progress	
Delete, modify, or carry the proposed action forward unchanged	

Jurisdiction:_____

Action # from previously approved plan	
Description of action	
Person or agency responsible for implementation	
Designate into which of the following four categories the previously proposed action should be placed, including discussion of that designation.	
Completed since previous plan adoption, and description of progress	
Not Started/Continue in Plan Update, and discussion of reasons for lack of implementation	
In Progress/Continue in Plan Update, with a description of the progress made to date	
Deleted from the update, with a discussion of the reasons for deletion	

Caldwell County Missouri
Multi-Jurisdictional
Hazard Mitigation Plan

Data Collection Questionnaire
For School Districts and Educational Institutions

School District: Braymer C-4

Prepared by: Don Regan Phone: (660) 645-2284

Date: 01 / 15 / 2016 Email: dregan@braymerc4.net

Please complete this data collection questionnaire as accurately and completely as possible as this information will appear in the mitigation plan. A data collection questionnaire must be completed for each "jurisdiction" that wishes to be included in the plan. According to FEMA's definition a jurisdiction is any local government, including counties, municipalities, cities, towns, school districts, special districts, councils of government, and tribal organizations. Any of these entities as well as publicly funded colleges and universities that do not participate in the planning process **will not** be eligible applicants for FEMA mitigation funding programs.

Please return questionnaires by mail, email, or fax to:

Matthew D. Walker, Hazard Mitigation Planner
Green Hills Regional Planning Commission
1104 Main St. / Trenton, MO 64683
Phone (660) 359-5636 / Fax (660) 359-3096
email: mdw@ghrpc.org

CAPABILITY ASSESSMENT
&
INCORPORATION OF EXISTING PLANS, STUDIES, REPORTS AND TECHNICAL INFORMATION

The purpose of this section is to collect information to document existing capabilities as well as determine existing plans, studies, reports, and technical information that may need to be incorporated in the mitigation plan.

Please indicate which of the following your school district / institution has in place. For elements that do not pertain to you, please indicate with "N/A". If applicable, please provide a completion date for the element. If your school district / institution has any of the **underlined and bolded** elements, please provide a copy of the document to the contact indicated on the front of this questionnaire and indicate method in the comments column (i.e. available on the web, will email or mail).

Planning Elements	Yes/No	Date of Latest Version	Comments
Master Plan	NO		
Capital Improvement Plan	NO		
School Emergency Plan Shelter in place protocols Evacuation protocols	Yes	3-1-2016	
Weapons Policy	Yes	8-1-2015	

Administrative/Technical

Identify the technical and personnel resources responsible for activities related to hazard mitigation/loss prevention within your school district / institution.

Personnel Resources	Yes/No	Department/Position	Comments
Full-time building official (i.e. Principal)	Yes	Supt. & Principals	
Emergency Manager	NO		
Grant Writer	NO		
Public Information Officer	YES	Superintendent	

Financial Resources

Identify whether your school district /institution has access to or is eligible to use the following financial resources for hazard mitigation.

Financial Resources	Accessible/Eligible to Use (Y/N)	Comments
Capital improvements project funding	Yes	
Local funds	Yes	
General obligation bonds	NO	
Special tax bonds	NO	
Private activities/donations	Yes	
State and federal funds	yes	

Additional Capabilities Questions

1. Are your buildings equipped with a public address system or other emergency alert system? Please describe.
   Yes - PA System
   TextCaster
2. Does your school buildings' have NOAA Weather Radios?
   Yes (3)
3. List any past or ongoing projects or programs designed to reduce disaster losses, these may include projects to protect facilities or provide education regarding hazards that could occur.
   Ongoing - Drills, Procedure Updates.
4. List any other past or ongoing projects or programs designed to reduce disaster losses, these may include projects to protect critical facilities.
   NA
5. Do any of your buildings have designated tornado shelters or "saferooms"? If so, are they constructed in accordance with FEMA standards?
   Tornado Shelter - not FEMA Standards
   No
6. Did your school district / institution make any additions to buildings or construction new buildings since the last plan update (2010)? Please list the buildings and the improvement.
   NA
7. Does your school district / institution plan to remodel or construct any buildings in the next 5 years? If so, please list the building or proposed building and planned improvements. Are any planned construction activities in known hazard areas?
   No
8. What percentage is your projected enrollment expected to increase or decrease in the next five years?
   should remain steady.
9. Do you have your own campus police? Please explain your police department or who you rely on for security needs.
   No.
   We rely on Caldwell Co. Sheriff Dept.
   Braymer has a part-time police officer

VULNERABILITY ASSESSMENT

Asset Inventory

The purpose of this worksheet is to assist in the assessment of the vulnerable populations and facilities owned by your school district / institution. Use the table below to compile a detailed inventory of specific assets at risk. In the hazard specific column of the asset inventory table, indicate (by assigned abbreviation) which of the following hazards the asset is vulnerable to:

Riverine Flooding (Major & Flash)-**RF**

Dam Failure-**DF**
Levee Failure-**LF**
Earthquake-**EQ**
Land Subsidence / Sinkholes-**LSS**
Severe Thunderstorm (incl. winds, hail, lightning)-**ST**
Tornadoes-**T**

Severe Winter Weather (incl. snow, ice, severe cold)-**SWW**
Droughts-**D**
Extreme Temperatures-**ET**
Fires (structural, urban, and wild)-**F**
Attack (nuclear, conventional, chemical, and biological)-**A**
Civil Disorder-**CD**
Cyber Disruption-**CyD**

Hazardous Materials Release (fixed facility, accidents)-**HM**
Mass Transportation Accident-**MTA**
Nuclear Power Plants (emergencies & accidents)-**NPP**
Public Health Emergencies/Environmental Issues-**PH**
Special Events-**SE**
Terrorism-**TX**
Utilities (interruptions & system failures)-**U**

Please list buildings owned by your school district / institution including the square feet, values, and occupancy/capacity. If not applicable or not available, enter "N/A". Add as many rows as needed. **If you have this data in GIS formats, or other formats, please provide in lieu of this.**

Name of Asset	Address	Square Feet	Replacement Value (Insured)	Contents Value	Occupancy/ Capacity #	Hazards
School Building	400 Bobcat Ave. Braymer, MO 64624		$4 m	$2.5m	500	EQ, ST, T, SWW, F CyD, HM PH U

																	Name of Asset
																	Address
																	Square Feet
																	Replacement Value (Insured)
																	Contents Value
																	Occupancy/ Capacity #
																	Hazards

Multi-jurisdictional Mitigation Plan
HISTORIC HAZARD EVENTS

Please fill out one sheet for each significant hazard event that affected **your school district / institution** with as much detail as possible. This includes all hazard events listed on the Vulnerability Assessment page that have caused previous damage. Attach supporting documentation, photocopies of newspaper articles, or other original sources.

Type of event	Propane Leak.
Nature and magnitude of event	Propane Pipe Broken
Location	Between Tanks & Building.
Date of event	3 / 2016
Injuries	None
Deaths	None
Property damage	Lines needed repair.
Infrastructure damage	↓
Crop damage	None
Business/economic impacts	—
Road/school/other closures	School closed for 3 days
Other damage	None
Insured losses	None.
Federal/state disaster relief funding	No
Opinion on likelihood of occurring again	Some chance in distant future.
Source of information	—
Comments	—

Multi-jurisdictional Mitigation Plan
HISTORIC HAZARD EVENTS

Please fill out one sheet for each significant hazard event that affected **your school district /institution** with as much detail as possible. This includes all hazard events listed on the Vulnerability Assessment page that have caused previous damage. Attach supporting documentation, photocopies of newspaper articles, or other original sources.

Type of event	
Nature and magnitude of event	
Location	
Date of event	
Injuries	
Deaths	
Property damage	
Infrastructure damage	
Crop damage	
Business/economic impacts	
Road/school/other closures	
Other damage	
Insured losses	
Federal/state disaster relief funding	
Opinion on likelihood of occurring again	
Source of information	
Comments	

Caldwell County Missouri
Multi-Jurisdictional
Hazard Mitigation Plan

Data Collection Questionnaire
For School Districts and Educational Institutions

School District: Braymer R-IV

Prepared by: Brent Skinner Phone: (660) 645-5715

Date: 08/01/2016 Email: bskinner@braymer.k12.mo.us

Please complete this data collection questionnaire as accurately and completely as possible as this information will appear in the mitigation plan. A data collection questionnaire must be completed for each "jurisdiction" that wishes to be included in the plan. According to FEMA's definition a jurisdiction is any local government, including counties, municipalities, cities, towns, school districts, special districts, councils of government, and tribal organizations. Any of these entities as well as publicly funded colleges and universities that do not participate in the planning process **will not** be eligible applicants for FEMA mitigation funding programs.

Please return questionnaires by mail, email, or fax to:

Matthew D. Walker, Hazard Mitigation Planner
Green Hills Regional Planning Commission
1104 Main St. / Trenton, MO 64683
Phone (660) 359-5636 / Fax (660) 359-3096
email: mdw@ghrpc.org

CAPABILITY ASSESSMENT
&
INCORPORATION OF EXISTING PLANS, STUDIES, REPORTS AND TECHNICAL INFORMATION

The purpose of this section is to collect information to document existing capabilities as well as determine existing plans, studies, reports, and technical information that may need to be incorporated in the mitigation plan.

Please indicate which of the following your school district / institution has in place. For elements that do not pertain to you, please indicate with "N/A". If applicable, please provide a completion date for the element. If your school district / institution has any of the **underlined and bolded** elements, please provide a copy of the document to the contact indicated on the front of this questionnaire and indicate method in the comments column (i.e. available on the web, will email or mail).

Planning Elements	Yes/No	Date of Latest Version	Comments
Master Plan			
Capital Improvement Plan	No		
School Emergency Plan Shelter in place protocols Evacuation protocols	Yes	May 2016	
Weapons Policy	Yes		

Administrative/Technical

Identify the technical and personnel resources responsible for activities related to hazard mitigation/loss prevention within your school district / institution.

Personnel Resources	Yes/No	Department/Position	Comments
Full-time building official (i.e. Principal)	Yes	Supt.	
Emergency Manager	Yes	"	
Grant Writer	No		
Public Information Officer	Yes	Supt	

Financial Resources

Identify whether your school district /institution has access to or is eligible to use the following financial resources for hazard mitigation.

Financial Resources	Accessible/Eligible to Use (Y/N)	Comments
Capital improvements project funding	N	
Local funds	Y	
General obligation bonds	N	
Special tax bonds	N	
Private activities/donations	?	
State and federal funds	Y	

Additional Capabilities Questions

1. Are your buildings equipped with a public address system or other emergency alert system? Please describe.

   Yes

2. Does your school buildings' have NOAA Weather Radios?

   Yes

3. List any past or ongoing projects or programs designed to reduce disaster losses, these may include projects to protect facilities or provide education regarding hazards that could occur.

   Ongoing safety training w/ staff

4. List any other past or ongoing projects or programs designed to reduce disaster losses, these may include projects to protect critical facilities.

5. Do any of your buildings have designated tornado shelters or "saferooms"? If so, are they constructed in accordance with FEMA standards?

   Lower floor of main bldg. partially below ground level

6. Did your school district / institution make any additions to buildings or construction new buildings since the last plan update (2010)? Please list the buildings and the improvement.

   No

7. Does your school district / institution plan to remodel or construct any buildings in the next 5 years? If so, please list the building or proposed building and planned improvements. Are any planned construction activities in known hazard areas?

   No

8. What percentage is your projected enrollment expected to increase or decrease in the next five years?

   steady no info to date projected

9. Do you have your own campus police? Please explain your police department or who you rely on for security needs.

   No
   Caldwell Co. Sheriff's Department

VULNERABILITY ASSESSMENT

Asset Inventory

The purpose of this worksheet is to assist in the assessment of the vulnerable populations and facilities owned by your school district / institution. Use the table below to compile a detailed inventory of specific assets at risk. In the hazard specific column of the asset inventory table, indicate (by assigned abbreviation) which of the following hazards the asset is vulnerable to:

Riverine Flooding (Major & Flash)-**RF**

Dam Failure-**DF**
Levee Failure-**LF**
Earthquake-**EQ**
Land Subsidence / Sinkholes-**LSS**
Severe Thunderstorm (incl. winds, hail, lightning)-**ST**
Tornadoes-**T**

Severe Winter Weather (incl. snow, ice, severe cold)-**SWW**
Droughts-**D**
Extreme Temperatures-**ET**
Fires (structural, urban, and wild)-**F**
Attack (nuclear, conventional, chemical, and biological)-**A**
Civil Disorder-**CD**
Cyber Disruption-**CyD**

Hazardous Materials Release (fixed facility, accidents)-**HM**
Mass Transportation Accident-**MTA**
Nuclear Power Plants (emergencies & accidents)-**NPP**
Public Health Emergencies/Environmental Issues-**PH**
Special Events-**SE**
Terrorism-**TX**
Utilities (interruptions & system failures)-**U**

Please list buildings owned by your school district / institution including the square feet, values, and occupancy/capacity. If not applicable or not available, enter "N/A". Add as many rows as needed. **If you have this data in GIS formats, or other formats, please provide in lieu of this.**

Name of Asset	Address	Square Feet	Replacement Value (Insured)	Contents Value	Occupancy/ Capacity #	Hazards
Beechcroft School	400 W. Colfax	33,661	4,428,263.00	554,545.00	N/A	T, SWW, F, SE, Tx, A, CyD, U
School Buses (4)	" " "					MTA, SWW, T, F

	Name of Asset
	Address
	Square Feet
	Replacement Value (Insured)
	Contents Value
	Occupancy/ Capacity #
	Hazards

Multi-jurisdictional Mitigation Plan
HISTORIC HAZARD EVENTS

Please fill out one sheet for each significant hazard event that affected **your school district / institution** with as much detail as possible. This includes all hazard events listed on the Vulnerability Assessment page that have caused previous damage. Attach supporting documentation, photocopies of newspaper articles, or other original sources.

Type of event	
Nature and magnitude of event	
Location	
Date of event	
Injuries	
Deaths	
Property damage	
Infrastructure damage	
Crop damage	
Business/economic impacts	
Road/school/other closures	
Other damage	
Insured losses	
Federal/state disaster relief funding	
Opinion on likelihood of occurring again	
Source of information	
Comments	

Multi-jurisdictional Mitigation Plan
HISTORIC HAZARD EVENTS

Please fill out one sheet for each significant hazard event that affected **your school district /institution** with as much detail as possible. This includes all hazard events listed on the Vulnerability Assessment page that have caused previous damage. Attach supporting documentation, photocopies of newspaper articles, or other original sources.

Type of event	
Nature and magnitude of event	
Location	
Date of event	
Injuries	
Deaths	
Property damage	
Infrastructure damage	
Crop damage	
Business/economic impacts	
Road/school/other closures	
Other damage	
Insured losses	
Federal/state disaster relief funding	
Opinion on likelihood of occurring again	
Source of information	
Comments	

Multi-Jurisdictional

Hazard Mitigation Plan

RECEIVED
AUG 01 2016
Green Hills Regional
Planning Commission

Data Collection Questionnaire

For School Districts and Educational Institutions

County: CALDWELL

School District / Educational Institution Name: Hamilton R-II

Return by: Troy Ford- Superintendent

Please complete this data collection questionnaire as accurately and completely as possible as this information will appear in the mitigation plan. A data collection questionnaire must be completed for each "jurisdiction" that wishes to be included in the plan. According to FEMA's definition a jurisdiction is any local government, including counties, municipalities, cities, towns, school districts, special districts, councils of government, and tribal organizations. Any of these entities as well as publicly funded colleges and universities that do not participate in the planning process **will not** be eligible applicants for FEMA mitigation funding programs.

Prepared by: Troy Ford- Superintendent
Phone: 816-583-2134
Email: ford+@hamilton.k12.mo.us
Date: 7-22-16

Please return questionnaires by mail, email, or fax to:

CAPABILITY ASSESSMENT
&
INCORPORATION OF EXISTING PLANS, STUDIES, REPORTS AND TECHNICAL INFORMATION

The purpose of this section is to collect information to document existing capabilities as well as determine existing plans, studies, reports, and technical information that may need to be incorporated in the mitigation plan.

Please indicate which of the following your school district / institution has in place. For elements that do not pertain to you, please indicate with "N/A". If applicable, please provide a completion date for the element. If your school district / institution has any of the **underlined and bolded** elements, please provide a copy of the document to the contact indicated on the front of this questionnaire and indicate method in the comments column (i.e. available on the web, will email or mail).

Planning Elements	Yes/No	Date of Latest Version	Comments
Master Plan	NO		
Capital Improvement Plan	YES	6-1-10	
School Emergency Plan Shelter in place protocols Evacuation protocols	YES	9-1-15	
Weapons Policy	YES	6-1-10	

Administrative/Technical

Identify the technical and personnel resources responsible for activities related to hazard mitigation/loss prevention within your school district / institution.

Personnel Resources	Yes/No	Department/Position	Comments
Full-time building official (i.e. Principal)	YES	3 Building Principals	
Emergency Manager	NO		
Grant Writer	NO		
Public Information Officer	NO		

Financial Resources

Identify whether your school district /institution has access to or is eligible to use the following financial resources for hazard mitigation.

Financial Resources	Accessible/Eligible to Use (Y/N)	Comments
Capital improvements project funding	YES	Fund 4
Local funds	YES	Fund 1
General obligation bonds	YES -	Only for New Elementary
Special tax bonds	NO	
Private activities/donations	NO	
State and federal funds	YES - But no funds allocated to HAZARD MITIGATION	

Additional Capabilities Questions

1. Are your buildings equipped with a public address system or other emergency alert system? Please describe. YES -
   — BELLS/SIRENS as well as intercom system.

2. Does your school buildings' have NOAA Weather Radios? YES, All buildings have weather radios.

3. List any past or ongoing projects or programs designed to reduce disaster losses, these may include projects to protect facilities or provide education regarding hazards that could occur.
   Fire Drills, Tornado Drills, Intruder Drills in all buildings

4. List any other past or ongoing projects or programs designed to reduce disaster losses, these may include projects to protect critical facilities. NONE

5. Do any of your buildings have designated tornado shelters or "saferooms"? If so, are they constructed in accordance with FEMA standards? NO -

6. Did your school district / institution make any additions to buildings or construction new buildings since the last plan update (2010)? Please list the buildings and the improvement. NO

7. Does your school district / institution plan to remodel or construct any buildings in the next 5 years? If so, please list the building or proposed building and planned improvements. Are any planned construction activities in known hazard areas? Planning to remodel two classrooms + remove large windows. Install smaller windows + frame in wall.

8. What percentage is your projected enrollment expected to increase or decrease in the next five years?
   We have seen no real growth in enrollment. We have actually decreased a little bit but have remain fairly steady.

9. Do you have your own campus police? Please explain your police department or who you rely on for security needs. NO Campus Police, We rely on City of Hamilton Police Department & Caldwell County Sheriff's Department.

VULNERABILITY ASSESSMENT

Asset Inventory

The purpose of this worksheet is to assist in the assessment of the vulnerable populations and facilities owned by your school district / institution. Use the table below to compile a detailed inventory of specific assets at risk. In the hazard specific column of the asset inventory table, indicate (by assigned abbreviation) which of the following hazards the asset is vulnerable to:

Riverine Flooding (Major & Flash)-**RF**
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Tornadoes-**T**
Severe Winter Weather (incl. snow, ice, severe cold)-**SWW**
Droughts-**D**
Extreme Temperatures-**ET**
Fires (structural, urban, and wild)-**F**
Attack (nuclear, conventional, chemical, and biological)-**A**
Civil Disorder-**CD**
Cyber Disruption-**CyD**
Hazardous Materials Release (fixed facility, accidents)-**HM**
Mass Transportation Accident-**MTA**
Nuclear Power Plants (emergencies & accidents)-**NPP**
Public Health Emergencies/Environmental Issues-**PH**
Special Events-**SE**
Terrorism-**TX**
Utilities (interruptions & system failures)-**U**

Please list buildings owned by your school district / institution including the square feet, values, and occupancy/capacity. If not applicable or not available, enter "N/A". Add as many rows as needed. **If you have this data in GIS formats, or other formats, please provide in lieu of this.**

Name of Asset	Address	Square Feet	Replacement Value (Insured)	Contents Value	Occupancy/ Capacity #	Hazards
Hamilton R-II Central Office	419 S. Hughes, Hamilton MO 64644	13,000	$1,371,919	$258,935	8	EQ, T, SWW, F, A, MTA, Hm,
Pemiey High School 9-12	903 N. Davis, Hamilton mo. 64644	70,893	$12,196,087	$1,857,295	270	EQ, T, SWW, F, A, MTA, Hm,
Hamilton Middle School 6-8	903 N. Davis, Hamilton mo. 64644				185	EQ, T, SWW, F, A, MTA, Hm,
Hamilton Elementary - PK-5	7650 NW Harley ROAD Hamilton mo	56,681	$10,011,585	$540,919	350	EQ, T, SWW F, A, MTA, Hm,

Multi-jurisdictional Mitigation Plan
HISTORIC HAZARD EVENTS

Please fill out one sheet for each significant hazard event that affected y**our school district / institution** with as much detail as possible. This includes all hazard events listed on the Vulnerability Assessment page that have caused previous damage. Attach supporting documentation, photocopies of newspaper articles, or other original sources.

Type of event	Severe Winter Weather
Nature and magnitude of event	SNOWSTORM
Location	Midwest
Date of event	JANUARY 2013 or 2012
Injuries	—
Deaths	—
Property damage	—
Infrastructure damage	—
Crop damage	—
Business/economic impacts	—
Road/school/other closures	School was out numerous days
Other damage	—
Insured losses	—
Federal/state disaster relief funding	FEMA Funding SNOW REMOVAL
Opinion on likelihood of occurring again	Certain
Source of information	—
Comments	—

HISTORIC HAZARD EVENTS

Please fill out one sheet for each significant hazard event that affected **your school district /institution** with as much detail as possible. This includes all hazard events listed on the Vulnerability Assessment page that have caused previous damage. Attach supporting documentation, photocopies of newspaper articles, or other original sources.

