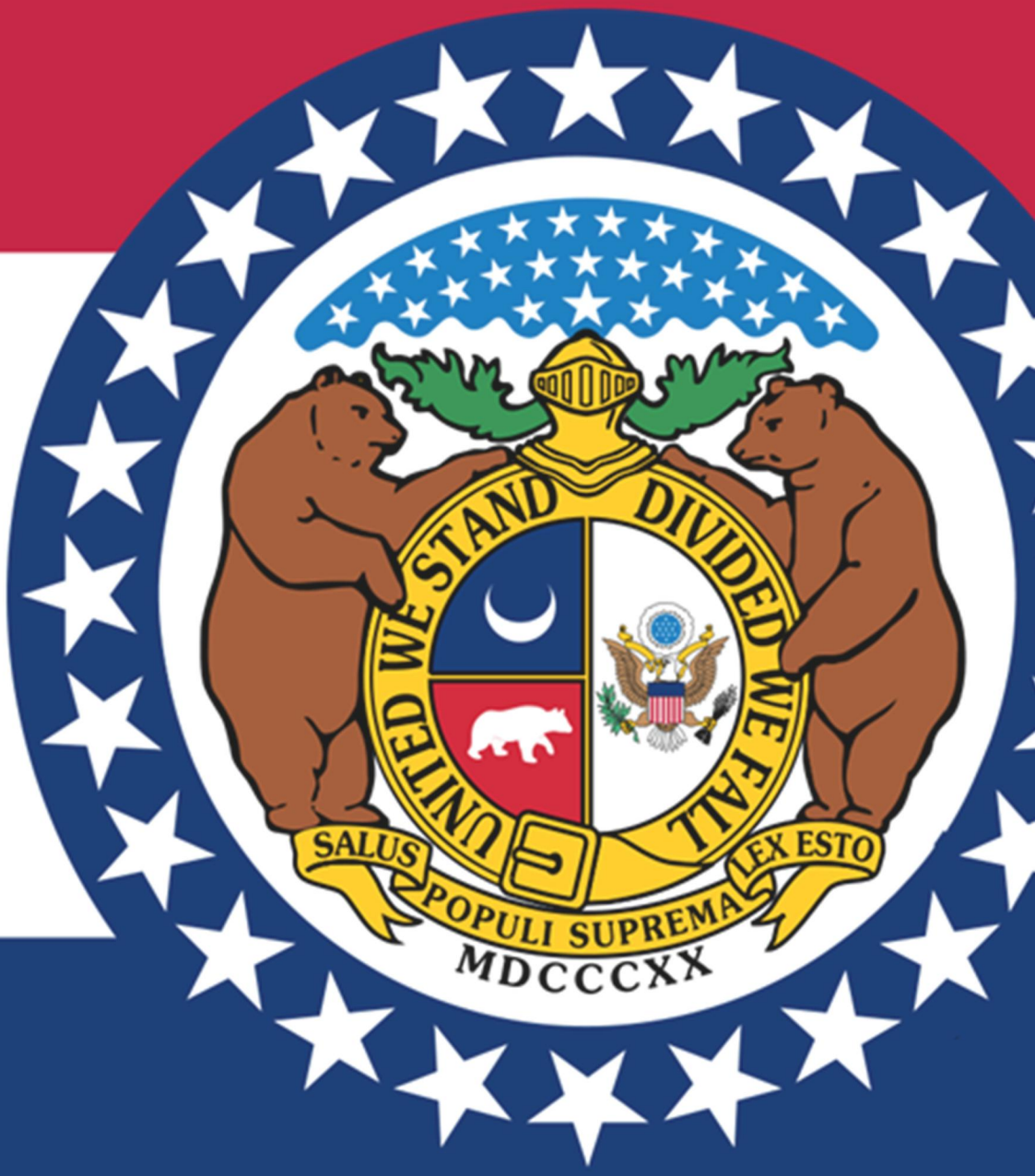
TEXAS COUNTY, MISSOURI



Multijurisdictional Hazard Mitigation Plan
2019 Update

Prepared by: South Central Ozark Council of Governments
4407 County Road 2340; PO Box 100
Pomona, Missouri 65789
Phone: 417.256.4226

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The purpose of hazard mitigation is to reduce or eliminate long-term risk to people and property from hazards. Texas County and participating jurisdictions and school districts developed this multi-jurisdictional local hazard mitigation plan update to reduce future losses from hazard events to the County and its communities and school districts. This iteration of the plan is an update of a plan that was approved on February 3, 2016. 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 Texas County Hazard Mitigation Plan is a multi-jurisdictional plan that covers the following jurisdictions that participated in the planning process:

- Texas County
- City of Cabool
- City of Houston
- City of Licking
- Village of Plato
- Village of Raymondville
- Cabool R-IV School District
- Houston R-I School District
- Licking R-VIII School District
- Plato R-V School District
- Raymondville R-VII School District
- Success R-VI School District
- Summersville R-II School District

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 Texas County and participating jurisdictions. The MPC updated the risk assessment that identified and profiled hazards that pose a risk to the County and analyzed jurisdictional vulnerability to these hazards. The MPC also directed the planner-in-charge to analyze the capabilities in place to mitigate the hazard damages, with emphasis on changes that have occurred since the previously approved plan was adopted. The planner-in-charge determined that the planning area is vulnerable to several hazards that are identified, profiled, and analyzed in this plan. Flash flooding, winter storms, and tornadoes are among the hazards that historically have had the most significant impact.

Texas County Mitigation Planning Committee: Jurisdictional Representatives

Name	Title	Department	Jurisdiction
Scott Long	Presiding Commissioner	County	Texas County
Ron Scheets	Administrator	City	Cabool
Glenn McKinney	Emergency Manager	City	Houston
Keith Cantrell	Mayor	City	Licking
Jason Cook	Director	County	Texas County EMD
Cristina Irwin	Superintendent	School	Licking
Allen Moss	Superintendent	School	Houston
Rick Stark	Superintendent	School	Summersville
Kim Hawk	Superintendent	School	Plato
Harold Dandridge	Emergency Manager	City	Plato
John Casey	Associate Commissioner	County	Texas County
Doyle Heiney	Associate Commissioner	County	Texas County
Debbie Schweighauser	Clerk	Village	Raymondville
John Johnson	Principal	School	Summersville

Texas County Plan Stakeholders

Name	Title	Department	Jurisdiction
Chris Rutledge	Asst. District Engineer	State	MO Dept. of Transportation
Darci Malam	Citizen	Public	Houston
Jessica Paulk	Citizen	Public	Cabool
Robbie Smith	Fire Fighter	Federal	US Forest Service
Terra Willey	Asst. Director	County	911 Services
Susan Hale	Director	County	911 Services
JJ Travis	Regional Coordinator	State	Missouri DPS

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

Goal 1: Protect the Lives and Property of all Citizens of Texas County

OBJECTIVES:

- Identify and provide sufficient emergency shelters
- Review and maintain current warning systems for sufficient coverage

Goal 2: Preserve the Functioning of Civil Government During Natural Disasters

OBJECTIVES:

- Implement proper maintenance and necessary upgrades of critical buildings and infrastructures in the county
- Improve the efficiency, timing, and effectiveness of response and recovery efforts for natural hazard disasters

Goal 3: Maintain Economic Activities Essential to the Survival and Recovery from Natural Disasters

OBJECTIVES:

- Periodically review chain of command of government organizations for emergency situations and keep up-to-date
- Continuously review communications systems and keep in good working order

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

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

This plan has been reviewed by and adopted with resolutions or other documentation of adoption by all participating jurisdictions and schools districts. The documentation of each adoption is included in Appendix D, and an example of the resolution used by the participating jurisdictions is included on the following page.

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

- Texas County
- City of Cabool
- City of Houston
- City of Licking
- Village of Plato
- Village of Raymondville
- Cabool R-IV School District
- Houston R-I School District
- Licking R-VIII School District
- Plato R-V School District
- Raymondville R-VII School District
- Success R-VI School District
- Summersville R-II School District

Model Resolution

Resolution # _____

Adopting the Multi-Jurisdictional Hazard Mitigation Plan

Whereas, the (*Name of Government/District/Organization seeking FEMA approval of hazard mitigation plan*) recognizes the threat that natural hazards pose to people and property within our community; and

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

Whereas, the U.S. Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") emphasizing the need for pre-disaster mitigation of potential hazards;

Whereas, the Disaster Mitigation Act made available hazard mitigation grants to state and local governments; and

Whereas, an adopted Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

Whereas, the (*Name of Government/District/Organization*) fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Hazard Mitigation Plan; and

Whereas, the Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region VII officials will review the "Texas County Multi-Jurisdictional Hazard Mitigation Plan," and approved it as to form and content; and

Whereas, the (*Name of Government/District/Organization*) desires to comply with the requirements of the Disaster Mitigation Act of 2000 to remain eligible and to augment its emergency planning efforts by formally adopting the Texas County Multi-Jurisdictional Hazard Mitigation Plan; and

Whereas, adoption by the governing body for the (*Name of Government/District/Organization*) demonstrates the jurisdictions' commitment to furthering the effort of the mitigation goals outlined in this Multi-Jurisdictional Hazard Mitigation Plan; and

Whereas, adoption of this legitimizes the plan and authorizes local agencies to carry out actions under the plan;

Now, therefore, be it resolved, that the (*Name of Government/District/Organization*) has adopted the "Texas County Multi-Jurisdictional Local Hazard Mitigation Plan" as an official plan.

Date:

Certifying Official: _____

1 INTRODUCTION AND PLANNING PROCESS

1.1 Purpose

Following the severe weather, tornado, and flooding disasters that was declared in the spring of 2002 (DR-1412), Missouri's State Emergency Management Agency (SEMA) was inundated with flood buyout project proposals from 23 communities across the state. With state funding scarce, they were able to help some of these communities using federal mitigation grant funding provided by the Federal Emergency Management Agency (FEMA). After November 1, 2004, communities like these will still be eligible for federal disaster public assistance and individual assistance, but will not be eligible for hazard mitigation assistance unless they have an approved hazard mitigation plan on file. This requirement also extends to school districts requesting SEMA or FEMA Hazard Mitigation project funding.

For the nearly 1,000 cities and 114 counties in Missouri, mitigation plans are required for all federally declared disasters such as flood, earthquake, ice storm, tornado, and fire. Under the current rules for federal mitigation funding, local governments are required to have a FEMA-approved hazard mitigation plan in place as a condition to receiving federal mitigation grant funding. These plans must be updated and adopted every five years.

Under the initiative set forth by SEMA, the Missouri Association of Councils of Governments (MACOG) agreed to meet the challenge of developing county and municipal plans on a regional level, throughout the state. The 19 regional planning commissions of MACOG provided an effective way for local governments to work together to share technical staff and address common problems in need of an area-wide approach. They also can effectively deliver programs that might be beyond the resources of an individual county, school district, or municipal government. The intent of the regional planning commissions is Missouri is to be of service to their member counties and municipalities and to bring an organized approach to addressing a broad cross-section of area wide issues. They also are available to assist their member entities in coordinating the needs of the area with state and federal agencies, or with private companies or other public bodies. Most of the rural regional planning commissions (RPCs) in Missouri were formed under Chapter 251 of the Revised Statutes of the State of Missouri. All regional councils, or RPCs, in Missouri operate as "quasi-governmental" entities. In Missouri, RPCs are advisory in nature, and county and municipal governments hold membership on a voluntary basis.

SEMA's mitigation planning initiative further states that, due to time and funding limitations, the plan development by Missouri's regional planning commissions should cover natural hazards only. Manmade and/or technological hazards are not addressed in this plan, except in the context of cascading damages.

1.2 Background and Scope

The Texas County Hazard Mitigation Plan was originally developed in 2004; the updated mitigation goals and objectives were incorporated into the 2014 Hazard Mitigation Plan update, as well as the inclusion of school districts in the planning process. This, the fourth iteration of the Texas County Hazard Mitigation Plan, has utilized some newly-acquired GIS mapping capabilities and incorporated the findings of the 2018 U.S. Census American Community Survey. Utilizing the latest census data and natural hazard research, the jurisdictions of the County can develop informed actions and strategies to mitigate the impact of these events on the assets and lives of the people of Texas County.

The 2019 Plan is a major re-write of the 2014 Plan that reflects changes in priorities and the development of fundable actions, as well as the continued commitment of local governments to mitigate the impact of natural hazards in Texas County. Local jurisdictions that participated in the 2014 Plan and are continuing participation in the 2019 version include:

- Texas County Commission
- City of Cabool
- City of Houston
- City of Licking
- Village of Plato
- Village of Raymondville
- Cabool R-IV School District
- Houston R-I School District
- Licking R-VIII School District
- Plato R-V School District
- Raymondville R-VII School District
- Success R-VI School District
- Summersville R-II School District

The local mitigation plan is the representation of the jurisdiction's commitment to reduce risks from natural hazards, serving as a guide for decision makers as they commit resources to reducing the effects of natural hazards. Information in the plan will be used to help guide and coordinate mitigation activities and decisions for local projects in the future.

1.3 Plan Organization

The Plan is organized into five chapters. The 2014 Plan included a chapter dedicated to local jurisdiction capabilities. This information has been incorporated into the Planning Area Profile Chapter. The format of the Plan was changed to conform to the local hazard mitigation plan

outline template released by the Missouri State Emergency Management Agency in November of 2018. The Plan chapters include:

- *Chapter 1: Introduction and Planning Process*

Section One provides an introduction to the multi-jurisdictional hazard mitigation planning process and a detailed look at the participation of the local jurisdictions. It also detailed the purpose of local hazard mitigation planning and outlined the requirements enacted by the Federal Emergency Management Agency.

- *Chapter 2: Planning Area Profile and Capabilities*

Section Two of this plan provides general background information and statistics for Texas County and its municipalities and the disaster response and recovery capabilities found in the county. The first part of section two includes demographic data, identification of community anchor institutes, and information regarding infrastructure. Understanding this baseline data is a fundamental component of any planning process. This section provides a snapshot of Texas County that will serve to assist in the implementation of this plan. The second part of section two provides a capability assessment of Texas County. These resources are crucial in the mitigation, response, and recovery processes should one of the identified natural disasters occur. In detail, it outlines the County's response capabilities and seeks to identify those areas in which the County may improve mitigation capabilities. The section identifies key personnel, organizational leaders, and outlines existing plans regarding emergency planning. Additionally, it provides a brief assessment of each municipality's readiness regarding hazard mitigation.

- *Chapter 3: Risk Assessment*

Section Three, Risk Assessment, identifies and explores the types of natural hazards that pose a risk to the County, and the likelihood in which a hazard will occur. It provides a general overview of each of the identified natural hazards, in addition to explaining the impact upon the County and its municipalities should such hazards occur.

- *Chapter 4: Mitigation Strategy*

Section Four delivers the multi-jurisdiction mitigation strategies in response to the risk assessment. Each disaster has specific problems identified with its respective occurrence probability within each jurisdiction; therefore the mitigation strategies are tailored to fit each jurisdictions circumstance. Section Four outlines the overall goals to reduce a disaster's effect, specific objectives toward achieving those goals, and implementation plans for the county to pursue.

- *Chapter 5: Plan Implementation and Maintenance*

Section Five outlines Hazard Mitigation Plan maintenance procedures.

- *Appendices*

The overall mitigation goals of the plan include: (1) **Protect the lives and property of all citizens of Texas County**; (2) **Preserve functioning of civil government during natural disasters**; and (3) **Maintain economic activities essential to the survival and recovery from natural disasters**.

Table 1.1 summarizes the changes made in the Plan by chapter.

Table 1.1. Changes Made in Plan Update

Plan Chapter	Summary of Changes Made
Introduction	• Added public involvement section describing community meetings and outreach efforts and opportunity for neighboring jurisdictions to be involved in the update process. • Changed the participation requirements for local jurisdictions • Included a record of participation describing how each jurisdiction participated in the process • Updated list of plan participants (MPC and Stakeholders) • Updated planning methodology and plan timeline
Profile & Capabilities	• Updated demographic information • Updated critical, vulnerable and government facilities information • Incorporated revisions to community profiles • Incorporated information derived from the new Data Collection Questionnaires
Risk Assessment	• Included events for each hazard that occurred from 2012 through 2015 • Incorporated structures GIS layer developments by Missouri Spatial Data Services in vulnerability analysis • Added likely locations subsections for each hazard • Developed hazard identification and analysis methodology • Added overall summary of hazard vulnerability by jurisdiction • Added vulnerability assessment tables for each hazard and each participating jurisdiction
Mitigation Strategy	• Updated mitigation actions development process • Included actions eliminated and reason for removal • Updated progress made towards mitigation goals & objectives from earlier plan • Discussed funding sources, lead agencies and statuses of continuing, revised and new actions
Plan Maintenance	• Updated the local responsibilities for plan monitoring, evaluation and implementation.

1.4 Planning Process

44 CFR Requirement 201.6(c)(1): [The plan shall document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

For the update of the 2019 Texas County Hazard Mitigation Plan, the County and SEMA has contracted with the South Central Ozark Council of Governments (SCOCOG) and has participated fully in the update process. Once this plan receives final approval from the Federal Emergency Management Agency, Texas County, and the participating cities and school districts within will be eligible for future mitigation assistance from FEMA and will be able to more effectively carry out the identified mitigation activities in an effort to lessen the adverse impact of future natural disasters that take place in the county.

SCOCOG's role as contractor includes the following elements:

- Assist in establishing a Mitigation Planning Committee (MPC) as defined by the Disaster Mitigation Act (DMA),
- Ensure the updated plan meets the DMA requirements as established by federal regulations and follows the most current planning guidance of the Federal Emergency Management Agency (FEMA),
- Facilitate the entire plan development process,
- Identify the data that MPC participants could provide and conduct the research and documentation necessary to augment that data,
- Assist in soliciting public input,
- Produce the draft and final plan update in a FEMA-approvable document, and Coordinate the Missouri State Emergency Management Agency (SEMA) and (FEMA) plan reviews.

Table 1.2. Jurisdictional Representatives Texas County Mitigation Planning Committee

Name	Title	Department	Jurisdiction
Scott Long	Presiding Commissioner	County	Texas County
Ron Scheets	Administrator	City	Cabool
Glenn McKinney	Emergency Manager	City	Houston
Keith Cantrell	Mayor	City	Licking
Bob Burtrum	Chairman	Village	Plato
Jason Cook	Director	County	Texas County EMD
Cristina Irwin	Superintendent	School	Licking
Allen Moss	Superintendent	School	Houston
Rick Stark	Superintendent	School	Summersville
Kim Hawk	Superintendent	School	Plato

1.4.1 Multi-Jurisdictional Participation

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

The South Central Ozark Council of Governments, on behalf of Texas County, invited all incorporated cities, all school districts, many non-profit entities located within the county, and representatives from neighboring jurisdictions to participate in the Texas County Hazard Mitigation Plan update planning meetings. FEMA accepts multi-jurisdictional plans which meet all the requirements of 44CFR §201.6(a)(3):

- The risk assessment must assess each jurisdiction's risk where they may vary from the risks facing the entire planning area.
- There must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.
- Each jurisdiction requesting approval of the plan must document that itself has formally adopted the plan.

DMA 2000 further requires that jurisdictions represented within a multi-jurisdictional hazard mitigation plan participate in the planning process in addition to formally adopting the completed plan. Each participating jurisdiction was required to meet planning participation requirements as defined by SCOCOG at the beginning of the update process. Minimum participation requirements were defined as follows:

Provide information to support the plan update through at least two of the following methods:

- Completion of jurisdiction questionnaire;
- Attendance at public meetings;
- Alternately scheduled meetings for data collection purposes;
- Email correspondence with SCOCOG staff for data collection purposes; and
- Formally adopt the hazard mitigation plan

SCOCOG was contracted by Texas County to revise and update the 2014 Hazard Mitigation Plan and coordinate planning efforts between the municipalities and school districts of the County. SCOCOG planning staff led the development of the plan update by forming the planning committee, calling and facilitating meetings, compiling data, composing and reviewing drafts, issuing public notices, and drafting correspondence. All of the jurisdictions listed as participants in the plan update met the minimum participation requirements as indicated in the following tables. Documentation of meeting attendance in the form on sign in sheets is included in *Appendix A: Planning Participation Documentation*.

Participating jurisdictions are listed above on page 1.2. In the 2014 iteration of the Texas County Hazard Mitigation Plan, all jurisdictions participated fully. Other jurisdictions which participated in the planning process, but are not seeking independent adoption and approval are: local police departments, electric cooperatives, emergency management agencies.

The Plan serves as a written document of the planning process. Active participation of local jurisdiction representatives and stakeholders in the hazard mitigation planning process is essential if the Plan is to have value. To be eligible for mitigation funding, local governments and school districts must adopt the FEMA-approved update of the Plan. The participation of the local government stakeholders in the planning process is considered critical to successful

implementation of this plan. Each jurisdiction that is seeking approval for the plan must have its governing body adopt the updated plan, regardless the degree of modifications. SCOCOG collaborated with the local governments and districts in Texas County to assure participating in the planning process to the greatest extent possible and the development of the plan that represents the needs and interests of Texas County and its local jurisdictions.

The planning engagement took to the form of a county-wide meeting with participating jurisdictions, who reviewed findings from the updated Risk Assessment and completed a hazard mitigation data collection questionnaire (DCQ) that was developed in tandem with the Missouri SEMA planning outline template. Special meetings were held in order to meet with representatives from jurisdiction who were unable to attend the county-wide meeting. From these meetings, goal refinement and potential mitigation actions were identified and MPC representatives were decided.

The public was engaged at two points during the development of the plan update. First, a public survey was posted on the SCOCOG website and advertised in the Cabool Enterprise and the Houston Herald Newspapers in January of 2019, the newspaper of widest circulation in the county. Second, the availability of the draft plan for review and comment was announced in the same newspaper in May of 2019. Documentation for both public engagement efforts are included in Appendix C.

Building from the feedback received from the jurisdictional meetings, the MPC was convened via conference call to finalize mitigation goals and actions and make final review and comment on the Plan prior to submittal to the Missouri State Emergency Management Agency.

Table 1.3. Jurisdictional Participation in Planning Process

Jurisdiction	Completion of Questionnaire	Attendance at a meeting	Alternately scheduled planning meeting	Formal adoption of the Plan
Texas County Commission	X	X		X
City of Cabool	X	X	X	X
City of Houston	X	X		X
City of Licking	X	X		X
Village of Plato	X			X
Village of Raymondville	X	X		X
Cabool R-IV School District	X		X	X
Houston R-I School District	X	X		X
Licking R-VIII School District	X	X		X
Plato R-V School District	X		X	X
Raymondville R-VII School District	X		X	X
Success R-VI School District	X		X	X
Summersville R-II School District	X	X		X

1.4.2 The Planning Steps

FEMA's Local Mitigation Planning Handbook (March 2013), Local Mitigation Plan Review Guide (October 2013), and Integrating Hazard Mitigation into Local Planning: Case Studies and Tools for Community Officials (March 2013) were used as sources for development the Plan update process. The development of the plan followed the 10-step planning process adapted from FEMA's Community Rating System (CRS) and Flood Mitigation Assistance Programs. The 10-step process allows the Plan to meet funding eligibility requirements of the Hazard Mitigation Grant Program, Pre-Disaster Mitigation Program, Community Rating System, and Flood Migration Assistance Program. Table 1.4 shows how the CRS process aligns with the Nine Task Process outlined in the 2013 Local Mitigation Planning Handbook.

The following Table 1.4 is a summary of how SCOCOG staff used the Nine Task Process to develop the updated for the Texas County Hazard Mitigation Plan.

Table 1.4. Texas County Mitigation Plan Update Process

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

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

The Council of Governments planners began the plan update process by contacting local stakeholders that were identified as key officials who would be valuable to the update of the mitigation plan. County commissioners, city officials, and emergency management personnel were targeted as potential members of the MPC. During an introductory conference call in December 2018, the scope of the plan update was discussed, including planning participation requirements and general methodology. A timeline for completion the update was established and planning meetings were scheduled and given 'tentative' dates.

The Data Collection Questionnaires for the county's school districts and municipalities were distributed at the very beginning of the update process via email along with a follow up phone call to explain the procedure, the need for the data collection, how the data would be used, and to answer any questions the Superintendents may have had regarding the contents of the Data Collection Questionnaires. All participating jurisdictions were informed of an upcoming planning meetings in the county where SCOCOG planners would review the questionnaire responses and help shore up any gaps in the data. In total, five planning meetings were held in Texas County.

Table 1.5. Schedule of Planning Meetings

Meeting	Topic	Date
Kickoff Meeting	• Prospective participants and stakeholders identified • Raising awareness for mitigation strategy/increase countywide resilience to natural hazards • Natural hazard vulnerability • Local plan participation • Project timeline	December 18, 2018 *Conference Call*
Planning Meeting	Houston, MO FEMA Storm Shelter Building Jurisdictions represented: Texas Co., Houston, Raymondville, Summersville, Licking • Review of 2014 Mitigation Goals, Objectives and Actions • Review of Jurisdictional Risk Assessment • Identification of new mitigation actions • Completion of Data Collections Questionnaire, identifying capabilities, assets, vulnerability	February 5, 2019
Planning Meeting	Cabool City Hall. Jurisdictions represented: Cabool, Cabool School • Review of 2014 Mitigation Goals, Objectives and Actions • Review of Jurisdictional Risk Assessment • Identification of new mitigation actions • Completion of Data Collections Questionnaire, identifying capabilities, assets, vulnerability	May, 6, 2019
MPC Meeting	Mitigation Planning Committee Work Session 1:30 p.m. Jurisdictions represented: All • Discussed changes to the 2019 Plan update • Discussed STAPLEE Criteria • Discussion of lead agencies and funding sources for each mitigation action • Coordinated timing of plan adoption	May 9, 2019 *Conference Call*

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

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

Options for soliciting public input on the Plan update were discussed during the Planning Kickoff Conf. Call held on December 18, 2018, and at the planning meeting at the Houston, MO FEMA Storm Shelter Building SCOCOG staff explained the importance of public involvement during the planning process.

A plan to engage the public in the plan update process was developed in accordance with 44 CFR Requirement 201.6(b), ensuring the opportunity for the public to comment on the plan during the drafting stage and prior to FEMA approval. The consensus of the group was to (**1**) develop an online survey instrument which would be publicized in the Houston Herald and Cabool Enterprise and ran concurrent to the drafting of the plan update and (**2**) post the draft plan on the website of the South Central Ozark Council of Governments for public review and comment, and announce its availability in the Houston Herald and Cabool Enterprise prior to the plan's submittal to the State Emergency Management Agency

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

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

There are many organizations that are 'regional' in nature whose interests interface with hazard mitigation planning in Texas County. These groups were engaged via telephone calls to invite interested parties to the February 2019 planning meeting at the FEMA Storm Shelter in Houston. The agencies and interest groups who were invited to take part in the hazard mitigation plan update are listed below:

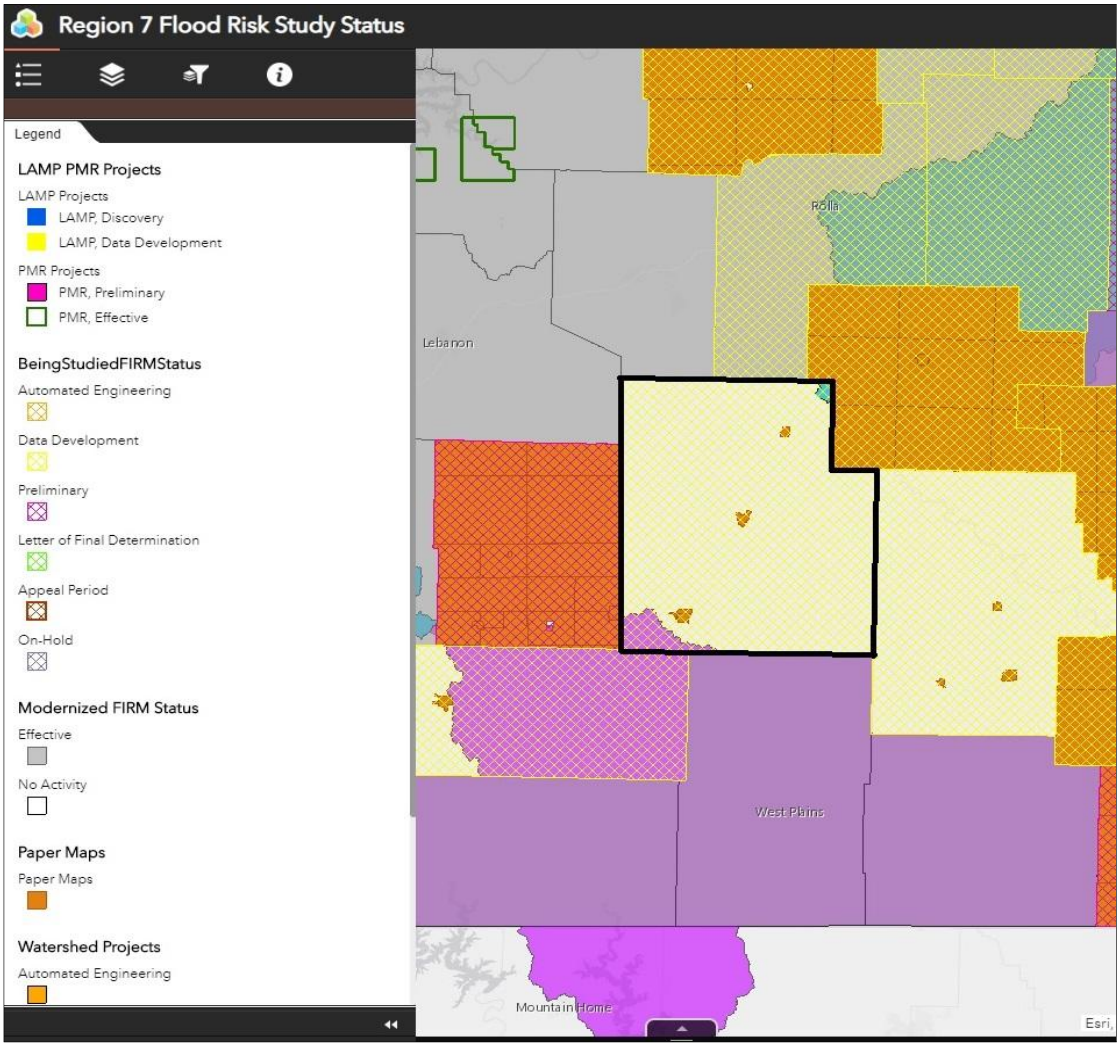
Agency	Representative	Agency	Representative
Red Cross of Missouri	Director, Southern MO	Houston Rural Fire	Fire Chief
Community Foundation of the Ozarks	Sr. Associate for Advancement	Raymondville VFD	Fire Chief
Texas County Sheriff's Department	Sheriff Scott Lindsay	Montauk VFD	Fire Chief
Missouri Department of Conservation	Region Supervisor and Regional Biologist	Summersville VFD	Fire Chief
Missouri Department of Transportation	Asst. Southeast District Engineer	Roby Rural Fire	Fire Chief
Wright County Commissioner	Zach Williams	Duke Rural Fire	Fire Chief
Shannon County Commissioner	Jeff Cowen	Howell County Commissioner	Mark B. Collins

Integration of Other Data, Reports, Studies, and Plans

A review of the most current data, reports, studies and Plans relating to hazard mitigation planning in Texas County were reviewed in order to provide the latest "snapshot" of existing conditions to inform the development of the 2019 Plan. Local planning documents that were reviewed were the Region G Threat Hazard Risk Assessment (THIRA), the Comprehensive Economic Development Strategy, the South Central Regional Transportation Plan, The State Transportation Plan, and the Texas County Local Emergency Operations Plan. Where available, information from these Plans was integrated into the planning meeting discussions and into the Hazard Mitigation Plan narrative itself.