Type of event	
Nature and magnitude of event	
Location	
Date of event	
Injuries	
Deaths	
Property damage	
Infrastructure damage	
Crop damage	
Business/economic impacts	
Road/school/other closures	
Other damage	
Insured losses	
Federal/state disaster relief funding	
Opinion on likelihood of occurring again	
Source of information	
Comments	

PENNEY HIGH SCHOOL

Safety Procedure Booklet

Gas Line Break / Fire

Pull the fire alarm or notify the office if a fire or gas line break is suspected.
The signal for either crisis will be one continuous bell.
All people in the school are to evacuate to the Safe Zone.
Teachers should be the last one out of the building and should take grade books with them to account for students in their class.
The principal or building administrator will call 911 and notify the superintendent's office at 583-2134.
The fire department will determine if and when the building is safe to re-enter.

GAS LINE BREAK / FIRE

Bomb Threat

The signal for a bomb threat is one continuous bell.
All people in the school are to evacuate to the Safe Zone.
Teachers should be the last one out of the building and should take grade books with them to account for students in their class.
All evacuated buildings will be under the jurisdiction of fire and police departments until declared safe.

DO'S

Keep the caller on the line as long as possible.
Use the checklist at the back of the booklet during the call.
Inform only the principal of the call/no one else.
Dial 911, giving the information from the checklist to police.
Teachers: Observe if anything is out of place. DO NOT TOUCH IT. Notify police of the location of item.
SEND STAFF MEMBERS TO THE SAFEZONE TO CHECK THAT THE AREA IS SAFE BEFORE STUDENTS ARRIVE

DON'T'S

Don't open doors, lockers, desks, etc. that have not been used that day.
Don't take bags, backpacks, etc. to Safe zone. Leave as you are.
Don't allow students to take items to Safe Zone. Leave as they are.

BOMB THREAT

Severe Weather

Tones over the intercom will signal a tornado has been sighted.
Students are to remain in the designated protection area.
Avoid being around windows or glass doors.
Do not exit the building for any reason.
Shut all windows and doors.
All students should first kneel on the floor, bow their heads, and clasp both arms over their heads.
Designated Protection Areas:
Trailer: Proceed to the hallway near the Biology room or the library.
All other classrooms: Move to the hallway outside your room. Keep away from doorways.
New Gymnasium: Proceed to the locker room.
Old Gymnasium: Proceed to the hallway by the Biology room.
Hi-Vac classrooms: Take cover under the desks in the classroom.

SEVERE WEATHER

Physical Threats / Armed Intruder

The announcement, "Lock Down Inside Threat" or "Lock Down Outside Threat" will be broadcast over the intercom system.
Teachers should lock the doors and windows, shut off all lights, pull window shades, and begin to barricade the door with the assistance of students. For doors that swing outward, the cord should be attached to the door knob and around the boat cleat to further make the room inaccessible. After barricading is complete, students should arm themselves and move to the safest place in the classroom.
If a teacher feels it is safer to evacuate the building, they need to give the class a rally point and then exit the building through the window.
Classrooms are to remain in lockdown until an administrator comes to the room and verbally announces the lockdown has ended.

ARMED INTRUDER

All Actual Evacuations:

1. Recognize or identify the type of evacuation. Bomb, Fire, etc.
2. Move students by pre-determined routes to Safe Zone.
3. Evacuate "As You Are," no coats, bags, packages, or boxes to Safe Zone.
4. Teachers are to take Class/Grade rosters to Safe Zone to account for students.
5. Keep students calm and use buddy-system from younger to older students.

Bomb Threat/Gas Leak:

1. A long continuous bell will ring.
2. Do not open or close doors and lockers. Try to leave the building without disturbing anything.
3. Leave "As You Are," no items to be taken to the Safe Zone.
4. Use pre-determined route to evacuate to Safe Zone. If possible, visually check as you leave.

Intruder or Armed Suspect:

1. "Lock Down" will be announced over the intercom.
2. Stay in classroom with door locked. Shut all windows and blinds and barricade doors
3. If necessary, move any children from auxilliary portions of room into main room or evacuate and have students grab something to protect themselves.
4. Remain calm and keep children calm. Do not open doors until law enforcement unlocks them.

Severe Weather:

1. Tones over the intercom will be the signal for a tornado.
2. Students should quickly move to an inside wall away from windows and doors.
3. Students should assume the protective body position.

Fire:

1. One long continuous bell will signal a fire.
2. Leave "As You Are," and take no items to Safe Zone.

EVACUATION PLANS

Emergency Phone Numbers:

General Emergency:	911
Hamilton City Police:	583-7311
Caldwell County Sheriff's Dept.	911 or 586-2681
Highway Patrol	816-387-2345
Ambulance	911
Fire	911
Superintendent	583-2134 cell (816)465-0510
H.S. Principal	583-2136 cell (816)465-0694
M.S. Principal	583-2173 cell (660)748-8132
Elementary Principal	583-4811 cell (660)707-2583
Cameron Hospital	816-632-2101
Liberty Hospital	816-781-7200
Heartland Hospital	816-271-6000
Hedrick Medical Center	660-646-1480
Hamilton Medical Clinic	816-583-2151
Hamilton Family Health Center	816-583-7839
Poison Information Center	1-800-222-1222
Child Abuse Hotline	800-392-3738
Domestic Violence Hotline	800-799-7233
AmerenUE (electricity)	800-552-7583

EMERGENCY NUMBERS

Checklist

TYPE OF CALL: TIME NOW:
SCHOOL NAME:
ADDRESS:
CALLER'S NAME:
LOCATION OF EVACUATION:
NUMBER OF SUSPECTS:

WEAPONS: KNIFE GUN BOMB OTHER:

WHEN WILL BOMB EXPLODE:
WHERE IS THE BOMB:
WHAT KIND OF BOMB IS IT:
WHY DID YOU DO THIS?

TYPE OF VOICE: BACKGROUND NOISES?

HOSTAGES: YES NO NUMBER OF HOSTAGES:

NAME ENTRANCE POLICE SHOULD ENTER:
WHERE IS SUSPECT AT THIS TIME? VEHICLE:

SUSPECT DESCRIPTION: SEX: MALE FEMALE

BUILD:	HAIR:		RACE:		
Height:	Color:		White	Asian	Black
Weight:	Length:	Indian	Hispanic	Other:	
Age:	Style:				

CLOTHES:

HAT	COAT
PANTS	SHIRT
SHOES	OTHER CLOTHES

Caldwell County Missouri
Multi-Jurisdictional
Hazard Mitigation Plan

Data Collection Questionnaire
For School Districts and Educational Institutions

School District: Kingston 42

Prepared by: Andrea Hieronymus Phone: (816) 586-3111

Date: 08 / 03 / 2016 Email: Andrea.Hieronymus@Kingston42.com

Please complete this data collection questionnaire as accurately and completely as possible as this information will appear in the mitigation plan. A data collection questionnaire must be completed for each "jurisdiction" that wishes to be included in the plan. According to FEMA's definition a jurisdiction is any local government, including counties, municipalities, cities, towns, school districts, special districts, councils of government, and tribal organizations. Any of these entities as well as publicly funded colleges and universities that do not participate in the planning process **will not** be eligible applicants for FEMA mitigation funding programs.

Please return questionnaires by mail, email, or fax to:

Matthew D. Walker, Hazard Mitigation Planner
Green Hills Regional Planning Commission
1104 Main St. / Trenton, MO 64683
Phone (660) 359-5636 / Fax (660) 359-3096
email: mdw@ghrpc.org

CAPABILITY ASSESSMENT
&
INCORPORATION OF EXISTING PLANS, STUDIES, REPORTS AND TECHNICAL INFORMATION

The purpose of this section is to collect information to document existing capabilities as well as determine existing plans, studies, reports, and technical information that may need to be incorporated in the mitigation plan.

Please indicate which of the following your school district / institution has in place. For elements that do not pertain to you, please indicate with "N/A". If applicable, please provide a completion date for the element. If your school district / institution has any of the **underlined and bolded** elements, please provide a copy of the document to the contact indicated on the front of this questionnaire and indicate method in the comments column (i.e. available on the web, will email or mail).

Planning Elements	Yes/No	Date of Latest Version	Comments
Master Plan	CSIP yes		
Capital Improvement Plan	No		
School Emergency Plan Shelter in place protocols Evacuation protocols	yes	annual	Non-public internal only due to security
Weapons Policy	yes		

Administrative/Technical

Identify the technical and personnel resources responsible for activities related to hazard mitigation/loss prevention within your school district / institution.

Personnel Resources	Yes/No	Department/Position	Comments
Full-time building official (i.e. Principal)	yes	Superintendent	
Emergency Manager	yes		
Grant Writer	yes		
Public Information Officer	yes		

Financial Resources

Identify whether your school district /institution has access to or is eligible to use the following financial resources for hazard mitigation.

Financial Resources	Accessible/Eligible to Use (Y/N)	Comments
Capital improvements project funding	yes	
Local funds	yes	
General obligation bonds	yes	With voter approval
Special tax bonds	yes	With voter approval
Private activities/donations	yes	
State and federal funds	yes	

Additional Capabilities Questions

1. Are your buildings equipped with a public address system or other emergency alert system? Please describe.

   Speakers through phone System internal only

2. Does your school buildings' have NOAA Weather Radios?

   YES

3. List any past or ongoing projects or programs designed to reduce disaster losses, these may include projects to protect facilities or provide education regarding hazards that could occur.

   —

4. List any other past or ongoing projects or programs designed to reduce disaster losses, these may include projects to protect critical facilities.

   —

5. Do any of your buildings have designated tornado shelters or "saferooms"? If so, are they constructed in accordance with FEMA standards?

   —

6. Did your school district / institution make any additions to buildings or construction new buildings since the last plan update (2010)? Please list the buildings and the improvement.

   —

7. Does your school district / institution plan to remodel or construct any buildings in the next 5 years? If so, please list the building or proposed building and planned improvements. Are any planned construction activities in known hazard areas?

   multipurpose / storm shelter if funding allows

8. What percentage is your projected enrollment expected to increase or decrease in the next five years?

   Steady

9. Do you have your own campus police? Please explain your police department or who you rely on for security needs.

   NO

VULNERABILITY ASSESSMENT

Asset Inventory

The purpose of this worksheet is to assist in the assessment of the vulnerable populations and facilities owned by your school district / institution. Use the table below to compile a detailed inventory of specific assets at risk. In the hazard specific column of the asset inventory table, indicate (by assigned abbreviation) which of the following hazards the asset is vulnerable to:

Riverine Flooding (Major & Flash)-**RF**
Dam Failure-**DF**
Levee Failure-**LF**
Earthquake-**EQ**
Land Subsidence / Sinkholes-**LSS**
Severe Thunderstorm (incl. winds, hail, lightning)-**ST**
Tornadoes-**T**
Severe Winter Weather (incl. snow, ice, severe cold)-**SWW**
Droughts-**D**
Extreme Temperatures-**ET**
Fires (structural, urban, and wild)-**F**
Attack (nuclear, conventional, chemical, and biological)-**A**
Civil Disorder-**CD**
Cyber Disruption-**CyD**
Hazardous Materials Release (fixed facility, accidents)-**HM**
Mass Transportation Accident-**MTA**
Nuclear Power Plants (emergencies & accidents)-**NPP**
Public Health Emergencies/Environmental Issues-**PH**
Special Events-**SE**
Terrorism-**TX**
Utilities (interruptions & system failures)-**U**

Please list buildings owned by your school district / institution including the square feet, values, and occupancy/capacity. If not applicable or not available, enter "N/A". Add as many rows as needed. **If you have this data in GIS formats, or other formats, please provide in lieu of this.**

Name of Asset	Address	Square Feet	Replacement Value (Insured)	Contents Value	Occupancy/ Capacity #	Hazards
Kingston 42	139 E Lincoln Kingston	30,000	1.5 mil	500,000	100	EQ, ST, T, SWW, D, ET, F, A, CD, CyD, PH, SE, TX, U

																	Name of Asset
																	Address
																	Square Feet
																	Replacement Value (Insured)
																	Contents Value
																	Occupancy/ Capacity #
																	Hazards

Multi-jurisdictional Mitigation Plan
HISTORIC HAZARD EVENTS

Please fill out one sheet for each significant hazard event that affected **your school district / institution** with as much detail as possible. This includes all hazard events listed on the Vulnerability Assessment page that have caused previous damage. Attach supporting documentation, photocopies of newspaper articles, or other original sources.

Type of event	Thunderstorm
Nature and magnitude of event	
Location	Kingston 42
Date of event	July 2011
Injuries	0
Deaths	0
Property damage	Roof & content due to water
Infrastructure damage	0
Crop damage	0
Business/economic impacts	0
Road/school/other closures	0
Other damage	0
Insured losses	$ 60,000
Federal/state disaster relief funding	0
Opinion on likelihood of occurring again	90%
Source of information	internal documentation
Comments	Straight line wind removed roof

Multi-jurisdictional Mitigation Plan
HISTORIC HAZARD EVENTS

Please fill out one sheet for each significant hazard event that affected **your school district /institution** with as much detail as possible. This includes all hazard events listed on the Vulnerability Assessment page that have caused previous damage. Attach supporting documentation, photocopies of newspaper articles, or other original sources.

Type of event	
Nature and magnitude of event	
Location	
Date of event	
Injuries	
Deaths	
Property damage	
Infrastructure damage	
Crop damage	
Business/economic impacts	
Road/school/other closures	
Other damage	
Insured losses	
Federal/state disaster relief funding	
Opinion on likelihood of occurring again	
Source of information	
Comments	

Multi-Jurisdictional

Hazard Mitigation Plan

Data Collection Questionnaire

For School Districts and Educational Institutions

County: CALDWELL

School District / Educational Institution Name: NEW YORK R-IV

Return by: _____

Please complete this data collection questionnaire as accurately and completely as possible as this information will appear in the mitigation plan. A data collection questionnaire must be completed for each "jurisdiction" that wishes to be included in the plan. According to FEMA's definition a jurisdiction is any local government, including counties, municipalities, cities, towns, school districts, special districts, councils of government, and tribal organizations. Any of these entities as well as publicly funded colleges and universities that do not participate in the planning process **will not** be eligible applicants for FEMA mitigation funding programs.

Prepared by: DEBBIE ELLIS, SUPT.
Phone: (816) 583-2563
Email: nyr4@centurytel.net
Date: 10-31-16

Please return questionnaires by mail, email, or fax to:

CAPABILITY ASSESSMENT
&
INCORPORATION OF EXISTING PLANS, STUDIES, REPORTS AND TECHNICAL INFORMATION

The purpose of this section is to collect information to document existing capabilities as well as determine existing plans, studies, reports, and technical information that may need to be incorporated in the mitigation plan.

Please indicate which of the following your school district / institution has in place. For elements that do not pertain to you, please indicate with "N/A". If applicable, please provide a completion date for the element. If your school district / institution has any of the **underlined and bolded** elements, please provide a copy of the document to the contact indicated on the front of this questionnaire and indicate method in the comments column (i.e. available on the web, will email or mail).

Planning Elements	Yes/No	Date of Latest Version	Comments
Master Plan	NO		
Capital Improvement Plan	NO		
School Emergency Plan Shelter in place protocols Evacuation protocols	YES	8-17-16	
Weapons Policy	YES	8-17-16	

Administrative/Technical

Identify the technical and personnel resources responsible for activities related to hazard mitigation/loss prevention within your school district / institution.

Personnel Resources	Yes/No	Department/Position	Comments
Full-time building official (i.e. Principal)	YES		
Emergency Manager	NO		
Grant Writer	NO		
Public Information Officer	NO		

Financial Resources

Identify whether your school district /institution has access to or is eligible to use the following financial resources for hazard mitigation.

Financial Resources	Accessible/Eligible to Use (Y/N)	Comments
Capital improvements project funding	NO	
Local funds	YES	
General obligation bonds	NO	
Special tax bonds	NO	
Private activities/donations	NO	
State and federal funds	YES	

Additional Capabilities Questions

1. Are your buildings equipped with a public address system or other emergency alert system? Please describe. YES - Intercoms in each room

2. Does your school buildings' have NOAA Weather Radios?

   YES

3. List any past or ongoing projects or programs designed to reduce disaster losses, these may include projects to protect facilities or provide education regarding hazards that could occur.

   1. MO ALERT NETWORK & COUNTY "CIVICREADY.COM"
   2. DISTRICT IS A CLOSED POINT OF DISPENSE IN PARTNER WITH CALDWELL COUNTY HEALTH DEPT.

4. List any other past or ongoing projects or programs designed to reduce disaster losses, these may include projects to protect critical facilities.

5. Do any of your buildings have designated tornado shelters or "saferooms"? If so, are they constructed in accordance with FEMA standards?

   WE HAVE AN OUT OF THE BUILDING TORNADO SHELTER

6. Did your school district / institution make any additions to buildings or construction new buildings since the last plan update (2010)? Please list the buildings and the improvement.

   NO

7. Does your school district / institution plan to remodel or construct any buildings in the next 5 years? If so, please list the building or proposed building and planned improvements. Are any planned construction activities in known hazard areas?

   NO

8. What percentage is your projected enrollment expected to increase or decrease in the next five years?

   DECREASE by 1% per year

9. Do you have your own campus police? Please explain your police department or who you rely on for security needs.

   NO

VULNERABILITY ASSESSMENT

Asset Inventory

The purpose of this worksheet is to assist in the assessment of the vulnerable populations and facilities owned by your school district / institution. Use the table below to compile a detailed inventory of specific assets at risk. In the hazard specific column of the asset inventory table, indicate (by assigned abbreviation) which of the following hazards the asset is vulnerable to:

Riverine Flooding (Major & Flash)-**RF**
Dam Failure-**DF**
Levee Failure-**LF**
Earthquake-**EQ**
Land Subsidence / Sinkholes-**LSS**
Severe Thunderstorm (incl. winds, hail, lightning)-**ST**
Tornadoes-**T**
Severe Winter Weather (incl. snow, ice, severe cold)-**SWW**
Droughts-**D**
Extreme Temperatures-**ET**
Fires (structural, urban, and wild)-**F**
Attack (nuclear, conventional, chemical, and biological)-**A**
Civil Disorder-**CD**
Cyber Disruption-**CyD**
Hazardous Materials Release (fixed facility, accidents)-**HM**
Mass Transportation Accident-**MTA**
Nuclear Power Plants (emergencies & accidents)-**NPP**
Public Health Emergencies/Environmental Issues-**PH**
Special Events-**SE**
Terrorism-**TX**
Utilities (interruptions & system failures)-**U**

Please list buildings owned by your school district / institution including the square feet, values, and occupancy/capacity. If not applicable or not available, enter "N/A". Add as many rows as needed. **If you have this data in GIS formats, or other formats, please provide in lieu of this.**

Name of Asset	Address	Square Feet	Replacement Value (Insured)	Contents Value	Occupancy/ Capacity #	Hazards
NEW YORK SCH. BLDG.	6061 RT. U; HAMILTON		YES	YES	600/120	ST, T, SWW, D, ET F, PH, U

Multi-jurisdictional Mitigation Plan
HISTORIC HAZARD EVENTS

Please fill out one sheet for each significant hazard event that affected **your school district / institution** with as much detail as possible. This includes all hazard events listed on the Vulnerability Assessment page that have caused previous damage. Attach supporting documentation, photocopies of newspaper articles, or other original sources.

Type of event	
Nature and magnitude of event	
Location	
Date of event	
Injuries	
Deaths	
Property damage	
Infrastructure damage	
Crop damage	
Business/economic impacts	
Road/school/other closures	GRAVEL ROADS & F HWY FLOODED SEPT. 14-16, 2016 (AFFECTED BUS ROUTE)
Other damage	
Insured losses	
Federal/state disaster relief funding	
Opinion on likelihood of occurring again	
Source of information	
Comments	

Multi-Jurisdictional

Hazard Mitigation Plan

Data Collection Questionnaire

For School Districts and Educational Institutions

County: Caldwell

School District / Educational Institution Name: Cowgill R-VI

Return by: _____

Please complete this data collection questionnaire as accurately and completely as possible as this information will appear in the mitigation plan. A data collection questionnaire must be completed for each "jurisdiction" that wishes to be included in the plan. According to FEMA's definition a jurisdiction is any local government, including counties, municipalities, cities, towns, school districts, special districts, councils of government, and tribal organizations. Any of these entities as well as publicly funded colleges and universities that do not participate in the planning process **will not** be eligible applicants for FEMA mitigation funding programs.

Prepared by: Betty Vassmer
Phone: (660) 255-4415
Email: bvassmer@cowgill.k6.org
Date: 11-29-16

Please return questionnaires by mail, email, or fax to: mdw@ghrpc.org

660 359-3096

CAPABILITY ASSESSMENT
&
INCORPORATION OF EXISTING PLANS, STUDIES, REPORTS AND TECHNICAL INFORMATION

The purpose of this section is to collect information to document existing capabilities as well as determine existing plans, studies, reports, and technical information that may need to be incorporated in the mitigation plan.

Please indicate which of the following your school district / institution has in place. For elements that do not pertain to you, please indicate with "N/A". If applicable, please provide a completion date for the element. If your school district / institution has any of the **underlined and bolded** elements, please provide a copy of the document to the contact indicated on the front of this questionnaire and indicate method in the comments column (i.e. available on the web, will email or mail).

Planning Elements	Yes/No	Date of Latest Version	Comments
Master Plan	NA		
Capital Improvement Plan	NA		
School Emergency Plan Shelter in place protocols Evacuation protocols	Yes	2013	
Weapons Policy	Yes	2013	

Administrative/Technical

Identify the technical and personnel resources responsible for activities related to hazard mitigation/loss prevention within your school district / institution.

Personnel Resources	Yes/No	Department/Position	Comments
Full-time building official (i.e. Principal)	Yes	Superintendent	
Emergency Manager	Yes	Superintendent	
Grant Writer	NO		
Public Information Officer	NO		

Financial Resources

Identify whether your school district /institution has access to or is eligible to use the following financial resources for hazard mitigation.

Financial Resources	Accessible/Eligible to Use (Y/N)	Comments
Capital improvements project funding	Yes	
Local funds	Yes	
General obligation bonds	Yes	
Special tax bonds	Yes	
Private activities/donations	Yes	
State and federal funds	Yes	

Additional Capabilities Questions

1. Are your buildings equipped with a public address system or other emergency alert system? Please describe. Yes we have intercoms in all rooms and Outside

2. Does your school buildings' have NOAA Weather Radios? Yes

3. List any past or ongoing projects or programs designed to reduce disaster losses, these may include projects to protect facilities or provide education regarding hazards that could occur.
   Fire, Railroad, Electric, Health, Intruder Safety Programs

4. List any other past or ongoing projects or programs designed to reduce disaster losses, these may include projects to protect critical facilities. Fencing by RR. Security Cameras, Secured doors,

5. Do any of your buildings have designated tornado shelters or "saferooms"? If so, are they constructed in accordance with FEMA standards? NO

6. Did your school district / institution make any additions to buildings or construction new buildings since the last plan update (2010)? Please list the buildings and the improvement. NO

7. Does your school district / institution plan to remodel or construct any buildings in the next 5 years? If so, please list the building or proposed building and planned improvements. Are any planned construction activities in known hazard areas? NO

8. What percentage is your projected enrollment expected to increase or decrease in the next five years?
   increase 20

9. Do you have your own campus police? Please explain your police department or who you rely on for security needs. NO

VULNERABILITY ASSESSMENT

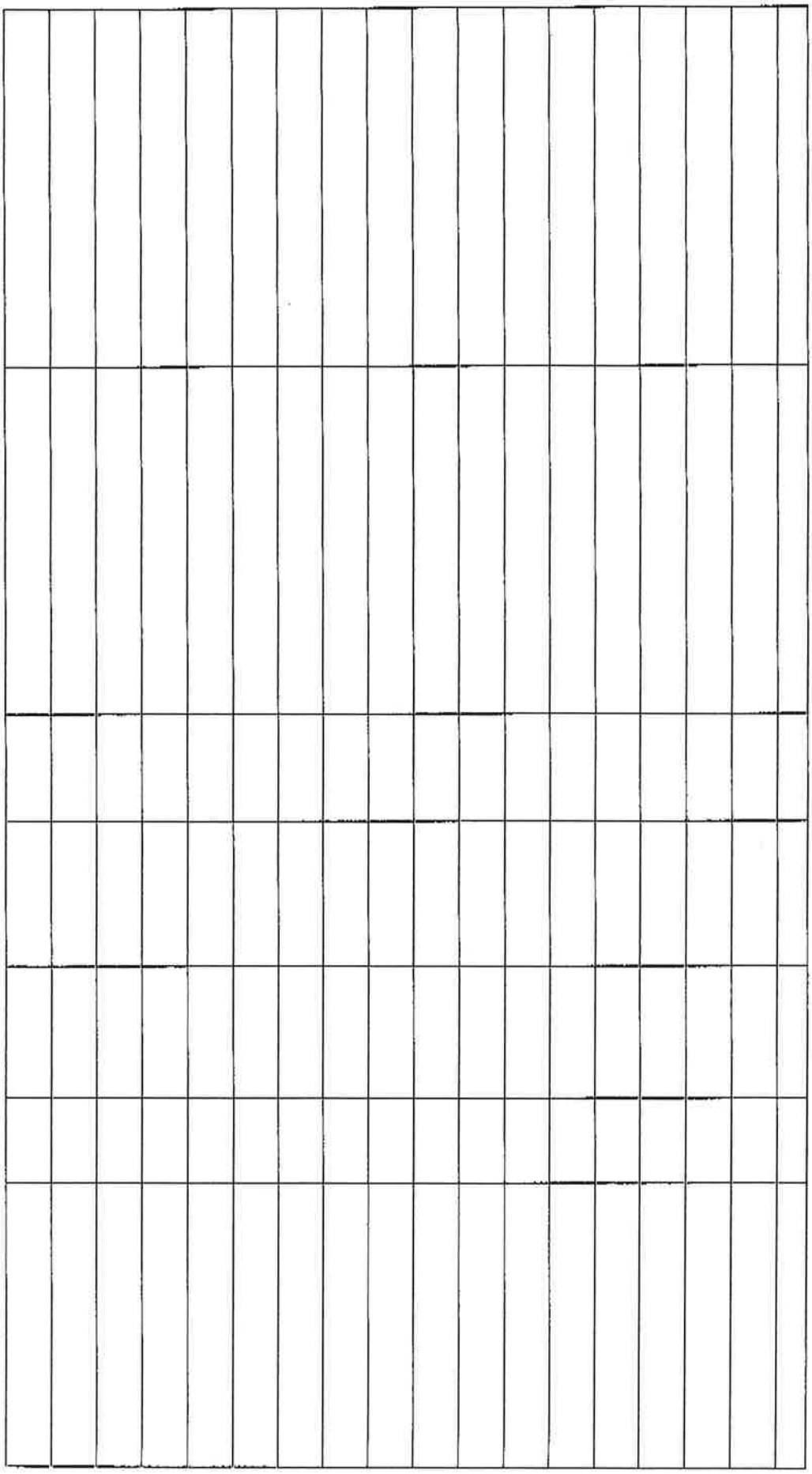
Asset Inventory

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Riverine Flooding (Major & Flash)-**RF**
Dam Failure-**DF**
Levee Failure-**LF**
Earthquake-**EQ**
Land Subsidence / Sinkholes-**LSS**
Severe Thunderstorm (incl. winds, hail, lightning)-**ST**
Tornadoes-**T**
Severe Winter Weather (incl. snow, ice, severe cold)-**SWW**
Droughts-**D**
Extreme Temperatures-**ET**
Fires (structural, urban, and wild)-**F**
Attack (nuclear, conventional, chemical, and biological)-**A**
Civil Disorder-**CD**
Cyber Disruption-**CyD**
Hazardous Materials Release (fixed facility, accidents)-**HM**
Mass Transportation Accident-**MTA**
Nuclear Power Plants (emergencies & accidents)-**NPP**
Public Health Emergencies/Environmental Issues-**PH**
Special Events-**SE**
Terrorism-**TX**
Utilities (interruptions & system failures)-**U**

Please list buildings owned by your school district / institution including the square feet, values, and occupancy/capacity. If not applicable or not available, enter "N/A". Add as many rows as needed. **If you have this data in GIS formats, or other formats, please provide in lieu of this.**

Name of Asset	Address	Square Feet	Replacement Value (Insured)	Contents Value	Occupancy/ Capacity #	Hazards
Cowgill R-VI Main	341 E 6th Street Cowgill MO 64671	20,140	2,869,236	616,220	250	EQ, ST, T, SWW D, ET, F CO, CyO HM MTA PH TX, U
West Buildings	11	2881	149,331	58,425	40	EQ, ST, T, SWW D, ET, F CO, CyO HM MTA PH TX, U



HISTORIC HAZARD EVENTS

Please fill out one sheet for each significant hazard event that affected **your school district /institution** with as much detail as possible. This includes all hazard events listed on the Vulnerability Assessment page that have caused previous damage. Attach supporting documentation, photocopies of newspaper articles, or other original sources.

Type of event	Fire (Arson)
Nature and magnitude of event	
Location	Gym
Date of event	2000
Injuries	None
Deaths	None
Property damage	Gym
Infrastructure damage	Gym
Crop damage	None
Business/economic impacts	None
Road/school/other closures	None
Other damage	None
Insured losses	Music Insurance
Federal/state disaster relief funding	None
Opinion on likelihood of occurring again	Unlikely
Source of information	Board of Education
Comments	

APPENDIX B

Public Participation Documentation

Kick – Off Meeting
Minutes

The Kick off Meeting for the Caldwell County Hazard Mitigation Update planning committee was held on July 18, 2016 at 1:00 PM in the Conference Room of the Church of the Nazarene in Kingston, Missouri.

Seventeen people were in attendance to represent a variety of jurisdictions and agencies:

Jerry Galloway	Caldwell County Sherriff's Dept.	Don Willburn	Polo R-VII School District
Mitch Allen	Caldwell County Sherriff's Dept.	Billie McGraw	Hamilton R-2 School District
David Bethel	City of Kingston	Don Regan	Braymer C-4 School District
Donnie Cox	Caldwell County Commission	Gerald McBrayer	Caldwell County Commission
Jesse Pemberton	City of Breckenridge	Ralph Dishong	American Red Cross of North MO.
Bud Motzinger	Caldwell County Commission	Lesley Shulte	Caldwell County Health Depart.
Jess Innis	City of Polo	Randy Railsback	Green Hills RPC
Connie Cook	City of Polo	Jackie Soptic	Green Hills RPC
		Matt Walker	Green Hills RPC

The meeting was as follows:

1:00 PM Round table introductions were made.

1:10 PM Randy Railsback of Green Hills RPC gave the committee a short history of Hazard Mitigation funding programs and the development of Hazard Mitigation planning and the RPC's role in the state-wide process of developing county-level plans.

1:20 PM Matt Walker provided a hand out on the Emergency Management Cycle and discussed the role of Hazard Mitigation within that cycle (see attached).

1:30 PM Matt Walker provided an FAQ handout and led a discussion about what Hazard Mitigation is, described what a Hazard Mitigation Plan is, that the County has one currently which is due for its 5 year update, why the County needs to have a current plan, and how the planning process works. The FAQ handout contained many links to further educational resources relating to Hazard Mitigation and contact information for the RPC staff that will be leading the planning effort as well as a link to the Facebook page set up to provide a public forum for the planning committee. The importance of jurisdictional participation and public outreach was repeatedly stressed.

1:40 PM The group was provided with data collection questionnaires as "homework", which jurisdictional representatives need to complete and return via mail, email, or fax per the contact information provided on the forms. This information will be utilized in the planning process.

1:50 PM The date, time and location for the 1st official Hazard Mitigation Planning meeting was set for August 15th, at 1:00 PM in the Conference Room of the Church of the Nazarene in Kingston, MO. All attendees were urged to spread the word and attempt to bring as many stake holders with them as they could manage.

2:00 PM Meeting adjourned

Caldwell County Hazard Mitigation Planning Committee **SIGN IN** Kick Off Meeting July 1[illegible], 2016

Name		Title	Jurisdiction/Agency/ Organization
First	Last		
Jerry	Galloway	Sheriff	Caldwell County Sheriffs office
Mitch	Allen	Chief Deputy	Caldwell Co. Sheriffs Office
David	Bethel	City of Kingston	Water/Sewer Supt
Donnie	Cox	Caldwell County	Commissioner
Jesse	Pemberton	Fire Chief	Breckenridge Fire Dept
Bud	Mclemore	Caldwell Co	Commissioner
Jess	Innis	Mayor Polo,	City of Polo
Connie	Cook	City Clerk, Polo, MO	City of Polo
Don	Wilburn	Polo Superintendent	Polo R-VII School
Billie	McGraw	Hamilton Elem Principal	Hamilton R-2 School District
Don	Regan	Superintendent	Braymer C4 School Dist.
Leonard	McGregor	Caldwell County	Commissioner
Ralph	Dishong	DISASTER PROGRAM SPECIALIST AMERICAN RED CROSS →	OF NORTHWEST MISSOURI
Lesley	Schulte	Emergency Response Planner	Caldwell County Health Dpt.

Caldwell County Hazard Mitigation Plan Update 2016

Caldwell County	
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countyclerk@centurytel.net (Clerk's email)	
C.R. Motzinger, Presiding Commissioner	

City of Braymer	
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tnmallory1@gmail.com (Clerk's email)	
Kenny Rogers, Mayor	

City of Breckenridge	
680 W. Broadway Breckenridge, MO 64625	Ph (660) 605-2291 (Mayor) Fx (660) 644-5613
??	
Matt ??? , Mayor	

City of Cowgill	
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bpmisel@greenhills.net	
NO ANSWER, WENT TO FAX 06/27	

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Gene Vanlperen, City Administrator	

City of Kidder	
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Richard Evans, City Clerk LEFT VOICE MAIL 06/28	

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kingstoncityhall@centurytel.net	
David Bethel, Water/Sewer Superintendant	

City of Polo	
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Jeff Jenis, Mayor	

Braymer C-4 School District	
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Don Regan, Superintendant	

Jurisdictions invited to participate (06/28/16)

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Brent Skinner, Superintendant	

Cameron R-I School District	
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Dr. Matt Robinson, Superintendant LEFT VOICE MAIL 06/28	

Cowgill R-VI School District	
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Betty Vassmer, Superintendant	

Hamilton R-II School District	
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Troy Ford, Superintendant	

Kingston 42 School District	
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andrea.hieronymus@kingston42.com	
Andrea Hieronymus, Superintendant	

Lathrop R-II School District	
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chris.fine@lathropschools.com	
Chris Fine , Superintendant	

Mirable C-1 School District	
2954 S.W. State Route D Polo , MO 64671	Ph (816) 586-4129 Fx (816) 586-2029
troystemberger@gmail.com	
Troy Stemberger, Superintendant	

New York R-IV School District	
6061 N.E. State Route U Hamilton , MO 64644	Ph (816) 583-2563 Fx (816) 583-4065
nybulldogsec@gmail.com	
ATTN: Karen	

Polo R-VII School District	
300 W School Street Polo , MO 64671-9352	Ph (660) 354-2326 Fx (660) 354-2910
WILBURND@POLO.K12.MO.US	
Don Wiburn, Superintendant	

Matt Walker

From: Matt Walker [mdw@ghrpc.org]
Sent: Tuesday, July 05, 2016 10:19 AM
To: 'countyclerk@centurytel.net'; 'tnmallory1@gmail.com'; 'admincb@greenhills.net'; 'bpmisel@greenhills.net'; 'hamiltoncity@live.com'; 'Richard Evans'; 'kingstoncityhall@centurytel.net'; 'cityhal@greenhills.net'; 'dregan@braymerc4.net'; 'BSKINNER@BRECKENRIDGER1.ORG'; 'mattrobinson@cameronschools.org'; 'BVASSMER@COWGILLR6.org'; 'fordt@hamilton.k12.mo.us'; 'andrea.hieronymus@kingston42.com'; 'chris.fine@lathropschools.com'; 'troystemberger@gmail.com'; 'nybulldogsec@gmail.com'; 'wilburnd@polo.k12.mo.us'; 'emd@caldwellco.missouri.org'
Subject: The Caldwell County Hazard Mitigation Plan 5 Year Update

Tracking:

Recipient	Read
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'tnmallory1@gmail.com'	
'admincb@greenhills.net'	
'bpmisel@greenhills.net'	
'hamiltoncity@live.com'	
'Richard Evans'	Read: 7/5/2016 1:45 PM
'kingstoncityhall@centurytel.net'	
'cityhal@greenhills.net'	Read: 7/5/2016 10:23 AM
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'wilburnd@polo.k12.mo.us'	
'emd@caldwellco.missouri.org'	
'Jackie Soptic'	

You are invited to the Kick-off meeting that will signal the beginning of the planning process for the 5 year update of Caldwell County's Hazard Mitigation Plan. If you're getting this email, it's because YOU ARE ON THE COMMITTEE... or at least you *should* be.

SAVE THE DATE:

DATE: Monday, July 18
TIME: Approximately 1:00 PM (The LEPC meeting starts at 11:30, our meeting follows
PLACE: Kingston Church of the Nazarene - 93 W Jackson St, Kingston, MO 64650

What we're doing: This meeting is to orchestrate the 2017 update to the Caldwell County Hazard Mitigation Plan, (Plans remain current for five years, the current plan will expire in February of 2017). The current plan can be viewed online at https://drive.google.com/open?id=0B3Z1NlrJUjjQWWdUelFtRFI5MUk

Why we're doing it: State, Tribal, and Local governments (And school districts) are required to develop a Hazard Mitigation Plan as a

condition of eligibility for certain types of non-emergency disaster assistance (most specifically the Hazard Mitigation Grant Program). By participating in the County's planning process you enable your jurisdiction to adopt the county's plan rather than being required to develop its own separate plan.

For more detailed information on Hazard Mitigation Planning, you may visit the Missouri State Emergency Management Agency's webpage on Hazard Mitigation: http://sema.dps.mo.gov/programs/mitigation_management.php.

Again, it is imperative that you or another authorized representative be in attendance on behalf of your jurisdiction. If you can't make it, please try to send someone in your place.

Matthew D. Walker
Special Projects Manager
Green Hills Regional Planning Commission
1104 Main St. | Trenton, MO | 64683
Phone (660) 359-5636 Ext. 22
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Caldwell County Hazard Mitigation Plan Update 2016 FAQ
Kick-Off Meeting 07/18/16, Kingston MO.

Who's on the Hazard Mitigation Committee?

At a minimum, the committee must be composed of one representative from each of the participating jurisdictions that whishes to adopt and be covered under the finished plan. Ideally, the committee is also populated with people from all the various sectors of the community, from public safety professionals to ordinary citizens. In addition, it's best if the communities seek input from neighboring communities outside their own jurisdictions. FEMA has drastically increased its focus on public participation over the years, and nay jurisdiction that hasn't met the minimum level of required participation will be ineligible to adopt the plan, and will therefore be ineligible for certain types of funding.

When will the Hazard Mitigation Committee Meet?

There will be a series of three meetings, besides this initial kick-off meeting.

Kick-Off	July 18, 2016	Committee core group meeting, overview of Hazard mitigation planning, and "homework"; The Questionnaires. Sign up for text caster and a brief discussion of the face book page.
Meeting 1	Aug. _____. 2016	A short repeat of the overview aimed at attendees who did not attend the kick off will be followed by a brief review of the old plan and discussion about updated demographic and hazard information.
Meeting 2	Sept. _____, 2016	New Plan Development – what elements should remain, which should be altered, what should be added.
Meeting 3	Oct. _____, 2016	Overview of the rough draft of the completed plan, review of the maintenance and update process, discussion of resolutions of adoption.
Draft Sub	November 2016	1st draft must be submitted to SEMA/FEMA

Participation in the planning process is vital for each jurisdiction. Any Questions or concerns about the plan should be directed to:

Matt Walker, Hazard Mitigation Planner
(mdw@ghrpc.org) (660) 359-5636 x 22

Jackie Soptic, Assistant Director
(jackie@ghrpc.org) (660) 359-5636 x 12

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Caldwell County Hazard Mitigation Planning Committee — Contact List 201

Name	Title	Jurisdiction/Agency/ Organization	Email	Land-Line Phone	Mobile Number	Mobile Provider
First Last				( ) -	( ) -	
David Bethel	Water/Sewer Supt	City of Kingston	Kingstoncity@centurytel.net	816-586-4110	816-633-9872	Verizon
Donnie Cox	Commissioner	Caldwell County	dcox@greenhills.net	660-645-2174	660-973-0216	Verizon
Jesse Pemberton	Fire Chief	Breckenridge Fire	bfd202@hotmail.com	N/A	660-973-0029	Verizon
Burd Motsinger	Presiding Comm.	Caldwell Co.	burdandbettymot@gmail.com	816-583-4898	816-465-0414	verizon
Connie Cook	City Clerk	City of Polo	cityhall@greenhills.com	660 354 2346		
Jess Innis	Mayor	City of Polo	jessi@greenhills.net	660-354 2349		
Don Wilburn	Superintendent	Polo R-VII	J.wilburn@polo.k12.mo.us	660-354-2326	660-626-3710	Verizon
Billie McGraw	Elem Principal	Hamilton R-2	mcgraw-c.hamilton.k12.mo.us or fordt@hamilton.k12.mo.us	816-583-2134		
Don Regan	Supt.	Braymer C4	dregan@braymerc4.net	660-645-2254	(660) 247-1675	Verizon
Gerald McBroyer	Commissioner	Caldwell County	mcbroyer@mac.com	816-586-4491	816-465-0095	Verizon
Lesley Schulte	Emergency Response Planner	Caldwell County Health Dept.	Lesley.Schulte@ipha.mo.gov		660 853-1126	Sprint

JURISDICITONAL PARTICIPATION RECORD

Minimum participation requirements included:

- Designation of a representative to serve on the MPC.
- Meeting attendance
- Provision of sufficient information to support plan development by completing and returning Data Collection Questionnaires and validating/correcting critical facility inventories.
- Review and comment on plan drafts.
- Provision of documentation to show time donated to the planning effort.
- Formal Adoption of the mitigation plan prior to submittal to SEMA and FEMA for final approval.

Jurisdiction	Designate a representative	Kick-off Meeting July 18	Meeting #1 Aug. 15	Meeting #2 TBA	Meeting # 3 TBA	Data Collection Response	Provision of records showing time donated to planning effort	Undertaking at least one mitigation action	Review and Comment on Plan Draft	PARTICIPATION STATUS
Caldwell County	✓	✓								Participant
Braymer	✓	X								Participant
Breckenridge	✓	✓								Participant
Cowgill	X	X								Non-Participant
Hamilton	✓	X								Participant
Kidder	X	X								Non-Participant
Kingston	✓	✓								Participant
Polo	✓	✓								Participant
Braymer C-4 School	✓	✓								Participant
Breckenridge R-I School	✓	X								Participant
Cowgill R-VI School	✓	X								Participant
Hamilton R-II School	✓	✓								Participant
Kingston 42 School	✓	X								Participant
Mirable C-1 School	✓	X								Participant
New York R-IV School	✓	X								Participant
Polo R-VII School	✓	✓								Participant

The Emergency Management Cycle

Emergency management in the United States has been described for the past three decades as a "four phase" process, involving:

•Mitigation
•Preparedness
•Response
•Recovery



These terms have been widely used by policy makers, practitioners, trainers, educators, and researchers. As illustrated in the figure above, the four phases are often described as part of a continuous process. Critical activities frequently cover more than one phase, and the boundaries between phases are seldom precise – furthermore, important interrelationships exist among all the phases. For example, "mitigating" flood damage by restricting development in a flood plain will reduce the problems in "responding" to flooding

Mitigation refers to measures that reduce the chance of an emergency happening, or reduce the damaging effects of unavoidable emergencies. This is achieved through risk analysis, which results in information that provides a foundation for typical mitigation measures include establishing building codes, zoning requirements, and constructing barriers such as levees. Effective Mitigation efforts can break the cycle of disaster damage, reconstruction, and repeated damage. Mitigation creates safer communities by reducing loss of life and property damage. For example, the rigorous building standards adopted by 20,000 communities across the country are saving the nation more than $1.1 billion a year in prevented flood damages. It allows individuals to minimize post-flood disaster disruptions and recover more rapidly. For example, homes built to NFIP standards incur less damage from floods. And when floods do cause damages, flood insurance protects the homeowner's investment, and lessens the financial impact on individuals, communities, and society as a whole. For example, a recent study by the Multi-hazard Mitigation Council shows that each dollar spent on mitigation saves society an average of four dollars.

Preparedness activities increase a community's ability to respond when a disaster occurs. The National Incident Management System (NIMS) defines preparedness as "a continuous cycle of planning, organizing, training, equipping, exercising, evaluating, and taking corrective action in an effort to ensure effective coordination during incident response." Typical preparedness measures include developing mutual aid agreements and memorandums of understanding, training for both response personnel and concerned citizens, conducting disaster exercises to reinforce training and test capabilities, and presenting all-hazards education campaigns. Unlike mitigation activities, which are aimed at preventing a disaster from occurring, personal preparedness focuses on preparing equipment and procedures for use when a disaster occurs, i.e. planning.