Coordination with FEMA Risk MAP Project Risk Mapping, Assessment, and Planning (Risk MAP) is the Federal Emergency Management Agency (FEMA) Program that provides communities with flood information and tools that they can use to enhance their mitigation plans and take action to better protect their citizens. Through collaboration with State, Tribal, and local entities, Risk MAP delivers quality data that increases public awareness and leads to action that reduces risk to life and property. As depicted in the following map, the majority of the county is currently in the data development status, with the extreme southwestern corner of the county undergoing preliminary mapping work.

Figure 1.1. Map of RiskMAP projects



Texas County Emergency Operations Plan (EOP)

Texas County emergency management is set up along the following functional segments: direction and control; communications and warning; emergency public information; damage assessment; law enforcement; fire and rescue; civil disorder; hazardous materials response; public works; evacuation; in-place sheltering; reception and care; health and medial terrorism response; and resources and supply. This plan also defines lines of succession for the continuity of government operations during a disaster as well as the preservation of records and the logistics of administrative functions such as procedures for obtaining temporary use of facilities. The Texas County Emergency Operations Plan was last updated December 2017.

South Central Ozark Regional Transportation Plan (RTP)

SCOCOG maintains and updates annually the Regional Transportation Plan (RTP) as part of a work agreement with the Missouri Department of Transportation. The RTP begins with the statewide Long Range Transportation Plan's goals then refines them to fit the unique nature of the South Central region. The local planning process involves prioritization of transportation projects and defining broad transportation improvement strategies, including economic development, safety, and expansion of multimodal opportunities.

Comprehensive Economic Development Strategy (CEDS)

The regional Comprehensive Economic Development Strategy was updated in 2014 following an extensive regional planning process. A current update is currently underway for the year 2019. In 2014, A dozen planning meetings were held throughout the seven county region to identify economic development goals and strategies, gain input on the function and effectiveness of the regional planning commission's services, and identify vital economic development projects & programs for every jurisdiction in the region. The CEDS provides detailed information on social and economic data, and an overview of funding programs available to local governments and not-for-profit agencies.

A wide variety of technical data gathered from a number of state and federal agencies was integrated to the 2014 Plan to develop the Risk Assessment portion of the plan. Federal Emergency Management Agency DFIRM maps were utilized to delineate flood hazard areas and at risk structures in the county. NOAA data was used to compile event history for hazard profiles. Data from Missouri Department of Transportation, Missouri Department of Natural Resources, and Missouri Economic Resource Information Center (MERIC) were utilized to define the county's vulnerability to natural hazard events.

National datasets such as the National Agriculture Imagery Program, the National Inventory of Dams, the SILVIS Lab housed at the University of Wisconsin-Madison, and the 2010 U.S. Census were referenced in the updated Risk Assessment.

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

The hazard profiles contained within the 2014 Texas County Hazard Mitigation Plan were reassessed during the Kickoff meeting and county-wide planning meeting in February.

During the remainder of the planning meetings in the county, attendees were provided the latest hazard data via the research conducted by the South Central Ozark Council of Governments. The attendees provided to SCOCOG their input on hazard events from the DCQs completed by each participating jurisdiction. By consensus the participants identified the natural hazards that are not considered a threat to their own jurisdiction and eliminated those disasters from consideration in the Risk Assessment process. A Hazard Vulnerability Sheet was completed by each participating jurisdiction to help determine the perceived threat faced by their respective jurisdictions for inclusion in the Hazard Mitigation Plan.

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

Identified assets in the planning area include population, structures, critical facilities and infrastructure, and other important assets that may be at risk to hazards. The inventory of assets for each jurisdiction were derived from GIS layers identified structures by use in the county and the local jurisdiction and school district data collection questionnaires, and FEMA HAZUS-MH Flood Analysis software. Potential losses to existing development were estimated on hazard event scenarios and annualized losses. In most cases the county assessor's valuations were used to estimate structure losses in impacted areas by structure occupancy type. The methodology for estimating losses varies by hazard. Loss estimates are included in each hazard profile contained in the Risk Assessment chapter.

Step 6: Set Goals (Handbook Task 6)

The Mitigation Planning Committee reviewed the goals from the 2014 Texas County Plan during the kickoff planning meeting in February 2019. It was decided that three of the four mitigation goals were still relevant and as a result they were carried over into the new Plan. The fourth, listed as Goal 2 in the previous plan, was considered redundant to Goal 1 and removed.

Listed below are the Texas County Hazard Mitigation Goals and Objectives:

Goal 1: Protect the Lives and Property of all Citizens of Texas County

- Identify and provide sufficient emergency shelters
- Review and maintain current warning systems for sufficient coverage

Goal 2: Preserve the Functioning of Civil Government During Natural Disasters

- Implement proper maintenance and necessary upgrades of critical buildings and infrastructures in the county
- Improve the efficiency, timing, and effectiveness of response and recovery efforts for natural hazard disasters

Goal 3: Maintain Economic Activities Essential to the Survival and Recovery from Natural Disasters

- Periodically review chain of command of government organizations for emergency situations and keep up-to-date
- Continuously review communications systems and keep in good working order

In the 2014 Plan, the organization of the mitigation actions included broad goals and a set of objectives linking the actions and goals. The MPC opted to keep three of four goals from the 2014 Plan with slight modification to the objective statements, and narrow the focus of the mitigation actions, making them more relevant to each individual jurisdiction as opposed to nebulous action items with no measurability.

Step 7: Review Possible Mitigation Actions and Activities

The Mitigation Planning Committee and representatives from participating jurisdictions reviewed the mitigation actions from the 2014 Plan at the December 12th, February 5th and May 6th planning meetings. It was decided that the actions from the previous plan were nebulous and the consensus of the group was that the mitigation actions needed to be more individualized in nature. New actions were identified, potential costs were discussed, lead agencies and staff were identified. Actions were prioritized using the STAPLEE methodology prior to the May 9th MPC work session. The FEMA publication *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards (January 2013)* was used as a primary source to guide the action formulation process. Participants were encouraged to focus on mitigation efforts that could be reasonably be attained in the next five-to-ten years

Step 8: Draft an Action Plan

The MPC reviewed the results of the jurisdiction-specific action identification and discussed the results of the previously completed action prioritization during a conference call work session on May 9th, 2019. Progress in implementing the mitigation actions will be reviewed annually by the regional planner housed at the South Central Ozark Council of Governments. Additionally, as potential grant funding becomes available, SCOCOG planners will work with the jurisdictions of Texas County to develop applications when a viable project arises.

Step 9: Adopt the Plan (Handbook Task 8)

The 2019 update of the Texas County Plan brings a new paradigm in plan adoption. The jurisdictions will be asked to adopt the plan prior to the initial submittal to SEMA in order the streamline the coordination of adoption of the participating jurisdictions. SCOCOG planners worked with the governing bodies of the local jurisdictions to facilitate the adoption processes in a timely fashion

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

During the conference call of the MPC on 5/6, it was decided that the implementation the mitigation actions will be reviewed annually and revised (as needed) by the regional planner housed at the South Central Ozark Council of Governments. Additionally, as potential grant funding becomes available, SCOCOG planners will work with the jurisdictions of Texas County to develop applications when a viable project arises. The process for Plan Maintenance is detailed in Chapter 5 of this document.

2.1 Texas County Planning Area Profile

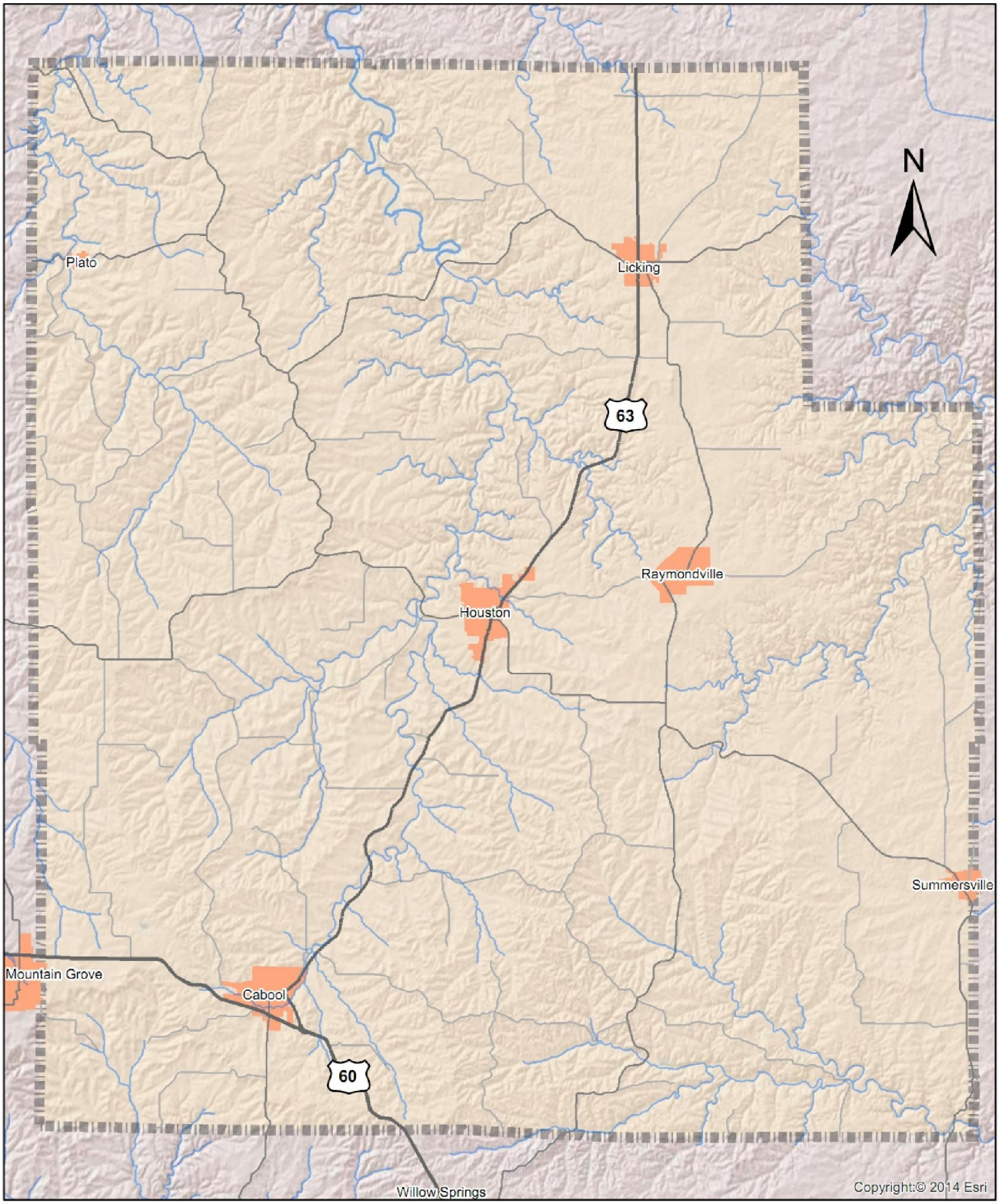


Figure 2.1. **Map of Texas County**

According to the US Census Bureau, the 2017 ACS Population Estimate of Texas County was 25,714. This represents an estimated decrease of 244 residents or 1.1% decline since the 2010 census. The shrinking population of the county is concerning when compared to the State of Missouri's growth (7.0%) and the United States' growth (9.7%) during the same time period.

The median household income for Texas County rose nearly 2.8% from $34,607 in 2010 to $35,571 in 2017, and family income still lags far behind the state and national figures of $45,600 and $49,445, respectively.

2.1.2 Geography, Geology and Topography

Texas County is located in the south central region of Missouri, in an area referred to as the Ozark Plateau. This part of Missouri is characterized by one of the most karstic regions in the continental United States. A region with outstanding water resources, numerous springs, sinkholes, losing streams, caves and hollows.

The underground and surface water resources found in Texas County are very much connected as a result of the karst topography of the county and region. There are four primary watershed in the county, each having their own unique drainage feature—creek or river—two flowing northerly toward the Meramec River Watershed and two flowing westerly toward the Current River Watershed.

Watershed	General Location in Texas County	Tributary to:
Big Piney River	Central	Meramec River
Roubidoux Creek	Northwest	Meramec River
Big Creek	East-Central	Current River
The Prongs	Southeast	Jacks Fork River

Texas County is comprised of 753,450 acres of land. The largest county in the state. According to the 2016 Texas County Agriculture Impact report, farmland in Ozark County totals 392,248 acres, or approximately 52% of the total land area. The remaining non-farm acreage in Texas County is made up of lands inside three municipalities, state and federally owned lands, private real estate, roads, highways and other public properties.

Elevations in Texas County range from approximately 1,561 feet above sea level at King Mountain, northeast of Willow Springs, to the lowest elevation of about 620 feet, located in the extreme southeastern corner of the county along Jacks Fork River.

2.1.3 Climate

Texas County's average annual precipitation through the reporting years of 1971-2018 was 42.8 inches. The average annual temperature for the county is 56 degrees Fahrenheit. On average, the hottest month of the year in Ozark County is July, with a mean temperature of 88.4 degrees. The coldest month is January, with a mean temperature of 19.6 degrees.

2.1.4 Demographics

Table 2.1. Texas County Population 2000-2017 by Community

Jurisdiction	2000 Population	2017 Population	2000-2017 # Change	2000-2017 %Change
Texas County	26,008	25,714	-294	--1.1
City of Cabool	2,146	2,369	+223	+10.4
City of Houston	2,081	2,428	+347	+16.7
City of Licking	3,124	2,889	-235	-7.5
Village of Plato	109	90	-19	-17.4
Village of Raymondville	363	551	+188	+51.8
City of Summersville	502	691	+189	+37.6

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

As of the 2017 ACS, There were 9,378 households out of which 30.80% had children under the age of 18 living with them, 58.10% were married couples living together, 8.90% had a female householder with no husband present, and 29.10% were non-families. 26.00% of all households were made up of individuals and 13.20% had someone living alone who was 65 years of age or older. The average household size was 2.42 and the average family size was 2.89.

In the county, the age of the population was spread out 24.90% under the age of 18, 7.10% from 18 to 24, 24.90% from 25 to 44, 25.30% from 45 to 64, and 17.80% who were 65 years of age or older. The median age was 40 years. For every 100 females there were 93.50 males. For every 100 females age 18 and over, there were 90.10 males.

Table 2.2. Unemployment, Poverty, Education, and Language Percentage Demographics, Texas Co., Missouri

Jurisdiction	Total in Labor Force	Percent of Population Unemployed	Percent of Families Below the Poverty Level	Percentage of Population (High School graduate)	Percentage of Population (Bachelor's degree or higher)	Percentage of population (spoken language other than English)
Texas County	9,543	7.1%	17%	82.3%	13.8%	1.9%
City of Cabool	672	8.9%	31.9%	82.1%	19.9%	0.4%
City of Houston	849	13.8%	24.2%	81.9%	13.5%	1.1%
City of Licking	596	9.7%	21.8%	77.5%	6.3%	2.1%
Village of Plato	29	7.7%	16.3%	86.7%	31.7%	0.1%
Village of Raymondville	302	3.6%	13.3%	76.3%	10%	0.2%
City of Summersville	260	8.5%	25.6%	87.5%	19.1%	0.4%
State	3,005,604	8.4	11.1	88.0	26.7	6.1

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

2.1.5 History

Texas County, the largest county in the State of Missouri, is 1,178 square miles of Ozark Highlands. Rugged hills, springs, creeks, rivers, and caves abound. The area was originally part of the 1808 Osage Tribe Land Cession. The county is named for the second largest of the fifty states, yet it exceeds the size of the State of Rhode Island. Texas County was formally organized on February 14, 1845. The first county seat of Justice was laid out in 1846 near the center of the county and then was promptly renamed Houston for the first president of the Texas Republic.

Pioneering families came to the Texas County area in the 1820's from Virginia, Kentucky, Tennessee and the Carolinas. Some setting up sawmills along the Big Piney River. The timber industry has always played a very vital part in the economy of the county. In the northern part of the county some 48,000 acres are now part of Mark Twain National Forest, also hundreds of acres in the southeast part of county are part of the Ozark National Scenic Riverways Park. The pioneers homesteaded the fertile valleys and soon log cabins dotted the county. Small family farms are still a major part of the landscape. The first Federal Census of Texas County in 1850 was 2,312 citizens. The pioneer cultivated his own provisions and with his trusty gun he could shoot various wild game. He hunted, trapped and sold furs to traveling buyers. Livestock was limited to subsistence farming. In the early 1900's the typical farmer grew small crops, kept a few cattle, hogs, etc. Today, Texas County is largely beef and dairy country with some feeder pig production.

As was the case across the country, the Civil War period was a time of turmoil in Texas County. A majority of the populace supported the Confederacy, yet the Texas County Courthouse was occupied during the most of the war by the Union (Federal) Army. The City of Houston was an important stop along the route between Federal headquarters in Springfield and Rolla. Several skirmishes took place fought along this route in Texas County. During one engagement, Confederate soldiers stormed the City of Houston, burning nearly every building. Before the courthouse was burned, the county records were taken to a cave on Arthur's Creek. All the record books were safely returned after the conflict.

Early social activities revolved around the church and school. Community activities included old time hoedowns, candy pullings, corn huskings, barn warmings, quilting bees, and log rolling. Arts and crafts continue to enter into the lives of many. People still gather for church activities, auctions, musicals, square dancing and sports of all kinds. Like the early pioneers, fishing and floating our rivers are very much a part of living in Texas County. Hunting is enjoyed by many and the county is one of the leading counties statewide for deer and turkey. Small game is abundant.

Education has always been very important to county residents. The rural one room school houses have vanished. Now students are transported to one of the ten school districts serving the county. College courses are offered in Licking, Houston, and Cabool.

Incorporated communities include the Cities of Cabool, Houston, and Licking, parts of the Cities of Summersville, and the Villages of Raymondville and Plato. Other unincorporated places include Roby, Lynchburg, Success, Fairview, Bado, Simmons, Elk Creek, Dunn, Tyrone, Magles, Yukon, Hartshorn, Arroll and Dunn.

Texas County with its moderate climate has become a place many people choose to retire. Its rural environment, excellent education systems, good churches, great hunting and fishing, community spirit, businesses, industry, and the beauty of the area make this a desirable place to live.
Source: www.historicmarkers.com/mo/71203

2.1.6 Occupations

Table 2.3. Occupation Statistics, Texas County, Missouri

Place	Management, Business, Science, and Arts Occupations	Service Occupations	Sales and Office Occupations	Natural Resources, Construction, and Maintenance Occupations	Production, Transportation, and Material Moving Occupations
Texas County	25.7%	21%	20.7%	8.7%	13.5%
City of Cabool	35.3%	27.36%	17.8%	10.9%	9.3%
City of Houston	18%	33.3%	32.8%	5.6%	10.2%
City of Licking	18.6%	27.3%	32.7%	9.3%	12.1%
Village of Plato	37.5%	16.7%	8.3%	12.5%	25%
Village of Raymondville	18.6%	30.2%	17.5%	17.1%	16.5%
City of Summersville	37%	3.4%	6.7%	8.5%	36.1%

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

2.1.7 Agriculture

According to the 2016 Missouri Agriculture Impact report, Texas County is home to 1,296 farms, consisting of 392,248 acres. The number of farms in the county has decreased by 2.5% since the 2012 Census of Agriculture. The average market value of products sold per farm is $61,364, a 45% increase in value from 2007. The top crop in the county is Forage-land, the top livestock item is cattle and calves. The farming sector is a significant part of the county's economy with an estimated 1,296 farm operators in the county.

2.1.8 FEMA Hazard Mitigation Assistance Grants in Planning Area

Table 2.4. FEMA HMA Grants in County from 1993-2019

Project Type	Sub applicant	Award Date	Project Total
Tornado Safe Room	Texas County Memorial Hospital	11/26/2013	$1,164,919.00
Tornado Safe Room	Cabool School District	1/29/2015	$1,255,000.00
Tornado Safe Room	City of Houston	7/25/2008	$1,106,161.00
Outdoor Warning Sirens	Texas County	8/14/2017	$67,272.00
Outdoor Warning Sirens	City of Summersville	7/19/2018	$34,700.00
Tornado Safe Room	Plato School District	12/9/2014	$1,125,000.00
Total	**-**	**-**	**$4,753,052.00**

Source: SCOCOG, SEMA

2.2 Jurisdictional Profiles and Mitigation Capabilities

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

2.2.1 Unincorporated Texas County, Missouri

Texas County's jurisdiction includes all unincorporated areas within the county boundaries. Texas is identified as a third-class county in the State of Missouri. The governing body of the County is the County Commission. The Commission consists of a Presiding Commissioner, a northern Associate Commissioner and a southern Associate Commissioner.

The County's elected governing body; the Board of County Commissioners directs the general administration of County Government. The Commission sets broad operating policies, enacts ordinances and establishes budgets as mandated by State law. The County enters into contracts with other public and private agencies to ensure the smooth flow of services including law enforcement, construction and maintenance of public roads, bridges and the operations of county offices, equipment and services. The departments of the County government include:

- Board of Commissioners
- County Assessor
- County Attorney
- County Auditor
- County Recorder
- County Sheriff
- County Treasurer
- County Coroner
- County Clerk
- Emergency Management

Mitigation Initiatives and Capabilities

Staff capabilities to mitigate the impact of natural hazards include the local emergency management officials and local law enforcement members who are involved in mitigation planning, response and recovery processes. Efforts in coordinating with local government officials and cooperating with private organizations to: 1) prevent avoidable disasters and reduce the vulnerability of the residents to any disaster that may strike; 2) establish capabilities for protecting citizens from the effects of disasters; 3) respond effectively to the actual occurrences of disasters; and 4) provide for recovery in the aftermath of any emergency involving extensive damage within the county. The Emergency Management Director (EMD) is responsible for the development and maintenance of the Local Emergency Operations Plan.

Table 2.5 provides information about the mitigation capabilities and policies for the unincorporated county based on responses from the Mitigation Planning Data Collection Questionnaire.

Table 2.5. Unincorporated Texas County Mitigation Capabilities

Element	Yes, No, N/A	Comments and/or Weblink
Planning Capabilities		
Comprehensive Plan	Date: N	
Builder's Plan	Date: N	
Capital Improvement Plan	Date: N	
City Emergency Operations Plan	Date: N	
County Emergency Operations Plan	Date: Y – 2017	
Local Recovery Plan	Date: Y – 2014	
County Recovery Plan	Date: N	
City Mitigation Plan	Date: N	
County Mitigation Plan	Date: Y – 2014	
Debris Management Plan	Date: N	
Economic Development Plan	Date: Y – 2014	
Transportation Plan	Date: Y – 2018	
Land-use Plan	Date: N	
Flood Mitigation Assistance (FMA) Plan	Date: N	
Watershed Plan	Date: N	
Firewise or other fire mitigation plan	Date: N	
Critical Facilities Plan (Mitigation/Response/Recovery)	Date: N	
Policies/Ordinance		
Zoning Ordinance	N	
Building Code	Version: N	
Floodplain Ordinance	Date: N	
Subdivision Ordinance	N	
Tree Trimming Ordinance	N	
Nuisance Ordinance	N	
Stormwater Ordinance	N	
Drainage Ordinance	N	
Site Plan Review Requirements	N	

Element	Yes, No, N/A	Comments and/or Weblink
Seismic Construction Ordinance	N	
Historic Preservation Ordinance	N	
Landscape Ordinance	N	
Program		
Zoning/Land Use Restrictions	N	
Codes Building Site/Design	N	
Hazard Awareness Program	N	
National Flood Insurance Program (NFIP)	N	
NFIP Community Rating System (CRS) program	N	
National Weather Service (NWS) Storm Ready Certification	N	
Firewise Community Certification	N	
Building Code Effectiveness Grading (BCEGs)	N	
ISO Fire Rating	Rating: N/A	
Economic Development Program	N	
Land Use Program	N	
Public Education/Awareness	N	
Property Acquisition	N	
Planning/Zoning Boards	N	
Stream Maintenance Program	N	
Tree Trimming Program	N	
Engineering Studies for Streams (Local/County/Regional)	N	
Mutual Aid Agreements	N	
Studies/Reports/Maps		
Hazard Analysis/Risk Assessment (City)	N	
Hazard Analysis/Risk Assessment (County)	N	
Evacuation Route Map	N	
Critical Facilities Inventory	Y - 2014	
Vulnerable Population Inventory	N	
Land Use Map	N	

Element	Yes, No, N/A	Comments and/or Weblink
Staff/Department		**Full Time or Part Time?**
Building Code Official	N	
Building Inspector	N	
Mapping Specialist (GIS)	N	
Engineer	N	
Development Planner	N	
Public Works Official	N	
Emergency Management Coordinator	Y	PART TIME
NFIP Floodplain Administrator	N	
Emergency Response Team	N	
Hazardous Materials Expert	N	
Local Emergency Planning Committee	N	
County Emergency Management Commission	N	
Sanitation Department	N	
Transportation Department	Y	FULL TIME
Economic Development Department	N	
Housing Department	N	
Historic Preservation	N	
Non-Governmental Organizations (NGOs)	**Is there a local chapter? Yes or No**	
American Red Cross	N	
Salvation Army	N	
Veterans Groups	N	
Local Environmental Organization	N	
Homeowner Associations	N	
Neighborhood Associations	N	
Chamber of Commerce	N	
Community Organizations (Lions, Kiwanis, etc.	N	

Element	Yes, No, N/A	Comments and/or Weblink
Financial Resources		**Is your jurisdiction able to? Yes or No**
Apply for Community Development Block Grants		Y
Fund projects thru Capital Improvements funding		Y
Authority to levy taxes for specific purposes		Y
Fees for water, sewer, gas, or electric services		N
Impact fees for new development		N
Incur debt through general obligation bonds		Y
Incur debt through special tax bonds		Y
Incur debt through private activities		N
Withhold spending in hazard prone areas		N

Source: Data Collection Questionnaire

2.2.2 City of Cabool

The City of Cabool is located in the southern portion of Texas County at the intersection of US Highway 60 and US Highway 63N. The governing body of Cabool includes the Mayor and five council members. According to 2017 ACS estimates Bakersfield's current population is 2,369 individuals, more than a 10% increase since the 2010 census. The City of Cabool participated in the last update of the County-wide plan; however, specific mitigation activities undertaken by the City have been limited since 2014. City departments include:

- Mayor/Board of Aldermen
- City Clerk
- Water
- Sewer
- Electric
- Fire
- Police
- EMD
- Parks & Recreation

According to 2017 ACS estimates, the median year built for structures in Cabool is 1977. Additionally, 23.6% of the population were over the age of 65, median household income was $22,341, and 31.9% of the families in Cabool were living below the poverty level. The community does participate in the National Flood Insurance Program

- Mutual aid agreements with local fire and law enforcement
- Six Outdoor Warning Sirens

Table 2.6. City of Cabool Mitigation Capabilities

Element	Yes, No, N/A	Comments and/or Weblink
Planning Capabilities		
Comprehensive Plan	Date: Y - 1996	
Builder's Plan	Date: N	
Capital Improvement Plan	Date: N	
City Emergency Operations Plan	Date: N	
County Emergency Operations Plan	Date: Y – 2017	
Local Recovery Plan	Date: N	
County Recovery Plan	Date: N	
City Mitigation Plan	Date: N	
County Mitigation Plan	Date: Y – 2014	
Debris Management Plan	Date: N	
Economic Development Plan	Date: Y – 2014	
Transportation Plan	Date: Y – 2018	
Land-use Plan	Date: N	
Flood Mitigation Assistance (FMA) Plan	Date: N	
Watershed Plan	Date: N	
Firewise or other fire mitigation plan	Date: N	
Critical Facilities Plan (Mitigation/Response/Recovery)	Date: N	
Policies/Ordinance		
Zoning Ordinance	Y	
Building Code	Version: Y	
Floodplain Ordinance	Date: Y - 2001	
Subdivision Ordinance	Y	
Tree Trimming Ordinance	N	
Nuisance Ordinance	Y	
Stormwater Ordinance	N	
Drainage Ordinance	N	
Site Plan Review Requirements	N	

Element	Yes, No, N/A	Comments and/or Weblink
Historic Preservation Ordinance	N	
Landscape Ordinance	N	
Seismic Construction Ordinance	N	
Program		
Zoning/Land Use Restrictions	Y	
Codes Building Site/Design	Y	
Hazard Awareness Program	N	
National Flood Insurance Program (NFIP)	Y	
NFIP Community Rating System (CRS) program	N	
National Weather Service (NWS) Storm Ready Certification	N	
Firewise Community Certification	N	
Building Code Effectiveness Grading (BCEGs)	N	
ISO Fire Rating	Rating: 6	
Economic Development Program	Y	
Land Use Program	N	
Public Education/Awareness	N	
Property Acquisition	N	
Planning/Zoning Boards	Y	
Stream Maintenance Program	N	
Tree Trimming Program	N	
Engineering Studies for Streams (Local/County/Regional)	N	
Mutual Aid Agreements	Y	
Studies/Reports/Maps		
Hazard Analysis/Risk Assessment (City)	N	
Hazard Analysis/Risk Assessment (County)	N	
Evacuation Route Map	N	
Critical Facilities Inventory	Y - 2014	
Vulnerable Population Inventory	N	
Land Use Map	Y	

Element	Yes, No, N/A	Comments and/or Weblink
Staff/Department		**Full Time or Part Time?**
Building Code Official	Y	PART TIME
Building Inspector	N	
Mapping Specialist (GIS)	N	
Engineer	N	
Development Planner	N	
Public Works Official	Y	FULL TIME
Emergency Management Coordinator	Y	PART TIME
NFIP Floodplain Administrator	Y	PART TIME
Emergency Response Team	N	
Hazardous Materials Expert	N	
Local Emergency Planning Committee	N	
County Emergency Management Commission	N	
Sanitation Department	N	
Transportation Department	Y	FULL TIME
Economic Development Department	N	
Housing Department	N	
Historic Preservation	N	
Non-Governmental Organizations (NGOs)	**Is there a local chapter? Yes or No**	
American Red Cross	N	
Salvation Army	N	
Veterans Groups	N	
Local Environmental Organization	N	
Homeowner Associations	N	
Neighborhood Associations	N	
Chamber of Commerce	Y	
Community Organizations (Lions, Kiwanis, etc.	Y	
Financial Resources		**Is your jurisdiction able to? Yes or No**
Apply for Community Development Block Grants		Y

Element	Yes, No, N/A	Comments and/or Weblink
Fund projects thru Capital Improvements funding		Y
Authority to levy taxes for specific purposes		Y
Fees for water, sewer, gas, or electric services		Y
Impact fees for new development		N
Incur debt through general obligation bonds		Y
Incur debt through special tax bonds		Y
Incur debt through private activities		N
Withhold spending in hazard prone areas		Y

Source: Data Collection Questionnaire

2.2.3 City of Houston

The City of Houston is centrally located in Texas County along US Highway 63. The governing body of Gainesville includes the Mayor and five city council members. Houston's population growth was very strong between the years 2010 and 2017, with an estimated 16% increase in the city's number of residents. The 2017 ACS estimates indicate that the City's current population is 2,428. The City of Houston participated in the last update of the county-wide plan; however, specific mitigation activities undertaken by the City have been limited since 2014. City departments include:

- Mayor/Board of Aldermen
- City Administrator
- City Clerk
- Municipal Courts
- Water, Sewer
- Financial/Accounting
- Parks and Recreation
- Volunteer Fire Department

According to 2017 Estimates, the median year built for structures in in Houston is 1973. Additionally, 22.9% of the population were over the age of 65, median household income was $26,496, and 24.2% of the families in Houston were living below the poverty level.