Response actions may include activating the Emergency Operations Center (EOC), evacuating threatened populations, opening shelters and providing mass care, emergency rescue and medical care, fire fighting, and urban search and rescue. Response begins when an emergency event is imminent or immediately after an event occurs. Response encompasses the activities that address the short-term, direct effects of an incident. Response also includes the execution of the Emergency Operations Plan and of incident mitigation activities designed to limit the loss of life, personal injury, property damage, and unfavorable outcomes. As indicated by the situation, response activities include:

Recovery actions include any actions taken to return a community to normal or near-normal conditions, including the restoration of basic services and the repair of physical, social and economic damages. Typical recovery actions include debris cleanup, financial assistance to individuals and governments, rebuilding of roads and bridges and key facilities, and sustained mass care for displaced human and animal populations. Recovery differs from the response phase in its focus; recovery efforts are concerned with issues and decisions that must be made after immediate needs are addressed. Recovery efforts are primarily concerned with actions that involve rebuilding destroyed property, re-employment, and the repair of other essential infrastructure. Long-term recovery includes restoring economic activity and rebuilding community facilities and housing. Long-term recovery (stabilizing all systems) can sometimes take years.

MEETING MINUTES

1:00 **Meeting Began**

Introductions

Hazard Mitigation FAQ Handout – review for those who didn't attend the kick off meeting:

The importance of Jurisdictional Participation was discussed, particularly the minimum participation requirements that allow a jurisdiction to adopt the plan. Public participation, beyond that of just jurisdictional representatives, was also discussed. Attendees were made aware of the planning committee Facebook page and the signup sheet for text caster was made available.

A quick outline of the overall planning process:

Attendees were given a rough overview of the process of updating the plan, beginning with a brief description of the process of identifying hazards and community assets, followed by a discussion of how risk is analyzed and vulnerability is summarized, and how that information facilitates the committees planning of actions to mitigate the community's vulnerability to hazards.

Mitigation Goals:

The mitigation goals of the original plan were reviewed. It was determined that these goals would remain unchanged for the plan update. The goals are:

Goal 1: Manage the development of land and buildings to minimize risk of loss due to natural hazards.

Goal 2: Protect structures and their occupants and contents from the damaging effects of natural hazards.

Goal 3: Educate and inform the public about the risks of hazards and the techniques available to reduce danger to life and property.

Goal 4: Preserve and restore the beneficial functions of the natural environment and promote sustainable, "environmentally friendly" community development.

Goal 5: Improve the efficiency, timing, and effectiveness of response and recovery efforts for natural hazards disasters.

Goal 6: Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where feasible, cost effective, and environmentally sound.

Hazards in the old plan and the update:

The committee discussed the hazards identified in the previous plan to determine if the list needed to be expanded with additional hazards, or some hazards were no longer appropriate for inclusion in the plan. The hazards that had been omitted from the previous plan were also discussed.

Hazards Identified in the previous plan-

- Thunderstorm: High Winds/ Hail/ Lightning/ Tornado
- Flood: Riverine/Flash Flooding
- Severe Winter Weather: Extreme Cold/ Ice Storm/ Heavy Snowfall
- Drought
- Heat wave
- Earthquake
- Dam Failure
- Fire

The committee determined that all the previously identified hazards would remain in the plan update.

Hazards Omitted in the previous plan-

- Landslides/Land subsidence; Sinkholes
- Coastal Storms; Tsunamis, Hurricanes
- Geothermal Activity; Volcanoes, etc.
- Levees; Major regulated systems

The committee determined that these omissions were appropriate and would be retained for the plan update.

In light of the fact that past plans considered only natural hazards, the Committee discussed new hazards for inclusion in the plan in order to create a more comprehensive hazard profile for the County and its jurisdictional partners.

New Hazards for potential inclusion in the Hazard profile-

- Attack: Nuclear/ Conventional/Chemical/ Biological
- Civil Disorder
- Hazardous Materials release; Fixed Facility / Transportation incidents
- Mass Transportation Accident
- Nuclear Facilities
- Public Health Emergencies/ Environmental Issues
- Special Events
- Terrorism
- Utility disruption/failure

The committee decided to include all these new hazards in the plan update, with the exception of Nuclear Facilities. The closest nuclear facilities were in excess of 50 miles, which per the 2013 update of the State Hazard Mitigation Plan is the radius of potential contamination hazard for water and soil in the event of a catastrophic incident. Nuclear Facilities will therefore be added to the list of hazards omitted from the plan.

Discussion was held on the Hazard profiles themselves, which are underway and will be finished for use in the September planning meeting.

Updated demographic data was discussed, with the general synopsis being that there hadn't been any drastic statistical changes to population and employment data, though recent tourist based activity in the City of Hamilton did have a positive economic impact.
ed for meeting #2

Data Survey Questionnaires
It was again stressed that it was very important that every jurisdiction complete a Data Survey Questionnaire and submit it as soon as possible, as that data would also be required to prepare materials for the September meeting.

Discussion about Plan Actions
There was a lengthy discussion about new SEMA/FEMA guidelines Plan updates. A problem with many plans on a national level was that some of the proposed actions from older plans were not substantive proposals fundable under FEMA's mitigation grants programs. When action item narrative is similar to "the community should consider . . . ", "the town will encourage . . ." or "the city will continue to . . ." – these usually are not really actions within regulatory definitions. Nor are they fundable with hazard mitigation grants. ." In addition, Substantive progress on these kinds of actions is not easily assessed. In short, *such actions should not be carried forward into plan updates.* Those actions are highlighted in yellow below.

SEMA believes that the creation of substantive actions/projects in future hazard mitigation plans is key to the success of risk reduction efforts throughout the state. Updated actions must reflect current conditions and progress made on previously proposed mitigation efforts. The 5-year plan update is an opportunity for each jurisdiction to adjust its actions to address current realities.

The actions of the previous plan were assessed for relevance and fundability prior to discussing their inclusion in the plan update, and this caused many of the actions in the old plan to be rejected or significantly re-worded.

Status	Action form previous plan
Done But not in such a way as to be measured	Review and amend existing local planning documents to be certain vulnerability and environmental suitability of lands for future development has been addressed.
Done But not in such a way as to be measured	Ascertain that local plans address the vulnerability of designated hazard areas and encourage open space planning to create amenities for recreation and conservation of fragile resources.
In progress, Measurable via GHRPC TAC	Seek funding sources and technical assistance for conducting a more detailed analysis of the flood plain hazard areas in the vicinity of the cities of Kingston and Braymer.

TO BE REMOVED	Consider large lot size restrictions within designated flood zones
Done Measureable via Floodplain Ordinance	Evaluate additional land use restrictions within designated flood plains such as; the prohibition of storage of buoyant or hazardous materials, restricted development of floodways, etc.
Done Measurable via floodplain manager	Train local flood plain managers through programs offered through the State by FEMA.
Done Access to print products and digital products online	Maintain a library of technical materials to support local flood plain management.
Done Measureable via Floodplain Ordinance	Adopt and enforce floodplain management requirements, particularly those relating to the regulation of new construction in designated floodplains.
Progress made but unfinished A list needs to be generated	Investigate the current state of suitable shelter in Caldwell County; particularly in vulnerable areas, such as mobile home communities.
Insufficient	Investigate the availability of funding to construct tornado safe rooms in vulnerable areas where no sufficient shelter currently exists within an acceptable distance
TO BE REMOVED	Encourage the inclusion of safe rooms in the construction of all new public buildings.
Done Measureable via Floodplain Ordinance	Provide technical assistance to owners of pre-FIRM buildings to advise them of available retrofitting techniques.
Done Measureable via Floodplain Ordinance	Continuing to participate in FEMA's flood insurance program, ensuring that people with property in the floodplain are made aware that their property is in the floodplain and that there is an insurance program.
Done Measureable via Floodplain Ordinance	Continue to require mandatory flood-proofing of those buildings constructed in the floodplain after the enactment of regulations.
TO BE REMOVED	Take the appropriate steps to facilitate the elevation or relocation of structures which suffer repetitive losses despite flood proofing.
Incomplete	Use local libraries as a resource for distributing free information about hazards and hazard mitigation to interested parties.
Done Access to print products and digital products online	Obtain free copies of the latest FEMA flood maps and keep them on file in the courthouse for viewing and copying by any interested party.
TO BE REMOVED	Continue to support the legal requirement of the disclosure by real estate sellers of the presence of floodplains or other hazard areas to potential buyers.
Insufficient Detail Requires definitive items that can be measured	Support outreach to and education of the public regarding natural hazards and mitigation strategies via such efforts as carried out by the county LEPC (Local Emergency Planning Committee)

Caldwell County Hazard Mitigation Planning Committee
Sign-in

Meeting #1
August 15, 2016

Name	Title	Jurisdiction/Agency/ Organization	Email	Land-Line Phone	Mobile Number	Mobile Provider
Don Regan	Supt. B	Braymer C-4		( ) -	( ) -	
Colt Arnold	Planning & Zoning Administrator	Caldwell County	coltharnold@live.com	(816)586-4601	816-465-0820	Sprint
Bud McGregor	Pres. Comm.	Caldwell	budandbetty@gmail.com			
Troy Ford	Supt.	Hamilton R-II	fordt@hamilton.k12.mo.us	816-583-2134	816-465-0510	AT+T
Jean Van Ipseren	City Adm.	City of Hamilton	hamiltoncity@live.com	816-583-4911	816-465-1377	AT+T
Conrad [illegible]	[illegible]	[illegible]		816-[illegible]-4931	816-465-[illegible]	

Matt Walker

From:	Matt Walker <mdw@ghrpc.org>
Sent:	Friday, August 12, 2016 11:04 AM
To:	'countyclerk@centurytel.net'; 'tnmallory1@gmail.com'; 'admincb@greenhills.net'; 'bpmisel@greenhills.net'; 'hamiltoncity@live.com'; 'Richard Evans'; 'kingstoncityhall@centurytel.net'; 'cityhal@greenhills.net'; 'dregan@braymerc4.net'; 'BSKINNER@BRECKENRIDGER1.ORG'; 'mattrobinson@cameronschools.org'; 'BVASSMER@COWGILLR6.org'; 'fordt@hamilton.k12.mo.us'; 'andrea.hieronymus@kingston42.com'; 'dcox@greenhills.net'; 'bfd202@hotmail.com'; 'jessi@greenhills.net'; 'willburn@polo.k12.mo.us'; 'mcgraw@hamilton.k12.mo.us'; 'lesley.shulte@lpha.mo.gov'
Cc:	'jackie@ghrpc.org'
Subject:	Caldwell County Hazard Mitigation Plan Meeting

REMINDER: The Caldwell County Hazard Mitigation Planning Meeting (#1) is to be held this coming Monday, August 18th, at 1:00 PM at the Church of the Nazarene in Kingston.

It's important that jurisdictions wishing to adopt the plan and be covered under it participate in the planning process. Also, PLEASE, PLEASE bring anyone you can convince to come to the meeting. The more attendance we have at the meeting and the more public participation, the better. Please bring any interested persons you can find – public safety folks, utilities, transportation, health department, business owners, and the general public – EVERYONE is welcome and everyone who lives and works in and around Caldwell County has a stake in this planning effort.

Also, I've only got two Data Collection Questionnaires back, both from school districts. It's very important that you all fill those forms out and return them, as they are part of the data I have to compile for your use later in the planning process. If you don't have the form, they can be downloaded from below. There are instructions on the cover.

Data Collection Questionnaire for Local Governments:
https://drive.google.com/open?id=0B3Z1NlrJUjjQMkVJUS1MNXp5LXc
Data Collection Questionnaire for School Districts: https://drive.google.com/open?id=0B3Z1NlrJUjjQXzFLbi1FREkwMEE

A large group of attendees is desirable, but **attendance by representatives from the communities and school districts is VITAL.**

Feel free to contact me with questions, comments, or concerns at any time.

Matthew D. Walker
Green Hills Regional Planning Commission
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Caldwell County Mo Hazard Mitigation Planning Committee

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Caldwell County Mo Hazard Mitigation Planning Committee
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REMINDER: The Caldwell County Hazard Mitigation Planning Meeting (#1) is to be held this coming Monday. August 18th. at 1:00 PM at the Church of the Nazarene in Kingston.

It's important that jurisdictions wishing to adopt the plan and be covered under it participate in the planning process. Also. PLEASE. PLEASE bring anyone you can convince to come to the meeting. The more attendance we have at the meeting and the more public participation. the better. Please bring any interested persons you can find – public safety folks. utilities. transportation. health department. business owners. and the general public – EVERYONE is welcome and everyone who lives and works in and around Caldwell County has a stake in this planning effort.

A large group of attendees is desirable. but attendance by representatives from the communities and school districts is VITAL.

Feel free to contact me with questions. comments. or concerns at any time.

Matthew D. Walker
Green Hills Regional Planning Commission
1104 Main St. | Trenton. MO 646823
Phone (660) 359-5636 Ext. 22

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Caldwell County Mo Hazard Mitigation Planning Committee
July 22 at 1:39pm

The Kick Off Meeting for jurisdictions participating in the Caldwell County Hazard Mitigation Plan Update process was held in on July 18th at 1:00 pm in the Church of the Nazarene in Kingston.

Participating jurisdictions were brought up to speed on what Hazard

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CALDWELL COUNTY
HAZARD MITIGATION PLANNING COMMITTEE

Meeting #1
Monday, August 15 , 2016

AGENDA

I Introductions

II Hazard Mitigation FAQ Handout – review for those who didn't attend the kick off meeting:
- A. The importance of Jurisdictional Participation
- B. The importance of public Participation
- C. Facebook
- D. Text-Caster

III Quick overview of the Update Process

IV Discussion of Mitigation Goals; Changes, additions?

V The Old Plan
- A. Hazards
- A.1. Hazards Identified in the current plan – do they remain in the new?
- A.2 Hazards excluded in the current plan – any changes?
- A.3 New Hazards to be considered in the plan update
- A.4 Discussion of Hazard Data update which should be completed for meeting #2

VI Community Data
- A. Updated Demographic Information
- B. Data Survey Questionnaires

VII Review of the Hazard Mitigation Plan actions in the current plan – what's been accomplished, what hasn't, what should stay in the plan, what should be removed?

IIX A discussion of the kind of actions appropriate for inclusion in the plan update.

IX Set the time and place for Meeting #2 (sometime in late-September).

Caldwell County Hazard Mitigation Plan Update 2016 FAQ

What is Hazard Mitigation?

Hazard Mitigation is "any action taken to reduce or eliminate the long-term risks to human life and property from Natural Hazards." A good example is this: Rebuilding a bridge destroyed by flooding to its original design ***IS NOT*** mitigation, it's merely replacement. Rebuilding the bridge with structural modifications that make it more resistant to flood damage in the future ***IS*** Hazard Mitigation.

What is a Hazard Mitigation Plan?

A Hazard Mitigation Plan is a document created by a committee made up of stakeholders in the community (In this case, Caldwell County). During the planning process, this committee looks at information about the potential impacts of natural disasters and develops long-term strategies for protecting people and property in future hazard events, by developing feasible and cost effective mitigation projects.

Doesn't Caldwell County Already Have a Hazard Mitigation Plan?

Caldwell County does currently have a Hazard Mitigation Plan in effect – however, FEMA requires that to remain current Hazard Mitigation Plans must be updated on a five year schedule and Caldwell's latest update expires in February of 2017. The current plan can be viewed online at https://drive.google.com/open?id=0B3Z1NlrJUjiQWWdUelFtRFI5MUk

Why do we need a Hazard Mitigation Plan?

State, Tribal, and Local governments are required to develop a Hazard Mitigation Plan as a condition of receiving certain types of non-emergency disaster assistance (most specifically the Hazard Mitigation Grant Program).

How is Hazard Mitigation Planning Done?

In a broad sense, it's very much like land use or emergency response planning. A planning committee is created, information is compiled and analyzed, risks and assets are identified, and a plan is formulated to address those risks to the best of the communities' economic and administrative ability. This plan is then adopted by participating jurisdictions (including school districts and educational institutions).

For more detailed information on Hazard Mitigation Planning, you may visit the Missouri State Emergency Management Agency's webpage on Hazard Mitigation: http://sema.dps.mo.gov/programs/mitigation_management.php. Information on Caldwell County's planning efforts will be provided on the ***Caldwell County Mo Hazard Mitigation Planning Committee Facebook*** page https://www.facebook.com/search/top/?q=caldwell%20county%20mo%20hazard%20mitigation%20planning%20committee and meeting reminders and other notifications will be provided to committee members via textcaster.

Who's on the Hazard Mitigation Committee?

At a minimum, the committee must be composed of one representative from each of the participating jurisdictions that whishes to adopt and be covered under the finished plan. Ideally, the committee is also populated with people from all the various sectors of the community, from public safety professionals to ordinary citizens. In addition, it's best if the communities seek input from neighboring communities outside their own jurisdictions. FEMA has drastically increased its focus on public participation over the years, and nay jurisdiction that hasn't met the minimum level of required participation will be ineligible to adopt the plan, and will therefore be ineligible for certain types of funding.

When will the Hazard Mitigation Committee Meet?

There will be a series of three meetings, besides this initial kick-off meeting.

Kick-Off	July 18, 2016	Committee core group meeting, overview of Hazard mitigation planning, hand out materials and "homework". Sign up for text caster, brief discussion of the face book page.
Meeting 1	Aug. 18, 2016	A short repeat of the overview aimed at attendees who did not attend the kick off will be followed by a brief review of the old plan and discussion about updated demographic and hazard information.
Meeting 2	TBA - September	New Plan Development – what elements should remain, which should be altered, what should be added.
Meeting 3	TBA - October	Overview of the rough draft of the completed plan, review of the maintenance and update process, discussion of resolutions of adoption.
Draft Sub	November 2016	1st draft must be submitted to SEMA/FEMA

Participation in the planning process is vital for each jurisdiction. Any Questions or concerns about the plan should be directed to:

Jackie Soptic, Assistant Director (jackie@ghrpc.org) (660) 359-5636 x 12
Matt Walker, Hazard Mitigation Planner (mdw@ghrpc.org) (660) 359-5636 x 22
Green Hills Regional Planning Commission
1104 Main St. Trenton, MO 64683

CALDWELL COUNTY HAZARDS

HAZARDS IDENTIFIED (Natural Hazards) in the previous plans	
Natural Threats	
Thunderstorm	High winds, Hail, Lightning, Tornado
Flood	Riverine and Flash flooding
Severe Winter Weather	Extreme cold, ice storm, heavy snowfall
Drought	
Heat Wave	
Earthquake	
Dam Failure	
Fire	Wildland and structural
HAZARDS EXCLUDED (Natural Hazards) in the previous plans	
Landslides/ Land Subsidence	Sinkholes, etc.
Coastal Storms	Hurricanes/ Tsunamis
Geothermal Activity	Volcanos,etc.
Levees	Major regulated systems
POSSIBLE NEW IDENTIFIED HAZARDS (Man-Made Threats) in the plan update	
Attack	Nuclear, Conventional, Chemical, Biological
Civil Disorder	Correctional Institutions and Probation and Parole Offices
Hazardous Materials Release	Fixed Facility or Transportation Accidents, Illicit Chemical Laboratories, etc.
Mass Transportation Accident	
Nuclear Power Plant	Accidents and Emergencies
Public Health Emergencies/ Environmental Issues	Outbreaks and Epidemics
Special Events	
Terrorism	
Utility disruption and failure	Power, water

CALDWELL COUNTY'S CURRENT HAZARD MITIGATION GOALS	
Goal 1	Manage the development of land and buildings to minimize risk of loss due to natural hazards.
Goal 1	Protect structures and their occupants and contents from the damaging effects of natural hazards.
Goal 1	Educate and inform the public about the risks of hazards and the techniques available to reduce danger to life and property.
Goal 1	Preserve and restore the beneficial functions of the natural environment and promote sustainable, "environmentally friendly" community development.
Goal 1	Improve the efficiency, timing, and effectiveness of response and recovery efforts for natural hazards disasters.
Goal 1	Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where feasible, cost effective, and environmentally sound.

CALDWELL COUNTY HAZARD MITIGATION PLAN ACTIONS – 2011 - 2016

Goal 1: **Manage the development of land and buildings to minimize risk of loss due to natural hazards.**

Objectives:

1.a. **Comprehensive Plans**: Integrate the findings and recommendations of this plan into comprehensive planning programs of participating jurisdictions by:

1.a.1 Reviewing and amending existing local planning documents to be certain vulnerability and environmental suitability of lands for future development has been addressed.

1.a.2. Ascertaining that local plans address the vulnerability of designated hazard areas and encourage open space planning to create amenities for recreation and conservation of fragile resources.

1.b. **Targeted Studies**: evaluate the feasibility of various mitigation measures for addressing specific hazards in specific locations by:

1.b.1 Seeking funding sources and technical assistance for conducting a more detailed analysis of the flood plain hazard areas in the vicinity of the cities of Kingston and Braymer.

1.c. **Zoning Regulation**: Encourage effective zoning controls, where applicable, to vulnerable land areas to discourage environmentally incompatible land use and development by;

1.c.1 Considering large lot size restrictions within designated flood zones

1.c.2. Evaluating additional land use restrictions within designated flood plains such as; the prohibition of storage of buoyant or hazardous materials, restricted development of floodways, etc.

1. d **Flood Plain Management**: Effectively administer and enforce local floodplain management regulations by:

1.d.1. Training local flood plain managers through programs offered through the State by FEMA.

1.d.2. Maintaining a library of technical materials to support local flood plain management.

1.d.3. Adopting and enforcing floodplain management requirements, particularly those relating to the regulation of new construction in designated floodplains.

1.e. Tornado safe rooms will be promoted by:

1.e.1. Investigating the current state of suitable shelter in Caldwell County; particularly in vulnerable areas, such as mobile home communities.

1.e.2. Investigating the availability of funding to construct tornado safe rooms in vulnerable areas where no sufficient shelter currently exists within an acceptable distance

1.e.3. Encouraging the inclusion of safe rooms in the construction of all new public buildings.

Goal 2: **Protect structures and their occupants and contents from the damaging effects of natural hazards.**

Objectives:

2.a Building retrofits will be promoted by:

2.a.1 Providing technical assistance to owners of pre-FIRM buildings to advise them of available retrofitting techniques.