Mitigation capabilities in Houston include:

- Five good-condition outdoor warning sirens
- Mutual aid agreements with local volunteer fire and law enforcement

Table 2.7. City of Houston Mitigation Capabilities

Element	Yes, No, N/A	Comments and/or Weblink
Planning Capabilities		
Comprehensive Plan	Date: Y - 2015	
Builder's Plan	Date: N	

Element	Yes, No, N/A	Comments and/or Weblink
Capital Improvement Plan	Date: Y - 2015	
City Emergency Operations Plan	Date: N	
County Emergency Operations Plan	Date: Y – 2017	
Local Recovery Plan	Date: N	
County Recovery Plan	Date: N	
City Mitigation Plan	Date: N	
County Mitigation Plan	Date: Y – 2014	
Debris Management Plan	Date: N	
Economic Development Plan	Date: Y – 2014	
Transportation Plan	Date: Y – 2018	
Land-use Plan	Date: N	
Flood Mitigation Assistance (FMA) Plan	Date: N	
Watershed Plan	Date: N	
Firewise or other fire mitigation plan	Date: N	
Critical Facilities Plan (Mitigation/Response/Recovery)	Date: N	
Policies/Ordinance		
Zoning Ordinance	Y	
Building Code	Version: Y	
Floodplain Ordinance	Date: Y - 2013	
Subdivision Ordinance	Y	
Tree Trimming Ordinance	N	
Nuisance Ordinance	Y	
Stormwater Ordinance	N	
Drainage Ordinance	N	
Site Plan Review Requirements	N	
Historic Preservation Ordinance	N	
Landscape Ordinance	N	
Seismic Construction Ordinance	N	
Program		
Zoning/Land Use Restrictions	Y	
Codes Building Site/Design	Y	

Element	Yes, No, N/A	Comments and/or Weblink
Hazard Awareness Program	N	
National Flood Insurance Program (NFIP)	Y	
NFIP Community Rating System (CRS) program	N	
National Weather Service (NWS) Storm Ready Certification	Y	
Firewise Community Certification	N	
Building Code Effectiveness Grading (BCEGs)	N	
ISO Fire Rating	Rating: 8	
Economic Development Program	Y	
Land Use Program	N	
Public Education/Awareness	N	
Property Acquisition	Y	
Planning/Zoning Boards	Y	
Stream Maintenance Program	N	
Tree Trimming Program	N	
Engineering Studies for Streams (Local/County/Regional)	N	
Mutual Aid Agreements	Y	
Studies/Reports/Maps		
Hazard Analysis/Risk Assessment (City)	N	
Hazard Analysis/Risk Assessment (County)	N	
Evacuation Route Map	N	
Critical Facilities Inventory	Y - 2014	
Vulnerable Population Inventory	N	
Land Use Map	Y	
Staff/Department		**Full Time or Part Time?**
Building Code Official	Y	PART TIME
Building Inspector	N	
Mapping Specialist (GIS)	N	
Engineer	N	
Development Planner	N	
Public Works Official	Y	FULL TIME

Element	Yes, No, N/A	Comments and/or Weblink
Emergency Management Coordinator	Y	PART TIME
NFIP Floodplain Administrator	Y	PART TIME
Emergency Response Team	N	
Hazardous Materials Expert	N	
Local Emergency Planning Committee	N	
County Emergency Management Commission	N	
Sanitation Department	N	
Transportation Department	Y	FULL TIME
Economic Development Department	N	
Housing Department	N	
Historic Preservation	N	
Non-Governmental Organizations (NGOs)	**Is there a local chapter? Yes or No**	
American Red Cross	N	
Salvation Army	N	
Veterans Groups	N	
Local Environmental Organization	N	
Homeowner Associations	N	
Neighborhood Associations	N	
Chamber of Commerce	Y	
Community Organizations (Lions, Kiwanis, etc.	Y	
Financial Resources		**Is your jurisdiction able to? Yes or No**
Apply for Community Development Block Grants		Y
Fund projects thru Capital Improvements funding		Y
Authority to levy taxes for specific purposes		Y
Fees for water, sewer, gas, or electric services		Y
Impact fees for new development		N
Incur debt through general obligation bonds		Y
Incur debt through special tax bonds		Y
Incur debt through private activities		N
Withhold spending in hazard prone areas		Y

2.2.4 City of Licking

The City of Licking is located in the northeast portion of Texas County along US Highway 63. The governing body of Licking includes the Mayor and four city council members. While still the largest community in the county by census measures, Licking's population has declined between the years 2010 and 2017, showing an estimated 7.5% reduction in city residents. The 2017 ACS estimates indicate that the City's current population is 2,889. The City of Licking participated in the last update of the county-wide plan; however, specific mitigation activities undertaken by the City have been limited since 2014. City departments include:

- Mayor/Board of Aldermen
- City Administrator
- City Clerk
- Municipal Courts
- Water, Sewer
- Financial/Accounting
- Parks and Recreation
- Volunteer Fire Department

According to 2017 Estimates, the median year built for structures in in Licking is 1975. Additionally, 16% of the population were over the age of 65, median household income was $24,559, and 21.8% of the families in Gainesville were living below the poverty level.

The City was awarded a HMGP grant in 2016 to install new outdoor storm warning sirens. Mitigation capabilities in Licking include:

- Two good-condition outdoor warning sirens; one poor condition
- Mutual aid agreements with local volunteer fire and law enforcement

Table 2.8. City of Licking Mitigation Capabilities

Element	Yes, No, N/A	Comments and/or Weblink
Planning Capabilities		
Comprehensive Plan	Date: N	
Builder's Plan	Date: N	
Capital Improvement Plan	Date: Y - 2015	
City Emergency Operations Plan	Date: Y - 1991	
County Emergency Operations Plan	Date: Y – 2017	
Local Recovery Plan	Date: Y - 1991	
County Recovery Plan	Date: N	
City Mitigation Plan	Date: N	
County Mitigation Plan	Date: Y – 2014	
Debris Management Plan	Date: N	

Element	Yes, No, N/A	Comments and/or Weblink
Economic Development Plan	Date: Y – 2014	
Transportation Plan	Date: Y – 2018	
Land-use Plan	Date: N	
Flood Mitigation Assistance (FMA) Plan	Date: N	
Watershed Plan	Date: N	
Firewise or other fire mitigation plan	Date: N	
Critical Facilities Plan (Mitigation/Response/Recovery)	Date: N	
Policies/Ordinance		
Zoning Ordinance	Y	
Building Code	Version: Y - IBC 2001	
Floodplain Ordinance	Date: Y - 2001	
Subdivision Ordinance	Y	
Tree Trimming Ordinance	N	
Nuisance Ordinance	Y	
Stormwater Ordinance	N	
Drainage Ordinance	N	
Site Plan Review Requirements	N	
Historic Preservation Ordinance	N	
Landscape Ordinance	N	
Seismic Construction Ordinance	N	
Program		
Zoning/Land Use Restrictions	Y	
Codes Building Site/Design	Y	
Hazard Awareness Program	N	
National Flood Insurance Program (NFIP)	Y	
NFIP Community Rating System (CRS) program	N	
National Weather Service (NWS) Storm Ready Certification	N	
Firewise Community Certification	N	
Building Code Effectiveness Grading (BCEGs)	N	
ISO Fire Rating	Rating: 7	

Element	Yes, No, N/A	Comments and/or Weblink
Economic Development Program	Y	
Land Use Program	N	
Public Education/Awareness	N	
Property Acquisition	Y	
Planning/Zoning Boards	Y	
Stream Maintenance Program	N	
Tree Trimming Program	N	
Engineering Studies for Streams (Local/County/Regional)	N	
Mutual Aid Agreements	Y	
Studies/Reports/Maps		
Hazard Analysis/Risk Assessment (City)	N	
Hazard Analysis/Risk Assessment (County)	N	
Evacuation Route Map	N	
Critical Facilities Inventory	Y - 2014	
Vulnerable Population Inventory	N	
Land Use Map	Y	
Staff/Department		**Full Time or Part Time?**
Building Code Official	Y	PART TIME
Building Inspector	N	
Mapping Specialist (GIS)	N	
Engineer	N	
Development Planner	N	
Public Works Official	Y	FULL TIME
Emergency Management Coordinator	Y	PART TIME
NFIP Floodplain Administrator	Y	PART TIME
Emergency Response Team	N	
Hazardous Materials Expert	N	
Local Emergency Planning Committee	N	
County Emergency Management Commission	N	
Sanitation Department	N	
Transportation Department	Y	FULL TIME

Element	Yes, No, N/A	Comments and/or Weblink
Economic Development Department	N	
Housing Department	N	
Historic Preservation	N	
Non-Governmental Organizations (NGOs)	**Is there a local chapter? Yes or No**	
American Red Cross	N	
Salvation Army	N	
Veterans Groups	N	
Local Environmental Organization	N	
Homeowner Associations	N	
Neighborhood Associations	N	
Chamber of Commerce	Y	
Community Organizations (Lions, Kiwanis, etc.	Y	
Financial Resources		**Is your jurisdiction able to? Yes or No**
Apply for Community Development Block Grants		Y
Fund projects thru Capital Improvements funding		Y
Authority to levy taxes for specific purposes		Y
Fees for water, sewer, gas, or electric services		Y
Impact fees for new development		N
Incur debt through general obligation bonds		N
Incur debt through special tax bonds		Y
Incur debt through private activities		N
Withhold spending in hazard prone areas		Y

2.2.5 Village of Plato

The Village of Plato is located in the northwest portion of Texas County along Missouri State Route 32. The governing body of Plato includes a Village Chairperson and four trustees. The smallest, yet most affluent community in the county, Plato's population has decreased significantly between the years 2000 and 2017, showing an estimated 17.4% reduction in city residents. The 2017 ACS estimates indicate that the Village's population is 90 persons. Plato participated in the last update of the county-wide plan; however, specific mitigation activities undertaken by the City have been limited since 2014. Village departments include:

- Chair/Trustees
- Clerk
- Water, Sewer
- Volunteer Fire Department

According to 2017 Estimates, the median year built for structures in in Plato is 1982. Additionally, 22% of the population were over the age of 65, median household income was $34,792, and 11.3% of the families in Plato were living below the poverty level.

- One good-condition outdoor warning sirens
- Mutual aid agreements with local volunteer fire and law enforcement

Table 2.9.

Element	Yes, No, N/A	Comments and/or Weblink
Planning Capabilities		
Comprehensive Plan	Date: N	
Builder's Plan	Date: N	
Capital Improvement Plan	Date: Y - 2015	
City Emergency Operations Plan	Date: N	
County Emergency Operations Plan	Date: Y – 2017	
Local Recovery Plan	Date: N	
County Recovery Plan	Date: N	
City Mitigation Plan	Date: N	
County Mitigation Plan	Date: Y – 2014	
Debris Management Plan	Date: N	
Economic Development Plan	Date: Y – 2014	
Transportation Plan	Date: Y – 2018	
Land-use Plan	Date: N	
Flood Mitigation Assistance (FMA) Plan	Date: N	
Watershed Plan	Date: N	
Firewise or other fire mitigation plan	Date: N	
Critical Facilities Plan (Mitigation/Response/Recovery)	Date: N	
Policies/Ordinance		
Zoning Ordinance	N	
Building Code	Version: N	

Element	Yes, No, N/A	Comments and/or Weblink
Floodplain Ordinance	Date: N	
Subdivision Ordinance	N	
Tree Trimming Ordinance	N	
Nuisance Ordinance	Y	
Stormwater Ordinance	N	
Drainage Ordinance	N	
Site Plan Review Requirements	N	
Historic Preservation Ordinance	N	
Landscape Ordinance	N	
Seismic Construction Ordinance	N	
Program		
Zoning/Land Use Restrictions	N	
Codes Building Site/Design	N	
Hazard Awareness Program	N	
National Flood Insurance Program (NFIP)	N	
NFIP Community Rating System (CRS) program	N	
National Weather Service (NWS) Storm Ready Certification	N	
Firewise Community Certification	N	
Building Code Effectiveness Grading (BCEGs)	N	
ISO Fire Rating	Rating: 6	
Economic Development Program	N	
Land Use Program	N	
Public Education/Awareness	N	
Property Acquisition	N	
Planning/Zoning Boards	N	
Stream Maintenance Program	N	
Tree Trimming Program	N	
Engineering Studies for Streams (Local/County/Regional)	N	
Mutual Aid Agreements	Y	

Element	Yes, No, N/A	Comments and/or Weblink
Studies/Reports/Maps		
Hazard Analysis/Risk Assessment (City)	N	
Hazard Analysis/Risk Assessment (County)	N	
Evacuation Route Map	N	
Critical Facilities Inventory	Y - 2014	
Vulnerable Population Inventory	N	
Land Use Map	Y	
Staff/Department		**Full Time or Part Time?**
Building Code Official	N	
Building Inspector	N	
Mapping Specialist (GIS)	N	
Engineer	N	
Development Planner	N	
Public Works Official	Y	FULL TIME
Emergency Management Coordinator	Y	PART TIME
NFIP Floodplain Administrator	N	
Emergency Response Team	N	
Hazardous Materials Expert	N	
Local Emergency Planning Committee	N	
County Emergency Management Commission	N	
Sanitation Department	N	
Transportation Department	N	
Economic Development Department	N	
Housing Department	N	
Historic Preservation	N	
Non-Governmental Organizations (NGOs)	**Is there a local chapter? Yes or No**	
American Red Cross	N	
Salvation Army	N	
Veterans Groups	N	
Local Environmental Organization	N	
Homeowner Associations	N	

Element	Yes, No, N/A	Comments and/or Weblink
Neighborhood Associations	N	
Chamber of Commerce	N	
Community Organizations (Lions, Kiwanis, etc.	Y	
Financial Resources		**Is your jurisdiction able to? Yes or No**
Apply for Community Development Block Grants		Y
Fund projects thru Capital Improvements funding		Y
Authority to levy taxes for specific purposes		Y
Fees for water, sewer, gas, or electric services		Y
Impact fees for new development		N
Incur debt through general obligation bonds		Y
Incur debt through special tax bonds		N
Incur debt through private activities		N
Withhold spending in hazard prone areas		N

2.2.6 Village of Raymondville

The Village of Raymondville is located in the east-central portion of Texas County along Missouri State Route 137. The governing body of Plato includes a Village Chairperson and four trustees. A community with a history steeped in the timber industry, Raymondville's population has increased significantly between the years 2000 and 2017, showing an estimated 51.8% increase in city residents. The 2017 ACS estimates indicate that the Village's population is approximately 363 persons. Raymondville participated in the last update of the county-wide plan; however, specific mitigation activities undertaken by the City have been limited since 2014. Village departments include:

- Chair/Trustees
- Clerk
- Water, Sewer
- Volunteer Fire Department

According to 2017 Estimates, the median year built for structures in in Raymondville is 1989. Additionally, 11.4% of the population were over the age of 65, median household income was $41,389, and 13.3 % of the families in Plato were living below the poverty level.

- Two poor-condition outdoor warning sirens
- Mutual aid agreements with local volunteer fire and law enforcement

Table 2.10. Village of Raymondville Mitigation Capabilities

Element	Yes, No, N/A	Comments and/or Weblink
Planning Capabilities		
Comprehensive Plan	Date: N	
Builder's Plan	Date: N	
Capital Improvement Plan	Date: Y - 2015	
City Emergency Operations Plan	Date: N	
County Emergency Operations Plan	Date: Y – 2017	
Local Recovery Plan	Date: N	
County Recovery Plan	Date: N	
City Mitigation Plan	Date: N	
County Mitigation Plan	Date: Y – 2014	
Debris Management Plan	Date: N	
Economic Development Plan	Date: Y – 2014	
Transportation Plan	Date: Y – 2018	
Land-use Plan	Date: N	
Flood Mitigation Assistance (FMA) Plan	Date: N	
Watershed Plan	Date: N	
Firewise or other fire mitigation plan	Date: N	
Critical Facilities Plan (Mitigation/Response/Recovery)	Date: N	
Policies/Ordinance		
Zoning Ordinance	N	
Building Code	Version: N	
Floodplain Ordinance	Date: N	
Subdivision Ordinance	N	
Tree Trimming Ordinance	N	
Nuisance Ordinance	Y	
Stormwater Ordinance	N	
Drainage Ordinance	N	
Site Plan Review Requirements	N	
Historic Preservation Ordinance	N	
Landscape Ordinance	N	

Element	Yes, No, N/A	Comments and/or Weblink
Seismic Construction Ordinance	N	
Program		
Zoning/Land Use Restrictions	N	
Codes Building Site/Design	N	
Hazard Awareness Program	N	
National Flood Insurance Program (NFIP)	N	
NFIP Community Rating System (CRS) program	N	
National Weather Service (NWS) Storm Ready Certification	N	
Firewise Community Certification	N	
Building Code Effectiveness Grading (BCEGs)	N	
ISO Fire Rating	Rating: 6	
Economic Development Program	N	
Land Use Program	N	
Public Education/Awareness	N	
Property Acquisition	N	
Planning/Zoning Boards	N	
Stream Maintenance Program	N	
Tree Trimming Program	N	
Engineering Studies for Streams (Local/County/Regional)	N	
Mutual Aid Agreements	Y	
Studies/Reports/Maps		
Hazard Analysis/Risk Assessment (City)	N	
Hazard Analysis/Risk Assessment (County)	N	
Evacuation Route Map	N	
Critical Facilities Inventory	Y - 2014	
Vulnerable Population Inventory	N	
Land Use Map	Y	
Staff/Department		**Full Time or Part Time?**
Building Code Official	N	
Building Inspector	N	

Element	Yes, No, N/A	Comments and/or Weblink
Mapping Specialist (GIS)	N	
Engineer	N	
Development Planner	N	
Public Works Official	Y	FULL TIME
Emergency Management Coordinator	Y	PART TIME
NFIP Floodplain Administrator	N	
Emergency Response Team	N	
Hazardous Materials Expert	N	
Local Emergency Planning Committee	N	
County Emergency Management Commission	N	
Sanitation Department	N	
Transportation Department	N	
Economic Development Department	N	
Housing Department	N	
Historic Preservation	N	
Non-Governmental Organizations (NGOs)	**Is there a local chapter? Yes or No**	
American Red Cross	N	
Salvation Army	N	
Veterans Groups	N	
Local Environmental Organization	N	
Homeowner Associations	N	
Neighborhood Associations	N	
Chamber of Commerce	N	
Community Organizations (Lions, Kiwanis, etc.	Y	
Financial Resources		**Is your jurisdiction able to? Yes or No**
Apply for Community Development Block Grants		Y
Fund projects thru Capital Improvements funding		Y
Authority to levy taxes for specific purposes		Y
Fees for water, sewer, gas, or electric services		Y
Impact fees for new development		N

Element	Yes, No, N/A	Comments and/or Weblink
Incur debt through general obligation bonds		N
Incur debt through special tax bonds		N
Incur debt through private activities		N
Withhold spending in hazard prone areas		N

Table 2.11. Mitigation Capabilities Summary Table

CAPABILITIES	County	Cabool	Houston	Licking	Plato	Raymondville
Planning Capabilities						
Comprehensive Plan	Date: N	Date: Y - 1996	Date: Y - 2015	Date: N	Date: N	Date: N
Builder's Plan	Date: N	Date: N	Date: N	Date: N	Date: N	Date: N
Capital Improvement Plan	Date: N	Date: N	Date: Y - 2015	Date: Y - 2015	Date: Y - 2015	Date: Y - 2015
City Emergency Operations Plan	Date: N	Date: N	Date: N	Date: Y - 1991	Date: N	Date: N
County Emergency Operations Plan	Date: Y – 2017	Date: Y – 2017	Date: Y – 2017	Date: Y – 2017	Date: Y – 2017	Date: Y – 2017
Local Recovery Plan	Date: Y – 2014	Date: N	Date: N	Date: Y - 1991	Date: N	Date: N
County Recovery Plan	Date: N	Date: N	Date: N	Date: N	Date: N	Date: N
City Mitigation Plan	Date: N	Date: N	Date: N	Date: N	Date: N	Date: N
County Mitigation Plan	Date: Y – 2014	Date: Y – 2014	Date: Y – 2014	Date: Y – 2014	Date: Y – 2014	Date: Y – 2014
Debris Management Plan	Date: N	Date: N	Date: N	Date: N	Date: N	Date: N
Economic Development Plan	Date: Y – 2014	Date: Y – 2014	Date: Y – 2014	Date: Y – 2014	Date: Y – 2014	Date: Y – 2014
Transportation Plan	Date: Y – 2018	Date: Y – 2018	Date: Y – 2018	Date: Y – 2018	Date: Y – 2018	Date: Y – 2018
Land-use Plan	Date: N	Date: N	Date: N	Date: N	Date: N	Date: N
Flood Mitigation Assistance (FMA) Plan	Date: N	Date: N	Date: N	Date: N	Date: N	Date: N
Watershed Plan	Date: N	Date: N	Date: N	Date: N	Date: N	Date: N
Firewise or other fire mitigation plan	Date: N	Date: N	Date: N	Date: N	Date: N	Date: N
Critical Facilities Plan	Date: N	Date: N	Date: N	Date: N	Date: N	Date: N
Policies/Ordinance	**Policies/Ordinance**					
Zoning Ordinance	N	Y	Y	Y	N	N
Building Code	Version: N	Version: Y	Version: Y	Version: Y - IBC	Version: N	Version: N
Floodplain Ordinance	Date: N	Date: Y - 2001	Date: Y - 2013	Date: Y - 2001	Date: N	Date: N
Subdivision Ordinance	N	Y	Y	Y	N	N
Tree Trimming Ordinance	N	N	N	N	N	N
Nuisance Ordinance	N	Y	Y	Y	Y	Y
Stormwater Ordinance	N	N	N	N	N	N
Drainage Ordinance	N	N	N	N	N	N
Site Plan Review Requirements	N	N	N	N	N	N
Historic Preservation Ordinance	N	N	N	N	N	N
Landscape Ordinance	N	N	N	N	N	N
Seismic Construction Ordinance	N	N	N	N	N	N

CAPABILITIES	County	Cabool	Houston	Licking	Plato	Raymondville
Program	**Program**					
Zoning/Land Use Restrictions	N	Y	Y	Y	N	N
Codes Building Site/Design	N	Y	Y	Y	N	N
Hazard Awareness Program	N	N	N	N	N	N
National Flood Insurance Program (NFIP)	N	Y	Y	Y	N	N
NFIP Community Rating System	N	N	N	N	N	N
National Weather Service (NWS)	N	N	Y	N	N	N
Firewise Community Certification	N	N	N	N	N	N
Building Code Effectiveness Grading (BCEGs)	N	N	N	N	N	N
ISO Fire Rating	Rating: N/A	Rating: 6	Rating: 8	Rating: 7	Rating: 6	Rating: 6
Economic Development Program	N	Y	Y	Y	N	N
Land Use Program	N	N	N	N	N	N
Public Education/Awareness	N	N	N	N	N	N
Property Acquisition	N	N	Y	Y	N	N
Planning/Zoning Boards	N	Y	Y	Y	N	N
Stream Maintenance Program	N	N	N	N	N	N
Tree Trimming Program	N	N	N	N	N	N
Engineering Studies for Streams	N	N	N	N	N	N
Mutual Aid Agreements	N	Y	Y	Y	Y	Y
Studies/Reports/Maps	**Studies/Reports/Maps**					
Hazard Analysis/Risk Assessment (City)	N	N	N	N	N	N
Hazard Analysis/Risk Assessment (County)	N	N	N	N	N	N
Evacuation Route Map	N	N	N	N	N	N
Critical Facilities Inventory	Y - 2014	Y - 2014	Y - 2014	Y - 2014	Y - 2014	Y - 2014
Vulnerable Population Inventory	N	N	N	N	N	N
Land Use Map	N	Y	Y	Y	Y	Y
Non-Governmental Organizations (NGOs)						
American Red Cross	N	N	N	N	N	N
Salvation Army	N	N	N	N	N	N
Veterans Groups	N	N	N	N	N	N
Local Environmental Organization	N	N	N	N	N	N
Homeowner Associations	N	N	N	N	N	N

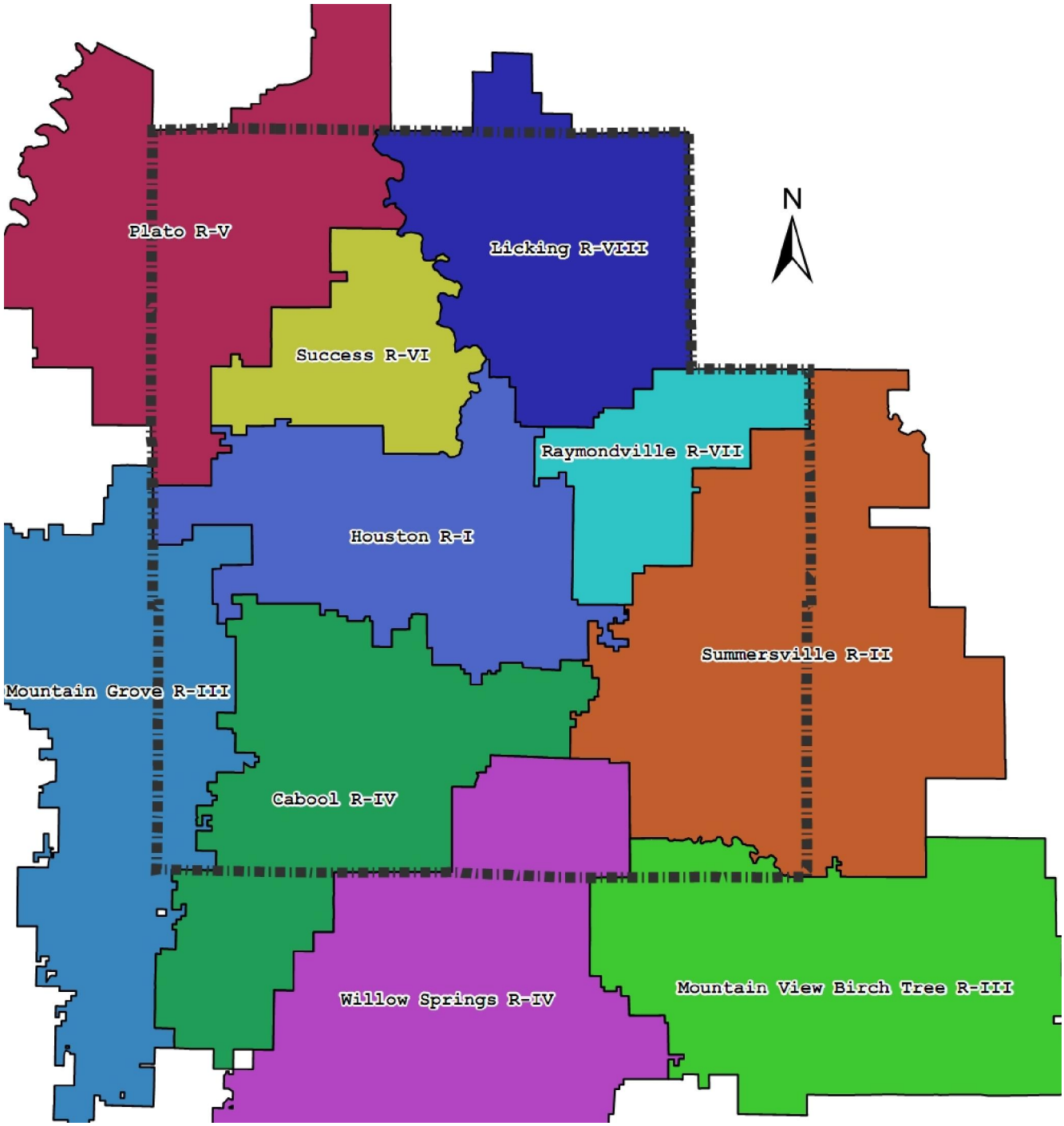
CAPABILITIES	County	Cabool	Houston	Licking	Plato	Raymondville
Neighborhood Associations	N	N	N	N	N	N
Chamber of Commerce	N	Y	Y	Y	N	N
Community Organizations	N	Y	Y	Y	Y	Y
Staff/Department						
Building Code Official	N	Y	Y	Y	N	N
Building Inspector	N	N	N	N	N	N
Mapping Specialist (GIS)	N	N	N	N	N	N
Engineer	N	N	N	N	N	N
Development Planner	N	N	N	N	N	N
Public Works Official	N	Y	Y	Y	Y	Y
Emergency Management Coordinator	Y	Y	Y	Y	Y	Y
NFIP Floodplain Administrator	N	Y	Y	Y	N	N
Emergency Response Team	N	N	N	N	N	N
Hazardous Materials Expert	N	N	N	N	N	N
Local Emergency Planning Committee	N	N	N	N	N	N
County Emergency Management Commission	N	N	N	N	N	N
Sanitation Department	N	N	N	N	N	N
Transportation Department	Y	Y	Y	Y	N	N
Economic Development Department	N	N	N	N	N	N
Housing Department	N	N	N	N	N	N
Historic Preservation	N	N	N	N	N	N
Financial Resources						
Apply for Community Development Block Grants	Y	Y	Y	Y	Y	Y
Fund projects thru Capital Improvements	Y	Y	Y	Y	Y	Y
Authority to levy taxes for specific purposes	N	Y	Y	Y	Y	Y
Fees for water, sewer, gas, or electric services	N	Y	Y	Y	Y	Y
Impact fees for new development	Y	N	N	N	N	N
Incur debt through general obligation bonds	Y	Y	Y	N	Y	N
Incur debt through special tax bonds	N	Y	Y	Y	N	N
Incur debt through private activities	N	N	N	N	N	N
Withhold spending in hazard prone areas	N	Y	Y	Y	N	N

Source: Data Collection Questionnaires,

2.2.7 Public School District Profiles and Mitigation Capabilities

This section provides general information about participating school districts in the Plan. There are seven school districts based in Texas County. Other school district boundaries include areas of Texas County but are not headquartered and do not have facilities within the county (Mountain Grove, Willow Springs, and Mountain View). Figure 2.2 is a map of school district boundaries in Texas County.

Figure 2.2. **Texas County School Districts**



2.2.8 Cabool R-IV School District

All of Cabool R-IV School District facilities are in the City of Cabool in southwest Texas County. Table 2.12 provides building and enrollment information.

Table 2.12.

Building Name	Address	Building Occupants
Elementary School	1025 Rogers Avenue	365
Jr. High School	1025 Rogers Avenue	224
High School	1025 Rogers Avenue	265

Cabool R-IV Schools are governed by a Board of Education consisting of the Board President and six board members. The District serves over 760 students and employees approximately 80 teachers and staff. District departments include:

- Transportation
- Cafeteria Services
- Custodial Services
- Health Services
- Central Office

The District was awarded a Pre Disaster Mitigation Grant to construct a FEMA standard tornado saferoom in 2013. Table 2.13 provides responses from the Mitigation Planning Data Collection Questionnaire for School Districts.

Table 2.13. Cabool R-IV School District Mitigation Capabilities

Capability		
Planning Elements	**Y/N**	**Date of Latest Version**
Master Plan	Y	2017
Capital Improvement Plan	Y	2017
School Emergency Plan	Y	2017
Weapons Policy	Y	2017
Personnel Resources	**Y/N**	**Department/Position**
Full Time Building Official	Y	Bldg. Principal
Emergency Manager	N	
Grant Writer	N	
Public Information Officer	Y	Superintendent
Information Technology	Y	Staff
Financial Resources	**Accessible/Eligible to Use?**	
Capital Improvement Project Funding	Y	
Local Funds	Y	
General Obligation Bonds	Y	
Special Tax Bonds	Y	
Private Activities Donations	Y	
State and Federal Grant Funds	Y	
Other		
Fire Evacuation Training	Y	
Tornado Sheltering Exercises	N	Shelter Operations Plan pending
Public Address/EAS	Y	
NOAA Weather Radios	Y	
Tornado Shelter/Saferoom	Y	
Campus Police	N	

Source: Data Collection Questionnaire

2.2.9 Houston R-I School District

All Houston School District Facilities are located in the City of Houston, in the central portion of Texas County. Table 2.14 provides building and enrollment information

Table 2.14.

Building Name	Address	Building Occupants
Elementary	423 W Pine	459
Jr. High School	423 W Pine	226
High School	423 W Pine	415

Houston Schools are governed by a Board of Education consisting of the Board President and six board members. The District serves over 900 students and employees approximately 120 teachers and staff. District departments include:

- Transportation
- Cafeteria Services
- Custodial Services
- Health Services
- Central Office

The City of Houston was awarded a Pre Disaster Mitigation Grant to construct a FEMA standard tornado saferoom in 2010. Table 2.15 provides responses from the Mitigation Planning Data Collection Questionnaire for School Districts.

Table 2.15. Houston School District Mitigation Capabilities

Capability		
Planning Elements	**Y/N**	**Date of Latest Version**
Master Plan	N	
Capital Improvement Plan	N	
School Emergency Plan	Y	2018
Weapons Policy	Y	2018
Personnel Resources	**Y/N**	**Department/Position**
Full Time Building Official	Y	BLDG PRINCIPALS
Emergency Manager	Y	SUPT.
Grant Writer	Y	CURRICULUM DIRECTOR
Public Information Officer	Y	SUPT.
Information Technology	N	
Financial Resources	**Accessible/Eligible to Use?**	
Capital Improvement Project Funding	Y	
Local Funds	Y	
General Obligation Bonds	Y	
Special Tax Bonds	N	
Private Activities Donations	N	
State and Federal Grant Funds	Y	
Other		
Fire Evacuation Training	Y	
Tornado Sheltering Exercises	Y	
Public Address/EAS	Y	
NOAA Weather Radios	Y	
Tornado Shelter/Saferoom	Y	
Campus Police	N	

Source: Data Collection Questionnaire

2.2.10 Licking R-VIII School District

All of Licking R-VIII School District Facilities are located in the City of Licking, in northern Texas County. Table 2.16 provides building and enrollment information

Table 2.16.

Building Name	Address	Building Occupants
Elementary	125 College Avenue	439
High School	125 College Avenue	420

Licking Schools are governed by a Board of Education consisting of the Board President and four board members. The District serves over 800 students and employees approximately 80 teachers and staff. District departments include:

- Transportation
- Cafeteria Services
- Custodial Services
- Health Services
- Central Office

The district does not have any facilities located in or near flood hazard areas. Table 2.17 provides responses from the Mitigation Planning Data Collection Questionnaire for School Districts.

Table 2.17. Licking School District Mitigation Capabilities

Capability		
Planning Elements	**Y/N**	**Date of Latest Version**
Master Plan	Y	2018
Capital Improvement Plan	Y	2019
School Emergency Plan	Y	2018
Weapons Policy	Y	2018
Personnel Resources	**Y/N**	**Department/Position**
Full Time Building Official	Y	HS Principal
Emergency Manager	Y	Superintendent
Grant Writer	y	Superintendent
Public Information Officer	Y	Superintendent
Information Technology	Y	Staff Personnel
Financial Resources	**Accessible/Eligible to Use?**	
Capital Improvement Project Funding	Y	
Local Funds	Y	
General Obligation Bonds	Y	
Special Tax Bonds	Y	
Private Activities Donations	Y	
State and Federal Grant Funds	Y	
Other		
Fire Evacuation Training	Y	
Tornado Sheltering Exercises	Y	
Public Address/EAS	Y	
NOAA Weather Radios	Y	
Tornado Shelter/Saferoom	y	
Campus Police	N	

Source: Data Collection Questionnaire

2.2.11 Plato R-V School District

All of Plato R-V School District Facilities are located in the Village of Plato, in northwestern Texas County along State Route 32. Table 2.18 provides building and enrollment information

Table 2.18.

Building Name	Address	Building Occupants
Elementary	10645 Plato Drive	272
High School	10645 Plato Drive	299

Plato Schools are governed by a Board of Education consisting of the Board President and six board members. The District serves over 450 students and employees approximately 55 teachers and staff. District departments include:

- Transportation
- Cafeteria Services
- Custodial Services
- Health Services
- Central Office

The district was awarded an HMGP grant in 2013 to construct a FEMA-standard 361 tornado safe room. Table 2.19 provides responses from the Mitigation Planning Data Collection Questionnaire for School Districts.

Table 2.19. Plato School District Mitigation Capabilities

Capability		
Planning Elements	**Y/N**	**Date of Latest Version**
Master Plan	Y	2018
Capital Improvement Plan	N	
School Emergency Plan	Y	2018
Weapons Policy	Y	2018
Personnel Resources	**Y/N**	**Department/Position**
Full Time Building Official	Y	HS Principal
Emergency Manager	Y	Superintendent
Grant Writer	N	
Public Information Officer	N	
Information Technology	N	
Financial Resources	**Accessible/Eligible to Use?**	
Capital Improvement Project Funding	Y	
Local Funds	Y	
General Obligation Bonds	N	
Special Tax Bonds	N	
Private Activities Donations	Y	
State and Federal Grant Funds	Y	
Other		
Fire Evacuation Training	Y	
Tornado Sheltering Exercises	Y	
Public Address/EAS	Y	
NOAA Weather Radios	Y	
Tornado Shelter/Saferoom	N	
Campus Police	N	

Source: Data Collection Questionnaire

2.2.12 Raymondville R-VII School District

All of Raymondville R-VII School District Facilities are located in the City of Raymondville, in eastern Texas County along State Route 137. Table 2.20 provides building and enrollment information

Table 2.20.

Building Name	Address	Building Occupants
K-12	135 W. State Highway B	140

Raymondville Schools are governed by a Board of Education consisting of the Board President and four board members. The District serves approximately 140 students and employees approximately 19 teachers and staff. District departments include:

- Transportation
- Cafeteria Services
- Custodial Services
- Health Services
- Central Office

The district does not have any facilities located in or near flood hazard areas. Table 2.21 provides responses from the Mitigation Planning Data Collection Questionnaire for School Districts.

Table 2.21. Raymondville School District Mitigation Capabilities

Capability		
Planning Elements	**Y/N**	**Date of Latest Version**
Master Plan	Y	2018
Capital Improvement Plan	Y	2019
School Emergency Plan	Y	2018
Weapons Policy	Y	2018
Personnel Resources	**Y/N**	**Department/Position**
Full Time Building Official	Y	HS Principal
Emergency Manager	Y	Superintendent
Grant Writer	y	Staff
Public Information Officer	Y	Superintendent
Information Technology	Y	Staff
Financial Resources	**Accessible/Eligible to Use?**	
Capital Improvement Project Funding	Y	
Local Funds	Y	
General Obligation Bonds	Y	
Special Tax Bonds	Y	
Private Activities Donations	Y	
State and Federal Grant Funds	Y	
Other		
Fire Evacuation Training	Y	
Tornado Sheltering Exercises	Y	
Public Address/EAS	Y	
NOAA Weather Radios	Y	
Tornado Shelter/Saferoom	N	
Campus Police	N	

Source: Data Collection Questionnaire

2.2.13 Success R-VI School District

All of Success R-VI School District Facilities are located in an unincorporated portion of Texas County, along State Route 32 inside the Mark Twain National Forest. Table 2.22 provides building and enrollment information

Table 2.22.

Building Name	Address	Building Occupants
K-9	10341 State Highway 17	109

Success Schools are governed by a Board of Education consisting of the Board President and four board members. The District serves over 100 students and employees approximately 17 teachers and staff. District departments include:

- Transportation
- Cafeteria Services
- Custodial Services
- Health Services
- Central Office

The district has on file a notice of interest to the HMGP program for construction of the 361-design safe room. Table 2.23 provides responses from the Mitigation Planning Data Collection Questionnaire for School Districts.

Table 2.23. Success School District Mitigation Capabilities

Capability		
Planning Elements	**Y/N**	**Date of Latest Version**
Master Plan	Y	2018
Capital Improvement Plan	N	
School Emergency Plan	Y	2018
Weapons Policy	Y	2018
Personnel Resources	**Y/N**	**Department/Position**
Full Time Building Official	Y	HS Principal
Emergency Manager	Y	Superintendent
Grant Writer	N	
Public Information Officer	N	
Information Technology	N	
Financial Resources	**Accessible/Eligible to Use?**	
Capital Improvement Project Funding	Y	
Local Funds	Y	
General Obligation Bonds	N	
Special Tax Bonds	N	
Private Activities Donations	Y	
State and Federal Grant Funds	Y	
Other		
Fire Evacuation Training	Y	
Tornado Sheltering Exercises	Y	
Public Address/EAS	Y	
NOAA Weather Radios	Y	
Tornado Shelter/Saferoom	N	
Campus Police	N	

Source: Data Collection Questionnaire

2.2.14 Summersville R-II School District

All of Summersville R-II School District Facilities are located in the City of Summersville, in extreme eastern Texas County, near the intersection of State Routes 17 & 106. Table 2.24 provides building and enrollment information

Table 2.24.

Building Name	Address	Building Occupants
Elementary	Missouri Route 106	265
High School	525 Rogers Avenue	184

Licking Schools are governed by a Board of Education consisting of the Board President and four board members. The District serves over 400 students and employees approximately 40 teachers and staff. District departments include:

- Transportation
- Cafeteria Services
- Custodial Services
- Health Services
- Central Office

The district was invited to submit a full PDM application for a safe room in 2018, results of this application are not yet known. Table 2.25 provides responses from the Mitigation Planning Data Collection Questionnaire for School Districts.

Table 2.25. Summersville School District Mitigation Capabilities

Capability		
Planning Elements	**Y/N**	**Date of Latest Version**
Master Plan	N	
Capital Improvement Plan	Y	2018
School Emergency Plan	Y	2018
Weapons Policy	Y	2018
Personnel Resources	**Y/N**	**Department/Position**
Full Time Building Official	Y	HS Principal
Emergency Manager	Y	Superintendent
Grant Writer	N	N/A
Public Information Officer	Y	Superintendent
Information Technology	Y	Staff Personnel
Financial Resources	**Accessible/Eligible to Use?**	
Capital Improvement Project Funding	Y	
Local Funds	Y	
General Obligation Bonds	N	
Special Tax Bonds	N	
Private Activities Donations	N	
State and Federal Grant Funds	Y	
Other		
Fire Evacuation Training	Y	
Tornado Sheltering Exercises	Y	
Public Address/EAS	Y	
NOAA Weather Radios	Y	
Tornado Shelter/Saferoom	N	
Campus Police	N	

Source: Data Collection Questionnaire

Table 2.26. Summary of Mitigation Capabilities - Texas County, Missouri School Districts

Capability	Cabool	Houston	Licking	Plato	Raymondville	Success	Summersville
Planning Elements	**Y/N**	**Y/N**	**Y/N**	**Y/N**	**Y/N**	**Y/N**	**Y/N**
Master Plan/ Date	Y	N	Y	Y	Y	Y	N
Capital Improvement Plan/Date	Y	N	Y	N	Y	N	Y
School Emergency Plan / Date	Y	Y	Y	Y	Y	Y	Y
Weapons Policy/Date	Y	Y	Y	Y	Y	Y	Y
Personnel Resources	**Y/N**	**Y/N**	**Y/N**	**Y/N**	**Y/N**	**Y/N**	**Y/N**
Full-Time Building Official	Y	Y	Y	Y	Y	Y	Y
Emergency Manager	N	Y	Y	Y	Y	Y	Y
Grant Writer	N	Y	y	N	y	N	N
Public Information Officer	Y	Y	Y	N	Y	N	Y
Information Technology	Y	N	Y	N	Y	N	Y
Financial Resources							
Capital Improvements Project Funding	Y	Y	Y	Y	Y	Y	Y
Local Funds	Y	Y	Y	Y	Y	Y	Y
General Obligation Bonds	Y	Y	Y	N	Y	N	N
Special Tax Bonds	Y	N	Y	N	Y	N	N
Private Activities/Donations	Y	N	Y	Y	Y	Y	N
State And Federal Funds/Grants	Y	Y	Y	Y	Y	Y	Y
Other							
Fire Evacuation Training	Y	Y	Y	Y	Y	Y	Y
Tornado Sheltering Exercises	N	Y	Y	Y	Y	Y	Y
Public Address/Emergency Alert System	Y	Y	Y	Y	Y	Y	Y
NOAA Weather Radios	Y	Y	Y	Y	Y	Y	Y
Tornado Shelter/Saferoom	Y	Y	y	N	N	N	N
Campus Police	N	N	N	N	N	N	N

Source: Data Collection Questionnaires

3 Texas County RISK ASSESSMENT

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

The goal of the risk assessment is to estimate the potential loss in the planning area, including loss of life, personal injury, property damage, and economic loss, from a hazard event. The risk assessment process allows communities and the school districts of Texas County 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 plan is an update of the previous Texas County Hazard Mitigation Plan adopted in 2014. According to the US Census Bureau, the 2017 ACS Population Estimate of Texas County was 25,714. This represents an estimated decrease of 244 residents or 1.1% decline since the 2010 census. The shrinking population of the county is concerning when compared to the State of Missouri's growth (7.0%) and the United States' growth (9.7%) during the same time period. The 2017 ACS estimate provides that there are 11,724 housing unties in Texas County, a slight increase since the 2010 decennial census.

This chapter is divided into four main parts:

- **Section 3.1 Hazard Identification** identifies the hazards that threaten Texas County and provides a factual basis for elimination of hazards from further consideration;
- **Section 3.2 Assets at Risk** provides Texas 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 the planning area. For each hazard, there are three sections: 1) Hazard Profile provides a general description and discusses the threat to the planning area, the geographic location at risk, potential severity/magnitude/extent, previous occurrences of hazard events, probability of future occurrence, risk summary by jurisdiction, impact of future development on the risk; 2) Vulnerability Assessment further defines and quantifies populations, buildings, critical facilities, and other jurisdictional assets at risk to natural hazards; and 3) Problem Statement briefly summarizes the problem and develops possible solutions.

3.1 Hazard Identification

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

Natural disasters to which pose a risk and are analyzed on a county-wide level are:

- Tornado
- Severe thunderstorms and hail/high winds
- Severe winter weather
- Drought
- Heat Wave
- Earthquake

Natural disasters that have a more defined risk area, thus posing a risk unique to each participating jurisdiction, are:

- Flooding
- Wildfires
- Sinkhole
- Dam failure

3.1.1 Review of Existing Mitigation Plans

Natural disaster data from the 2014 Texas County Hazard Mitigation Plan, 2018 Missouri State Hazard Mitigation Plan, the National Center for Environmental Information (NCEI), the National Oceanic and Atmospheric Administration (NOAA), the South Central Missouri Stormwater Management Planning Project, FEMA Flood Insurance Studies (FIS), South Central Threat Hazard Identification and Risk Assessment (THIRA), HAZUS-MH software, information from local officials and stakeholders were reviewed and incorporated, where appropriate, into this update of the Texas County Hazard Mitigation Plan.

Due to its location in middle-America, the Hazard Mitigation Planning Committee has eliminated coastal flooding from the list of disasters considered in this mitigation plan. Other natural disasters eliminated from the Risk Assessment due to geographic factors include: levee failure (none exist), landslides (slopes are not conducive to landslides), tsunamis (not coastal), hurricanes (not coastal) and tropical storms (not coastal), avalanches (no snow pack), volcanic activity (not in proximity to active volcanoes).

In Missouri, local hazard mitigation plans customarily include only natural hazards, as only natural hazards are required by federal regulations to be included. As a result, the Texas County Mitigation Planning Committee chose to include only natural hazards. Additionally, man-made disaster threats and events are covered in detail in the South Central Threat Hazard Identification and Risk Assessment and the MPC did not want to duplicate those efforts.

3.1.2 Review Disaster Declaration History

Federal and/or State Disaster Declarations may be granted when the severity and magnitude of an event surpasses the ability of the local government to respond and recover. Disaster assistance is supplemental and sequential. When the local government's capacity has been surpassed, a state disaster declaration may be issued, allowing for the provision of state assistance. If the disaster is so severe that both the local and state governments' capacities are exceeded; a federal emergency or disaster declaration may be issued allowing for the provision of federal assistance.

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

Table 3.1 lists the federal FEMA disaster declarations that included the planning area from 1990 to present.

Table 3.1. FEMA Disaster Declarations that included Texas County, Missouri, 1990-Present

Disaster Number	Description	Declaration Date-Incident Period	Individual Assistance (IA) Public Assistance (PA)
4317	SEVERE STORMS, TORNADOES, STRAIGHT-LINE WINDS, AND FLOODING	6/2/2017	IA, PA
4250	SEVERE STORMS, TORNADOES, STRAIGHT-LINE WINDS, AND FLOODING	1/21/2016	PA
3374	SEVERE STORMS, TORNADOES, STRAIGHT-LINE WINDS, AND FLOODING	1/2/2016	PA
4130	SEVERE STORMS, TORNADOES, STRAIGHT LINE WINDS AND FLOODING	7/18/2013	PA
1980	SEVERE STORMS, TORNADOES, AND FLOODING	5/9/2011	PA
3317	SEVERE WINTER STORM	2/3/2011	PA
1847	SEVERE STORMS, TORNADOES, AND FLOODING	6/19/2009	PA
3303	SEVERE WINTER STORM	1/30/2009	PA
1809	SEVERE STORMS, FLOODING, AND A TORNADO	11/13/2008	IA, PA
1748	WINTER STORMS AND FLOODING	3/12/2008	PA
1749	SEVERE STORMS AND FLOODING	3/19/2008	IA,PA
3281	SEVERE WINTER STORMS	12/12/2007	PA
1412	SEVERE STORMS, TORNADOES AND FLOODING	5/6/2002	IA, PA
1006	SEVERE STORMS, TORNADOES, AND FLOODING	12/1/1993	IA, PA
995	SEVERE STORMS & FLOODING	7/9/1993	IA, PA

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

3.1.3 Research Additional Sources

Sources for data contained within this risk assessment was gathered from the following sources:

- Missouri Hazard Mitigation Plans (2013 and 2018)
- 2014 Texas County Hazard Mitigation Plan
- Federal Emergency Management Agency (FEMA)
- Missouri Department of Natural Resources (MDNR)
- National Drought Mitigation Center Drought Reporter
- Data Collection Questionnaires completed by each participating jurisdiction
- Environmental Protection Agency
- Flood Insurance Administration
- Hazards US (HAZUS)
- Missouri Department of Transportation
- Missouri Division of Fire Marshal Safety
- National Fire Incident Reporting System (NFIRS)
- National Oceanic and Atmospheric Administration's (NOAA) National Center for Environmental Information (NCEI);
- 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
- United States Geological Survey (USGS)
- Various articles and publications available on the internet (citations will be given to sources throughout the assessment)

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

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

The database currently contains data from January 1950 to December 2018, as entered by the NWS. Due to changes in the data collection and processing procedures over time, there are unique periods of record available depending on the event type. The following timelines show the different time spans for each period of unique data collection and processing procedures.

- Tornado: From 1950 through 1954, only tornado events were recorded.

- Tornado, Thunderstorm Wind and Hail: From 1955 through 1992, only tornado, thunderstorm wind and hail events were keyed from the paper publications into digital data. From 1993 to 1995, only tornado, thunderstorm wind and hail events have been extracted from the Unformatted Text Files.

- All Event Types (48 from Directive 10-1605): From 1996 to present, 48 event types are recorded as defined in NWS Directive 10-1605.

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

3.1.4 Hazards Identified

The natural hazards that can possibly or have affected the planning area are profiled in alphabetical order. All hazards do not affect every jurisdiction participating in the plan. Table 3.2 provides a summary of the jurisdictions that may be affected by each hazard. An "X" in the table indicates that jurisdictions are affected 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	Wildfire	Flooding (River and Flash)	Land Subsidence/Sinkholes	Severe Winter Weather	Thunderstorm/Lightning/Hail/High Wind	Tornado
Texas County	X	X	X	X	X	X	X	X	X	X
City of Cabool	-	X	X	X	X	X	X	X	X	X
City of Houston	-	X	X	X	X	X	X	X	X	X
City of Licking	-	X	X	X	X	X	X	X	X	X
Village of Plato	-	X	X	X	X	X	X	X	X	X
Village of Raymondville	-	X	X	X	X	X	X	X	X	X
School Districts										
Cabool R-IV	-	X	X	X	X	X	X	X	X	X
Houston R-i	-	X	X	X	X	X	X	X	X	X
Licking R-VIII	-	X	X	X	X	X	X	X	X	X
Plato R-V	-	X	X	X	X	X	X	X	X	X
Raymondville R-VII	-	X	X	X	X	X	X	X	X	X
Success R-VI	-	X	X	X	X	X	X	X	X	X
Summersville R-II	-	X	X	X	X	X	X	X	X	X

3.1.5 Multi-Jurisdictional Risk Assessment

This planning document is the fourth quinquennial update of the Texas County Hazard Mitigation Plan. The Plan is multi-jurisdictional in nature, encompassing the county itself, four incorporated communities, and seven school districts. Each hazard detailed in this risk assessment is addressed on a planning area-wide basis. Some hazards, like flooding, vary in risk across the landscape of Texas County. These jurisdictional variations are include in the relevant hazard profiles.

The planning area is fairly uniform in terms of climate, topography, and building construction characteristics apart from the region's largest city, Houston. Municipalities in the county are: Cabool, Houston, Licking, Plato, Raymondville and Summersville. The remainder of the county is comprised of a sparse, ranch-based development pattern. While sparsely developed, agricultural areas do have assets—primarily livestock—that are vulnerable to the effects of natural hazards. The differences in vulnerability will be discussed in greater detail in the following pages.

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 natural hazards. The inventory of assets for each jurisdiction were derived from parcel data from the Texas County Assessor and the local jurisdiction data collection questionnaires to the greatest extent possible dependent on local staff expertise and capacity.

3.2.1 Total Exposure of Population and Structures

Table 3.3 shows the total population, parcel count, estimated value of parcels, estimated value of contents and estimated total exposure to parcels for the unincorporated Texas County and each incorporated city. Table 3.4 that follows provides the parcel value exposures for the county and each city in the planning area broken down by usage type. Finally, Table 3.5 provides the parcel count total for the county and each city in the planning area broken out by parcel usage types (residential, commercial, and agricultural).

Table 3.3. Maximum Population and Building Exposure by Participating Jurisdiction

Jurisdiction	2017 ACS Population	Building Count	Building Exposure ($)	Contents Exposure ($)	Total Exposure ($)
City of Cabool	2,369	1,281	9,515,268	6,280,076	15,795,344
City of Houston	2,428	1,604	16,822,564	11,102,892	27,925,456
City of Licking	2,889	951	8,995,115	4,857,362	13,852,477
Village of Plato	90	72	619,848	421,496	1,041,344
Village of Raymondville	551	202	1,154,602	762,037	1,916,639
Texas County	25,714	32,789	358,908,394	236,879,540	595,787,934
Totals	**-**	**-**	**397,368,779**	**261,101,665**	**658,470,444**

Sources: Population, 2010 U.S. Census; Building Count and Building Exposure, Missouri GIS Table 3.3. Identifies maximum building (or structural) exposure this is calculated the University of Missouri's statewide structures layer.
Database: http://sema.dps.mo.gov/programs/mitigation_management.php; Contents Exposure derived by applying multiplier to Building Exposure based on HAZUS MH 2.1 standard contents multipliers per usage type as follows: Residential (50%), Commercial (100%), Industrial (150%), Agricultural (100%). For purposes of these calculations, government, school, and utility were calculated at the commercial contents rate.

Table 3.4. Parcel Values/Exposure by Usage Type

Jurisdiction	Residential	Commercial	Agricultural	Total
City of Cabool	7,008,950	4,274,220	**208,498**	10,424,927
City of Houston	11,242,788	7,324,847	340,690	17,034,528
City of Licking	10,573,000	2,251,027	360,164	13,004,110
Village of Plato	651,463	42,486	14,162	708,113
Village of Raymondville	921,136	827,988	11,486	1,034,985
Texas County	76,895,570	10,434,550	13,236,110	100,566,230

Source: Missouri GIS Database, http://sema.dps.mo.gov/programs/mitigation_management.php;, Texas County Assessor

Table 3.5. Parcel Counts by Usage Type

Jurisdiction	Residential Counts	Commercial Counts	Agricultural Counts	Total*
City of Cabool	871	468	31	1,370
City of Houston	962	561	40	1,563
City of Licking	665	266	9	940
Village of Plato	66	5	1	72
Village of Raymondville	181	16	5	202
Texas County	15,685	75	11,804	27,564

Source: Missouri GIS Database, http://sema.dps.mo.gov/programs/mitigation_management.php; Texas County Assessor Public School Districts and Special Districts *Excludes "other" building types Table 3.3. Identifies maximum building (or structural) exposure this is calculated the University of Missouri's statewide structures layer. Table 3.4. provides the assessor's valuation of all parcels in the county. Table 3.4 provides the total parcel count in the county provided by the assessor's office. Not all parcels have structures on them, and some parcels have multiple structures on it, thus the discrepancy in table 3.3 & 3.5.

Even though school district total assets are included in the tables above, additional discussion is needed, based on the data that is available from the districts' completion of the Data Collection Questionnaire and district maintained websites. The number of enrolled students at the participating public school districts is provided in **Table 3.6** below. Additional information includes the number of buildings, building values (building exposure) and contents value (contents exposure).

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

Public School District	Enrollment	Building Count	Building Exposure ($)	Contents Exposure ($)	Total Exposure ($)
Cabool R-IV	791	3	52,802,112	7,181,000	59,983,199
Houston R-I	1,009	4	74,846,279	10,927,556	85,773,835
Licking R-VIII	905	2	40,136,322	5,458,539	45,594,861
Plato R-V	584	2	34,457,796	4,686,260	39,144,056
Raymondville R-VII	150	1	7,642,834	1,039,425	8,682,259
Success R-VI	117	1	3,214,694	437,198	3,214,694
Summersville R-II	434	2	29,082,367	3,955,201	29,082,367

Source: http://mcds.dese.mo.gov/quickfacts/Pages/District-and-School-Information.aspx/ ; Data Collection Questionnaires

3.2.2 Critical and Essential Facilities and Infrastructure

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

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

Table 3.7 includes a summary of the inventory of critical and essential facilities and infrastructure in the planning area. The list was compiled from the Data Collection Questionnaire.

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

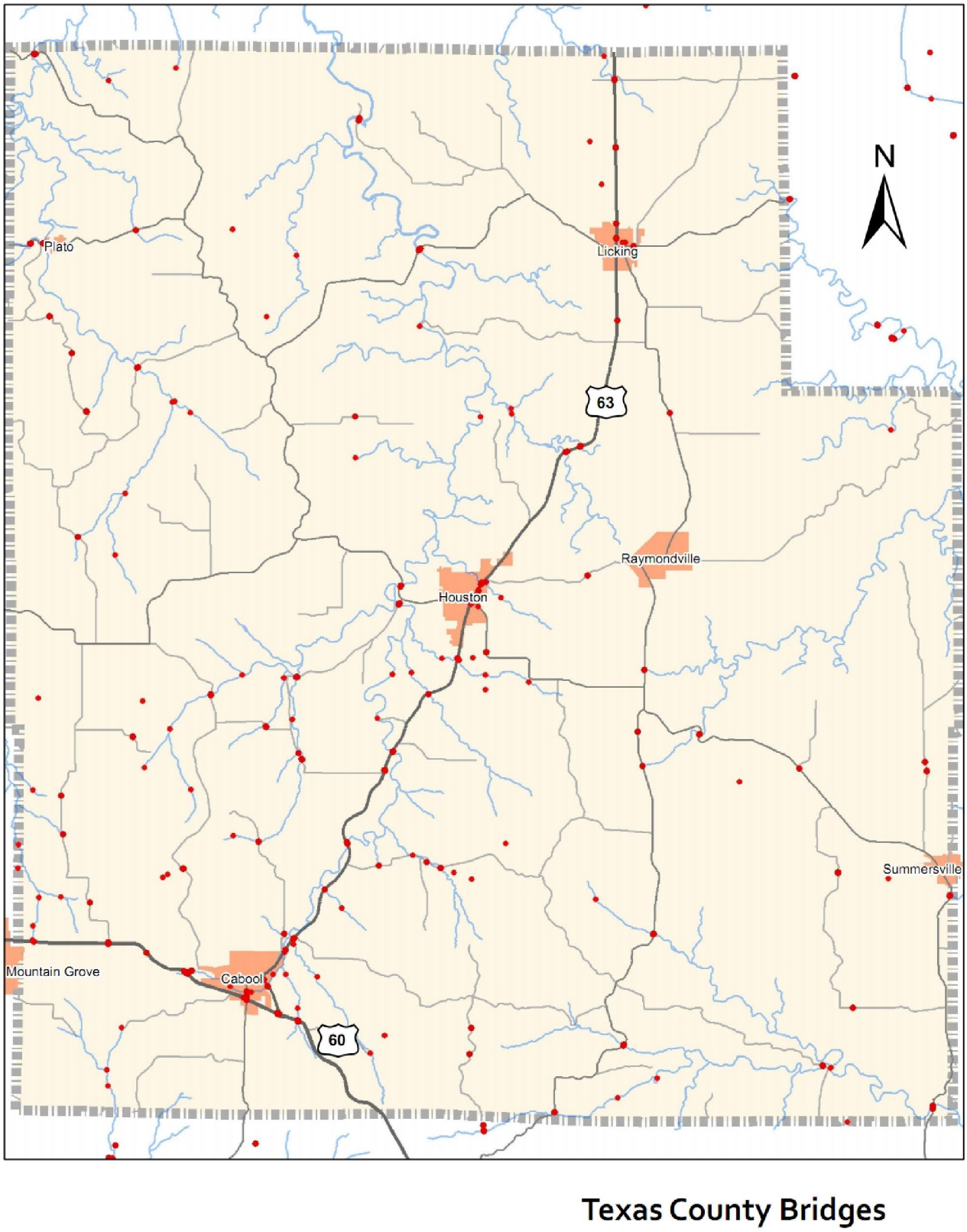
Jurisdiction	Airport Facility	Bus Facility	Childcare Facility	Communications Tower	Electric Power Facility	Emergency Operations	Fire Service	Government	Highway Bridge	Hospital/Health Care	Military	Natural Gas Facility	Nursing Homes	Police Station	Potable Water Facility	Rail	Sanitary Pump Stations	School Facilities	Tier II Chemical Facility	Wastewater Facility	Total
City of Cabool	1	0	4	3	2	1	1	1	9	1	0	0	3	1	1	1	1	3	0	1	34
City of Houston	1	1	7	3	3	1	1	1	6	5	0	0	5	1	1	0	4	3	0	1	44
City of Licking	0	1	3	2	4	1	1	1	5	1	0	0	2	2	1	0	1	2	0	1	28
Village of Plato	0	0	0	1	0	1	1	1	1	0	0	0	0	1	0	0	0	1	0	0	7
Village of Raymondville	0	0	0	2	0	1	1	1	0	0	0	0	0	0	1	0	1	1	0	1	9
City of Summersville**	0	0	1	1	1	1	1	1	0	1	0	0	0	1	1	0	1	2	0	1	13
Texas County *Unincorporated*	0	0	5	15	4	0	6	2	141	1	0	0	0	0	0	1	0	1	0	0	176
Totals	**2**	**2**	**20**	**27**	**14**	**6**	**12**	**8**	**162**	**9**	**0**	**0**	**10**	**6**	**5**	**2**	**8**	**13**	**0**	**5**	**311**

Source: Data Collection Questionnaires 2019

On the following page is a map of the location of the bridges in the planning area included in the National Bridge Inventory data set.

**The City of Summersville is included in this inventory for planning purposes to provide full context; however they are not participating in this plan update.

Figure 3.1. Texas County Bridges



A bridge's scour index is a number indicating the vulnerability of a bridge to scour during a flood. Bridges with a scour index between 1 and 3 are considered "scour critical", or a bridge with a foundation determined to be unstable for the observed or evaluated scour condition. According to the data provided by the Missouri Department of Transportation, there are no "scour critical" bridges in Texas County, Missouri.