2.a.1 Continuing to participate in FEMA's flood insurance program, ensuring that people with property in the floodplain are made aware that their property is in the floodplain and that there is an insurance program.

2.b The county and communities will continue to require mandatory flood-proofing of those buildings constructed in the floodplain after the enactment of regulations.

2.c The County will take the appropriate steps to facilitate the elevation or relocation of structures which suffer repetitive losses despite flood proofing.

Goal 3: **Educate and inform the public about the risks of hazards and the techniques available to reduce danger to life and property.**

Objectives:

3.a The county and individual communities will use local libraries as a resource for distributing free information about hazards and hazard mitigation to interested parties.

3.b. The county will obtain free copies of the latest FEMA flood maps and keep them on file in the courthouse for viewing and copying by any interested party.

3.c The county will continue to support the legal requirement of the disclosure by real estate sellers of the presence of floodplains or other hazard areas to potential buyers.

3.d The county will support outreach to and education of the public regarding natural hazards and mitigation strategies via such efforts as carried out by the county LEPC (Local Emergency Planning Committee)

Goal 4: **Preserve and restore the beneficial functions of the natural environment and promote sustainable, "environmentally friendly" community development.**

Objectives:

4.a The county will continue to support river/stream corridor restoration by observing "best management practices" prescribed by the Missouri Department of Conservation for construction projects in or near streams and rivers .

Goal 5: **Improve the efficiency, timing, and effectiveness of response and recovery efforts for natural hazards disasters.**

Objectives:

5.a The county will support the individual communities in maintaining existing storm warning systems as well those communities without who are seeking funding for storm sirens.

5.b The county and communities will continue to encourage the ownership and use of NOAA Radios. In the past, the LEPC has purchased such radios and given them to schools and daycares. Similar programs may be undertaken in the future; efforts to foster public knowledge of these radios and their availability are also included in this action.

5.c The county and individual communities will continue with their Disaster Response planning as currently undertaken by the county LEPC.

5.d The county, via the LEPC, will undertake a preliminary evaluation of existing facilities evacuation planning in the county. Following the findings of that evaluation, the county may create an addendum to their existing Emergency Response Plan regarding facilities evacuation plans.

5.e The county will, through the LECP, review the existing emergency response plan with health and safety maintenance planning in mind. Dependent on this review, the LEPC may make additions or changes to the existing plan.

5f Support School Districts in annual assessments and updates of their all-hazards plan.

Goal 6: **Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where feasible, cost effective, and environmentally sound.**

Objectives:

6.a Individual communities with adequate existing storm water drainage systems will continue to maintain them.

6.b. Communities with no existing storm water drainage systems or systems that are inadequate will investigate funding resources and options to pursue the construction of such.

6.c The County will work with individual communities, land owners, and State and Federal agencies to maintain existing flood control and drainage systems which protect large areas of land and substantial portions of the Transportation system, and seek funding assistance to design and implement flood control and drainage structures where a need for such has been demonstrated.

CALDWELL COUNTY
HAZARD MITIGATION PLANNING COMMITTEE

Meeting #2
Monday, September 19, 2016
1:30 PM
Church of the Nazarene
Kingston Mo.

MINUTES

1:30 **Meeting began.** Participants were provided with a draft copy of Section 3 of the plan (risk assessment) and each individual received a packet that contained the minutes of the 1st meeting, a one page hazard summary table, a county base-map for reference, and a STAPLEE sheet with instructions on the STAPLEE process.

- **Round table Introductions** – representatives were in attendance from the Caldwell County Commission, Caldwell County 911, the Caldwell County Sheriff's office, the Caldwell County Health Department, the City of Hamilton, the City of Kingston, the City of Breckenridge, the City of Braymer, the Hamilton R-II School District, and the Kingston 42 school district.

- **Quick overview of the Update Process** – this included a review of the Minutes from the previous planning meeting. The purpose of this discussion was to refresh the memory of those who'd attended the last meeting and bring those who had not previously attended a meeting up to speed.

- **Discussion of Mitigation Goals** – a hard copy list was part of the minutes from the previous planning meeting.

- **Overview of Hazards, per Risk Analysis** – a draft copy of Section 3 of the plan (Risk Analysis) was provided and each packet contained an 11X17 table containing a synopsis of the hazard analysis in the plan. Each hazard was ranked by its probability of occurrence and probable severity. The table also included a summary of the hazard's possible effects and areas of vulnerability of the county. The risk analysis for 2016 is greatly expanded from the previous hazard analysis, as it includes not only the natural hazards (Thunderstorm: High Winds/ Hail/ Lightning/ Tornado, Flood: Riverine/Flash Flooding, Severe Winter Weather: Extreme Cold/ Ice Storm/ Heavy Snowfall, Drought, Heat wave, Earthquake, Dam Failure, and Wildland Fire) but man-made and technological threats including Attack: Nuclear/Conventional/Chemical/ Biological, Civil Disorder, Hazardous Materials release; Fixed Facility / Transportation incidents, Mass Transportation Accident, Public Health Emergencies/ Environmental Issues, Special Events, Terrorism, Utility disruption/failure, and one new hazard that has not been addressed in any previous hazard mitigation or emergency operations plans in the county ; Electromagnetic Pulse (EMP)

- **Discussion of specific Vulnerabilities in Caldwell County, open discussion** – The discussion was vigorous and detailed, and touched on all the hazards presented in the risk analysis.

  - The committee discussed the pipelines present in the county and sited pipeline security as a matter they felt had not received sufficient attention.

  - Concerns were also expressed about the threat of hazardous materials releases associated with both fixed facilities and transportation incidents, as the county is home to both a railroad that passes through several communities and a major four-lane highway. There was some discussion of traffic control and detour pre-planning and disaster exercises.

  - The area of Hwy 36 located directly north of a proposed army-corps lake was cited as a contamination threat to a regional public water drinking supply, the committee felt it was important to develop a mitigation strategy to reduce or eliminate this threat. It was determined that a committee should be appointed to make contact with partner agencies like MoDOT, MoDNR and the MERC to work towards developing this plan in conjunction with the construction plans of the proposed lake.

  - The Committee felt there should be a comprehensive county response plan for addressing emergencies at the Caldwell County Detention center, both "civil unrest" concerns such as a riot or hostage situation as well as other possible scenarios such as the facility being struck by a natural disaster, or the occupants requiring evacuations due to a chemical, biological, or environmental threat. The Detention Center itself most certainly had its own plans in place, but the committee felt a multi-agency response plan would be a good investment.

  - Public notifications systems were discussed, and there was a recognized need for improvements in this area. "Reverse 911" systems however are extremely expensive and not likely to fall within reach of the County budget, and that grant funds would be required. Discussion then turned towards working to educate the public on notification systems already available to them such as the National Emergency Alert System, National Weather Service Weather Radio, free smart phone apps from NWS, Red Cross, and FEMA, and local text caster services provided by public schools and some local business.

    Storm sirens were discussed, as several representatives expressed concerns about the number of sirens and their placement in various communities around the county. The Committee determined the need for a county wide analysis of gaps in siren coverage. The City of Hamilton determined the need for a storm siren protocol in their community.

  - Talk of public notification segued into a discussion about public education. The School District representatives on the committee gave a brief overview of their preparedness programs and various planning and exercises they conduct each year, mostly geared towards tornado and fire drills and security threats such as an "active shooter". The

- School Districts present determined that they would begin participating in the "Great American Shake Out" earthquake drill, using materials provided by SEMA and FEMA.

  In improving their public education the schools determined that they would implement "The Pillowcase Project", sponsored by Disney, which is an hour long preparedness education program for children in grades 3 – 5, which teaches students about personal and family preparedness, local hazards, and basic coping skills. Red Cross volunteers lead students through a "learn, practice, share" framework to engage them in disaster preparedness. Upon completion, students receive a sturdy pillowcase in which to build their personal emergency supplies kit.

  Hamilton R-II School currently has a robust preparedness program, including buckets of emergency supplies kept in each class room. The district representative also indicated that the school expected to function as a shelter in the event of a major disaster in the City of Hamilton or nearby environs, and that the school was prepared to do that even if school was in session. However, the school has no detailed sheltering plan and could benefit from a shelter audit by the Red Cross and could seek funding for improvements to the campus with shelter activities in mind. In addition, the Hamilton R-II school does not at this time have a tornado safe room, and determined that incorporating plans for such a structure into their capital improvement plan would be wise, as the cost of building a safe room structure as part of the initial construction of a new building is far less expensive than retrofitting an existing building and the school does have plans for a multi-purpose

- Emergency shelters continued to be a topic of interest as discussion moved from schools the general public. Lack of readily available, organized and useful information on available shelters in the county was cited as an issue which could be remedied with the development of a county-wide shelter inventory - with this inventory, 911 dispatch (directly to callers or through emergency responders on scene) could advise individuals displaced by disaster of the closest available shelter. In addition, emergency management and incident commanders will have access to information detailing the locations, assets, and limitations of shelters as they relate to the needs imposed by a given situation. The committee determined that the best way to accomplish this would be for the County to:
  - Appoint a shelter coordinator
  - Work with representatives from each community and school district to develop a list of shelters:

    This list will contain, for example :
    - Shelter location
    - Contact Info
    - Access (Knox box?)
    - Facility Info – Does it have Showers, kitchen, segregated spaces, stored supplies
    - Power Capability – Is there a generator or hook-up for a portable generator

It was determined that to best facilitate the creation of this inventory that each community should appoint a local shelter coordinator who could work with the County Coordinator and local resources to create a local shelter plan. – It was noted that every designated shelter space did not need to be perfectly suited for sheltering at the onset – Sheltering plans can include actions such as pursuing funding (through fund-raising or seeking grants) to improve existing shelter areas that are less than ideal- funds and assistance may be sought for such items as electrical work to make a site able to seamlessly interface with a portable generator, obtaining an on-site generator, undertaking renovations and additions such as restrooms or showers stalls, and other actions which may be identified and incorporated into both the shelter plan and the Hazard Mitigation Plan.

The Red Cross was cited as a potential partner in this endeavor, as they will perform audits of shelters and help communities recognize what kind of improvements are most needed.

- **Overview of the kind of actions appropriate for inclusion in the plan update** - There was a brief review of the new SEMA/FEMA guidelines for actions in Hazard Mitigation Plan updates. A problem with many plans on a national level was that some of the proposed actions from older plans were not substantive proposals fundable under FEMA's mitigation grants programs. When action item narrative is similar to "the community should consider . . . ", "the town will encourage . . ." or "the city will continue to . . ." – these usually are not really actions within regulatory definitions. Nor are they fundable with hazard mitigation grants. ." In addition, substantive progress on these kinds of actions is not easily assessed. SEMA believes that the creation of substantive actions is key to the success of risk reduction efforts throughout the state. The 5-year plan update is an opportunity for each jurisdiction to adjust its actions to address current realities with concrete, measurable solutions.

- **Proposals for Plan Actions, open discussion** - Throughout the MPC consideration and discussion, emphasis was placed on the importance of a benefit-cost analysis in determining project priority. The Disaster Mitigation Act requires benefit-cost review as the primary method by which mitigation projects should be prioritized. The MPC decided to pursue implementation according to when and where damage occurs, available funding, political will, jurisdictional priority, and priorities identified in the Missouri State Hazard Mitigation Plan. The benefit/cost review at the planning stage primarily consisted of a qualitative analysis, and was not the detailed process required grant funding application. For each action, the plan sets forth a narrative describing the types of benefits that could be realized from action implementation. The cost was estimated as closely as possible, with further refinement to be supplied as project development occurs.

  FEMA's STAPLEE methodology was used to assess the costs and benefits, overall feasibility of mitigation actions, and other issues impacting project viability. During the prioritization process, the MPC used a worksheet as a guide to assign scores. The worksheets posed

questions based on the STAPLEE elements as well as the potential mitigation effectiveness of each action. Scores were based on the responses to the questions as follows:

Definitely yes = 3 points Maybe yes = 2 points Probably no = 1 Definitely no = 0

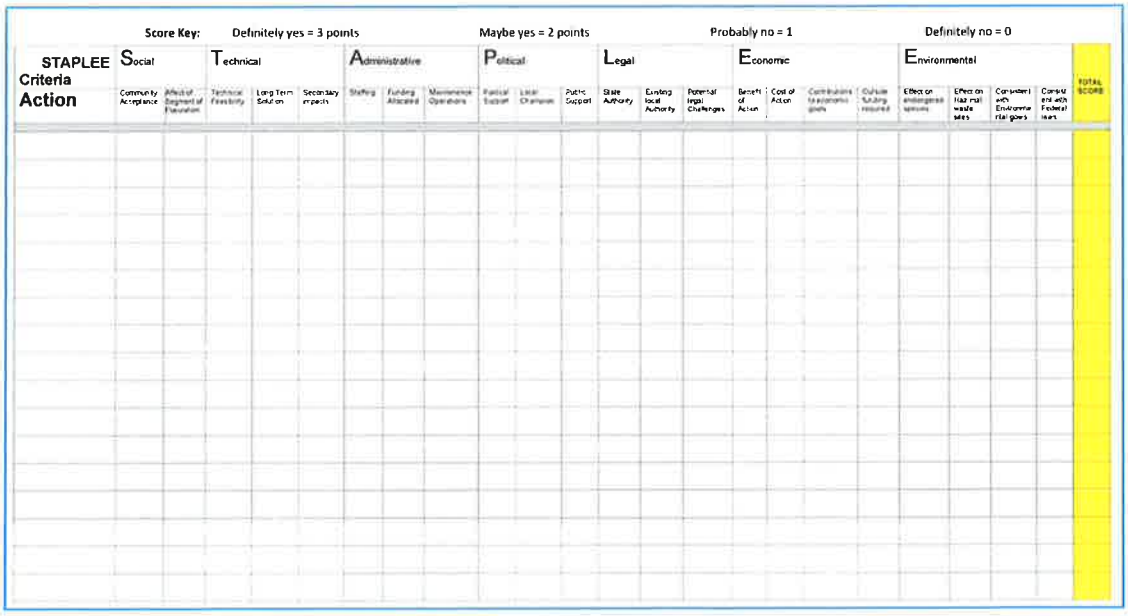
The following questions were asked for each proposed action.

S: Is the action socially acceptable?
T: Is the action technically feasible and potentially successful?
A: Does the jurisdiction have the administrative capability to successfully implement this action?
P: Is the action politically acceptable?
L: Does the jurisdiction have the legal authority to implement the action?
E: Is the action economically beneficial?
E: Will the project have an environmental impact that is either beneficial or neutral? (Score "3" if positive and "2" if neutral)

Will the implemented action result in lives saved? Will the implanted action result in a reduction of disaster damage?

A single form was used to guide group discussion on all existing and propose measures rather than having each committee member fill one out separately. The STAPLEE final score for each action, absent other considerations, such as a localized need for a project, determined the priority. Low priority action items were those that had a total score of between 0 and 24. Moderate priority actions were those scoring between 25 and 29. High priority actions scored 30 or above. A blank STAPLEE worksheet is shown below

The STAPLEE Worksheet



Score Key:	Definitely yes = 3 points					Maybe yes = 2 points						Probably no = 1						Definitely no = 0				
STAPLEE Criteria / Action	Social		Technical			Administrative			Political			Legal			Economic				Environmental				TOTAL SCORE
	Community Acceptance	Affect of Segment of Population	Technical Feasibility	Long Term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance Operations	Political Support	Local Champion	Public Support	State Authority	Existing local Authority	Potential legal Challenges	Benefit of Action	Cost of Action	Contributions to economic goals	Outside funding required	Effect on endangered species	Effect on Hazmat waste sites	Consistent with Environmental goals	Consistent with Federal laws	

Proposed Actions for the 2016 Update
of the Caldwell County Hazard Mitigation Plan

Action No:	**CCHM1601**
Description	**Develop a detailed county-wide inventory of emergency shelters**
Jurisdictions Selecting the Action:	Caldwell County
Responsible Agency/ Party:	Caldwell County Emergency Management
Partner Agencies	Red Cross
Mechanism of Implementation	Designation of a Shelter Coordinator
Problem(s) to be Mitigated:	Lack of readily available, organized and useful information on available shelters; With this inventory, 911 dispatch (directly to callers or through emergency responders on scene) could advise individuals displaced by disaster of the closest available shelter. In addition, emergency management and incident commanders will have access to information detailing the locations, assets, and limitations of shelters as they relate to the needs imposed by a given situation.
Process	• Appoint a shelter coordinator • Work with representatives from each community to develop a list of shelters: This list will contain, for example : ▪ Shelter location ▪ Contact Info ▪ Facility info including capacity and amenities (Showers, kitchen, segregated spaces, stored supplies) ▪ Whether the site has a generator or the capacity to interface with a portable generator
Applicable Goal(s)	Goal 5: Improve the efficiency, timing, and effectiveness of response and recovery efforts for disasters
Hazards Addressed:	All hazards
Estimated Cost:	$0
Potential Funding Sources	NA
Cost/Benefit Discussion:	Being a matter that could be adequately handled by volunteers, there is great benefit at no cost
Prioritization Discussion:	As such an inventory does not yet exist, this project was seen as having a high priority
Priority	High
Timeline for Implementation/Completion:	2017-2018
Status of Action:	Pending
Report of Progress:	Emergency Management will assess the progress of this project in July of 2017 and again at the first LEPC/EM meeting scheduled in 2018.

Action No:	**CCHM1602**
Description	**Develop a community shelter plan**
Jurisdictions Selecting the Action:	Caldwell County, City of Hamilton, City of Kingston, City of Polo, City of Braymer, City of Breckenridge
Responsible Agency/ Party:	City Council or appointed representative
Partners	Red Cross, Local Churches and Schools, Caldwell County Emergency Management
Mechanism of Implementation	Designation of a Municipal Shelter Coordinator who will develop an inventory of spaces available for use as emergency shelters and develop a simple set of standard operating guidelines and procedures for activating and operating those shelters
Problem(s) to be Mitigated:	Lack of pre-disaster organization of sheltering options; With this pre-disaster planning each jurisdiction will have multiple alternate shelters available and there will be an established protocol to put them into service. Their inclusion in the County-Wide shelter inventory will provide authorities important information on the locations, facilities, and limitations of shelters as they relate to the needs imposed by a given situation.
Process	• Appoint a shelter coordinator for the City • Work with representatives from Community groups such as local churches and schools to designate spaces suitable for emergency sheltering. • Work with the County Shelter Coordinator to create and maintain the County-Wide shelter inventory. The inventory of shelters will contain, at a minimum, the following info: ▪ Shelter location ▪ Contact Info ▪ Facility info including capacity and amenities (Showers, Kitchen, Segregated spaces, stored supplies) *Note: Every designated shelter space need not be perfectly suited for sheltering at the onset – The sheltering plan can include actions such as pursuing funding (through fund-raising or seeking grants) to improve existing shelter areas that are less than ideal- funds and assistance may be sought for such items as electrical work to make a site able to seamlessly interface with a portable generator, obtaining an on-site generator, undertaking renovations and additions such as restrooms or showers stalls, and other actions which may be identified and incorporated into both the shelter plan and the Hazard Mitigation Plan*
Applicable Goal(s)	Goal 5: Improve the efficiency, timing, and effectiveness of response and recovery efforts for disasters
Hazards Addressed:	All hazards
Estimated Cost:	$0
Potential Funding Sources	NA
Cost/Benefit Discussion:	Being a matter that could be adequately handled by volunteers or made part of an employee's existing duties, there is great benefit at no cost
Prioritization Discussion:	As there is no shelter inventory or any shelter plans in Caldwell County at the present time, this project was seen as having a high priority
Priority	High
Timeline for Implementation/Completion:	2017-2018
Status of Action:	Pending
Report of Progress:	Emergency Management will assess the progress of this project in July of 2017 and again at the first LEPC/EM meeting scheduled in 2018.