Travelway	Body of Water	Classification	Scour Index
-	-	-	-

3.2.3 Other Assets

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

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

Table 3.8. Threatened and Endangered Species in Texas County, Missouri

Common Name	Scientific Name	Status
Gray Bat	Myotis grisescens	Endangered
Indiana Bat	Myotis sodalist	Endangered
Northern Long-Eared Bat	Myotis septentrionalis	Threatened
Ozark Hellbender	Cryptobranchus alleganiensis bishopi	Endangered
Decurrent false aster	Boltonia decurrens	Threatened
Virginia Sneezeweed	Helenium virginicum	Threatened

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

Natural Resources:

Table 3.9. Parks in Texas County

Area Name	Address	City
Barn Hollow Natural Area	Route 17	Summersville
Piney River Narrows Natural Area	Route 17	Houston
Paddy Creek Wilderness	Route 32	Plato

http://mdc4.mdc.mo.gov/applications/moatlas/AreaList.aspx?txtUserID=guest&txtAreaNm=s

Park Name	Address	City
Piney River Rec. Area	Route 137	Cabool
Davis Park	City	Cabool
Houston City Park	3rd Street	Houston
Deer Lick Park	Route 137	Licking
Raymondville Park	Route B	Raymondville
Summersville Lions Park	Route 106	Summersville

Source: MDC, Data Collection Questionnaires

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

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

Property	Address	City	Date Listed
Bates-Geers House	Slabtown Road	Plato	1982
Cole House	Rocky Branch Road	Houston	1998
Houston Ranger District Station	US 63	Houston	2003
Houston High School	West Pine Street	Houston	2009
White Rock Archaeological Area	Route 17	Houston	1969

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

Economic Resources:

Table 3.11. Major Non-Government Employers in Texas County

Employer Name	Main Locations	Product or Service	Employees
Correctional Center	Licking	Prision	150-200
Texas County Hospital	Houston	Healthcare	150-200
Dairy Farmers of America	Cabool	Manufacturing	100-150
The Durham Company	Houston	Manufacturing	100-150

Source: Data Collection Questionnaires; local Economic Development Commissions

Agriculture

Table 3.12. Agriculture-Related Sales in Texas County

Value of Sales by Commodity Group	State Rank (out of 114)
Sheep, goats, wool, mohair, and milk	12
Milk from Cows	12
Horses, ponies, mules, burros and donkeys	14
Cattle and calves	15

Source: 2012 Missouri Agricultural Census

Table 3.13. Top Livestock Inventory Items

Livestock Inventory	State Rank (out of 114) Product or Service Employees
Goats, all	9
Cattle and calves	10
Horses and Ponies	14

Source: 2012 Missouri Agricultural Census

3.3 Future Land Use and Development

Table 3.14. County Population Growth, 2000-2017

Jurisdiction	2000 Population	2017 Population	2000-2017 # Change	2000-2017 %Change
Texas County	26,008	25,714	-294	--1.1
City of Cabool	2,146	2,369	+223	+10.4
City of Houston	2,081	2,428	+347	+16.7
City of Licking	3,124	2,889	-235	-7.5
Village of Plato	109	90	-19	-17.4
Village of Raymondville	363	551	+188	+51.8

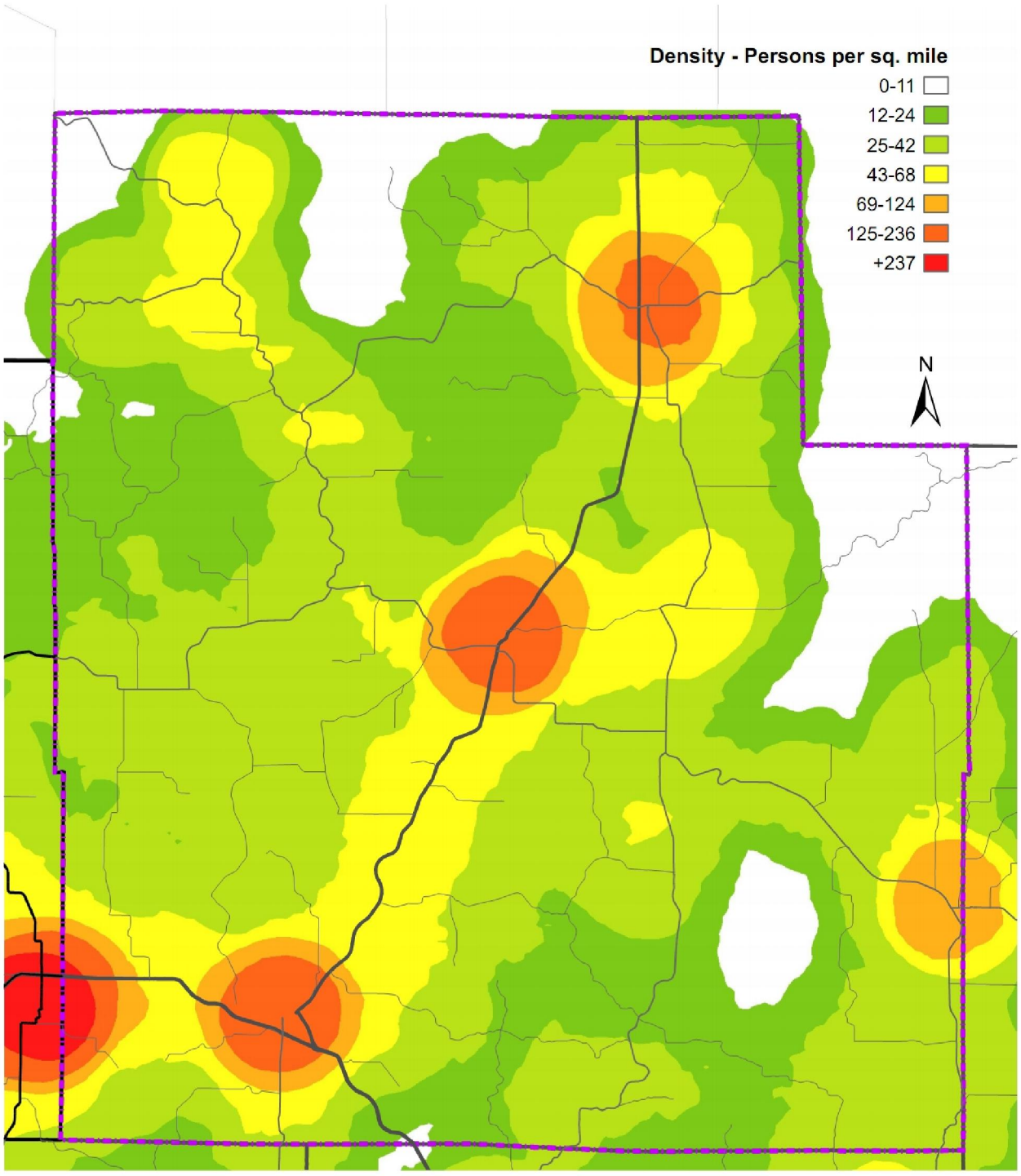
Source: U.S. Bureau of the Census, Decennial Census; Population Statistics are for entire incorporated areas as reported by the Census bureau

Table 3.15. Change in Housing Units, 2000-2017

Jurisdiction	Housing Units 2017	Housing Units 2000	2000-2017 % change
Texas County	11,724	10,764	8.90%
City of Cabool	1,118	1,054	6%
City of Houston	1,184	1,060	12%
City of Licking	777	742	5%
Village of Plato	55	48	15%
Village of Raymondville	250	189	32%

Source: U.S. Bureau of the Census, Decennial Census; Population Statistics are for entire incorporated areas as reported by the U.S. Census Bureau

Figure 3.2. Population Density in Texas County and Adjacent Areas



3.4 Hazard Profiles, Vulnerability, and Problem Statements

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

Hazard Profiles

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

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

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

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

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

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

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

Vulnerability Assessments

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

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

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

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

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

Following the hazard profile for each hazard will be the vulnerability assessment. The vulnerability assessment further defines and quantifies populations, buildings, critical facilities, and other community assets at risk to damages from natural hazards. The vulnerability assessments will be based on the best available county-level data, which is in the Missouri Hazard Mitigation Plan (2018). 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 Texas County plan will also be based on:

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

Vulnerability Overview provided for each hazard consists of:

Potential Losses to Existing Development: Includes types and numbers, of buildings, critical facilities.

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..

3.4.1 Dam Failure

Hazard Profile

Hazard Description

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

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

According to the State Plan, Missouri had some 5,423 recorded dams in 2013, the largest number of man-made dams of any state in the country. Missouri topography allows lakes to be built easily and inexpensively, which accounts for the high number of dams. Despite the large number of dams, there are only 682 (about 13 percent) state regulated dams, with an additional 66 federally regulated dams. Federal dams in Missouri are primarily regulated by two federal agencies; the US Army Corps of Engineers (USACE) and the US Department of Agriculture Forest Service. The remaining 4,495 dams are unregulated.

Dams that fall under state regulation are non-federally regulated dams that are more than 35 feet in height. Most nonfederal dams are privately owned structures built either for agricultural, water supply or recreational use. The Department of Natural Resources (MDNR) Water Resources Center maintains the Dam and Reservoir Safety Program in Missouri. The program ensures that dams over 35 feet in height are safely constructed, operated, and maintained pursuant to Chapter 236 of the Revised Statutes of Missouri.

The Department of Natural Resources provided information about regulated and unregulated dams in Missouri. The information includes details of the dam dimensions, date of construction, approximate reservoir volume, contributing drainage basin area and hazard classification. In addition, USACE maintains the National Inventory of Dams (NID). The information in the NID database matches the list from the MDNR website with some additional details for dams in Texas County. Although both agencies proved a hazard classification for dams, the dam classification systems differ.

The Missouri Dam and Reservoir Safety Council Rules and Regulations uses three classes of downstream environmental zones used when considering permits. The downstream environment zone is the area below the damn that would become inundated should the dam fail. Inundation is defined as water two feet or more over the submerged ground outside of the stream channel. These classes are based on the number of structures and types of development contained within the inundation area as presented in Table 3.16. The downstream environment zone classification is also used to prescribe the frequency of inspection.

Table 3.16. MDNR Dam Hazard Classification Definitions

Hazard Class	Definition
Class I	The area downstream from the dam that would be affected by inundation contains ten (10) or more permanent dwellings or any public building. Inspections of these dams must occur every two years.
Class II	The area downstream from the dam that would be affected by inundation contains one to nine permanent dwellings, or one (1) or more campgrounds with permanent water, sewer and electrical services or one (1) or more industrial buildings. Inspections of these dams must occur once every three years.
Class III	The area downstream from the dam that would be affected by inundation does not contain any of the structures identified for Class I or Class II dams. Inspections of these dams must occur once every five years.

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

Dams in the NID are classified according to hazard potential, an indicator of the consequences of dam failure. A dam's hazard potential classification, presented in Table 3.17 does not indicate its condition. Dams assigned the high hazards potential classification are those where failure will potentially result in loss of human life. Significant hazard potential are those dams where failure results in no probable loss of human life but can cause economic loss. Dams assigned the low hazard potential classification are those where failure will result in no probable loss of human life and low economic or environmental losses. Losses are principally limited to the owner's property.

Table 3.17. NID Dam Hazard Classification Definitions

Hazard Class	Definition
Low Hazard	Failure results in only minimal property damage
Significant Hazard	Failure could possibly result in the loss of life and appreciable property damage
High Hazard	If the dam were to fail, lives would likely be lost and extensive property damage would result

Source: National Inventory of Dams

There is not a direct correlation between the State Hazard classification and the NID classifications. However, most dams that are in the States Classes I and II are considered NID High Hazard Dams.

Geographic Location

According to the MDNR there are seven total dams in Texas County and one regulated dams. MDNR lists zero as hazard class 1, two dams listed as hazard class 2: Austin Community Lake and Hutcheson Lake.

NID data indicated that there are eight total dams in the county, with five listed as low hazard potential, three listed as high hazard potential, and zero listed as significant hazard potential.

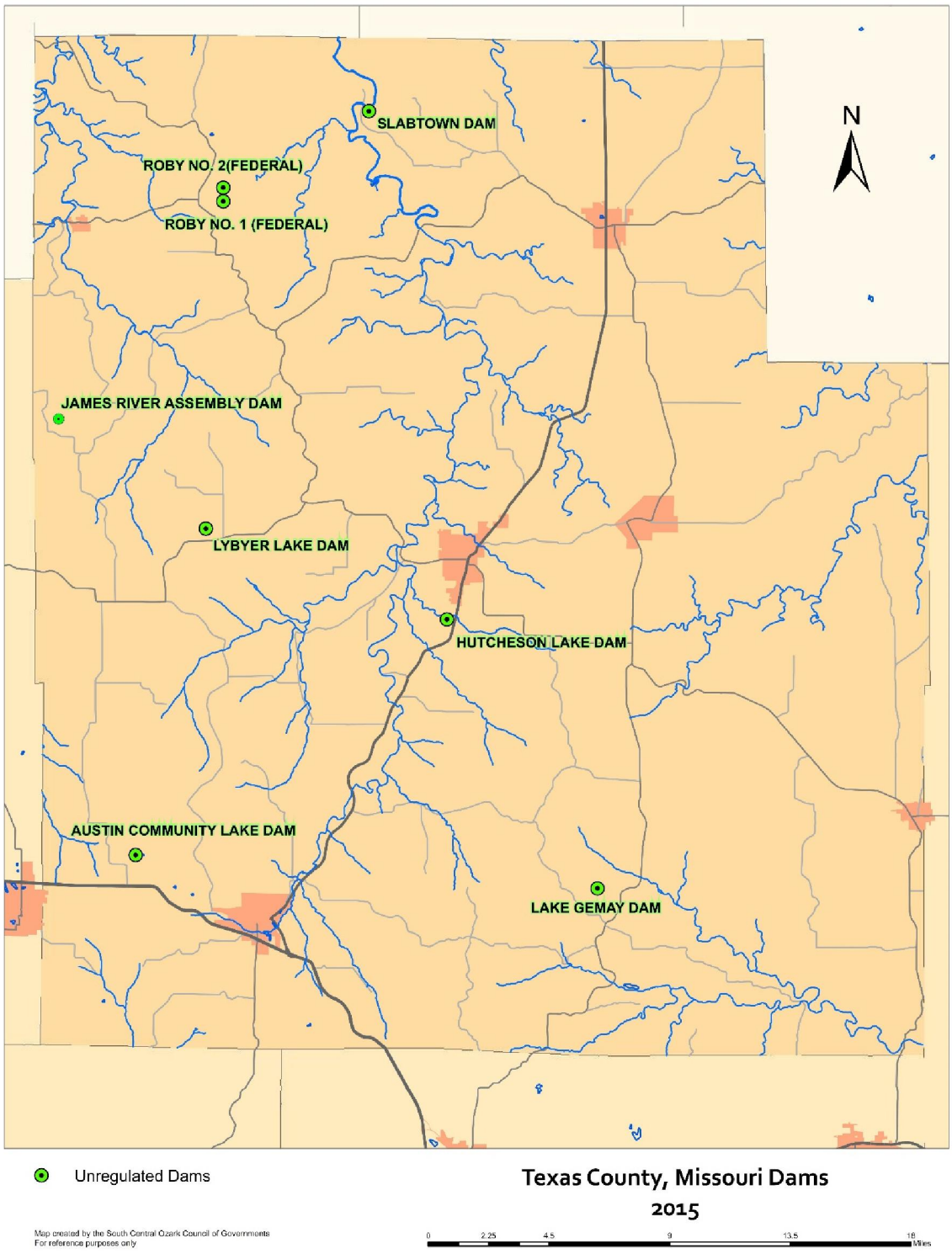
Dams in Planning Area

Table 3.18. Dams in the Texas County Planning Area

Dam Name	Emergency Action Plan (EAP)AP	Dam Height (Ft)	Normal Storage (Acre-Ft)	Last Inspection Date	River	NID Hazard Class Level	Nearest Downstream City	Distance To Nearest City (Miles)	Dam Owner
Hutcheson Lake Dam	-	25	54	-	Trib. Indian Creek	H	Houston	1	Nolan Hutcheson
Lake Gemay Dam	-	27	53	-	Trib. Jacks Fork	L	Alley	2	Joseph Mueller
Roby Lake 1	-	27	105	3/31/09	Little Paddy Creek	L	Roby	5	US Forest Service
Roby Lake 2	-	15	150	3/31/09	Trib. Little Paddy Cr.	L	Roby	5	US Forest Service
Austin Community Lake Dam	-	27	332	-	Trib. Beaver Creek	H	Manes	18	MO Dept. Conservation
Slabtown Dam	-	12	77	-	Trib. Big Piney	L	Slabtown	1	Ed Green
James River Assembly Dam	Y	42.7	108	1/28/16	Trib. Burkhart Branch	H	Huggins	3	Private
Lybyer Lake	-	28	133	-	Trib. Roubidoux Creek	L	Roubidoux	1	Mike Lybyer

Source: USACE National Inventory of Dams

Figure 3.3. Dams in the Planning Area



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

Upstream Dams Outside the Planning Area

There are no upstream dams outside of the planning area that pose an inundation threat to Texas County in the event of failure.

Severity/Magnitude/Extent

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

Actual dam failure can result not only in loss of life, but also considerable loss of capital investment, loss of income, and property damage. Loss of the reservoir itself can cause hardship for those dependent on it for their livelihood or water supply.

Previous Occurrences

There are no records of dam failure in Texas County. Since there are zero recorded events in the planning area, a calculation of a probability percent is not possible. According to information from the 2018 State Plan, Missouri's percentage of high hazard dams in the MDNR inventory puts the State at about the national average for that category. However, if development occurs downstream of dams the percentage of high hazard dams will increase. Additionally, the probability of dam failure increases as many of the smaller and privately owned dams continue to deteriorate without the benefit of further regulation or improvements. Regular inspection and maintenance schedules for dams greatly reduces the probability of dam failure.

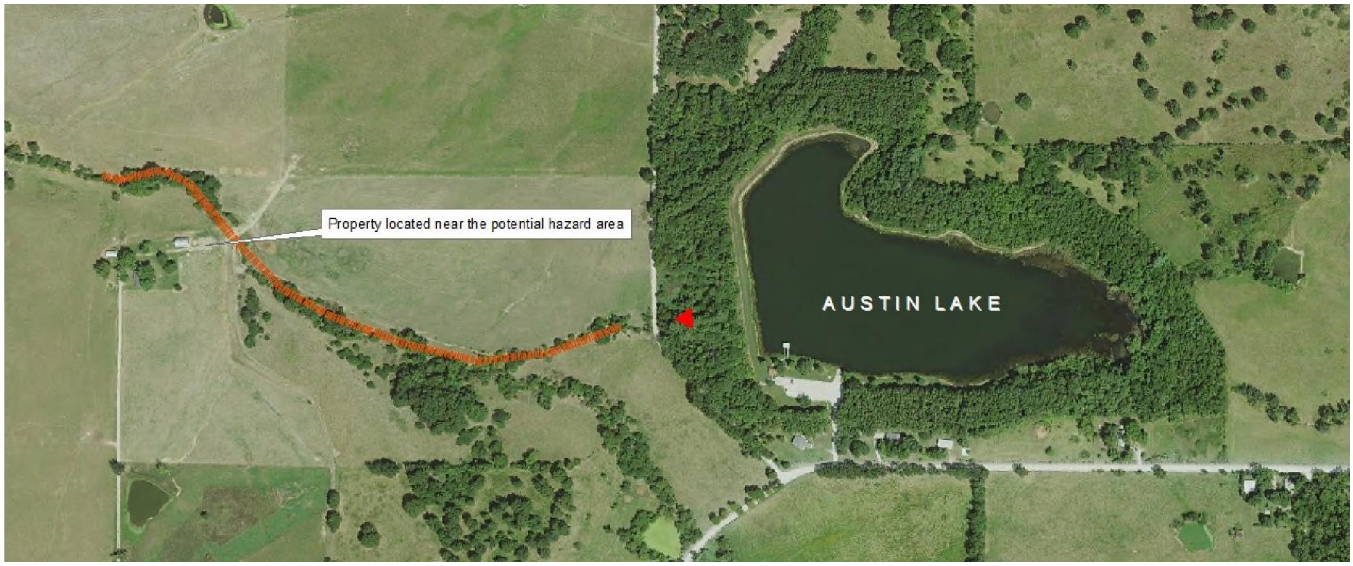
Probability of Future Occurrence

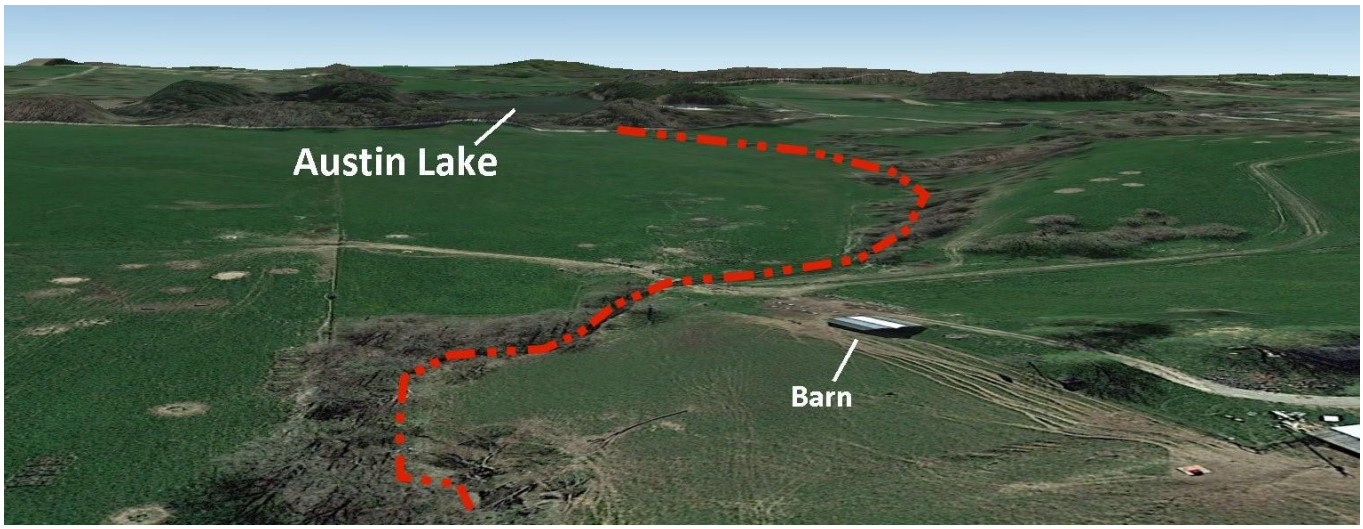
There is no record of dam failure within the county. For the 26-year period from 1975 to 2001 for which dam failure statistics are available, 17 dam failures were recorded. This does not include the devastating Taum Sauk failure in 2005 or the Moon Valley Lake Dam failure in 2008 since the comprehensive data collected by Stanford University was not updated past 2001. According to this data, the annual probability calculated to and 65% (17/26 = 0.65 or 65%) probability in any given year for at least one dam failure event in the State of Missouri. However, with over 5,000 dams in the State, this translates to an overall low probability per dam structure.

Vulnerability

Vulnerability to dam failure in Texas County is limited to structures and critical infrastructure located in dam inundation zones. Only one dam is located near an incorporated community, Hutcheson Lake Dam is located on the southern edge of the City of Houston just west of US Highway 63. The remaining two NID high hazard dams are located in the unincorporated areas of the county: Austin Community Lake and James River Assembly. There are three regulated dams in the county, and no existing inundation zone maps for any dams in Texas County. There is one EAP for James River Assembly Dam in the northwest portion of the unincorporated County. The following figures 3.4 to 3.6 depict the expected flow direction of water in the event of dam failure at the three NID High Hazard Dams.

Figure 3.4. Austin Community Lake – High Hazard – Cabool, MO





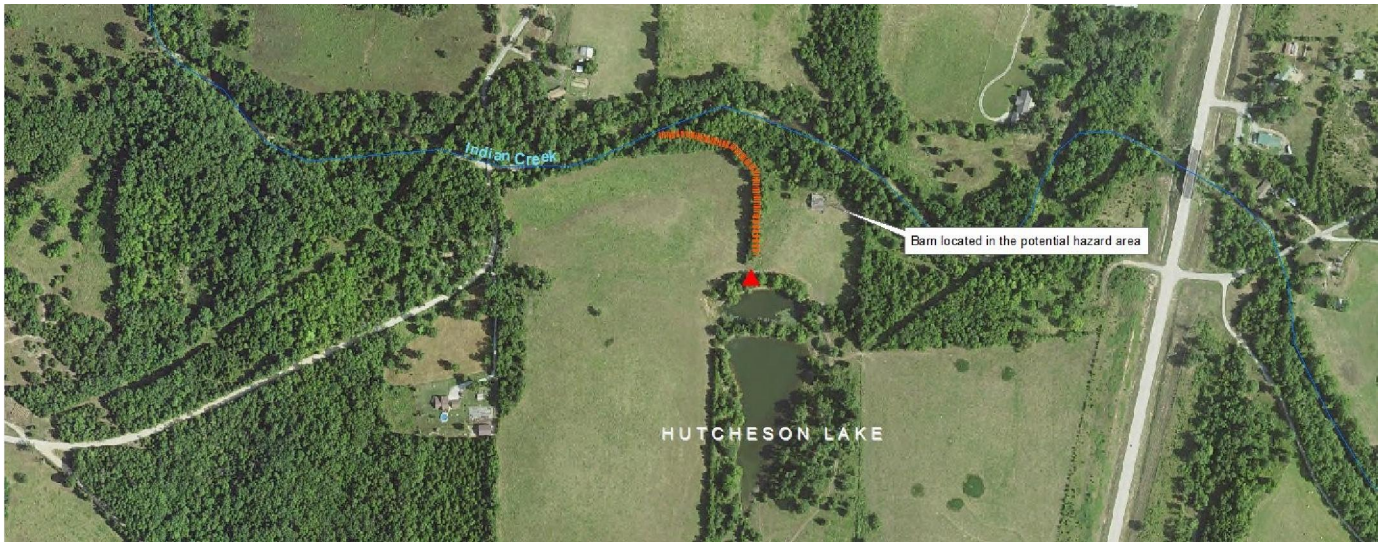
Potential Losses to Existing Development: (including types and numbers, of buildings, critical facilities, etc.)

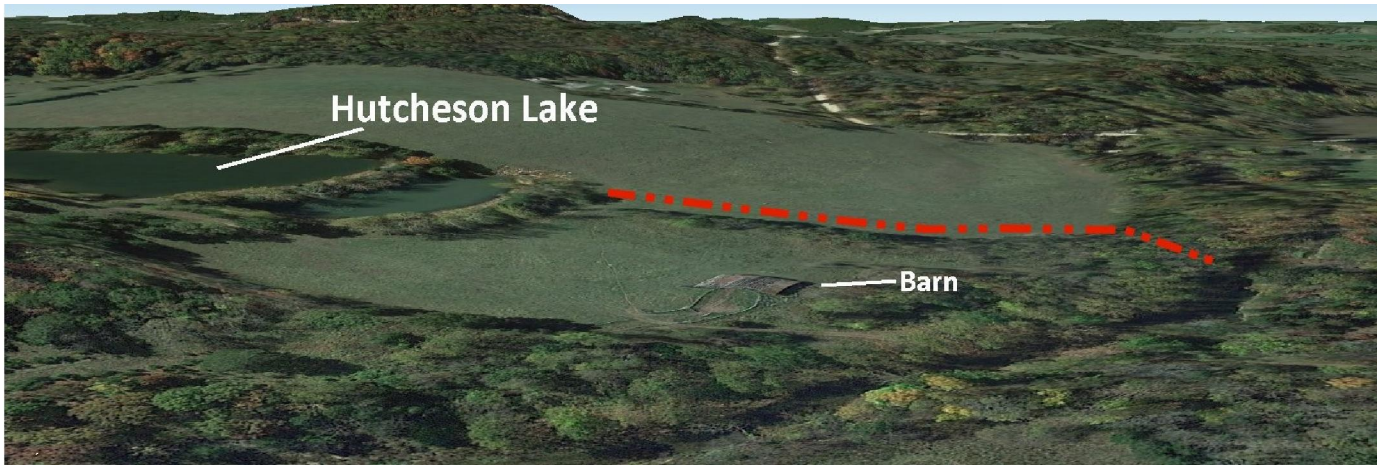
Fortunately, the two high hazard dams located in Texas County are located in areas where there is no significant development in downstream areas. In the absence of MDNR inundation zone maps and Emergency Action Plans, it is difficult to determine the exact areas where inundation would occur, but in reviewing recent aerial photography, it can be stated that the risk to human life, and the risk for property damage in the event of a failure of one of the five high hazard dams in Texas County would be minimal.

Impact of Future Development

The planning area, specifically, the areas downstream of Texas County's high hazard dams are rural in nature. Additionally, the growth in the county is stagnant therefore the vulnerability to dam failure will not substantially increase in the near future. Due to the amount and affordability of developable land, it is unlikely that residential structures will be developed in a location that is inside an inundation zone.

Figure 3.5. Hutcheson Lake – High Hazard – Houston, MO





Hazard Summary by Jurisdiction

Unincorporated Texas County is the only participating jurisdiction in this Plan that has indicated a vulnerability to dam failure. There are no mapped inundation areas or potential inundation areas within cities. No school district facilities are located within potential inundation areas or downstream environments from existing dams.

Problem Statement

There are three dams in the county with high hazard potential. However, none of the dams have mapped inundation zones or EAPs therefor it is difficult to gauge the vulnerability of downstream environments. The development of inundation zone maps by MDNR would help the citizenry of Texas County become more familiar with the risk they face due to the potential for dam failure. Additionally, the inspection rate of the high hazard dams in Texas County seems to be lacking. The MPC feels it would be beneficial if these dams were inspected more regularly.

Figure 3.6. James River Assembly Dam – Unincorporated Texas County

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 2018 State Plan, which are as follows.

> Meteorological drought is defined in terms of the basis of the degree of dryness (in comparison to some "normal" or average amount) and the duration of the dry period. A meteorological drought must be considered as region-specific since the atmospheric conditions that result in deficiencies of precipitation are highly variable from region to region.
>
> Hydrological drought is associated with the effects of periods of precipitation (including snowfall) shortfalls on surface or subsurface water supply (e.g., streamflow, reservoir and lake levels, ground water). The frequency and severity of hydrological drought is often defined on a watershed or river basin scale. Although all droughts originate with a deficiency of precipitation, hydrologists are more concerned with how this deficiency plays out through the hydrologic system. Hydrological droughts are usually out of phase with or lag the occurrence of meteorological and agricultural droughts. It takes longer for precipitation deficiencies to show up in components of the hydrological system such as soil moisture, streamflow, and ground water and reservoir levels. As a result, these impacts also are out of phase with impacts in other economic sectors.
>
> Agricultural drought focus is on soil moisture deficiencies, differences between actual and potential evaporation, reduced ground water or reservoir levels, etc. Plant demand for water depends on prevailing weather conditions, biological characteristics of the specific plant, its stage of growth, and the physical and biological properties of the soil.
>
> Socioeconomic drought refers to when physical water shortage begins to affect people.