Action No:	**CCHM1603**
Description	**a. Develop a shelter plan** b. **Incorporate shelter improvements and a proposed storm shelter into existing Capital Improvement plans**
Jurisdictions Selecting the Action:	Hamilton R-II Schools
Responsible Agency/ Party:	Hamilton R-II Administration (Superintendent)
Partners	Red Cross, FEMA, Caldwell County Emergency Management
Mechanism of Implementation	
Problem(s) to be Mitigated:	a. While the school is currently one of the most likely sites for an emergency shelter in time of disaster, there is no established, well organized plan for how such operations would be conducted, especially if school were in session and the school wished to continue its normal academic operation while simultaneously operating as a shelter. b. The school currently has no tornado safe room.
Process	a. The school, with the assistance of the Red Cross (who can do a shelter assessment) and Caldwell County Emergency Management will develop a shelter plan addressing the use of its campus as an emergency shelter both when school is in session and when it is not. In addition, the school will include suggested improvements in its existing capital improvement plans. b. The school will amend its proposal for a multi-purpose building to make that structure a designated tornado safe room.
Applicable Goal(s)	a. Goal 5: Improve the efficiency, timing, and effectiveness of response and recovery efforts for disasters b. Goal 6: Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where feasible, cost effective, and environmentally sound.
Hazards Addressed:	a. All Hazards b. Tornado
Estimated Cost:	a. 0$ b. It is difficult to estimate the additional cost to a building which hasn't yet been designed. Depending on the size of the school and how a shelter is constructed, safe rooms can range in price from about $500,000 to $1 million.
Potential Funding Sources	Capital Improvement budget, Tax Levy, FEMA Grant Monies
Cost/Benefit Discussion:	The cost of a designated tornado safe room is extremely high, but upgrading a building already being constructed to be a storm resistant structure is much more cost effective.
Prioritization Discussion:	a. Having little cost associated with it; the committee saw no reason why this action shouldn't have a high priority. b. As this action involves capital improvement planning, which generally operates on a five-year cycle, this action was assigned a moderate priority
Priority	Moderate
Timeline for Implementation/Completion:	a. 2017 b. 2019
Status of Action:	a. Pending b. Pending
Report of Progress:	Caldwell County Emergency Management will assess this actions at the annual HMP committee meetings and again upon updating the HMP in 2021

Action No:	CCHM1604
Description	**County wide analysis of gaps in municipal siren coverage**
Jurisdictions Selecting the Action:	Caldwell County, City of Hamilton, City of Kingston, City of Polo, City of Braymer, City of Breckenridge
Responsible Agency/ Party:	Caldwell County Emergency Management
Partners	Caldwell County 911
Mechanism of Implementation	Public survey
Problem(s) to be Mitigated:	Gaps in siren coverage
Process	Public surveys and sound tests
Applicable Goal(s)	Goal 3: Educate and inform the public about the risks of hazards and the techniques available to reduce danger to life and property.
Hazards Addressed:	Tornado
Estimated Cost:	$0
Potential Funding Sources	NA
Cost/Benefit Discussion:	There is no cost, and the benefit is that the county would know where there are gaps in siren coverage and determine where new sirens should be placed in the event that funding for additional sirens can be obtained.
Prioritization Discussion:	The committee felt this was a good project but due to the nature of grant applications and funding cycles it was not something that would result in rapid improvements.
Priority	Moderate
Timeline for Implementation/Completion:	2019
Status of Action:	Pending
Report of Progress:	Caldwell County Emergency Management will assess this action at the annual HMP meeting

Action No:	CCHM1606
Description	**City of Hamilton Storm Siren Protocol**
Jurisdictions Selecting the Action:	City of Hamilton
Responsible Agency/ Party:	Hamilton City Administrator
Partners	Caldwell County 911, Emergency Management, NWS
Mechanism of Implementation	Written protocol for use by the appropriate city personnel (Dispatch)
Problem(s) to be Mitigated:	Confusion about when to sound the sirens and for how long
Process	Develop a written protocol with emergency management and NWS
Applicable Goal(s)	Goal 3: Educate and inform the public about the risks of hazards and the techniques available to reduce danger to life and property.
Hazards Addressed:	Tornado
Estimated Cost:	$0
Potential Funding Sources	NA
Cost/Benefit Discussion:	There is no cost, and the benefit is that the storm sirens would only be sounded at appropriate times and intervals
Prioritization Discussion:	The committee felt this was a good project which could be accomplished quickly
Priority	High
Timeline for Implementation/Completion:	2017
Status of Action:	Pending
Report of Progress:	Caldwell County Emergency Management will assess this action at the annual HMP meeting

Action No:	CCHM1607
Description	**Implementation of the Red Cross Pillowcase Project**
Jurisdictions Selecting the Action:	Hamilton R-II, Kingston 42
Responsible Agency/ Party:	School administration (Superintendent)
Partners	Red Cross, Caldwell County Emergency Management
Mechanism of Implementation	The Red Cross Pillowcase Project
Problem(s) to be Mitigated:	Lack of primary school education on disaster preparedness
Process	The Pillowcase Project, sponsored by Disney, is an hour long preparedness education program for children in grades 3 – 5, which teaches students about personal and family preparedness, local hazards, and basic coping skills. Red Cross volunteers lead students through a "learn, practice, share" framework to engage them in disaster preparedness. Upon completion, students receive a sturdy pillowcase in which to build their personal emergency supplies kit.
Applicable Goal(s)	Goal 3: Educate and inform the public about the risks of hazards and the techniques available to reduce danger to life and property.
Hazards Addressed:	All Natural Hazards
Estimated Cost:	$0
Potential Funding Sources	NA/ Red Cross
Cost/Benefit Discussion:	Because this action has no cost associated with it, it is 100% benefit
Prioritization Discussion:	The committee decided that this action should be implemented within the next school year and be repeated annually as long as the program is available
Priority	High
Timeline for Implementation/Completion:	2017
Status of Action:	Pending
Report of Progress:	Caldwell County Emergency Management will assess this action at the annual HMP meeting

Action No:	CCHM1608
Description	**Develop a system of public notification with protocols**
Jurisdictions Selecting the Action:	Caldwell County
Responsible Agency/ Party:	Caldwell County Emergency Management
Partners	Caldwell County 911
Mechanism of Implementation	Caldwell County 911 Dispatch
Problem(s) to be Mitigated:	Lack of a rapid, simple and effective way to rapidly inform the public of emergencies
Process	Do market research, make vendor contacts, get cost estimates, choose a method that's fiscally attainable
Applicable Goal(s)	Goal 3: Educate and inform the public about the risks of hazards and the techniques available to reduce danger to life and property.
Hazards Addressed:	All hazards
Estimated Cost:	Unknown at this time
Potential Funding Sources	Budget, grant funding
Cost/Benefit Discussion:	This cannot be determined until cost estimates are obtained
Prioritization Discussion:	This item was seen as a high priority
Priority	High
Timeline for Implementation/Completion:	2018
Status of Action:	Pending
Report of Progress:	Caldwell County Emergency Management will assess this action at the annual HMP meeting

Action No:	CCHM1609
Description	**Develop a Geographic Information System**
Jurisdictions Selecting the Action:	City of Hamilton
Responsible Agency/ Party:	City Manager, City of Hamilton
Partners	Green Hills Regional Planning Commission
Mechanism of Implementation	QGIS software and base data from the Missouri Spatial Data Information Service
Problem(s) to be Mitigated:	Lack of mapping capability in the City of Hamilton
Process	QGIS is robust GIS software available at no cost. The Missouri Spatial Data Information Service maintains a database of geographic information which can be used to create a base map which the city can use to develop its own datasets, such as utilities etc.
Applicable Goal(s)	Goal 1: Manage the development of land and buildings to minimize risk of loss due to natural hazards.
Hazards Addressed:	All Hazards
Estimated Cost:	$0
Potential Funding Sources	NA
Cost/Benefit Discussion:	Because this project has no cash outlay yet provides a valuable piece of information technology, it was found to have an excellent benefit to cost ratio
Prioritization Discussion:	Because the City of Hamilton has a current need to update its zoning map, this action was given a high priority
Priority	High
Timeline for Implementation/Completion:	2017
Status of Action:	Pending
Report of Progress:	Caldwell County Emergency Management will assess this action at the annual HMP meeting

Action No:	CCHM1610
Description	**Develop a unified County Response Plan for the Caldwell County Detention Center**
Jurisdictions Selecting the Action:	Caldwell County 911, Caldwell County Sheriff, City of Kingston
Responsible Agency/ Party:	Caldwell County Emergency Management
Partners	Missouri State Highway Patrol
Mechanism of Implementation	An annex to the Caldwell County Emergency Operations Plan
Problem(s) to be Mitigated:	Currently the Jail has a plan but no one else knows anything about it
Process	Emergency Management will put together a committee of agencies that may be required to respond to such an event and make sure the jail's emergency plan is disseminated to those agencies. Subsequent discussion may lead to the development of further plans by other agencies to augment or improve the existing plan
Applicable Goal(s)	Goal 5: Improve the efficiency, timing, and effectiveness of response and recovery efforts for natural hazards disasters.
Hazards Addressed:	All hazards
Estimated Cost:	$0
Potential Funding Sources	NA
Cost/Benefit Discussion:	The lack of cost means this action can only be beneficial
Prioritization Discussion:	The committee felt this action had a moderate priority
Priority	Moderate
Timeline for Implementation/Completion:	2018
Status of Action:	Pending
Report of Progress:	Caldwell County Emergency Management will assess this action at the annual HMP meeting

Action No:	**CCHM1611**
Description	**Develop a plan to prevent contamination of the future Otter Creek lake in the event of a Hazardous Materials Incident on that portion of Hwy 36 which is directly north and upstream of the lake**
Jurisdictions Selecting the Action:	Caldwell County
Responsible Agency/ Party:	Caldwell County Emergency Management
Partners	MoDOT, DNR, MERC,
Mechanism of Implementation	Incorporation into future land use plans
Problem(s) to be Mitigated:	Vulnerability of a public drinking water source to contamination associated with Hazmat incidents on Hwy 36, which is a major transportation corridor with high traffic volume.
Process	Emergency Management will put together a committee of stake holders, including MoDot, MoDNR, SEMA and MERC to develop a mitigation plan.
Applicable Goal(s)	Goal 1: Manage the development of land and buildings to minimize risk of loss due to natural hazards. Goal 6: Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where feasible, cost effective, and environmentally sound.
Hazards Addressed:	HAZMAT incident, Mass Transportation Incident
Estimated Cost:	$0
Potential Funding Sources	SEMA, MERC
Cost/Benefit Discussion:	Because there's little cost associated with planning and the process could result in beneficial mitigation, this action was found to be extremely beneficial
Prioritization Discussion:	Due to the fact that the planning and engineering phase for the proposed lake is still underway and from becoming a reality, the committee found this action to be somewhat less urgent that others
Priority	Low
Timeline for Implementation/Completion:	2020
Status of Action:	Pending
Report of Progress:	Caldwell County Emergency Management will assess the progress of this action at the annual HMP meeting

Action No:	CCHM1612
Description	**Develop a Pipeline Security Plan**
Jurisdictions Selecting the Action:	Caldwell County
Responsible Agency/ Party:	Caldwell County 911, Emergency Management
Partners	Pipeline company, representatives of local government and response agencies, Homeland Security/SEMA, MERC
Mechanism of Implementation	An annex to the Caldwell County Emergency Operations Plan
Problem(s) to be Mitigated:	Environmental and security risks which might result in a hazmat incident
Process	Emergency Management will put together a committee of stake holders to analyze potential security risks to the pipeline in the county and devise strategies to mitigate these risks
Applicable Goal(s)	Goal 1: Manage the development of land and buildings to minimize risk of loss due to natural hazards. Goal 6: Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where feasible, cost effective, and environmentally sound.
Hazards Addressed:	Hazmat, Terrorism
Estimated Cost:	$0
Potential Funding Sources	SEMA, MERC, Homeland Security
Cost/Benefit Discussion:	Because there's little cost associated with planning and the process could result in beneficial mitigation, this action was found to be extremely beneficial
Prioritization Discussion:	This action was felt to warrant immediate implementation
Priority	High
Timeline for Implementation/Completion:	2017
Status of Action:	Pending
Report of Progress:	Caldwell County Emergency Management will assess this action at the annual HMP meeting

Action No:	CCHM1613
Description	**Participate in the "Great American Shake Out" Earthquake Drill**
Jurisdictions Selecting the Action:	Hamilton R II, Kinston 42
Responsible Agency/ Party:	School District/Superintendent
Partners	FEMA/SEMA
Mechanism of Implementation	Incorporation into school activities
Problem(s) to be Mitigated:	Lack of awareness about earthquake hazards and how such an event may affect the region
Process	The Schools will incorporate an earthquake drill into a day with information and activities promoting awareness of seismic hazards and disaster preparedness
Applicable Goal(s)	Goal 3: Educate and inform the public about the risks of hazards and the techniques available to reduce danger to life and property.
Hazards Addressed:	Earthquake
Estimated Cost:	$0
Potential Funding Sources	NA
Cost/Benefit Discussion:	The lack of cost means this action can only be beneficial
Prioritization Discussion:	This action was felt to warrant immediate implementation
Priority	High
Timeline for Implementation/Completion:	2017
Status of Action:	Pending
Report of Progress:	Caldwell County Emergency Management will assess this action at the annual HMP meeting

3:00 **Meeting Adjourned** – the date, time, and place for Meeting #3 will be determined via Facebook survey

Caldwell County Hazard Mitigation Planning Committee Meeting #2: Sept. 19, 2016 Sign in sheet

Name	Title	Jurisdiction/Agency/ Organization	Email	Land-Line Phone	Mobile Number	Mobile Provider
Matt Wolle		GHRPC		( ) -	( ) -	
Donnie Cox	Commissioner	Caldwell County				
David Buttel	City of Kingston					
Lesley Schulte	Planner	Caldwell County Health Dept	—			
Andrea Hieronymus	KT Admin Asst	Kingston CD				
MATT SIEVERING	BRECKENRIDGE MAYOR	"				
MARTY Gray	911 Coord	Caldwell Co	Caldwell003@caldwellco.missouri.org			
Jesse Pemberton	Breckenridge Fire Chief		bfd202@hotmail.com		660-973-0029	Verizon
Bud Mooring	Commissioner	Caldwell Co	bud and kathy mo@gmail.com		816-583-8888	
Troy Todd	Superintendent	Hamilton R-III	816583-2134 todd@hamilton.k12.mo.us			
Jean VanIperen	City Adm	Hamilton	hamiltoncity@live.com			
Jerry Galloway	sheriff	Caldwell Co.		816-586-2751		

PUBLIC MEETING

The Caldwell County Hazard Mitigation Plan Update Committee Meeting (#2)

Monday, September 19th at 1:30 PM

(following the Caldwell Co. LEPC Meeting)

at the

Kingston Church of the Nazarene

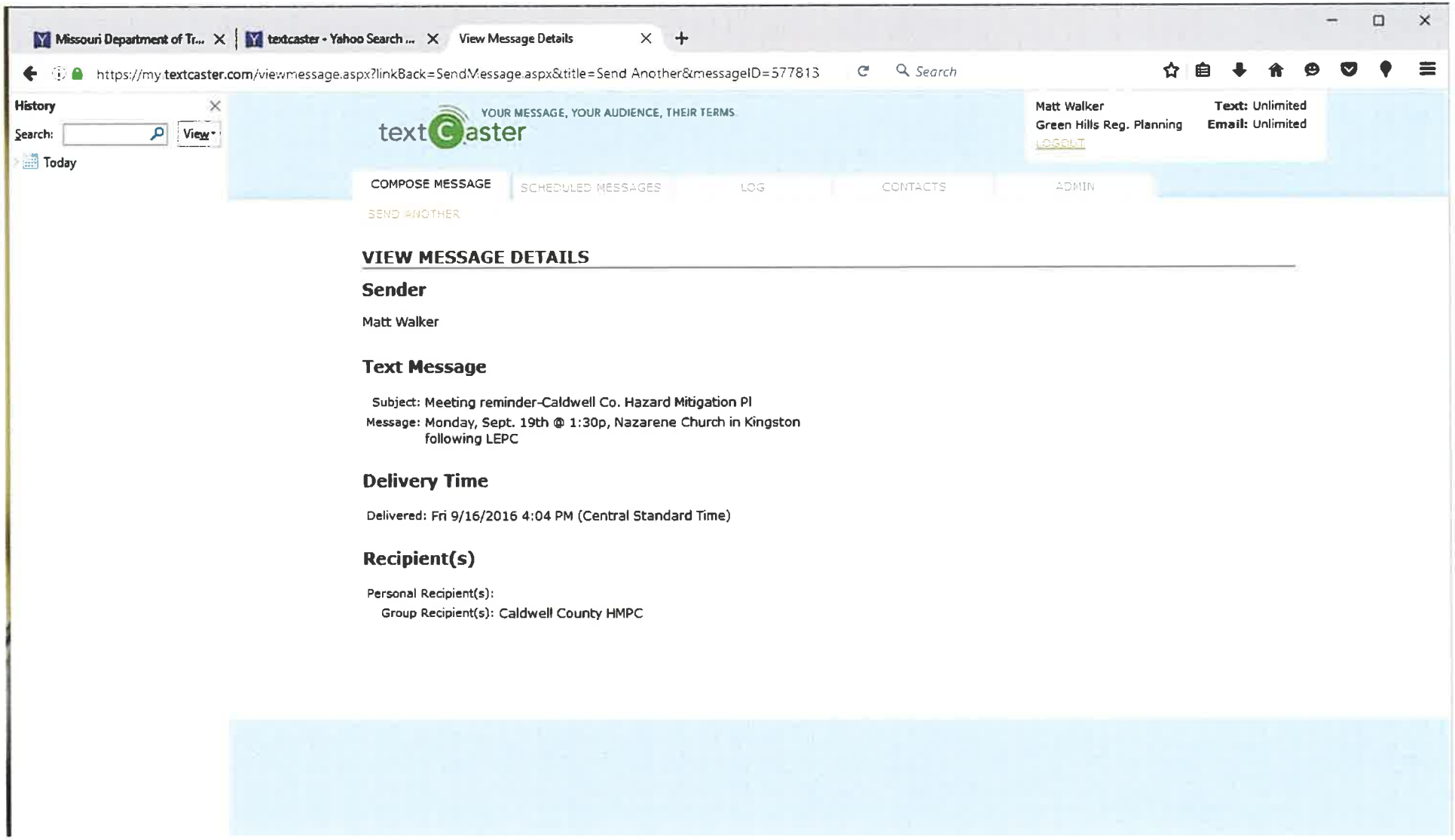
93 W Jackson St. Kingston, MO 64650

State, tribal, and local governments engage in hazard mitigation planning to identify risks and vulnerabilities associated with natural disasters, and develop long-term strategies for protecting people and property from future hazard events.

For more detailed information on Hazard Mitigation Planning, you may visit the Missouri State Emergency Management Agency's webpage on Hazard Mitigation: http://sema.dps.mo.gov/programs/mitigation_management.php.

Information on Caldwell County's planning efforts will be provided on the Caldwell County Mo Hazard Mitigation Planning Committee Facebook page https://www.facebook.com/search/top/?q=caldwell%20county%20mo%20hazard%20mitigation%20planning%20committee

THIS MEETING IS OPEN TO THE GENERAL PUBLIC. ANYONE WHO LIVES OR WORKS IN CALDWELL COUNTY IS A STAKEHOLDER IN THIS PROCESS AND IS WELCOME TO ATTEND THE MEETING AND GIVE INPUT TO THE HAZARD MITIGATION PLANNING PROCESS.


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textCaster
Matt Walker
Green Hills Reg. Planning
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Email: Unlimited
COMPOSE MESSAGE
SCHEDULED MESSAGES
LOG
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ADMIN
SEND ANOTHER
VIEW MESSAGE DETAILS
Sender
Matt Walker
Text Message
Subject: Meeting reminder-Caldwell Co. Hazard Mitigation Pl
Message: Monday, Sept. 19th @ 1:30p, Nazarene Church in Kingston following LEPC
Delivery Time
Delivered: Fri 9/16/2016 4:04 PM (Central Standard Time)
Recipient(s)
Personal Recipient(s):
Group Recipient(s): Caldwell County HMPC

Matt Walker

From: Matt Walker <mdw@ghrpc.org>
Sent: Friday, September 16, 2016 4:02 PM
To: 'countyclerk@centurytel.net'; 'tnmallory1@gmail.com'; 'admincb@greenhills.net'; 'bpmisel@greenhills.net'; 'hamiltoncity@live.com'; 'Richard Evans'; 'kingstoncityhall@centurytel.net'; 'cityhal@greenhills.net'; 'dregan@braymerc4.net'; 'BSKINNER@BRECKENRIDGER1.ORG'; 'mattrobinson@cameronschools.org'; 'BVASSMER@COWGILLR6.org'; 'fordt@hamilton.k12.mo.us'; 'andrea.hieronymus@kingston42.com'; 'dcox@greenhills.net'; 'bfd202@hotmail.com'; 'jessi@greenhills.net'; 'willburn@polo.k12.mo.us'; 'mcgraw@hamilton.k12.mo.us'; 'lesley.shulte@lpha.mo.gov'
Cc: 'jackie@ghrpc.org'
Subject: Meeting reminder - Caldwell County Hazard Mitgation Planning

The next Caldwell County Hazard Mitigation Meeting is scheduled for 1:30 PM on Monday, September 19th at the Church of the Nazarene in Kinston, immediately after the LEPC Meeting.

Please feel free to contact with any questions, comments, or concerns.

Matthew D. Walker
Special Projects Coordinator
Green Hills Regional Planning Commission
1104 Main St. | Trenton, MO. 64683
Phone (660) 359-5636 Ext. 22
Fax (660) 359-3096

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Caldwell County Mo Hazard Mitigation Planning

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Caldwell County Mo Hazard Mitigation Planning Committee
Just now ·

The next Caldwell County Hazard Mitigation Meeting is scheduled for 1:30 PM on Monday, September 19th at the Church of the Nazarene in Kinston, immediately after the LEPC Meeting.

Please feel free to contact with any questions, comments, or concerns.

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Caldwell County Mo Hazard Mitigation Planning Committee
June 10 ·

Greetings. This Facebook page has been created to facilitate planning efforts related to the 5-year update of the Caldwell County Hazard Mitigation Plan.

Both the Hazard Mitigation Committee members and the citizenry of Caldwell County are welcomed and encouraged to share their opinions and ideas as we carry out the 5-year update to the existing plan.

Progress reports on the plan and links to draft versions will be supplied here as they become available.

CALDWELL COUNTY
HAZARD MITIGATION PLANNING COMMITTEE

Meeting #2
Monday, September 19, 2016
1:30 PM
Church of the Nazarene
Kingston Mo.

AGENDA

I Introductions

II Quick overview of the Update Process – reminder of participation requirements

III Discussion of Mitigation Goals

IV Overview of Hazards, per Risk Analysis, open discussion

V Discussion of specific Vulnerabilities in Caldwell County, open discussion

VI Overview of the kind of actions appropriate for inclusion in the plan update.

VII Proposals for Plan Actions, open discussion

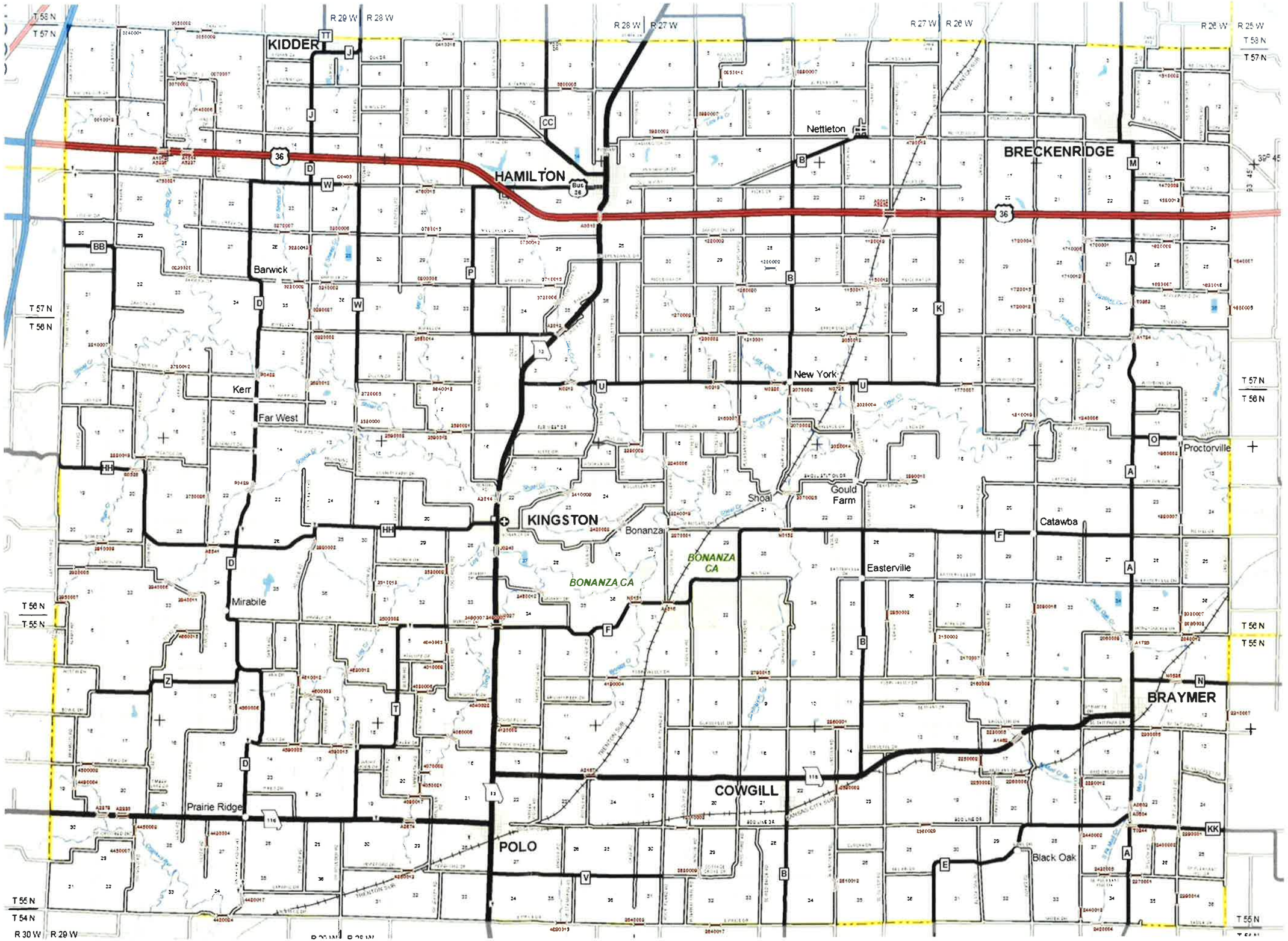
IX Set the time and place for Meeting #3 (sometime in mid-October).