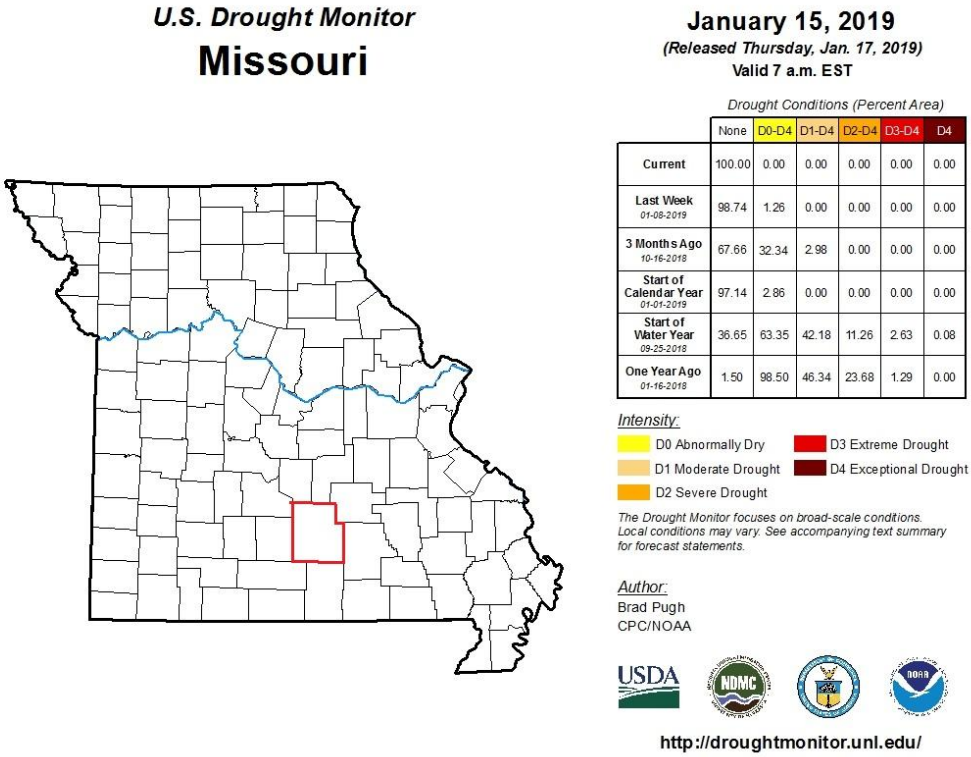
Geographic Location

Droughts are regional climatic events that can impact large areas and multiple counties. The entire county is as risk to the impacts of drought. However, drought most directly impacts the agricultural sector, so areas within the county where there is extensive agricultural land use can experience significant impacts. As noted previously in the plan, Texas County is home to intensive livestock production. All incorporated communities in the county rely on wells for water supply. The impact of drought on deeper public wells would not be significant unless the drought was of such historic severity to reduce groundwater levels.

Severity/Magnitude/Extent

Figure 3.7 is a recent map from the US Drought Monitor and an example of the size of the geographic area that could be in drought conditions at any given moment in time. The map is only a snapshot of conditions at a given time and indicates the severity of drought conditions.

Figure 3.7. U.S. Drought Monitor Map of Missouri on 1-22-2019



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

The most commonly used indicator of drought severity is the Palmer Drought Severity Index (PDSI), jointly published by the NOAA and the United States Department of Agriculture. 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.

According to the MDNR Missouri Drought Plan revised in 2002, Missouri Drought Response System is divided into four phases based on Palmer Index values:

- **Phase I: Advisory Phase**—Requires a drought monitoring and assessment system to provide enough lead time for state and local planners to take appropriate action;
- **Phase II: Drought Alert**—When the PDSI reads -1.0 to -2.0, and stream flows, reservoir levels, and groundwater levels are below normal over a several month period, or when the Drought Assessment Committee (DAC) determines that Phase II conditions exist based on other drought determination methods;

- **Phase III: Conservation Phase**—When the PDSI reads -2.0 to -4.0, and stream flows, reservoir levels, and groundwater levels continue to decline, along with forecasts indicating an extended period of below-normal precipitation, or when the DAC determines that Phase III conditions exist based on other drought determination models;
- **Phase IV: Drought Emergency**—When the PDSI is lower than -4.0, or when the DAC determines that Phase IV conditions exist based on other drought determination methods.

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

The USDA's Risk Management Agency provides insure crop loss payments in the county as a result of drought from 1948 to present. The 2013 State Plan states that Texas County is categorized as "low" in crop loss ration ratings. Data indicates that from 1998 through 2012 there were zero dollars in insured crop loss payments with annualized losses of $0.

Previous Occurrences

The NCEI storm events database includes 10 drought events occurring in Texas County from 1996 through 2018. Many of these were multiple reports from persistent drought conditions that lasted several months. The NCEI reports indicate that there were three distinct drought periods during a 22 year timeframe. Table 3.19 provides a summary of these events.

Table 3.19. Previous Drought Occurrences 1996-2018

Drought Year	Duration	Property Damage	Crop Damage
1999	July-October	0	$20,000
2000	August-September	0	$0
2012	June-December	0	$786,000

The impact of these events are described in the NCEI storm event narratives:

- **1999** – Stock ponds in many areas dried up forcing farmers to either pump or transport water for livestock, a few shallower wells reportedly ran dry. Many ranchers sold cattle and other livestock due to the lack of an adequate water supply.
- **2000** – These conditions allowed for the continuation of short-term dryness, lower yields of soybeans, and above normal fire danger. Soybean yields were reduced from normally 26-31 bushels per acre to 20 bushels per acre.
- **2012** – The USDA Service Center in Texas County indicated that crop losses were 75 percent of the spring planting. Many farmers and ranchers reported having to feed hay as pastures stopped growing and became dry through the month which added to operation costs, monetary crop loss figures are estimates using information from the National Agricultural Statistics Database.

Probability of Future Occurrence

Over the 22 year record period from January 1996 to December 2018, Texas County was in a drought for 13 months. There are a total of 264 months in the record period. The calculated risk percent from the number of months of drought and the total number of months in the record period equates to the annual average percentage of **4.9%** probability of drought occurrence in the county.

Although drought is not predictable, long-range outlooks and predicted impacts of climate change could indicate an increased chance of drought.

Vulnerability

Vulnerability Overview

The agriculture sector is particularly vulnerable to drought. Periods of dry weather can reduce stock ponds and force the early sale of livestock. Crop production can be disrupted and vegetative diseases can spread, reducing yields. Cities that operate water wells can experience water shortages during persistent drought periods like the seven month drought period in 2012. Those that rely on private wells are more likely to be impacted by reductions in the groundwater supply due to the fact that public wells are far deeper than private wells.

Potential Losses to Existing Development

The 2018 State Plan states that from 1998 through 2016 there or $0 in insured crop loss payments in Texas County. The absence of payment could be due to the absence of crop insurance. There are no anticipated structural losses, loss of life, or injuries associated with this hazard. In addition, according to the NCEI estimates there were $806,000 in crop losses from 1996-2018. According to this data, the total losses divided by the 22 year timeframe equals $36,636 in estimated annualized crop losses.

Impact of Future Development

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

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.

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

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

The risk to water sustainability for counties meeting two of the criteria are classified as “moderate”, while those meeting three of the criteria are classified as “high”, and those meeting four or more are classified as “extreme”. Counties meeting less than two criteria are considered to have low risk to water sustainability. According to the Natural Resources Defense Council, without climate change the water sustainability index for Texas County is “low”. With climate change, the water supply sustainability index is “low”.

Hazard Summary by Jurisdiction

Although the probability of drought is the same for the entire county, farming and livestock enterprises in the unincorporated parts of the county would feel the greatest impact. These impacts can be mitigated somewhat by the purchase of crop insurance. The existence of private farms and ranches are widespread throughout the county. All six municipalities in Texas County utilize groundwater wells for public water supply and could potentially be impacted during water shortages due to the reliance on these limited source wells.

Problem Statement

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

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.

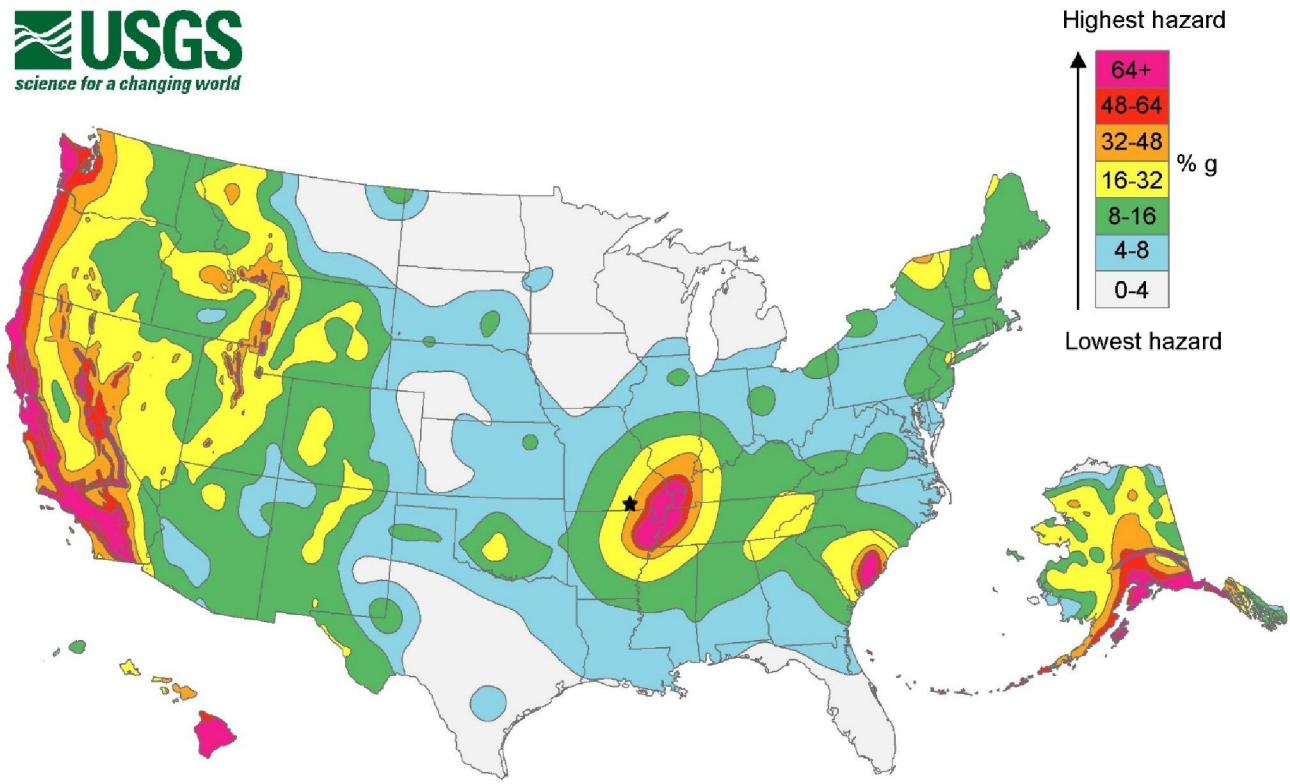
The subterranean faults were formed many millions of years ago on or near the surface of the earth. Subsequent to that time, these ancient faults subsided, while the areas adjacent were pushed up. As this fault zone (also known as a rift) lowered, sediments filled in the lower areas. Under pressure, the sediments hardened into limestones, sandstones, and shales – thus burying the rifts. The pressures on the North American plan and the movements along the San Andreas Fault by the Pacific plate have reactivated the buried rift(s) in the Mississippi embayment. This rift system is called the Reelfoot Rift and underlies the New Madrid Seismic Zone. (Braile et al., 1986)

Geographic Location

The greatest hazard from earthquakes in Texas County comes from the New Madrid Seismic Zone situated in the boot heel area of southeast Missouri. The potential of high magnitude earthquakes occurring along the New Madrid fault presents risk that does not vary across the planning area. The Nemaha uplift is central Kansas is also prone to seismic activity, however the center of the Humbolt fault zone near the Nemeha Uplift is approximately 300-350 miles west/northwest of Texas County and lower magnitude seismic events that will not impact jurisdictions in Texas County.

The 2014 USGS National Seismic Hazard Maps display earthquake ground motions for various probability levels across the United States and are applied in seismic provisions of building codes, insurance rate structures, risk assessments and other public policy. The updated maps represent an assessment of the best available science in earthquake hazards and incorporate new findings on earthquake ground shaking, faults, seismicity, and geodesy. The USGS National Seismic Hazard Mapping Project developed these maps by incorporating information on potential earthquakes and associated ground shaking obtained from interaction in science and engineering workshops involving hundreds of participants, review by several science organizations and State surveys, and advice from expert panels and a Steering Committee. Figure 3.8. is a USGS map illustrating seismicity in the United States. A star showing the general location of Texas County has been inserted on the map.

Figure 3.8.



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.

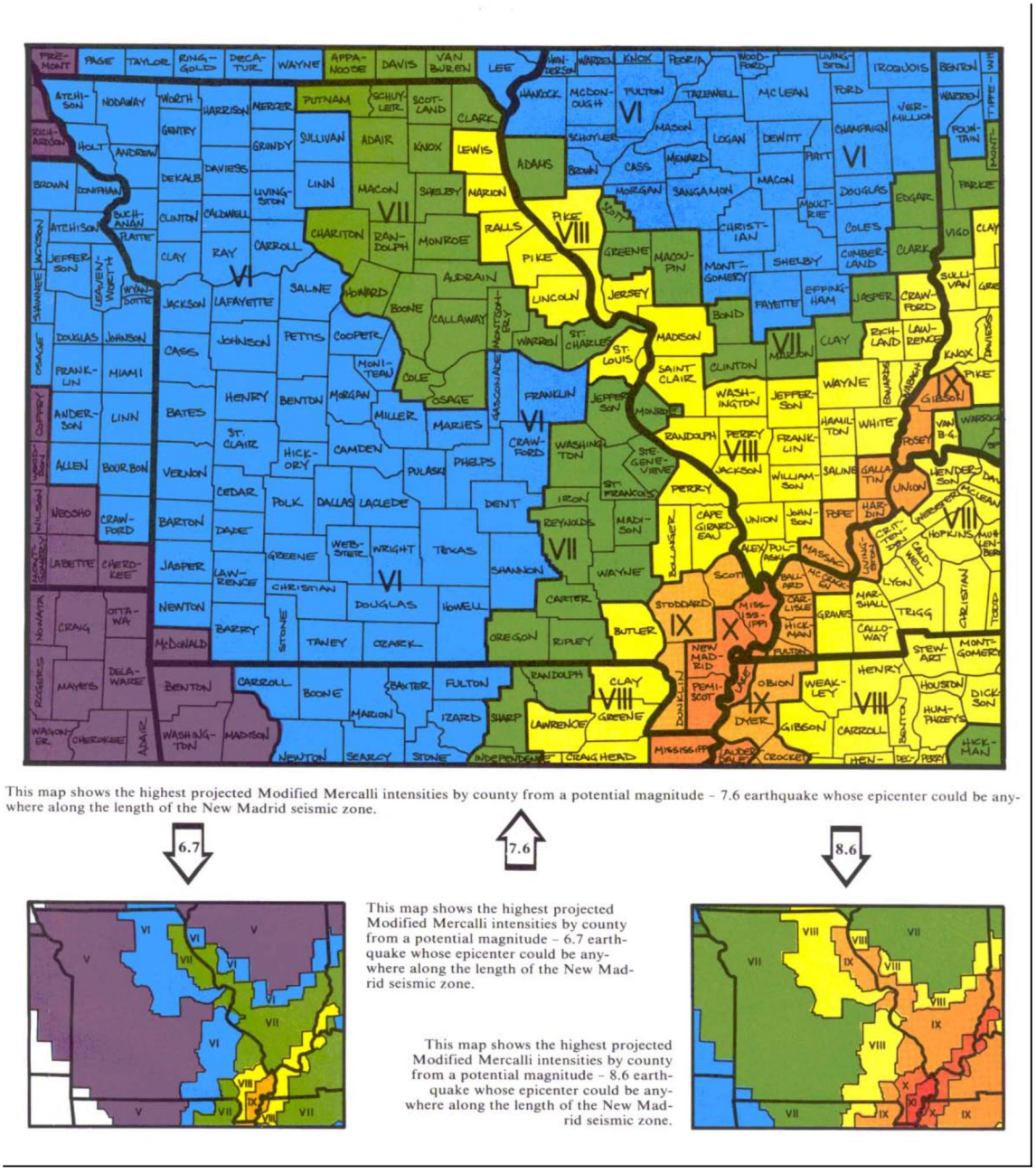
Richter Magnitude Scale

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.

Figure 3.9. Impact Zones for Earthquake Along the New Madrid Fault



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

Figure 3.9 shows the highest projected Modified Mercalli Intensities by county from a potential magnitude 7.6 earthquake whose epicenter could be anywhere along the length of the New Madrid Seismic Zone. The secondary maps in the figure above show the same regional intensities for 6.7 and 8.6 earthquake, respectively. Texas County is located in zone VI from a potential magnitude 7.6 earthquake along the New Madrid fault.

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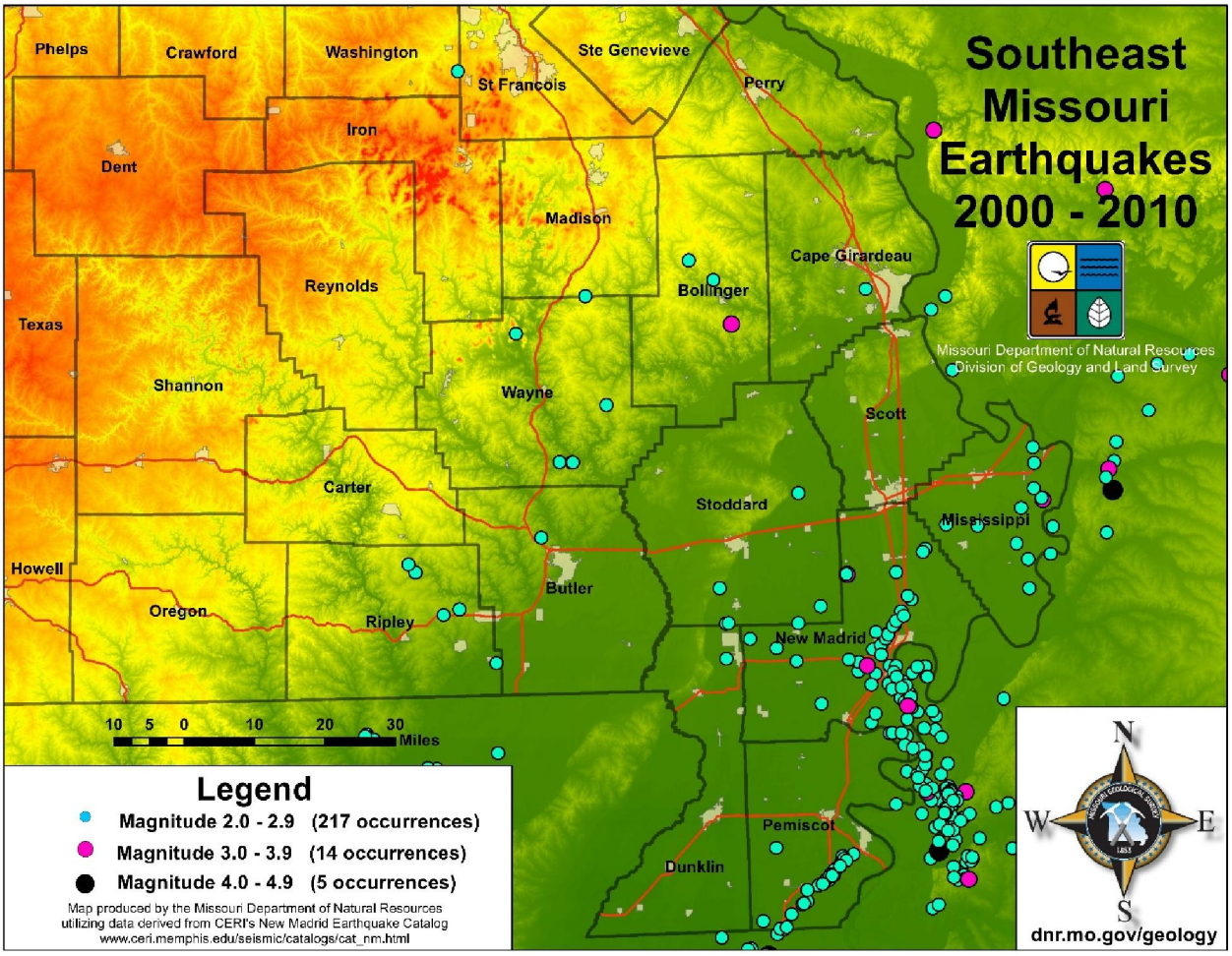
THE MISSOURI STATE
EMERGENCY MANAGEMENT AGENCY
P.O. BOX 116
JEFFERSON CITY, MO 65102
Telephone: 573-526-9100

Previous Occurrences

There is no record of recent earthquake occurrence within Texas County (2000-2018). The southeastern portion of Missouri is most susceptible to earthquakes because it overlies the New Madrid Seismic Zone. No area of Missouri is immune from the danger of earthquakes. Minor, but potentially damaging earthquakes can occur anywhere in the state. (SEMA, 2018)

Figure 3.10 provides the latest and best data from the MDNR regarding earthquake occurrence in southeast Missouri.

Figure 3.10.



Probability of Future Occurrence

Without a historical record for earthquakes in Texas County it is not possible to calculate a precise probability of earthquake occurrence. The Center for Earthquake Research and Information (CERI) at the University of Memphis has computed conditional probabilities of a magnitude 6.0 earthquake in the New Madrid Seismic Zone. According to a fact sheet prepared by SEMA in 2003, the probability for a magnitude 6.0 to 7.5 earthquake along the New Madrid Fault is 25 to 40 percent chance of occurrence over the next 50 years. At the 25% level, the likelihood of an earthquake happening in a given year is 1.0%. At the 40% level, the likelihood of an earthquake happening in a given year is

1.6%. The previous map (Figure 3.13. indicates the potential severity for Texas County of a 6.7, 7.6, and 8.6 magnitude earthquake anywhere along the New Madrid Fault.

Hazard Summary by Jurisdiction

Earthquake intensity is not likely to vary greatly throughout the planning area, the risk of occurrence is the same throughout. However, damages will differ where there are variations in the planning area based on percentage of structures build prior to 1939. For example, if one community has a high percentage of residences built prior to 1939 than the other participants, that community is likely to experience higher damages. Table 3.20 lists the median age and percentage of housing units built in 1939 or earlier

Table 3.20. Percent of Housing Units Built in 1939 or Earlier

Jurisdiction	Median Year Structure Built	Built 1939 or earlier %
Texas County	1985	8.9
City of Cabool	1974	8.9
City of Houston	1970	9.6
City of City of Licking	1975	7.8
Village of Plato	1971	5.7
Village of Raymondville	1982	5.2

Source: Missouri Census Data Center (2017) ACS Profiles

School districts with facilities constructed prior to 1939 could suffer more damages than newer facilities, however, the majority of the currently utilized school facilities in the district have been constructed after 1939 and are considered well-built structures and therefore, less vulnerable to potential ground shaking.

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 earthquake event.

Vulnerability

Vulnerability Overview

Ground shaking is the most damaging effect from earthquakes. Ground shaking will impact all structures and critical infrastructure such as roads and electrical transmission systems. Although Nearby Ripley County experienced a 3.3 magnitude earthquake there were no document damages associated with this low magnitude event. The greatest earthquake risk to Texas County is the New Madrid Fault in the bootheel region of Missouri. A 7.6 magnitude earthquake would result in people have difficulty standing; Considerable damage in poorly built or badly designed buildings, adobe houses, old walls, and spires; Damage is slight to moderate in well-built buildings; Numerous windows are broken; Weak chimneys break at rooflines; 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. In addition, some underground utilities would likely be damaged. Some injuries may occur but fatalities are unlikely.

Potential Losses to Existing Development

In Texas County, 7.6 magnitude earthquake along the New Madrid Fault could be expected to result in everyone feeling ground shaking; poorly built buildings are damaged slightly; considerable quantities of dishes, glassware and windows are broken; people have trouble walking; pictures fall off walls; objects fall from shelves; plaster in walls might crack; some furniture is overturned; and small bells in churches, chapels, and schools will ring. In addition, some underground utilities would likely be damaged. Injuries may occur but are unlikely

A smaller yet still significant 6.7 quake along the fault line in would likely result in almost everyone feeling movement. Most people will be awakened if sleeping; 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.

Problem Statement

Based on likely damage from a 7.6 magnitude earthquake along the New Madrid fault, it is clear that the downtowns and historic districts of communities in Texas County are at risk to significant damage. These older structures could perhaps be retrofitted with earthquake resistance measures to ensure their stability in the event of an earthquake of severe magnitude. Potential damages to future development can be mitigated by adopting and enforcing IBC 2012 building codes. Currently, the communities of Texas County are not enforcing building codes. Updating and enforcing building codes in other jurisdictions would mitigate the impact on future development from an earthquake event.

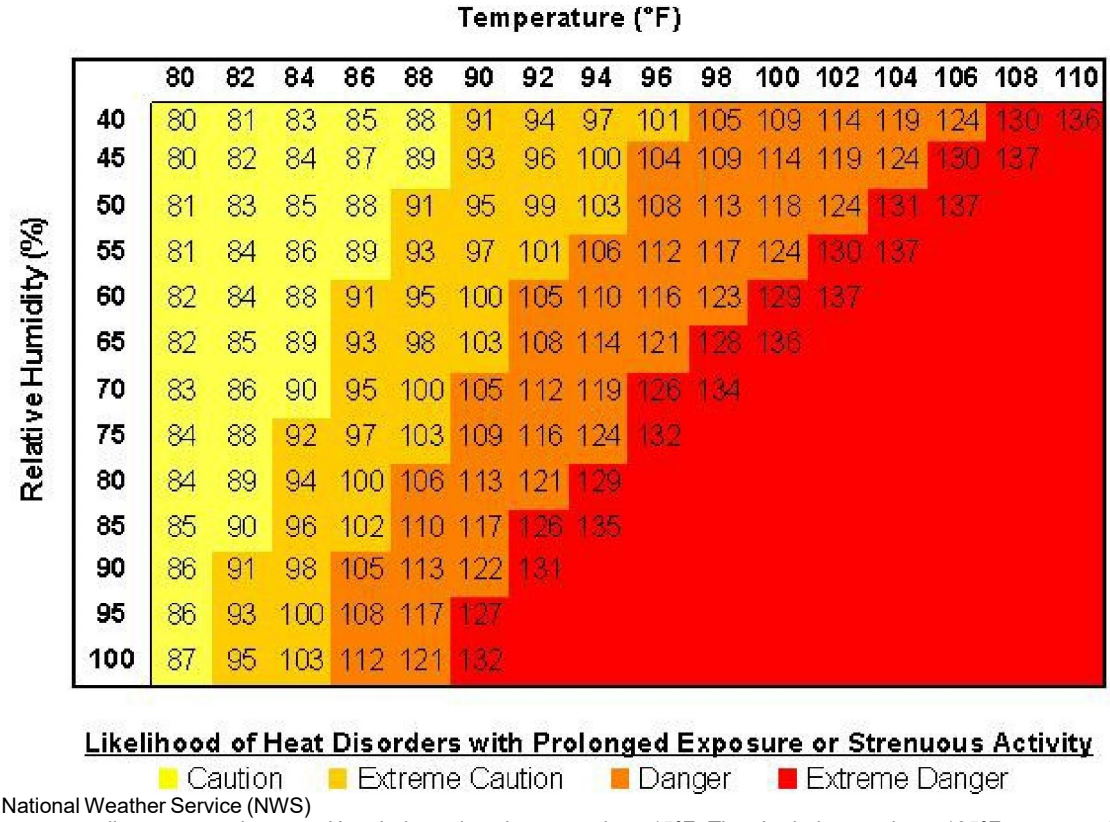
3.4.4 Extreme Heat

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 Storm in Section 3.4.10. 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 3.11 uses both of these factors to produce a guide for the apparent temperature or relative intensity of heat conditions.

Figure 3.11. 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

Extreme temperatures are an area-wide hazard event, the risk of extreme heat or cold does not vary within the county.

Severity/Magnitude/Extent

Extreme heat can cause stress to crops and animals. According to USDA Risk Management Agency, losses to insurable crops during the 4-year time period from 2010 to 2014 were $0 due to extreme heat in Texas County. Extreme heat can also strain electricity delivery infrastructure overloaded during peak use of air conditioning during extreme heat events. Another type of infrastructure damage from extreme heat is road damage. When asphalt is exposed to prolonged extreme heat, it can cause buckling of asphalt-paved roads, driveways, and parking lots.

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

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

Table 3.21. 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.

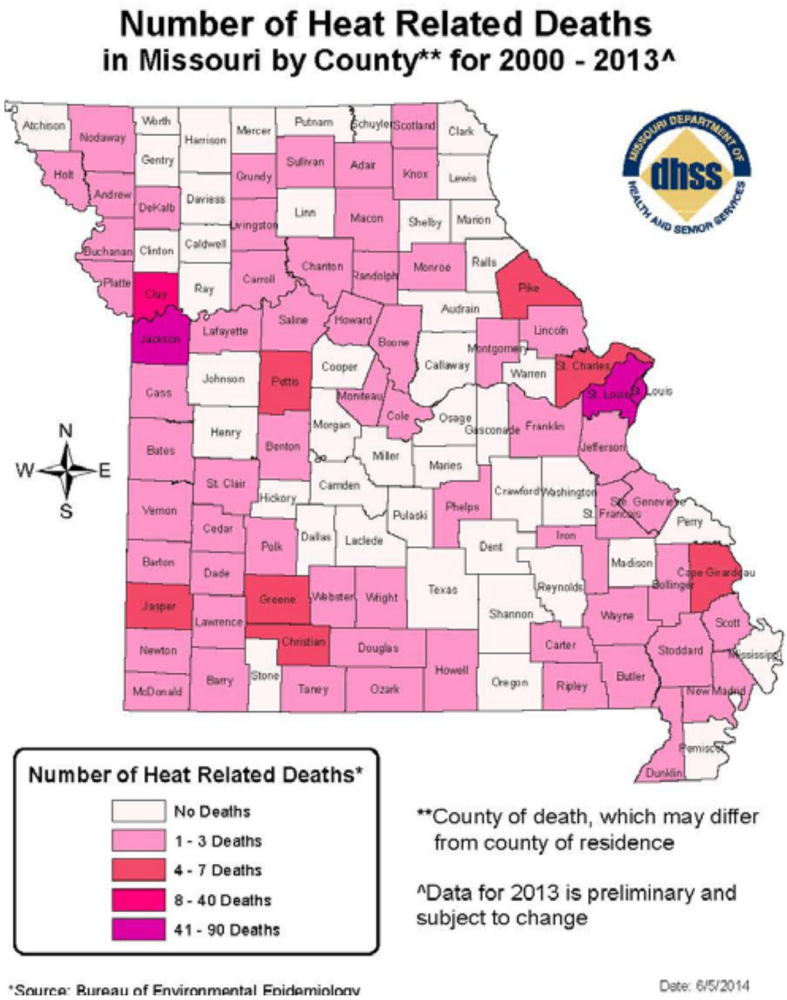
Previous Occurrences

There are nine (9) recorded extreme heat events in the National Center for Environmental Information (NCEI) database from 1996 to December 2018 for Texas County. There were zero deaths and no injuries or property and crop damage associated with these events in the NCEI data for Texas County. Extreme heat events in Texas County were recorded in consecutive months in four separate years from 1996 to December 2018. The months for each year are summarized as follows:

- 1999 – July & August
- 2000 – August & September
- 2001 – July & August
- 2012 – June, July & August

Figure 3.12 is a map created by the Missouri Department of Health and Senior Services (DHSS) for heat related fatalities by county. The map indicates that there has been zero heat related fatalities in Texas County from 2000 to 2013.

Figure 3.12. Heat Related Deaths in Missouri 2000 - 2013



Probability of Future Occurrence

The probability that an extreme heat event will occur in Texas County in any given year is 20% or once every four years. This equates to dividing four (4) years with an even period by the total number of years in the record period from 1996 to 2018 (22) and multiplying by 100. The events recorded in the NCEI database describe prolonged periods where temperatures rose above at least 90 degrees for at least twelve consecutive days. Heat advisories and warnings are issued for shorter periods of extreme heat nearly every year and may not meet the threshold for consecutive days in the NCEI database. This data limitation indicates that extreme heat events could be underreported in the NCEI.