HAZARD SUMMARY

Hazard	Likelihood of Occurrence	Possible Severity	Effects of the Hazard	Areas of Vulnerability
Dam Failure	Low	Low	Brief threat to life safety, traffic disruption	Hwy 36, south of the Hamilton City Lake Dam
Drought	Moderate	High	Damage to building foundations and buried utility infrastructure, Drinking water shortages, agricultural losses	Non-specific, Countywide
Earthquake	Moderate	Low	The most severe projections indicate that people will feel tremors, some sand and gravel stream banks will face in, unsecured items may fall off shelves, large furniture may tip over. Damage to structures will be minimal unless those buildings already had poor structural integrity, in which case the damage may be significant.	Areas with more structures (particularly old, dilapidated, multi-story structures) are more vulnerable.
Extreme Heat	Moderate	Low	Extreme heat events are fairly common and have a large area of effects, often covering entire States. While this does increase the incidence of heat-related illnesses, climate control, work safety standards, and EMS do much to mitigate these circumstances. Still, extreme heat is a serious hazard and may, in certain circumstances (such as a prolonged power outage) cause major issues.	Communities with larger vulnerable populations: Braymer, Hamilton, Cowgill
Fires (Wildland)	High	Moderate	Wildland fire can tie up Fire Protection personnel for prolonged periods of time, damage many acres of crop and woodland, and present secondary hazards by virtue of infrastructure that it may threaten, such as hazardous materials facilities or power stations.	Vulnerability is greatest where populated areas intersect with large amounts of vegetation. The Wildland/Urban Interface (WUI) map indicates that there are two such areas located near the communities of Hamilton and Kingston
Flooding (Flash/Riverine)	Flash:Moderate Riverine: Low	Low	Threat to life safety, traffic disruption	Low lying areas near streams are most vulnerable to flash flooding. One example is located on Hwy A just south of NE High Point Drive In addition, special floodplain hazard areas are located near the communities of
Thunderstorm (High Winds, Lightning, Hail)	Winds:High Hail: High Lightning: Low	Moderate	Lighting, high winds and hail can injure people and damage property.	Agricultural crops are most vulnerable to the impacts of thunderstorm damages.
Tornado	Low	High	Tornadoes can cause large scale death and destruction but in a relatively narrow geographic area, compared to hazards with broader impacts like flooding and ice storms	All areas are at an equal risk, but areas with higher population density and more structures are more vulnerable to negative impacts
Winter Weather (Snow, Ice, Severe Cold)	High	Low	Increased incidence of cold injuries, increased risk of trauma, travel disruption, power outages	Non-specific, Countywide
Attack (CBRN)	Low	High	Mass casualties, destruction of infrastructure	Non-specific, Countywide
Civil Disorder	~~Low~~ Perhaps Moderate/higher?	Moderate	Casualties, destruction of property, travel disruption, utility disruption	All areas are at an equal risk, but areas with higher population density and more structures are more vulnerable to negative impacts
Hazardous Materials Release	High	High	Threat to life safety, traffic disruption	All areas are at an equal risk, but major roads with high traffic volumes and with higher population density and more structures are more vulnerable to the negative impacts to life safety.
Mass Transportation Incident	High	High	Threat to life safety, traffic disruption	All roadways carry some risk, but areas with higher traffic volume are vulnerable to the negative impacts to life safety i.e. Hwy 36 and Hwy 13 specifically
Public Health/ Environmental Issues	Low	High	Public Health; A communicable disease outbreak can impacts ranging from increased sick leave and economic slowdown to mass casualties An Environmental issue can have similar affects, to the detriment of public health and damage to the natural resources on which agriculture, the County's largest economic sector, depends	Areas more vulnerable to public health issues include any institutional setting where people are housed closely in one location. Schools, hospitals, nursing homes, correctional facilities, etc. All areas or vulnerable to environmental issues
Special Events	High	High	An incident resulting from just about any of the hazards in this plan, occurring when and where a large number of people are congregated in one area could have devastating impacts.	Schools, Sporting facilities, parks, and fairgrounds are vulnerable areas.
Terrorism	Low	High	The effects of a terrorist attack will vary by method, whether it's conventional weapons and explosives, weapons of mass destruction, sabotage of industrial infrastructure, agro-terrorism, or even cyber-attack.	Non- specific, Countywide
Utility Failure	Moderate	High	Utility failures, particularly of the power grid, can disrupt communications and financial transactions, cause problems for people who depend on electronic devices for in-home medical care, increase vulnerability to heat and cold injury by disruption of climate control, and increase the likelihood of physical injuries (poor visibility)	Non- specific, Countywide
Electromagnetic Pulse	Low	High	The effects are the same as Utility failure, but on a much larger scale for a much longer period of time	Non- specific, Countywide

- Traffic - dangerous bldgs. - drug houses -

Caldwell County
Missouri
General Transportation
Map



FEMA's STAPLEE methodology was used to assess the costs and benefits, overall feasibility of mitigation actions, and other issues impacting project. During the prioritization process, the MPC used a worksheet as a guide to assign scores. The worksheets posed questions based on the STAPLEE elements as well as the potential mitigation effectiveness of each action. Scores were based on the responses to the questions as follows:

Definitely yes = 3 points Maybe yes = 2 points Probably no = 1 Definitely no = 0

The following questions were asked for each proposed action.

S: Is the action socially acceptable?
T: Is the action technically feasible and potentially successful?
A: Does the jurisdiction have the administrative capability to successfully implement this action?
P: Is the action politically acceptable?
L: Does the jurisdiction have the legal authority to implement the action?
E: Is the action economically beneficial?
E: Will the project have an environmental impact that is either beneficial or neutral? (Score "3" if positive and "2" if neutral)

Will the implemented action result in lives saved? Will the implanted action result in a reduction of disaster damage?

The final scores are listed below in the analysis of each action. The worksheet can be found in Appendix B with the documentation for meeting 2. A single form was used to guide group discussion on all existing and propose measures rather than having each committee member fill one out separately. The STAPLEE final score for each action, absent other considerations, such as a localized need for a project, determined the priority. Low priority action items were those that had a total score of between 0 and 24. Moderate priority actions were those scoring between 25 and 29. High priority actions scored 30 or above.

Score Key: Definitely yes = 3 points Maybe yes = 2 points Probably no = 1 Definitely no = 0

STAPLEE Criteria	Social		Technical			Administrative			Political			Legal			Economic				Environmental				TOTAL SCORE
Action	Community Acceptance	Affect of Segment of Population	Technical Feasibility	Long Term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance Operations	Political Support	Local Champion	Public Support	State Authority	Existing local Authority	Potential legal Challenges	Benefit of Action	Cost of Action	Contributions to economic goals	Outside funding required	Effect on endangered species	Effect on Haz-mat waste sites	Consistent with Environmental goals	Consistent with Federal laws	

CALDWELL COUNTY
HAZARD MITIGATION PLANNING COMMITTEE

Meeting #3
Monday, October 24 , 2016
1:00 PM
Church of the Nazarene, Kingston MO.

AGENDA

I Introductions New York Schl, Cowgil School

II Review and discussion of actions from the previous plan (listing included in packet)

III Overview and open discussion regarding the actions of the plan update (2016 plan update actions and time-line Included in the packet)

- Jurisdictions selecting actions
- Partner agencies
- Mechanism of implementation
- Time-lines
- Monitoring progress

IV Discussion of the plan maintenance process

- Responsibility for plan maintenance
- The maintenance schedule
- The maintenance process
- Incorporating plan maintenance into existing planning mechanisms
- Continued public involvement

V The resolution of adoption (sample in the packet)

- The necessity of adopting the plan via a resolution of adoption
- Review of the sample resolution
- Discussion about editing the resolution

VI Discussion of the projected first-draft submission to SEMA/FEMA in early November 2016

Table 4.1 Summary of Actions from the Previous Plan

Status: TO BE REMOVED POSSIBLY REMOVED COMPLETED (REMOVED)

Status	Action form previous plan
Done But not in such a way as to be measured	Review and amend existing local planning documents to be certain vulnerability and environmental suitability of lands for future development has been addressed.
Done But not in such a way as to be measured	Ascertain that local plans address the vulnerability of designated hazard areas and encourage open space planning to create amenities for recreation and conservation of fragile resources.
In progress, Measurable via GHRPC TAC	Seek funding sources and technical assistance for conducting a more detailed analysis of the flood plain hazard areas in the vicinity of the cities of Kingston and Braymer.
TO BE REMOVED	Consider large lot size restrictions within designated flood zones
Done Measureable via Floodplain Ordinance	Evaluate additional land use restrictions within designated flood plains such as; the prohibition of storage of buoyant or hazardous materials, restricted development of floodways, etc.
Done Measurable via floodplain manager	Train local flood plain managers through programs offered through the State by FEMA.
Done Access to print products and digital products online	Maintain a library of technical materials to support local flood plain management.
Done Measureable via Floodplain Ordinance	Adopt and enforce floodplain management requirements, particularly those relating to the regulation of new construction in designated floodplains.
Progress made but unfinished A list needs to be generated	Investigate the current state of suitable shelter in Caldwell County; particularly in vulnerable areas, such as mobile home communities.
Insufficient	Investigate the availability of funding to construct tornado safe rooms in vulnerable areas where no sufficient shelter currently exists within an acceptable distance
TO BE REMOVED	Encourage the inclusion of safe rooms in the construction of all new public buildings.
Done Measureable via Floodplain Ordinance	Provide technical assistance to owners of pre-FIRM buildings to advise them of available retrofitting techniques.
Done Measureable via Floodplain Ordinance	Continuing to participate in FEMA's flood insurance program, ensuring that people with property in the floodplain are made aware that their property is in the floodplain and that there is an insurance program.
Done Measureable via Floodplain Ordinance	Continue to require mandatory flood-proofing of those buildings constructed in the floodplain after the enactment of regulations.
TO BE REMOVED	Take the appropriate steps to facilitate the elevation or relocation of structures which suffer repetitive losses despite flood proofing.
Incomplete	Use local libraries as a resource for distributing free information about hazards and hazard mitigation to interested parties.
Done Access to print products and digital products online	Obtain free copies of the latest FEMA flood maps and keep them on file in the courthouse for viewing and copying by any interested party.
TO BE REMOVED	Continue to support the legal requirement of the disclosure by real estate sellers of the presence of floodplains or other hazard areas to potential buyers.
Insufficient Detail Requires definitive items that can be measured	Support outreach to and education of the public regarding natural hazards and mitigation strategies via such efforts as carried out by the county LEPC (Local Emergency Planning Committee)
TO BE REMOVED	Continue to support river/stream corridor restoration by observing "best management practices" prescribed by the Missouri Department of Conservation for construction projects in or near streams and rivers .
TO BE REMOVED	Support the individual communities in maintaining existing storm warning systems as well those communities without who are seeking funding for storm sirens.
TO BE REMOVED	Continue to encourage the ownership and use of NOAA Radios. In the past, the LEPC has purchased such radios and given them to schools and daycares. Similar programs may be undertaken in the future; efforts to foster public knowledge of these radios and their availability are also included in this action.
TO BE REMOVED	Continue Disaster Response planning as currently undertaken by the county LEPC.
Progress made but further effort is required	Undertake a preliminary evaluation of existing facilities evacuation planning in the county. Following the findings of that evaluation, the county may create an addendum to their existing Emergency Response Plan regarding facilities evacuation plans.
Done Measurable by review of the EOP	Review the existing emergency response plan with health and safety maintenance planning in mind. Dependent on this review, the LEPC may make additions or changes to the existing plan.
TO BE REMOVED	Support School Districts in annual assessments and updates of their all-hazards plan
TO BE REMOVED	Individual communities with adequate existing storm water drainage systems will continue to maintain them.
Incomplete. There is currently no way to measure this action	Communities with no existing storm water drainage systems or systems that are inadequate will investigate funding resources and options to pursue the construction of such.
In progress, Measurable via GHRPC TAC	The County will work with individual communities, land owners, and State and Federal agencies to maintain existing flood control and drainage systems which protect large areas of land and substantial portions of the Transportation system, and seek funding assistance to design and implement flood control and drainage structures where a need for such has been demonstrated.

2016 updated strategy

Action No:	**CCHM1601**
Description	**Develop a detailed county-wide inventory of emergency shelters**
Jurisdictions Selecting the Action:	Caldwell County
Responsible Agency/ Party:	Caldwell County Emergency Management
Partner Agencies	Red Cross
Mechanism of Implementation	Designation of a Shelter Coordinator
Problem(s) to be Mitigated:	Lack of readily available, organized and useful information on available shelters; With this inventory, 911 dispatch (directly to callers or through emergency responders on scene) could advise individuals displaced by disaster of the closest available shelter. In addition, emergency management and incident commanders will have access to information detailing the locations, assets, and limitations of shelters as they relate to the needs imposed by a given situation.
Process	• Appoint a shelter coordinator • Work with representatives from each community to develop a list of shelters: This list will contain, for example : ▪ Shelter location ▪ Contact Info ▪ Facility info including capacity and amenities (Showers, kitchen, segregated spaces, stored supplies) ▪ Whether the site has a generator or the capacity to interface with a portable generator
Applicable Goal(s)	Goal 5: Improve the efficiency, timing, and effectiveness of response and recovery efforts for disasters
Hazards Addressed:	All hazards
Estimated Cost:	$0
Potential Funding Sources	NA
Cost/Benefit Discussion:	Being a matter that could be adequately handled by volunteers, there is great benefit at no cost
Prioritization Discussion:	As such an inventory does not yet exist, this project was seen as having a high priority
Priority	High
Timeline for Implementation/Completion:	2017-2018
Status of Action:	Pending
Report of Progress:	Emergency Management will assess the progress of this project in July of 2017 and again at the first LEPC/EM meeting scheduled in 2018.

Action No:	**CCHM1602**
Description	**Develop a community shelter plan**
Jurisdictions Selecting the Action:	Caldwell County, City of Hamilton, City of Kingston, City of Polo, City of Braymer, City of Breckenridge
Responsible Agency/ Party:	City Council or appointed representative
Partners	Red Cross, Local Churches and Schools, Caldwell County Emergency Management
Mechanism of Implementation	Designation of a Municipal Shelter Coordinator who will develop an inventory of spaces available for use as emergency shelters and develop a simple set of standard operating guidelines and procedures for activating and operating those shelters
Problem(s) to be Mitigated:	Lack of pre-disaster organization of sheltering options; With this pre-disaster planning each jurisdiction will have multiple alternate shelters available and there will be an established protocol to put them into service. Their inclusion in the County-Wide shelter inventory will provide authorities important information on the locations, facilities, and limitations of shelters as they relate to the needs imposed by a given situation.
Process	• Appoint a shelter coordinator for the City • Work with representatives from Community groups such as local churches and schools to designate spaces suitable for emergency sheltering. • Work with the County Shelter Coordinator to create and maintain the County-Wide shelter inventory. The inventory of shelters will contain, at a minimum, the following info: ▪ Shelter location ▪ Contact Info ▪ Facility info including capacity and amenities (Showers, Kitchen, Segregated spaces, stored supplies) *Note: Every designated shelter space need not be perfectly suited for sheltering at the onset – The sheltering plan can include actions such as pursuing funding (through fund-raising or seeking grants) to improve existing shelter areas that are less than ideal- funds and assistance may be sought for such items as electrical work to make a site able to seamlessly interface with a portable generator, obtaining an on-site generator, undertaking renovations and additions such as restrooms or showers stalls, and other actions which may be identified and incorporated into both the shelter plan and the Hazard Mitigation Plan*
Applicable Goal(s)	Goal 5: Improve the efficiency, timing, and effectiveness of response and recovery efforts for disasters
Hazards Addressed:	All hazards
Estimated Cost:	$0
Potential Funding Sources	NA
Cost/Benefit Discussion:	Being a matter that could be adequately handled by volunteers or made part of an employee's existing duties, there is great benefit at no cost
Prioritization Discussion:	As there is no shelter inventory or any shelter plans in Caldwell County at the present time, this project was seen as having a high priority
Priority	High
Timeline for Implementation/Completion:	2017-2018
Status of Action:	Pending
Report of Progress:	Emergency Management will assess the progress of this project in July of 2017 and again at the first LEPC/EM meeting scheduled in 2018.

Action No:	CCHM1603
Description	**a. Develop a shelter plan** **b. Incorporate shelter improvements and a proposed storm shelter into existing Capital Improvement plans**
Jurisdictions Selecting the Action:	Hamilton R-II Schools
Responsible Agency/ Party:	Hamilton R-II Administration (Superintendent)
Partners	Red Cross, FEMA, Caldwell County Emergency Management
Mechanism of Implementation	
Problem(s) to be Mitigated:	a. While the school is currently one of the most likely sites for an emergency shelter in time of disaster, there is no established, well organized plan for how such operations would be conducted, especially if school were in session and the school wished to continue its normal academic operation while simultaneously operating as a shelter. b. The school currently has no tornado safe room.
Process	a. The school, with the assistance of the Red Cross (who can do a shelter assessment) and Caldwell County Emergency Management will develop a shelter plan addressing the use of its campus as an emergency shelter both when school is in session and when it is not. In addition, the school will include suggested improvements in its existing capital improvement plans. b. The school will amend its proposal for a multi-purpose building to make that structure a designated tornado safe room.
Applicable Goal(s)	a. Goal 5: Improve the efficiency, timing, and effectiveness of response and recovery efforts for disasters b. Goal 6: Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where feasible, cost effective, and environmentally sound.
Hazards Addressed:	a. All Hazards b. Tornado
Estimated Cost:	a. 0$ b. It is difficult to estimate the additional cost to a building which hasn't yet been designed. Depending on the size of the school and how a shelter is constructed, safe rooms can range in price from about $500,000 to $1 million.
Potential Funding Sources	Capital Improvement budget, Tax Levy, FEMA Grant Monies
Cost/Benefit Discussion:	The cost of a designated tornado safe room is extremely high, but upgrading a building already being constructed to be a storm resistant structure is much more cost effective.
Prioritization Discussion:	a. Having little cost associated with it; the committee saw no reason why this action shouldn't have a high priority. b. As this action involves capital improvement planning, which generally operates on a five-year cycle, this action was assigned a moderate priority
Priority	Moderate
Timeline for Implementation/Completion:	a. 2017 b. 2019
Status of Action:	a. Pending b. Pending
Report of Progress:	Caldwell County Emergency Management will assess this actions at the annual HMP committee meetings and again upon updating the HMP in 2021

Action No:	CCHM1604
Description	**County wide analysis of gaps in municipal siren coverage**
Jurisdictions Selecting the Action:	Caldwell County, City of Hamilton, City of Kingston, City of Polo, City of Braymer, City of Breckenridge
Responsible Agency/ Party:	Caldwell County Emergency Management
Partners	Caldwell County 911
Mechanism of Implementation	Public survey
Problem(s) to be Mitigated:	Gaps in siren coverage
Process	Public surveys and sound tests
Applicable Goal(s)	Goal 3: Educate and inform the public about the risks of hazards and the techniques available to reduce danger to life and property.
Hazards Addressed:	Tornado
Estimated Cost:	$0
Potential Funding Sources	NA
Cost/Benefit Discussion:	There is no cost, and the benefit is that the county would know where there are gaps in siren coverage and determine where new sirens should be placed in the event that funding for additional sirens can be obtained.
Prioritization Discussion:	The committee felt this was a good project but due to the nature of grant applications and funding cycles it was not something that would result in rapid improvements.
Priority	Moderate
Timeline for Implementation/Completion:	2019
Status of Action:	Pending
Report of Progress:	Caldwell County Emergency Management will assess this action at the annual HMP meeting

Action No:	CCHM1605
Description	**City of Hamilton Storm Siren Protocol**
Jurisdictions Selecting the Action:	City of Hamilton
Responsible Agency/ Party:	Hamilton City Administrator
Partners	Caldwell County 911, Emergency Management, NWS
Mechanism of Implementation	Written protocol for use by the appropriate city personnel (Dispatch)
Problem(s) to be Mitigated:	Confusion about when to sound the sirens and for how long
Process	Develop a written protocol with emergency management and NWS
Applicable Goal(s)	Goal 3: Educate and inform the public about the risks of hazards and the techniques available to reduce danger to life and property.
Hazards Addressed:	Tornado
Estimated Cost:	$0
Potential Funding Sources	NA
Cost/Benefit Discussion:	There is no cost, and the benefit is that the storm sirens would only be sounded at appropriate times and intervals
Prioritization Discussion:	The committee felt this was a good project which could be accomplished quickly
Priority	High
Timeline for Implementation/Completion:	2017
Status of Action:	Pending
Report of Progress:	Caldwell County Emergency Management will assess this action at the annual HMP meeting