Vulnerability

Vulnerability Overview

High humidity, which often accompanies heat in Missouri, can make the effects of heat even more harmful. While heat-related illness and death can occur from exposure to intense heat in just one afternoon, heat stress on the body has a cumulative effect. Consequently, the persistence of a heat wave increases the threat to public health. The people most at risk are children under five years of age and adults over the age of 65 as well as people who work outdoors. The agriculture sector can also suffer crop loss during periods of extreme heat. Extreme heat may also cause buckling of roads.

Potential Losses to Existing Development

Based on the information in the 2018 State Plan, NCEI and DHSS, zero heat related deaths have occurred in Texas County in the past 22 years. Despite the lack of heat-related fatalities, it is clear that extreme heat is one of the most dangerous events that could affect the planning area and proper measures should be in place when the county is exposed to a heat wave.

Impact of Future Development

Population growth can result in increases in the age groups that are most vulnerable to extreme heat. Population growth also increases the strain on electricity infrastructure, as more electricity is needed to accommodate the growing population. While the City of Licking has experienced by far the most significant population grown since the year 2000, most of those figures can be attributed to the construction of a new state penitentiary. Other than Licking, the fastest growing communities in the county are Raymondville (25%), and Plato & Houston (22%) The county's population is growing at a rate of 10% over the last two decades.

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 2017 ACS Demographic and Housing Estimates on population percentages in each jurisdiction comprised of those under age five and over age 65. Data was not available for overweight individuals and those on medications vulnerable to extreme heat. Table 3.22 below summarizes vulnerable populations in the participating jurisdictions. Note that school and special districts are not included in the table because students and those working for the special districts are not customarily in these age groups.

Table 3.22. County Population Under Age 5 and Over Age 65, 2017 ACS Data

Jurisdiction	% Population Under Five Years	% Population 65 Years and Over
Texas County*	5.7	19.6
City of Cabool	6.1	15.7
City of Houston	4.6	22.9
City of Licking	3.7	16.0
Village of Plato	12.1	22.2
Village of Raymondville	7.4	11.4

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

Problem Statement

Older and younger segments of the population are more vulnerable to the impact of extreme heat. Texas County has a very high percentage of its population that is 65 years of age or older. In addition people living below the poverty level may be more vulnerable during periods of extreme heat hue to lack of air conditions or proper utilities in their homes. Texas County, while relatively affluent for the south central Ozark region, is still among the poorest counties in the State. Institutionalized populations such as those living in nursing homes become more vulnerable to extreme heat due to power outages. This problem would best be mitigated by installation of emergency generators at these institutional facilities. Provision and advertisement of cooling centers in the county would help mitigate the impact on vulnerable populations in the planning area.

3.4.5 Wildfire

Hazard Profile

Hazard Description

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

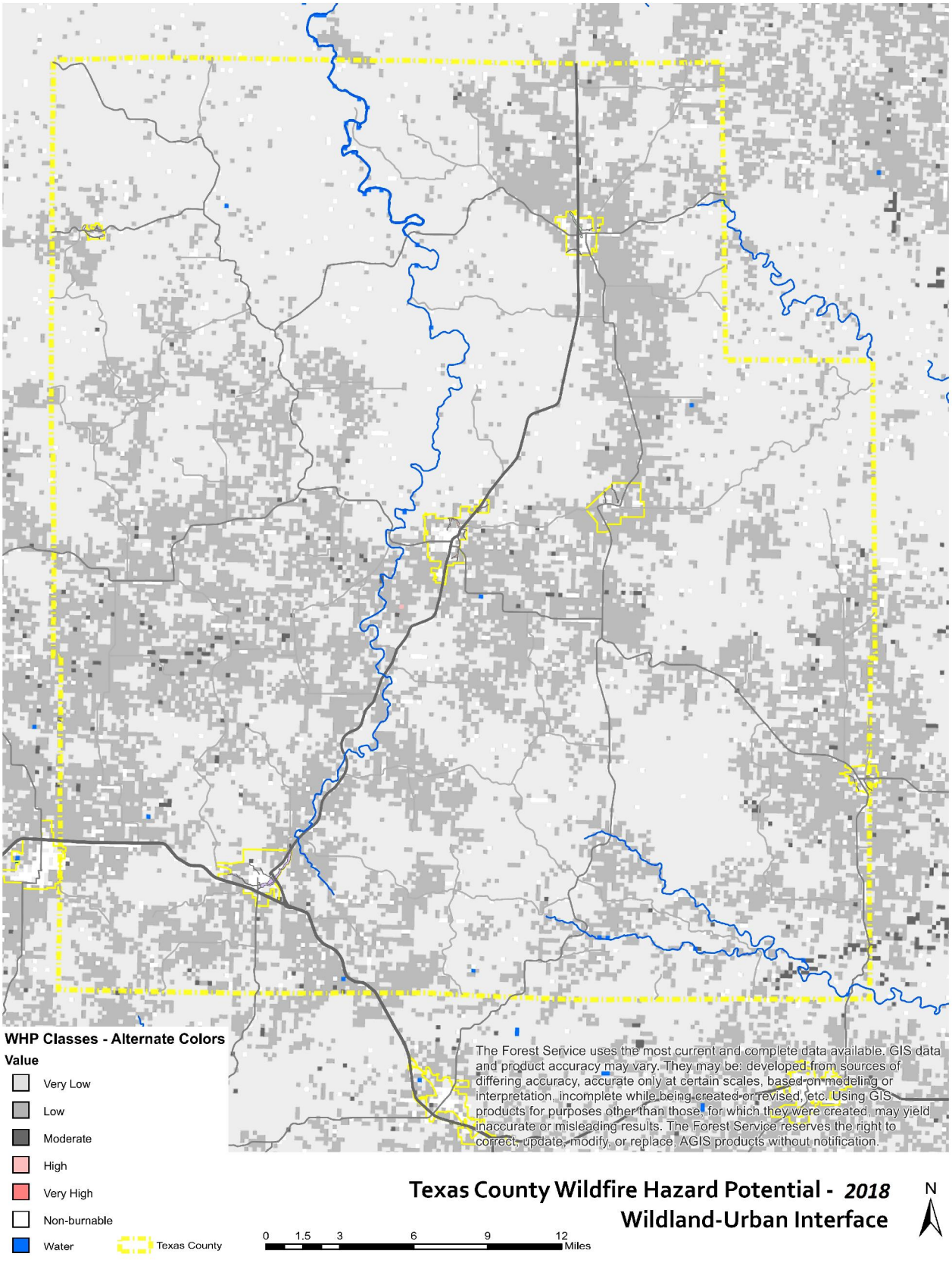
The Forestry Division of the Missouri Department of Conservation (MDC) is responsible for protecting privately owned and state-owned forests and grasslands from wildfires. To accomplish this task, eight forestry regions have been established in Missouri for fire suppression. The Forestry Division works closely with volunteer fire departments and federal partners to assist in fire suppression activities. Currently, more than 900 rural fire departments in Missouri have mutual aid agreements with the Forestry Division to obtain assistance in wildfire protection if needed.

Most of Missouri fires occur during the spring season between February and May. The length and severity of wildland fires depend largely on weather conditions. Spring is Missouri is usually characterized by low humidity and high winds. These conditions result in higher fire danger. In addition, due to the recent lack of moisture throughout many areas of the state, conditions are likely to increase the risk of wildfires. Drought conditions can also hamper firefighting efforts, as decreasing water supplies may not prove adequate for firefighting. It is common for rural residents to burn their garden spots, brush piles, and pastures in the spring. Some landowners also believe it is necessary to burn their forests in the spring to promote grass growth, kill ticks, and reduce brush accumulation. Therefore, spring months are the more dangerous for wildfires. The second most critical period of the year is fall. Depending on the weather conditions, a sizeable number of fires may occur between mid-October and late November.

Geographic Location

Absent demographic information indicating otherwise, the risk of structural fire probably does not vary widely across the planning area. However, damages due to wildfires would be higher in communities with more wildland–urban interface (WUI) areas. The term refers to the zone of transition between unoccupied land and human development and needs to be defined in the plan. Within the WUI, there are two specific areas identified: 1) Interface and 2) Intermix. The interface areas are those areas that abut wildland vegetation and the Intermix areas are those areas that intermingle with wildland areas. Figure 3.13 shows WUI areas in Texas County.

Figure 3.13. Texas County Wildland Urban Intermix, Interface



Severity/Magnitude/Extent

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

Wildland fires in Missouri have been mostly a result of human activity rather than lightning or some other natural event. Wildfires in Missouri are usually surface fires, burning the dead leaves on the ground or dried grasses. They do sometimes "torch" or "crown" out in certain dense evergreen stands like eastern red cedar and shortleaf pine. However, Missouri does not have the extensive stands of evergreens found in the western US that fuel the large fire storms seen on television news stories. While very unusual, crown fires can and do occur in Missouri native hardwood forests during prolonged periods of drought combined with extreme heat, low relative humidity, and high wind. Tornadoes, high winds, wet snow and ice storms in recent years have placed a large amount of woody material on the forest floor that causes wildfires to burn hotter and longer. These conditions also make it more difficult for fire fighters suppress fires safely. See ***http://www.firewisemissouri.org/wildfire-in-missouri.html***

Often wildfires in Missouri go unnoticed by the general public because the sensational fire behavior that captures the attention of television viewers is rare in the state. Yet, from the standpoint of destroying homes and other property, Missouri wildfires can be quite destructive.

Previous Occurrences

According to MDC Wildfire Data, there have been 476 wildfires reported in Texas County from 2005 through 2016. A total of 15,020 acres were burned as a result of these reported wildfires. In addition, 26 buildings were destroyed, 11 structures were damaged and 380 structures were threatened as a result of the wildfires in the county. Table 3.23 contains a summary of MDC wildfire statistics by year.

Table 3.23. Texas County Wildfires 2005-2018

Year	# Wildfires	Buildings Destroyed	Buildings Damaged	Buildings Threatened	Acres Burned
2005	16	0	1	9	169.5
2006	45	3	0	22	387.75
2007	7	0	0	1	154.75
2008	71	0	0	38	1159.50
2009	65	3	1	24	1353.45
2010	118	7	1	109	6058
2011	57	5	6	61	2705.25
2012	21	0	0	9	148
2013	41	1	0	54	1142.25
2014	16	0	0	10	86.5

2015	19	7	2	43	1655.50
2016	32	4	3	26	945.7
2017	38	5	1	71	1247.25
2018	11	1	1	18	369.2
Total	**557**	**36**	**16**	**495**	**17582.6**

There are no records from school districts and special districts about previous wildfire events and the damages resulting from them.

P*robability of Future Occurrence*

Based on the last thirteen years of fire reporting statistics from the MDC in Table 3.23, there were a total of 557 reported wildfires from 2005 to 2019. This equates to an averages of 42.8 wildfire events annually over the thirteen year reporting period and a 100% probability of occurrence in any given year.

Vulnerability

Vulnerability Overview

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

Potential Losses to Existing Development

In looking at the statistics over the last ten years, an average of 2.2 buildings are destroyed every year, and 0.9 buildings per year are damaged. Another 31.6 structures are threatened per year with an average of 1,251 acres burned annually.

Impact of Future Development

It is anticipated that there will be future development in WUI areas throughout incorporated and unincorporated areas of the county. Future growth in WUI areas of the county will increase the risk and exposure to wildfires.

Hazard Summary by Jurisdiction

In referencing the wildfire hazard map on the following page, it's apparent that the west-central and southeast portions of Texas County have the highest concentration of wildfire hazard areas, with another located along Highway 137 in the northeast part of the county. Licking, Raymondville, Summersville, and their surrounding areas are the population centers nearest to elevated wildfire risk areas. All school district campuses in the county are located outside areas identified as interface and/or intermix.

Problem Statement

Wildfire occurrence is frequent within Texas County. These events can destroy, damage, and threaten structures in hazard prone areas. Populations and structures in WUI areas of the county have an increased risk to wildfires due to the level of fuel mixed with built environments. Cities have not adopted landscape ordinances that could potentially include fire safe landscape design requirements. The unincorporated areas of the county have the highest risk and exposure to wildfires. Thankfully, many of these areas are sparsely population. However, when new construction is occurring promoting the use of fire-resistant construction materials is highly advisable. More information about these materials and techniques are available in the MDC publication *Living with Wildfire*.

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.

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.

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

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

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

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

Geographic Location

Riverine flooding is most likely to occur in Special Flood Hazard Areas (SFHAs) where the 1% annual chance floodplain has been mapped. Texas County has not been mapped by FEMA. Digital Flood Insurance Rate Maps do not exist for any jurisdiction in the county. However, flood hazard can be identified through alternative methods such as FEMA's HAZUS-MH software tool. Using this data, we can identify areas along the Big Piney River drainage as locations that have historically been locations of concentrated flooding impacts. According to NCEI storm event data from January 1996 through December 2018 there were 70 days with flooding events—this takes into account events listed in the NCEI database as "flooding" and "flash flooding". These events are typically regional in nature and affect rivers, streams and tributaries across a wide area. Figures 3.14 through 3.20 are flood risk areas for jurisdictions of Texas County, created in GIS using the latest HAZUS-MH data.

Figure 3.14. Structures at Risk to Flooding – Texas County

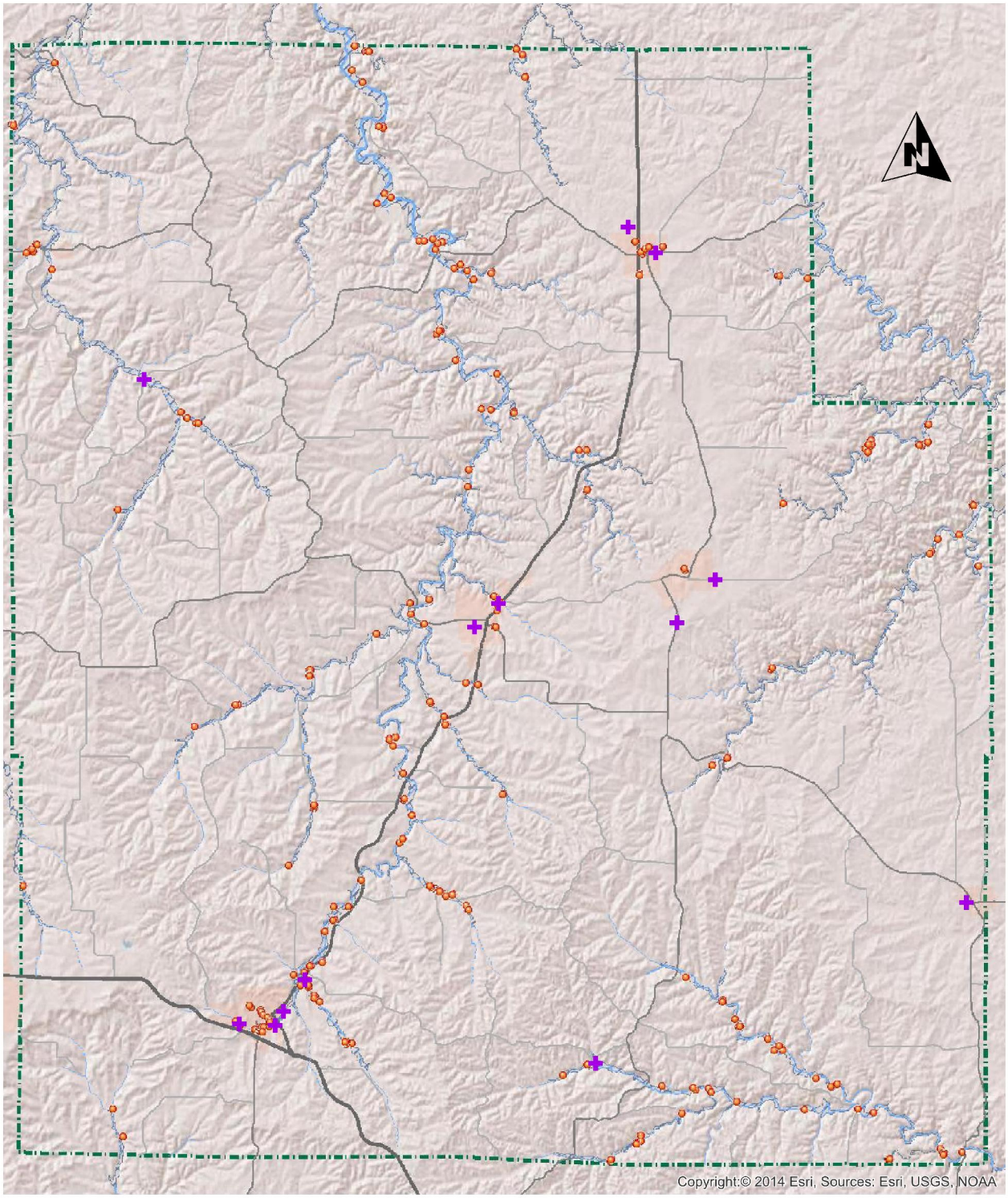


Figure 3.15. Structures at Risk of Flooding – City of Cabool

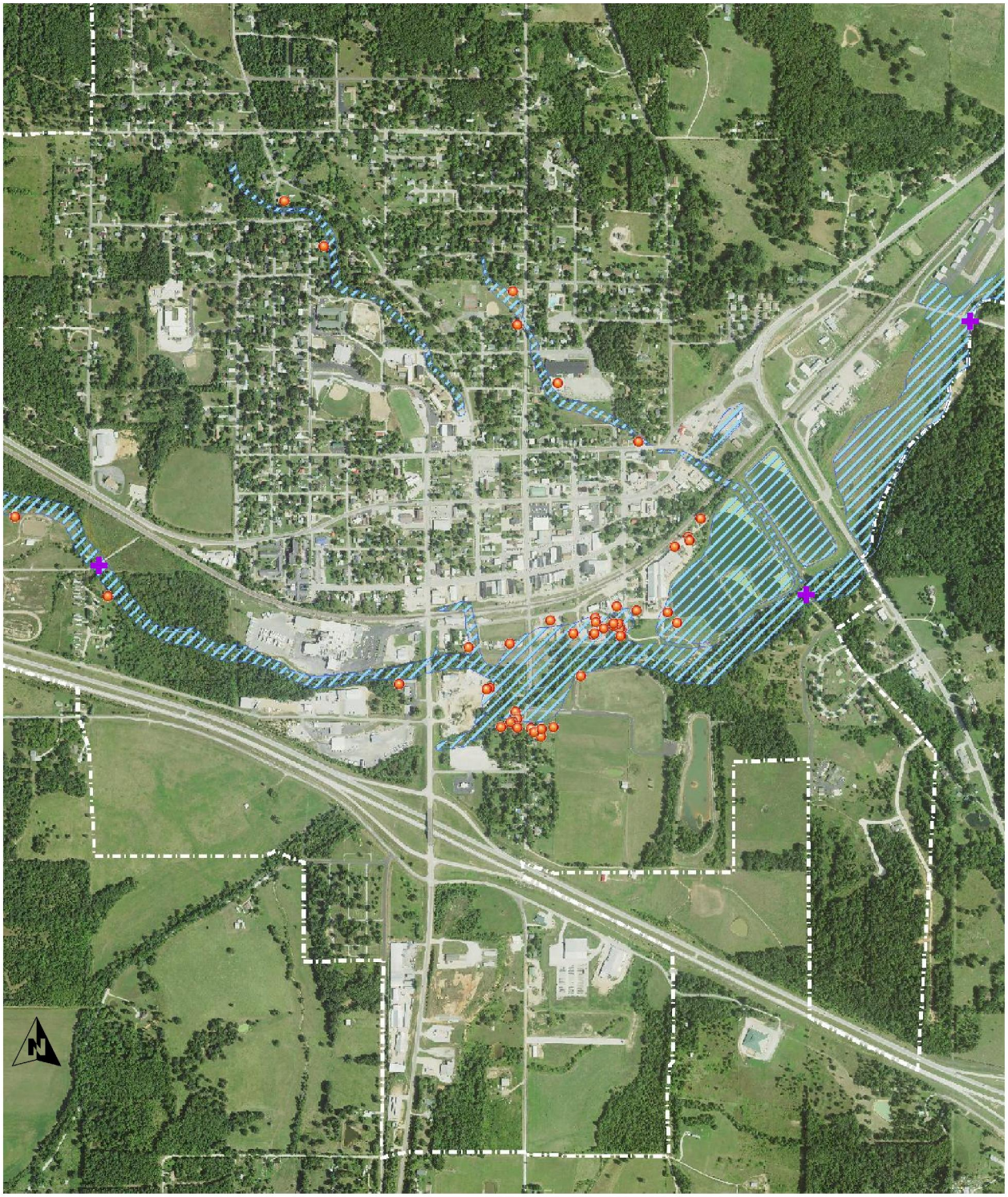


Figure 3.16. Structures at Risk of Flooding – City of Houston

Figure 3.17. Structures at Risk of Flooding – City of Licking

Figure 3.18. Structures at Risk of Flooding – Village of Plato

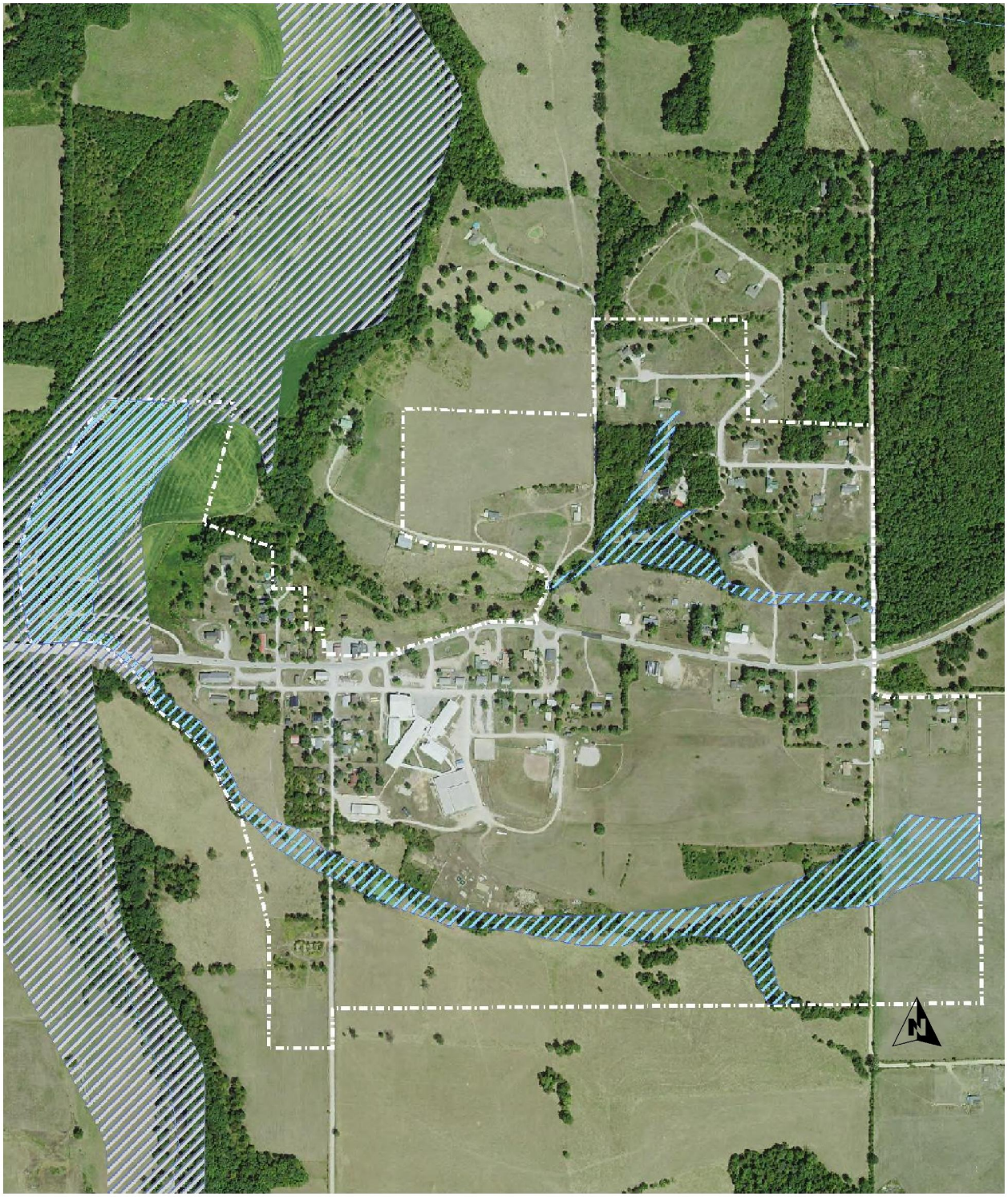


Figure 3.19. Structures at Risk of Flooding – Village of Raymondville

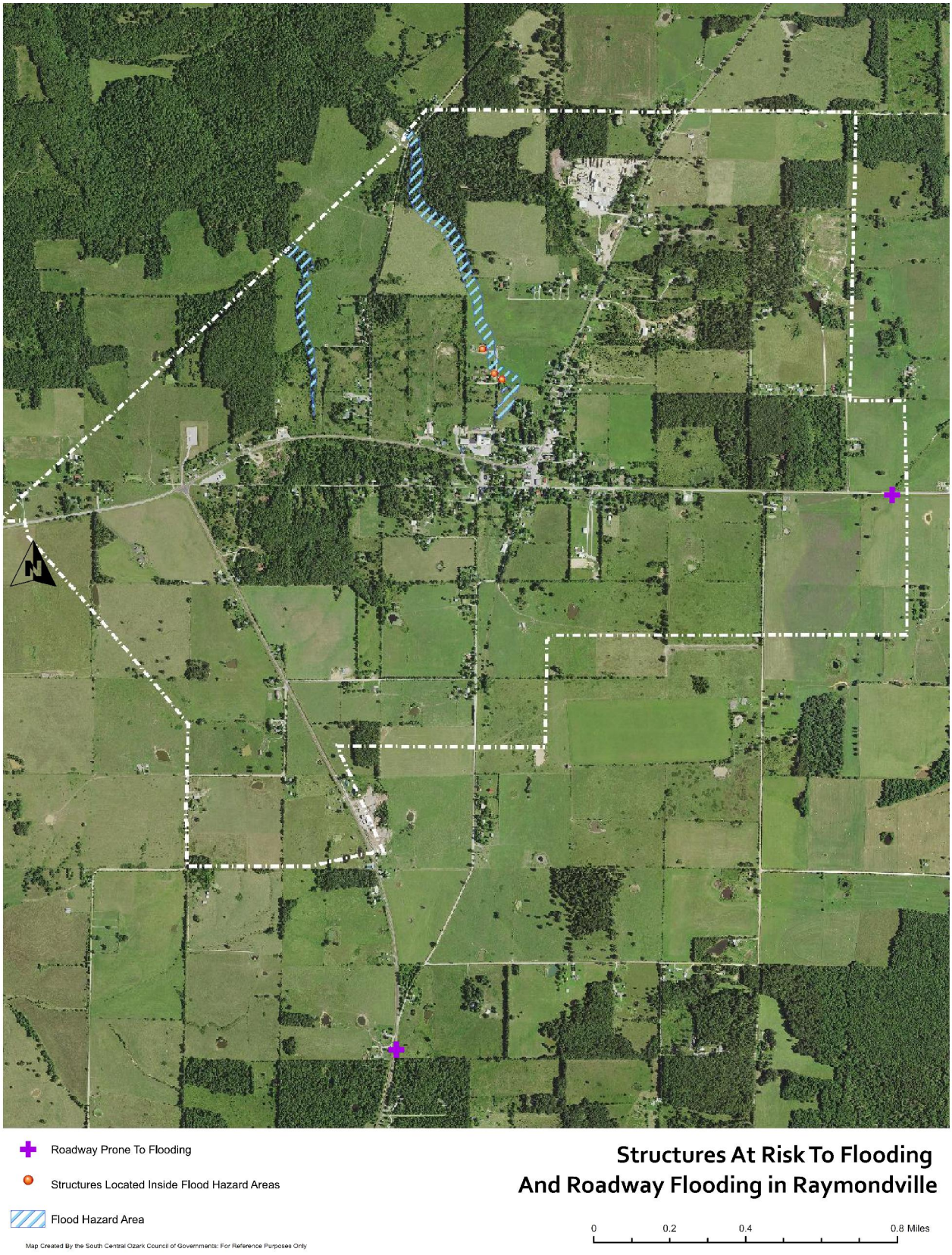


Figure 3.20. Structures at Risk of Flooding – City of Summersville

**The City of Summersville is not participating in this round of update; however their flood vulnerability analysis has been included for planning purpose

Flash flooding events pose the most pervasive hazard of the two flood types in the county due to permeability of soils, slopes, and the extensive network of streams and rivers. Sustained rainfall or downpours at the rate of one inch per hour have caused street flooding in incorporated areas and made a significant number of low water crossings impassible. In the instances of low water crossings, flash flooding occurs in the floodplains while low-lying areas in all jurisdictions are susceptible to flash floods outside the 1% chance floodplains. They also occur in areas without adequate drainage to carry away the amount of water that falls during intense rainfall events. A review of the NCEI storm event database determined which jurisdictions are most prone to flash flooding from 1996 to December 2018 are listed in Table 3.24

Table 3.24. Texas County NCEI Flash Flood Events by Location, 1996-2018

Location	# of Events
Countywide	**68**
Number of Events with Property Damage	14
Number of Events with Injury or Death	0
City of Cabool	**46**
Number of Events with Property Damage	9
Number of Events with Injury or Death	0
City of Houston	**33**
Number of Events with Property Damage	7
Number of Events with Injury or Death	0
City of Licking	**21**
Number of Events with Property Damage	14
Number of Events with Injury or Death	0
Village of Plato	8
Number of Events with Property Damage	3
Number of Events with Injury or Death	0
Village of Raymondville	6
Number of Events with Property Damage	3
Number of Events with Injury or Death	0
City of Summersville**	11
Number of Events with Property Damage	3
Number of Events with Injury or Death	0

Source: National Center for Environmental Information
**The City of Summersville is not participating in this round of update; however their flood vulnerability analysis has been included for planning purpose and context.

The NCEI storm event data lists flash flood events according to the nearest community or place name. Most of these events cover larger areas than the small geographic areas reported in the data. Some specific locates are listed within the narratives for flash flood events. Although some events may not be inside the corporate limits of the community identified in the narrative, they are in such proximity that the community names would be the most affected by impassible roads. It is safe to assume that numerous low water crossings were inundated by heavy rains and in turn, exacerbated flash flooding across the entire county. In addition, multiple records are related to the same event and vice versa.

Severity/Magnitude/Extent

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. Flooding at low water crossings is extremely hazardous to public safety. Motorists can easily be swept from the roadway when they attempt to cross flooded roads resulting in water rescues, loss of property, and fatalities.

National Flood Insurance Program (NFIP) Participation

Table 3.25 provides details on NFIP participation for the communities in the planning area. Table 3.25 contains the number of policies in force, amount of insurance in forces, number of closed losses, and total payments for each effected jurisdictions. The time period represented by for closed losses is from 1978 through December 2018.

Table 3.25. NFIP Participation in Texas County

Community ID #	Community Name	NFIP Participant (Y/N)	Current Effective Map Date	Regular-Emergency Program Entry Date
-	Texas County	N	N/A	N/A
290439	Cabool, City of	Y	8/1/78	8/1/78
290440	Houston, City of	Y	7/18/77	7/18/77
290441	Licking, City of	Y	9/04/86	9/04/86
-	Plato, Village of	N	N/A	N/A
-	Raymondville, Village of	N	N/A	N/A

Source: NFIP Community Status Book, 9/26/2013; BureauNet, http://www.fema.gov/national-flood-insurance-program/national-flood-insurance-program-community-status-book; M= No elevation determined – all Zone A, C, and X: NSFHA = No Special Flood Hazard Area; E=Emergency Program

Table 3.26. NFIP Policy and Claim Statistics as of 1/30/2019

Community Name	Policies in Force	Insurance in Force	Closed Losses	Total Payments
City of Cabool	4	1,313,000	2	16,836
City of Houston	1	187,600	4	244,747
City of Licking	12	1,221,000	4	99,257

Source: NFIP Community Status Book, [insert date]; BureauNet, http://bsa.nfipstat.fema.gov/reports/reports.html; *Closed Losses are those flood insurance claims that resulted in payment. Loss statistics are for the period from [1977] to [2019].