Action No:	CCHM1606
Description	**Implementation of the Red Cross Pillowcase Project**
Jurisdictions Selecting the Action:	Hamilton R-II, Kingston 42 all school district
Responsible Agency/ Party:	School administration (Superintendent)
Partners	Red Cross, Caldwell County Emergency Management
Mechanism of Implementation	The Red Cross Pillowcase Project
Problem(s) to be Mitigated:	Lack of primary school education on disaster preparedness
Process	The Pillowcase Project, sponsored by Disney, is an hour long preparedness education program for children in grades 3 – 5, which teaches students about personal and family preparedness, local hazards, and basic coping skills. Red Cross volunteers lead students through a "learn, practice, share" framework to engage them in disaster preparedness. Upon completion, students receive a sturdy pillowcase in which to build their personal emergency supplies kit.
Applicable Goal(s)	Goal 3: Educate and inform the public about the risks of hazards and the techniques available to reduce danger to life and property.
Hazards Addressed:	All Natural Hazards
Estimated Cost:	$0
Potential Funding Sources	NA/ Red Cross
Cost/Benefit Discussion:	Because this action has no cost associated with it, it is 100% benefit
Prioritization Discussion:	The committee decided that this action should be implemented within the next school year and be repeated annually as long as the program is available
Priority	High
Timeline for Implementation/Completion:	2017
Status of Action:	Pending
Report of Progress:	Caldwell County Emergency Management will assess this action at the annual HMP meeting

Get Ralph's content

Action No:	CCHM1607
Description	**Develop a system of public notification with protocols**
Jurisdictions Selecting the Action:	Caldwell County
Responsible Agency/ Party:	Caldwell County Emergency Management
Partners	Caldwell County 911
Mechanism of Implementation	Caldwell County 911 Dispatch
Problem(s) to be Mitigated:	Lack of a rapid, simple and effective way to rapidly inform the public of emergencies
Process	Do market research, make vendor contacts, get cost estimates, choose a method that's fiscally attainable
Applicable Goal(s)	Goal 3: Educate and inform the public about the risks of hazards and the techniques available to reduce danger to life and property.
Hazards Addressed:	All hazards
Estimated Cost:	Unknown at this time
Potential Funding Sources	Budget, grant funding
Cost/Benefit Discussion:	This cannot be determined until cost estimates are obtained
Prioritization Discussion:	This item was seen as a high priority
Priority	High
Timeline for Implementation/Completion:	2018
Status of Action:	Pending
Report of Progress:	Caldwell County Emergency Management will assess this action at the annual HMP meeting

Caldwell County 5-Year Plan Update (2016-2020): Summary and Timeline								
ID No.	Action	Jurisdiction(s)	Priority	Timeline				
				2017	2018	2019	2020	2021
CCHM1601	Develop a detailed county-wide inventory of emergency shelters	Caldwell County	High					
CCHM1602	Develop Community Shelter Plans	City of Hamilton, City of Kingston, City of Polo, City of Braymer, City of Breckenridge	High					
CCHM1603	a. Develop a Shelter Plan b. Incorporate shelter improvements and a proposed storm shelter into existing capital improvement plans	Hamilton R-II School District	Moderate					
CCHM1604	Conduct a County-wide analysis of gaps in municipal siren coverage	City of Hamilton, City of Kingston, City of Polo, City of Braymer, City of Breckenridge	Moderate					
CCHM1506	Develop a Storm-Siren Protocol	City of Hamilton	High					
CCHM1607	Implement the Red-Cross "Pillowcase Project"	Hamilton R-II School District, Kinston 42 School District	High					
CCHM1608	Develop a system of public notification with protocols	Caldwell County (911)	High					
CCHM1609	Develop a geographic information system	City of Hamilton	Moderate					
CCHM1610	Develop a unified County Response Plan for the Caldwell County Detention Center	Caldwell County 911, Caldwell County Sherriff, City of Kingston	Moderate					
CCHM1611	Develop a plan to mitigate potential contamination of the proposed Otter Creek lake by hazmat incidents on Hwy 36	Caldwell County	Low					
CCHM1612	Develop a pipeline security plan	Caldwell County	High					
CCHM1512	Participate in the "Great American Shake Out" Earthquake Drill	Hamilton R-II School District, Kingston 42 School District	High					

5 PLAN MAINTENANCE PROCESS

5 PLAN MAINTENANCE PROCESS 1
5.1 Monitoring, Evaluating, and Updating the Plan 1
5.1.1 Responsibility for Plan Maintenance 1
5.1.2 Plan Maintenance Schedule 1
5.1.3 Plan Maintenance Process 2
5.2 Incorporation into Existing Planning Mechanisms 3
5.3 Continued Public Involvement 3

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

5.1.1 Responsibility for Plan Maintenance

The Caldwell County Hazard Mitigation Committee is not a standing committee, and therefore responsibility for maintenance of the plan actions is delegated to individuals or entities as indicated in section 4 of this document. These entities are responsible for seeing that the actions which they have put in the plan are eventually implemented, if possible. These individuals or entities (or an appointed representative thereof) will meet annually as a "plan maintenance committee" with the Caldwell County Commission to evaluate the implementation of various actions within their jurisdiction. They will also meet after any major disaster event. These individuals will maintain vigilant monitoring of multi-objective, cost-share, and other funding opportunities to help their community or school district implement the plan's recommended actions for which no current funding exists, and keep the concept of mitigation in the forefront of decision making by identifying plan recommendations when other goals, plans, and activities overlap, influence, or directly affect increased vulnerability to disasters.

Like the planning committee, the maintenance committee is an advisory body and can only make recommendations to county, city, town, or district elected officials. Its primary duty is to see the plan successfully carried out and to report to the community governing boards and the public on the status of plan implementation and mitigation opportunities.

5.1.2 Plan Maintenance Schedule

The Maintenance Committee agrees to meet annually (On the Second Tuesday in May) as well as after any state or federally declared hazard event (as appropriate) to monitor progress and update the mitigation strategy. The Caldwell County Commission and/or County Emergency Management

Director will be responsible for initiating the plan reviews and will invite members of the maintenance committee (or other designated responsible entity) to the meeting.

In coordination with all participating jurisdictions, a five-year written update of the plan will be submitted to the Missouri State Emergency Management Agency (SEMA) and FEMA Region VII per Requirement §201.6(c)(4)(i) of the Disaster Mitigation Act of 2000, unless disaster or other circumstances (e.g., changing regulations) require a change to this schedule.

5.1.3 Plan Maintenance Process

Progress on the proposed actions can be monitored by evaluating changes in vulnerabilities identified in the plan.

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
- Incorporation of ideas for new actions and changes in action prioritization.

In order to best evaluate any changes in vulnerability as a result of plan implementation, the participating jurisdictions will adopt the following process:

- Each proposed action in the plan identified an individual, office, or agency responsible for action implementation. This entity will track and report on an annual basis to the jurisdictional representative (or designated responsible entity) 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 representative (or designated responsible entity) 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 maintenance committee deems appropriate and necessary. Changes will be approved by the County Commission and the governing boards of the other participating jurisdictions.

5.2 Incorporation into Existing Planning Mechanisms

Participating jurisdictions that have the capability will incorporate the relevant mitigation actions into their existing plans and/or programs. Those existing plans and programs are discussed in sections 2 and 3 of this plan, generally limited to

- Ordinances of participating jurisdictions;
- Caldwell County Emergency Operations Plan;
- Capital Improvement Plans and Budgets;
- School and Special District Plans and Budgets

The Maintenance Committee members will be responsible for insuring that the actions of the mitigation plan are incorporated into other planning frameworks in their individual jurisdictions, as appropriate. Conversely, those members will be responsible for integrating and incorporating pertinent information from other planning mechanisms in their jurisdiction into the Caldwell County hazard mitigation plan as warranted during the annual review and five year update processes.

Additionally, after the annual review of the Hazard Mitigation Plan, the Caldwell County Commission (and/or Emergency Management Director) will provide the updated Mitigation Strategy with current status of each mitigation action to all Mayors, City Clerks, and School District Superintendents of the participating jurisdictions.

5.3 Continued Public Involvement

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 Caldwell County Hazard Mitigation Planning Committee Facebook page following each annual review of the mitigation plan. When the Committee 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 Committee 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.

Sample Resolution of Adoption - Instructions

This is a template for a resolution of adoption, which is how your jurisdiction adopts the County Hazard Mitigation Plan in order to be covered beneath it for funding purposes. If there is no resolution of adoption from your jurisdiction in the plan, your jurisdiction will not be covered.

While the narrative of the resolution itself should appear in your resolution precisely as it does in the sample, other elements of the resolution, shown as **Green Text** – can be altered to follow your established local practices for drafting resolutions.

Red or **purple** text in the sample indicates narrative that must be replaced with information specific to your jurisdiction.

Red indicates a space where the name of your jurisdiction must be placed, for instance "The City of Breckenridge" or "The Hamilton R-II School District".

The **Purple** text indicates the space where you should cite whatever State or local statute, policy, or other rule that dictates how your jurisdiction creates a resolution.

If you have any questions about the resolution, contact me by phone or email:

Matt Walker
mdw@ghrpc.org
660-359-5636 Ext. 22

LOCAL GOVERNING BODY/SCHOOL DISTRICT, Missouri

RESOLUTION NO. ----------

A RESOLUTION OF THE (*LOCAL GOVERNING BODY /SCHOOL DISTRICT*) ADOPTING THE CALDWELL COUNTY ALL-HAZARD MITIGATION PLAN (UPDATED 2016)

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-hazard mitigation plan, hereby known as the *Caldwell County All-Hazard Mitigation Plan (Updated 2016),* 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/ school district*** recognizes that land use policies have a major impact on whether people and property are exposed to natural hazards, the (*local governing body*) 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 BODY/SCHOOL DISTRICT,*** in the State of Missouri, that In accordance with ***local rule for adopting resolutions*** the ***local governing body/school district*** adopts the 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: _____

Caldw County Hazard Mitigation Planning Com ittee **Meeting**

Sign-in **October 24, 2016**

OPTIONAL TEXT CASTER SIGN UP (For those who haven't previously signed up)

Name	Title	Jurisdiction/Agency/ Organization	Email	Land-Line Phone	Mobile Number	Mobile Provider
Debbie Ellis	Supt	New York	nyr4@centurytel-net	(816)583-2563	(660)359-1707	Verizon
Betty Vassmer	Supt	Cowgill Elem	bvassmer@cowgill.k5	660 255-4415	660 973-6432	Verizon
[illegible]	Supt	Mirabile	troy stemberger@gmail.com	816-586-4129	660-247-3179	AT+T

APPENDIX C

Signed Resolutions of Adoption

A RESOLUTION OF THE (Board of Education/Braymer C-4 School District) ADOPTING THE CALDWELL COUNTY ALL-HAZARD MITIGATION PLAN (UPDATED 2016)

WHEREAS the(Board of Education/Braymer C-4 School District) recognizes the threat that natural hazards pose to people and property within the(Board of Education/Braymer C-4 School District) and

WHEREAS the (Board of Education/Braymer C-4 School District) has participated in the preparation of a multi- hazard mitigation plan, hereby known as the *Caldwell County All-Hazard Mitigation Plan (Updated 2016),* 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(Board of Education/Braymer C-4 School District) from the impacts of future hazards and disasters; and

WHEREAS the (Board of Education/Braymer C-4 School District) recognizes that land use policies have a major impact on whether people and property are exposed to natural hazards, the (Board of Education/Braymer C-4 School District) will endeavor to integrate the Plan into the comprehensive planning process and

WHEREAS adoption by the (Board of Education/Braymer C-4 School District) demonstrates their commitment to hazard mitigation and achieving the goals outlined in the *Plan*

NOW THEREFORE, BE IT RESOLVED BY BOARD OF EDUCATION/BRAYMER C-4 SCHOOL DISTRICT, in the State of Missouri, that In accordance with Missouri Consultants for Education/Board Policy 0510 the (Board of Education/Braymer C-4 School District) adopts the Plan.

ADOPTED by a vote of 5 in favor and 0 against, and 0 abstaining,

this 14th day of November, 2016

By (Sig): _____

Print name: Larry Shaw Board President

ATTEST:

By (Sig.): _____

Print name: Vickie Davidson Board Secretary

APPROVED AS TO FORM:

By (Sig.): _____

Print name: _____

RESOLUTION

The Breckenridge R-I School District of Breckenridge, Missouri

A RESOLUTION OF THE *Breckenridge R-I Boards of Education* ADOPTING THE CALDWELL COUNTY ALL-HAZARD MITIGATION PLAN (UPDATED 2016)

WHEREAS the *Breckenridge R-I Board of Education* recognizes the threat that natural hazards pose to people and property within the (local governing body/school district); and

WHEREAS the *Breckenridge R-I Board of Education* has participated in the preparation of a multi- hazard mitigation plan, hereby known as the *Caldwell County All-Hazard Mitigation Plan (Updated 2016),* 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 ***Breckenridge R-I School District*** from the impacts of future hazards and disasters; and

WHEREAS the recognizes that land use policies have a major impact on whether people and property are exposed to natural hazards, the *Breckenridge R-I Board of Education* (*local governing body*) will endeavor to integrate the Plan into the comprehensive planning process and

WHEREAS adoption by the *Breckenridge R-I Board of Education* demonstrates their commitment to hazard mitigation and achieving the goals outlined in the *Plan*

NOW THEREFORE, BE IT RESOLVED BY THE *Breckenridge R-I Board of Education* , in the State of Missouri, that In accordance with *Breckenridge R-I Board of Education* Policy the *Breckenridge R-I Board of Education* adopts the Plan.

ADOPTED by a vote of 6 in favor and Ø against, and Ø abstaining,

this 14TH day of November , 2016

By (Sig): Terri Adams

Print name: Terri Adams

ATTEST:

By (Sig.): Rosemary A Sayers

Print name: Rosemary A. Sayers

APPROVED AS TO FORM:

By (Sig.): Lori Alexander Breckenridge R-I School District

Print name: Lori Alexander

CITY OF BRAYMER, MISSOURI

RESOLUTION NO. 2017.04.

A RESOLUTION OF THE CITY OF BRAYMER, MO.ADOPTING THE CALDWELL COUNTY ALL-HAZARD MITIGATION PLAN (UPDATED 2016)

WHEREAS the City of Braymer recognizes the threat that natural hazards pose to people and property within the City of Braymer; and

WHEREAS the CITY OF BRAYMER has participated in the preparation of a multi-hazard mitigation plan, hereby known as the *Caldwell County All-Hazard mitigation Plan (Updated 2016),* 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 City of Braymer from the impacts of future hazards and disasters; and

WHEREAS the City of Braymer recognizes that land use policies have a major impact on whether people and property are exposed to natural hazards, the City of Braymer will endeavor to integrate the Plan into the comprehensive planning process and

WHEREAS adoption by the City of Braymer demonstrates their commitment to hazard mitigation and achieving the goals outlined in the Plan

NOW THEREFORE, BE IT RESOLVED BY THE CITY OF BRAYMER, in the State of Missouri, that In accordance with the resolution no. 2017-04 the City of Braymer adopts the Plan.

Adopted by a vote of 4 in favor and 0 against, and 0 abstaining,

This 11th day of January, 2017

Mayor _____

ATTEST: _____

City of Hamilton, Missouri

RESOLUTION NO. R-2016-3

A RESOLUTION OF THE CITY OF HAMILTON, MISSOURI ADOPTING THE CALDWELL COUNTY ALL-HAZARD MITIGATION PLAN (UPDATED 2016)

WHEREAS the City of Hamilton recognizes the threat that natural hazards pose to people and property within the City of Hamilton; and

WHEREAS the City of Hamilton has participated in the preparation of a multi-hazard mitigation plan, hereby known as the *Caldwell County All-Hazard Mitigation Plan (Updated 2016),* 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 City of Hamilton from the impacts of future hazards and disasters; and

WHEREAS the City of Hamilton recognizes that land use policies have a major impact on whether people and property are exposed to natural hazards, the City of Hamilton will endeavor to integrate the Plan into the comprehensive planning process and

WHEREAS adoption by the City of Hamilton demonstrates their commitment to hazard mitigation and achieving the goals outlined in the *Plan*

NOW THEREFORE, BE IT RESOLVED BY THE CITY OF HAMILTON, in the State of Missouri, that this resolution is adopted by the Board of Aldermen of the City of Hamilton, Missouri, on this 9th day of November, 2016.

Winford Gilliam, Mayor

Attest: _____
Debra Davis, City Clerk

City of Polo, Missouri RESOLUTION NO. -2017-1-----

A RESOLUTION OF THE *City of Polo, Missouri* ADOPTING THE CALDWELL COUNTY ALL-HAZARD MITIGATION PLAN (UPDATED 2016)

WHEREAS the ***City of Polo, Missouri*** recognizes the threat that natural hazards pose to people and property within the (local governing body); and

WHEREAS the ***City of Polo, Missouri*** has participated in the preparation of a multi- hazard mitigation plan, hereby known as the *Caldwell County All-Hazard Mitigation Plan (Updated 2016),* 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 ***City of Polo, Missouri,*** from the impacts of future hazards and disasters; and

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

WHEREAS adoption by the ***City of Polo, Missouri*** demonstrates their commitment to hazard mitigation and achieving the goals outlined in the *Plan*

NOW THEREFORE, BE IT RESOLVED BY THE ***CITY OF POLO, MISSOURI,*** in the State of Missouri, that In accordance with ***local rule for adopting resolutions*** the ***City of Polo, Missouri,*** adopts the Plan.

ADOPTED by a vote of 3 in favor and -0 against, and -0 abstaining,

this 11 day of January, 2017

By (Sig): [signature]

Print name: Jess Innis

ATTEST:
By (Sig.): Constance M. Cook

Print name: Constance M. Cook, City Clerk

APPROVED AS TO FORM:
By (Sig.): Constance M. Cook

Print name: Constance M. Cook, City Clerk

THE COWGILL R-VI SCHOOL DISTRICT, MISSOURI

RESOLUTION NO. ----------

A RESOLUTION OF **The Cowgill R-VI School District** ADOPTING THE CALDWELL COUNTY ALL-HAZARD MITIGATION PLAN (UPDATED 2016)

WHEREAS ***The Cowgill R-VI School District*** recognizes the threat that natural hazards pose to people and property within **The Cowgill R-VI School District** ; and

WHEREAS ***The Cowgill R-VI School District*** has participated in the preparation of a multi- hazard mitigation plan, hereby known as the *Caldwell County All-Hazard Mitigation Plan (Updated 2016),* 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 Cowgill R-VI School District*** from the impacts of future hazards and disasters; and

WHEREAS ***The Cowgill R-VI School District*** recognizes that land use policies have a major impact on whether people and property are exposed to natural hazards, **The Cowgill R-VI School District** will endeavor to integrate the Plan into the comprehensive planning process and

WHEREAS adoption by ***The Cowgill R-VI School District*** demonstrates their commitment to hazard mitigation and achieving the goals outlined in the *Plan*

NOW, THEREFORE, BE IT RESOLVED BY THE ***THE COWGILL R-VI SCHOOL DISTRICT***, in the State of Missouri, that in accordance with the ***State Statute*** 171.011 ***The Cowgill R-VI School District*** adopts the Plan.

ADOPTED by a vote of 6 in favor and 0 against, and 1 abstaining,

this 15th day of November 2016

By (Sig): Paul Pulley Board President

Print name: Paul Pulley

ATTEST:

By (Sig.): Toi Cox Board Secretary

Print name: Toi Cox

APPROVED AS TO FORM:

By (Sig.): Betty Vassmer Superintendent

Print name: Betty Vassmer

Hamilton R-II School District, Hamilton Missouri

Resolution Number

A RESOLUTION OF THE HAMILTON R-II SCHOOL DISTRICT ADOPTING THE CALDWELL COUNTY ALL-HAZARD MITIGATION PLAN (UPDATED 2016)

WHEREAS the Hamilton R-II School District recognizes the threat that natural hazards pose to people and property within the Hamilton R-II School District and

WHEREAS the Plan identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in the Hamilton R-II School District from the impacts of future hazards and disasters; and

WHEREAS the Hamilton R-II School District recognizes that land use policies have a major impact on whether people and property are exposed to natural hazards, the Hamilton R-II School District will endeavor to integrate the Plan into the comprehensive planning process and

WHEREAS adoption by the Hamilton R-II School District demonstrates their commitment to hazard mitigation and achieving the goals outlined in the Plan

NOW THEREFORE, BE IT RESOLVED BY THE HAMILTON R-II SCHOOL DISTRICT, in the State of Missouri, that in accordance with local rule for adopting resolutions the Hamilton R-II School District adopts the Plan.

ADOPTED by a vote of 6 in favor and 0 against, and 0 abstaining.
This 16 day of NOVEMBER 2016

By (Sig): Ronald D. Kipp

Print name: Ronald D. Kipp, Board President

ATTEST
By (Sig): Troy Ford - Superintendent

Print name: Troy Ford

APPROVED AS TO FORM:

By (SIG):_____

Print Name:_____

Kingston 42 School District, Missouri

A RESOLUTION OF THE Kingston 42 School District ADOPTING THE CALDWELL COUNTY ALL-HAZARD MITIGATION PLAN (UPDATED 2016)

WHEREAS the Kingston 42 School District recognizes the threat that natural hazards pose to people and property within the (local governing body/school district); and

WHEREAS the Kingston 42 School District has participated in the preparation of a multi- hazard mitigation plan, hereby known as the *Caldwell County All-Hazard Mitigation Plan (Updated 2016),* 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 Kingston 42 School District from the impacts of future hazards and disasters; and

WHEREAS the Kingston 42 School District recognizes that land use policies have a major impact on whether people and property are exposed to natural hazards, the school board will endeavor to integrate the Plan into the comprehensive planning process and

WHEREAS adoption by the Kingston 42 School District demonstrates their commitment to hazard mitigation and achieving the goals outlined in the *Plan*

NOW THEREFORE, BE IT RESOLVED BY THE Kingston 42 School District, in the State of Missouri, that In accordance with ***school board policy*** the Kingston 42 School District adopts the Plan.

ADOPTED by a vote of 5 in favor and 0 against, and 0 abstaining,

this 12 day of December, 2016

By (Sig): Angela Bethel

Print name: Angela Bethel

ATTEST:

By (Sig.): Jennifer H. Noble

Print name: Jennifer H. Noble

APPROVED AS TO FORM:

By (Sig.): _____

Print name: _____