The City of Houston shows the most insurance payments with four closed losses with total payments of $244,747

Repetitive Loss/Severe Repetitive Loss Properties

Repetitive Loss Properties are those for which two or more losses of at least $1,000 each have been paid under the National Flood Insurance Program (NFIP) within any 10-year period since 1978. According to the Flood Insurance Administration, jurisdictions included in the planning area have a combined total of one repetitive loss properties.

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

There is one non-mitigated repetitive loss property in Texas County, Missouri. One residential property in the City of Houston shows two losses totaling $103,583 in building and contents payments.

Texas County does not currently participate in the NFIP as a result of local political pressures of land rights activists. Additionally, the county has not been entirely mapped. The villages of Plato and Raymondville do not participate in the NFIP due to concerns about their staff's capacity in properly managing and enforcing a floodplain ordinance and the properly completing the related administrative tasks.

Previous Occurrences

According to the NCEI storm event data, there have been 70 days with reported flood events recorded in Texas County from 1996 through 2018. 17 of these events resulted in reported property damage. The most recent damaging event occurred in April 2017 when multiple rounds of severe thunderstorms and extremely heavy rainfall over several days led to historic and devastating flash floods, record breaking river levels, large hail, wind damage, and at least one tornado across the Missouri Ozarks region. Most counties across the Missouri Ozarks region were declared a federal disaster from the President and FEMA. Numerous homes and business sustained severe flood damage across Texas County. Numerous roads and bridges were severely damaged or washed away across the county. The NCEI data reports $8,000,000 in property damage as a result of this event. Table 3.27 summarizes flash flood events by year from January 1996 through December 2018 in Texas County.

Table 3.27. NCEI Texas County Flash Flood Events Summary, 1996 to 2019

Year	# of Events	# of Deaths	# of Injuries	Property Damages $	Crop Damages $
1996	2	0	0	0	0
1997	2	0	0	0	0
1998	5	0	0	400,000	0
1999	1	0	3	30,000	0
2000	2	0	0	10,000	0
2001	0	0	0	0	0
2002	3	0	0	0	0
2003	2	0	0	20,000	0
2004	0	0	0	0	0
2005	2	0	0	0	0
2006	1	0	0	0	0
2007	2	0	0	0	0
2008	5	0	0	1,050,000	0
2009	1	0	0	0	0
2010	1	0	0	0	0
2011	6	0	0	1,000,000	0
2012	0	0	0	0	0
2013	9	0	0	2,500,000	0
2014	0	0	0	0	0
2015	15	0	0	2,100,000	0
2016	0	0	0	0	0
2017	7	0	0	8,000,000	0
2018	2	0	0	0	0
Total	**68**	**0**	**3**	**$15,110,000**	**0**

Source: NCEI, data accessed 1/30/2019

Table 3.28 on the following page summarizes riverine flood events listed in the NCEI in Texas County by year. The data contains record of 35 events from January 1996 to January 2019. The greatest amount of losses occurred in 2002.

Table 3.28. NCEI Texas County Riverine Flood Events Summary, 1996 to 2018

Year	# of Events	# of Deaths	# of Injuries	Property Damages $	Crop Damages $
1996	0	0	0	0	0
1997	0	0	0	0	0
1998	0	0	0	0	0
1999	0	0	0	0	0
2000	0	0	0	0	0
2001	1	0	0	0	0
2002	6	0	0	120,000	0
2003	0	0	0	0	0
2004	1	0	0	0	0
2005	3	0	0	0	0
2006	0	0	0	0	0
2007	0	0	0	0	0
2008	2	1	0	10,000	0
2009	3	0	0	0	0
2010	3	0	0	0	0
2011	1	0	0	0	0
2012	0	0	0	0	0
2013	3	0	0	0	0
2014	0	0	0	0	0
2015	6	0	0	0	0
2016	3	0	0	0	0
2017	1	0	0	0	0
2018	2	0	0	0	0
Total	**35**	**1**	**0**	**$130,000**	**0**

Source: NCEI, data accessed 1/16/2017

Probability of Future Occurrence

There have been a total of 103 reported flood events in Texas County from 1996 through 2018 in the NCEI storm event database. Of those, 68 have been labeled as flash floods and the remaining 35 have been deemed riverine flooding. Using a 23 year period of record, this equates to 2.96 flash flood events per year and a 100% probability of occurrence in the county in any given year. Using the same period of record, the probably of occurrence of riverine flooding inside Texas County is also 100%.

Vulnerability

Vulnerability Overview

Flooding has been included in 10 of the last 14 presidential disaster declarations that have affected Texas County. Periods of heavy rain falling at the rate of one inch per hour floods low water crossings throughout the county making many roads impassable. This creates a severe threat to motorists that attempt to drive through flood waters over the roadway. Riverine flooding occurs less frequently than flash flooding. Spaces in low lying areas outsides the identified floodplain are frequently flooding. Street flooding over roadways has been reported in the Cities of Cabool, Licking and Houston, and in unincorporated Texas County. There are no school district facilities in SFHAs in Texas County. Increases in development add to surface runoff and can potentially exacerbate flash flooding in areas that previously have not experienced flooding.

Potential Losses to Existing Development

Flood loss estimates were developed using a GIS methodology. A county-wide structures layer development by the University of Missouri in partnership with regional planning commissions (RPCs) across the state was overlaid on FEMA HAZUS Flood Risk area maps to show the number of structures and structure types situated inside Special Flood Hazard Areas. An average valuation from the Texas County Assessor for each structure type: Residential, Commercial, or Agriculture was applied to the at-risk structures in identified SFHAs. A review of GIS data indicate that no school district facilities in Texas County are located in the FEMA SFHA.

Table 3.29. Potential Flood Losses for Building Types by Jurisdiction

Jurisdiction	Residential	Commercial	Agricultural/ Accessory	Total Structure Count
Countywide	**53**	**9**	**332**	**392**
City of Cabool	17	4	34	55
City of Houston	8	2	16	26
City of Licking	5	3	12	20
Village of Plato	0	0	0	0
Village of Raymondville	0	0	0	0

Table 3.30 provides the total exposure for structures and contents by building type and jurisdiction. Losses were estimated by applying a 5% damage factor to total exposure. A 5% damage factor was used under the assumption that not all at-risk structures in the county would be affected simultaneously during a flooding even, nor would the individual structures sustain catastrophic damage.

Table 3.30. Total Flood Exposure and Estimated Losses by Jurisdiction

Jurisdiction	Residential	Commercial	Agricultural	Estimated Exposure $	Estimated Loss $
Texas County	76,895,570	10,434,550	13,236,110	100,566,230	5,028,311
City of Cabool	7,008,950	4,274,220	208,498	10,424,927	521,246
City of Houston	11,242,788	7,324,847	340,690	17,034,528	851,726
City of Licking	2,251,027	360,164	2,251,027	13,004,110	650,205
Village of Plato	651,463	42,486	14,162	708,113	35,405
Village of Raymondville	921,136	827,988	11,486	1,034,985	51,749

Impact of Future Development

Future development could impact flash flooding and riverine flooding in the planning area. Development in low-lying areas near rivers and streams or where interior drainage systems are not adequate to provide drainage during heavy rainfall events will be at risk to flash flooding. Future development would also increase impervious surfaces causing additional water run-off and drainage problems during heavy rainfall events. Not all jurisdictions in the county participate in the NFIP. Not all jurisdictions in the county have identified SFHAs. Zoning regulations that prohibit development in SFHAs and violations of floodplain management regulations are effective mitigation strategies in participating municipalities.

Hazard Summary by Jurisdiction

All local governments in the county are not equally at risk to flood hazards. Table 3.29 above details the exposure of assets inside SFHAs and how it varies by jurisdiction. Many parts of the county are vulnerable to street and road flooding during periods of heavy rainfall. In particular, U.S. Highway 63 in the central part of the County is particularly vulnerable to closure during flooding events. Due to the topography and many streams in the county, numerous low water crossings are damaged and create a significant hazard to public safety during flood events. This heightens the risk and exposure to infrastructure maintained by the Texas County Commission. There is no heightened risk to school district facilities due to flood as no facilities are located inside identified flood risk areas. No previous damage to school facilities by flooding was reported on the Data Collection Questionnaires used in the planning process.

Problem Statement

Floods are frequent events and have been listed in 10 out of 14 presidential disaster declarations that have included Texas County. Historic flooding that occurred within the past year have produced over $8,000,000 in damages throughout the county – a figure that many believe to be largely under-reported. Numerous water rescues have occurred in the county since 2002. Significant debris accumulation and damages at low water crossings have become regular occurrences due to flash flooding events.

The County Commission is in the process of developing a low water crossing inventory and improvement priority list for inclusion in their ongoing maintenance and management efforts. It is desired that warning signs, gauges, and perhaps warning lights be installed at frequently flooded low water crossings. The county is focusing on the replacements of frequently damaged crossings. Hazard awareness programs and education, such as “turn around, don’t drown” messages during and prior to flood events in the county broadcast by local media can mitigate future risks to motorists at low water crossings.

3.4.7 Land Subsidence/Sinkholes

Hazard Profile

Hazard Description

Sinkholes are depressed or collapsed areas formed by dissolution of carbonate bedrock or collapse of underlying caves. They range in size from several square yards to hundreds of acres and may be very shallow or hundreds of feet deep. Sinkholes are part of what is called karst topography, which also includes caves, springs and losing streams. Sinkholes are common where the rock below the land surface is limestone, carbonate rock, salt beds, or rocks that naturally can be dissolved by ground water circulating through them. As the rock dissolves, spaces and caverns develop underground. The sudden collapse of the land surface above them can be dramatic and range in size from broad, regional lowering of the land surface to localized collapse. Land subsidence may also result from human activities such as, underground mining, groundwater or petroleum withdrawal, and drainage of organic soils.

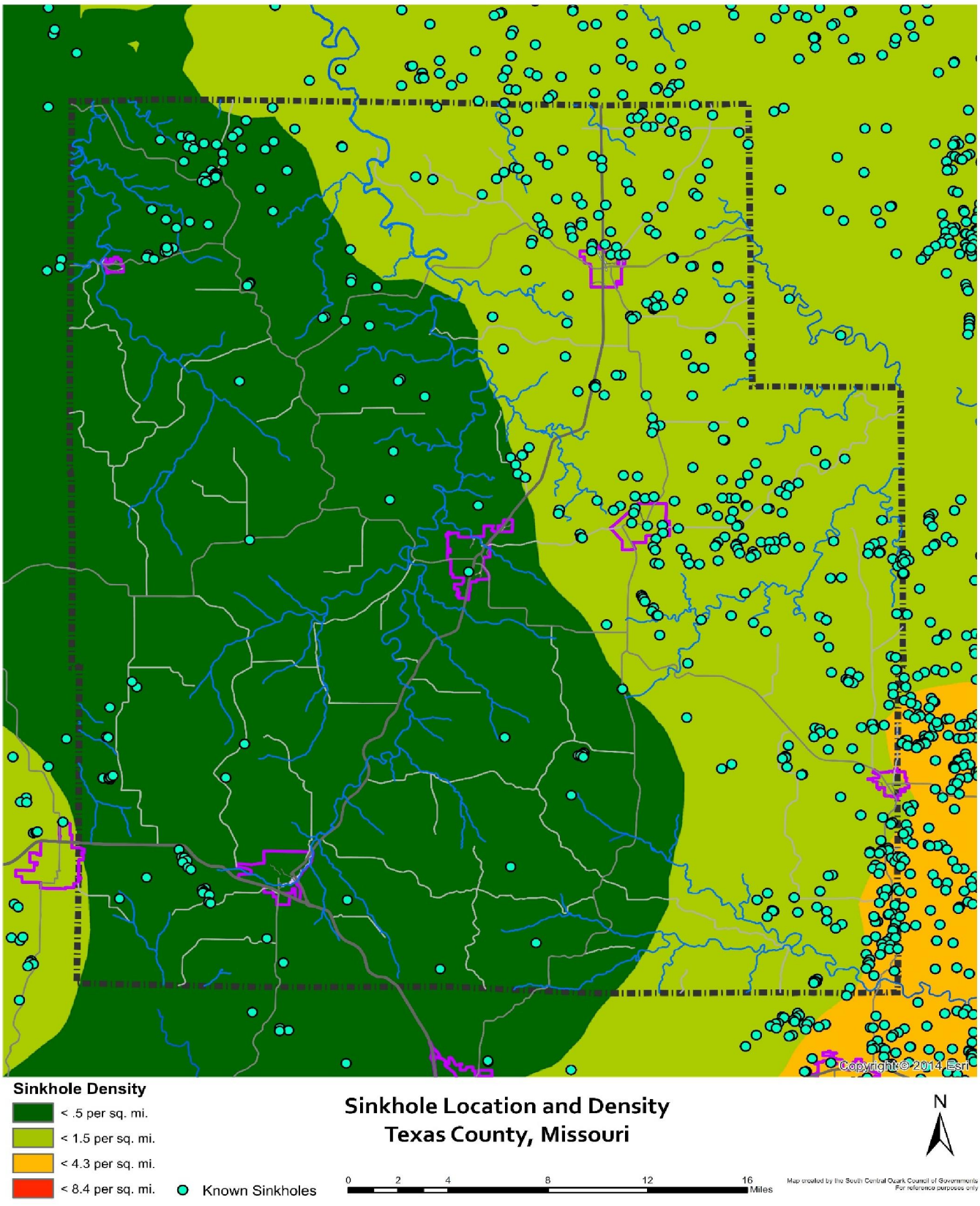
In the case of sinkholes, the rock below the surface is rock that has been dissolving by circulating groundwater. As the rock dissolves, spaces and caverns form, and ultimately the land above the spaces collapse. In Missouri, sinkhole problems are usually a result of surface materials above openings into bedrock caves eroding and collapsing into the cave opening. These collapses are called “cover collapses” and geologic information can be applied to predict the general regions where collapse will occur. Land subsidence occurs slowly and continuously over time, as a general rule. On occasion, it can occur abruptly, as in the sudden formation of sinkholes. Sinkhole formation can be aggravated by a change in stormwater runoff patterns resulting from an increase in impervious surfaces from land development.

According to the U.S. Geological Survey (USGS), the most damage from sinkholes tends to occur in Florida, Texas, Alabama, Missouri, Kentucky, Tennessee, and Pennsylvania. Fifty-nine percent of Missouri is underlain by thick, carbonate rock that makes Missouri vulnerable to sinkholes. Sinkholes occur in Missouri on a fairly frequent basis. Most of Missouri‘s sinkholes occur naturally in the State‘s karst regions (areas with soluble bedrock). They are a common geologic hazard in southern Missouri, but also occur in the central and northeastern parts of the State. Missouri sinkholes have varied from a few feet to hundreds of acres and from less than one to more than 100 feet deep. Sinkholes can also vary is shape like shallow bowls or saucers whereas other have vertical walls. Some hold water and form natural ponds.

Geographic Location

According to spatial data from Missouri Geological Survey, there are 471 sinkhole formations have been identified in Texas County. Figure 3.21 below, provides the location of known sinkholes in the county. Although the risk of sinkhole formation exists countywide, the map shows that the unincorporated areas of the county and in particular the locales in the eastern half of the county have an elevated risk to sinkhole formation than other areas of the county.

Figure 3.21. Known Sinkholes in Texas County



Severity/Magnitude/Extent

Sinkholes vary in size and location, and these variances will determine the impact of the hazard. A sinkhole could result in the loss of a personal vehicle, a building collapse, or damage to infrastructure such as roads, water, or sewer lines. Groundwater contamination is also possible from a sinkhole. Because of the relationship of sinkholes to groundwater, pollutants captured or dumped in sinkholes could affect a community's groundwater system. Sinkhole collapse could be triggered by large earthquakes. Sinkholes located in floodplains can absorb floodwaters but make detailed flood hazard studies difficult to model.

Previous Occurrences

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

Probability of Future Occurrence

Based on local information and the 2018 Missouri State Hazard Mitigation Plan, there have been zero documented sinkhole formations or expansions in the county during an eleven year period from 2006-2018. This equates to a 0% probability of a sinkhole formation in any given year in the county. However, in considering the large number of known sinkholes in Texas County, it is likely that unreported sinkhole formation occurs every year.

Vulnerability

Vulnerability Overview

Sinkholes in Missouri are a common feature where limestone and dolomite outcrop. Dolomite is a rock similar to limestone with magnesium as an additional element with the calcium normally present in the minerals that form the rocks. While some sinkholes may be considered a slow changing nuisance; other more sudden catastrophic collapses can destroy property, delay construction projects, contaminated groundwater resources, and damage underground utilities. The entire county is underlain with limestone and dolomite bedrock.

Potential Losses to Existing Development

A 75 foot buffer zone was created in GIS then overlaid on the Texas County Structures layer to identify structures located in close proximity to known sinkholes. The results of this operation show that in Texas County there are eight structures located within 75 feet of a known sinkhole.

Impact of Future Development

Future development in areas of known risk to sinkhole formation in the planning area will increase vulnerability to this hazard. Population and development in these areas, specifically in eastern Texas County will increase exposure to sinkhole occurrence. While no building codes currently restrict construction within a certain distance of known sinkholes, in is encouraged that local officials explore options to implement this regulatory condition.

Hazard Summary by Jurisdiction

The risk of sinkhole damage for individual communities and school districts is limited to the amount of exposure of buildings and infrastructure. The entire county is at risk for potential sinkhole development, however, eastern Texas County and Cities of Licking, Raymondville and Summersville in areas with high density of known sinkholes. This indicates that the subsurface conditions are currently favorable for the development of sinkhole features. It is unlikely that school districts will be greatly affected by sinkholes due to the localized nature of their exposure.

Problem Statement

It is likely that more sinkholes will occur as development occurs within the county. Sinkholes can be remediated with fill material. Once a sinkhole has been remediated, building should be prohibited at the site. Existing sinkholes can expand if surface runoff erodes the edges of the sinkhole. Best efforts to divert stormwater runoff from known sinkholes should be made. Texas County has a high density of sinkholes and the effects of collapse sinkholes on the built environment should be noted as a public service to the county's residents.

3.4.8 Thunderstorm/High Winds/Lightning/Hail

Hazard Profile

Hazard Description

Thunderstorms

A thunderstorm is defined as a storm that contains lightning and thunder which is caused by unstable atmospheric conditions. When cold upper air sinks and warm moist air rises, storm clouds or 'thunderheads' develop resulting in thunderstorms. This can occur singularly, as well as in clusters or lines. The National Weather Service defines a thunderstorm as "severe" if it includes hail that is one inch or more, or wind gusts that are at 58 miles per hour or higher. At any given moment across the world, there are about 1,800 thunderstorms occurring. Severe thunderstorms most often occur in Missouri in the spring and summer, during the afternoon and evenings, but can occur at any time. Other hazards associated with thunderstorms are heavy rains resulting in flooding (discussed separately in Section 3.4.6) and tornadoes (discussed separately in Section 3.4.9).

High Winds

A severe thunderstorm can produce winds causing as much damage as a weak tornado. The damaging winds of thunderstorms include downbursts, microbursts, and straight-line winds. Downbursts are localized currents of air blasting down from a thunderstorm, which induce an outward burst of damaging wind on or near the ground. Microbursts are minimized downbursts covering an area of less than 2.5 miles across. They include a strong wind shear (a rapid change in the direction of wind over a short distance) near the surface. Microbursts may or may not include precipitation and can produce winds at speeds of more than 150 miles per hour. Damaging straight-line winds are high winds across a wide area that can reach speeds of 140 miles per hour.

Lightning

All thunderstorms produce lightning which can strike outside of the area where it is raining and is has been known to fall more than 10 miles away from the rainfall area. Thunder is simply the sound that lightning makes. Lightning is a huge discharge of electricity that shoots through the air causing vibrations and creating the sound of thunder.

Hail

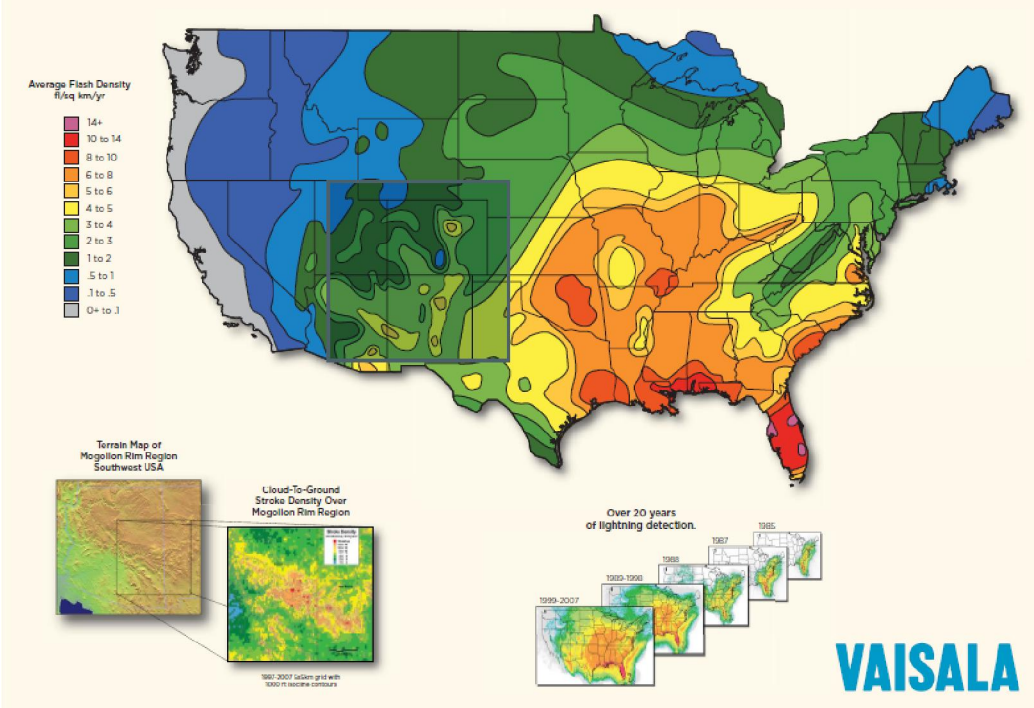
According to the National Oceanic and Atmospheric Administration (NOAA), hail is precipitation that is formed when thunderstorm updrafts carry raindrops upward into extremely cold atmosphere causing them to freeze. The raindrops form into small frozen droplets. They continue to grow as they come into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

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

Geographic Location

Thunderstorms/high winds/hail/lighting 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 the incorporated communities. In addition, damages are more likely to occur in more densely developed parts of the county. Figure 3.22 shows lightning frequency in the state. Texas County is located in the 6 to 8 flash density zone on the map.

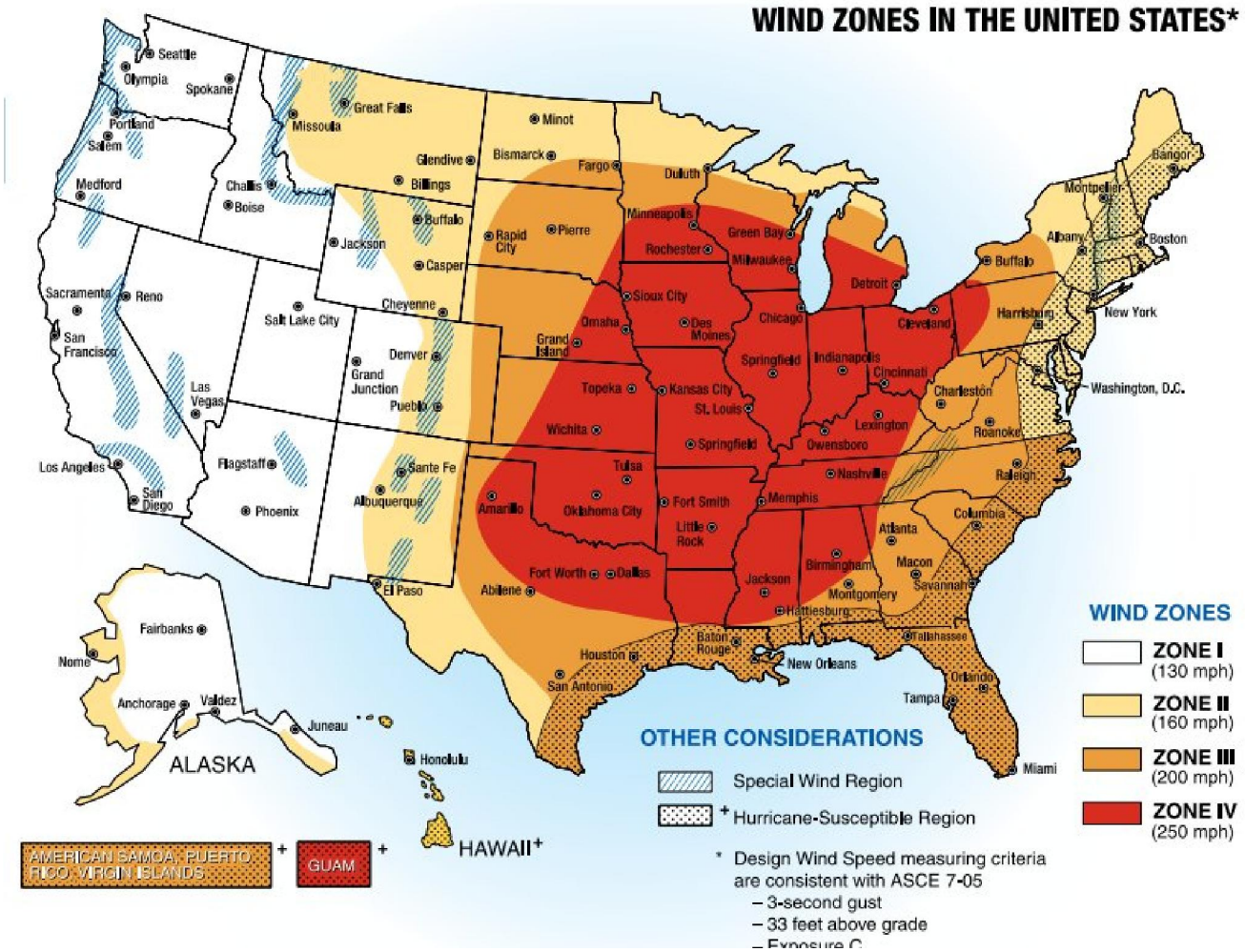
Figure 3.22. Location and Frequency of Lightning in Missouri



Source: National Weather Service,

Figure 3.23 on the following page shows wind zones in the United States. Texas County, Missouri is located in Zone IV which can experience wind speeds of up to 250 miles per hour.

Figure 3.23. 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, occasionally fatal injury.

In general, assets in the County vulnerable to thunderstorms with lightning, high winds, and hail include people, crops, vehicles, and built structures. Although this hazard results in high annual losses, private property insurance and crop insurance usually cover the majority of losses.

Considering insurance coverage as a recovery capability, the overall impact on jurisdictions is reduced.

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

Based on information provided by the Tornado and Storm Research Organization (TORRO), Table 3.31 below describes typical damage impacts of the various sizes of hail.

Table 3.31. Tornado and Storm Research Organization Hailstorm Intensity Scale

Intensity Category	Diameter (mm)	Diameter (inches)	Size Description	Typical Damage Impacts
Hard Hail	5-9	0.2-0.4	Pea	No damage
Potentially Damaging	10-15	0.4-0.6	Mothball	Slight general damage to plants, crops
Significant	16-20	0.6-0.8	Marble, grape	Significant damage to fruit, crops, vegetation
Severe	21-30	0.8-1.2	Walnut	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
Severe	31-40	1.2-1.6	Pigeon's egg > squash ball	Widespread glass damage, vehicle bodywork damage
Destructive	41-50	1.6-2.0	Golf ball > Pullet's egg	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
Destructive	51-60	2.0-2.4	Hen's egg	Bodywork of grounded aircraft dented, brick walls pitted
Destructive	61-75	2.4-3.0	Tennis ball > cricket ball	Severe roof damage, risk of serious injuries
Destructive	76-90	3.0-3.5	Large orange > Soft ball	Severe damage to aircraft bodywork
Super Hailstorms	91-100	3.6-3.9	Grapefruit	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open
Super Hailstorms	>100	4.0+	Melon	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open

Source: Tornado and Storm Research Organization (TORRO), Department of Geography, Oxford Brookes University
Notes: In addition to hail diameter, factors including number and density of hailstones, hail fall speed and surface wind speeds affect severity. http://www.torro.org.uk/site/hscale.php

Straight-line winds are defined as any thunderstorm wind that is not associated with rotation (i.e., is not a tornado). It is these winds, which can exceed 100 miles per hour, which represent the most common type of severe weather. They are responsible for most wind damage related to thunderstorms. Since thunderstorms do not have narrow tracks like tornadoes, the associated wind damage can be extensive and affect entire (and multiple) counties. Objects like trees, barns, outbuildings, high-profile vehicles, and power lines/poles can be toppled or destroyed, and roofs, windows, and homes can be damaged as wind speeds increase.

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

Previous Occurrences

Thunderstorm Wind

There are 81 days with Thunderstorm wind events reported to the NCEI from 1996 through 2018. There were 36 events with reported damages. The total damages from these events include $1,280,000 in property damages with average losses per damaging event totaling $35,555.

The costliest event occurred on May 8, 2009 when Sixty to 85 mph winds impacted most of Texas County. Thousands of trees were damaged along with more than 200 power poles that were destroyed. Nearly 10,000 power outages were estimated by Intercounty Electric. Numerous outbuildings were either damaged or destroyed. In Gladden, recovery crews worked 15 hours straight to remove storm debris along a one mile stretch of a county road. Hundreds of structures in the community of Licking were damaged. A pavillion structure at the Old City Park was completely flattened by a large tree. Several mobile homes at the Green Acres mobile home park were crushed by downed large trees.

Hail

There are 108 days with Hail events reported to the NCEI from 1996 through 2018. The largest magnitude event was on May 21, 1998 when hailstones 4.5 inches in diameter were reported near Roby in northwestern Texas County. There were 10 events with reported damages. Table 3.32 provides information about damaging hail events in the county.

Table 3.32. NCEI Reported Events and Damages from Hail

Location	Date	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
CABOOL	4/3/2001	1	0	0	150000	0
SUMMERSVILLE	3/25/2015	1.75	0	0	50000	0
LICKING	3/27/2008	1.75	0	0	25000	0
FAIRVIEW	4/21/1996	2.75	0	0	15000	0
CABOOL	5/26/1997	2.5	0	0	10000	0
ROBY	5/21/1998	4.5	0	0	10000	0
HOUSTON	9/3/2000	1.75	0	0	10000	0
LICKING	6/2/2018	2.5	0	0	8000	0
HOUSTON	4/21/1996	1.75	0	0	5000	0
EVENING SHADE	5/21/1998	4	0	0	5000	0
ROBY	4/28/1996	1.75	0	0	2000	0
TOTAL	**-**	**-**	**0**	**0**	**$290,000**	**0**

Source: NCEI

Lightning

Limitation to the use of NCEI reported lightning events include the fact that only lightning events that result in fatality, injury, and/or property and crop damage are in the NCEI. There are three lightning events recorded in the NCEI data for Texas County from 1996 through 2018. The most severe event caused by lightning strike occurred in June of 2007 when five people were injured from a lightning strike near the community of Huggins. In the 23 year record period, there have been zero deaths and $75,000 in property damages. Therefore, annualized losses for this hazard equals $3,260 per year.

Table 3.33. NCEI Reported Events and Damages from Lightning

Location	Date	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
HUGGINS	6/23/2007	-	0	5	0	0
HUGGINS	6/28/2013	-	0	0	5,000	0
CABOOL	4/29/2017	-	0	0	70,000	0
TOTALS	**-**	**-**	**0**	**5**	**$75,000**	**0**

Probability of Future Occurrence

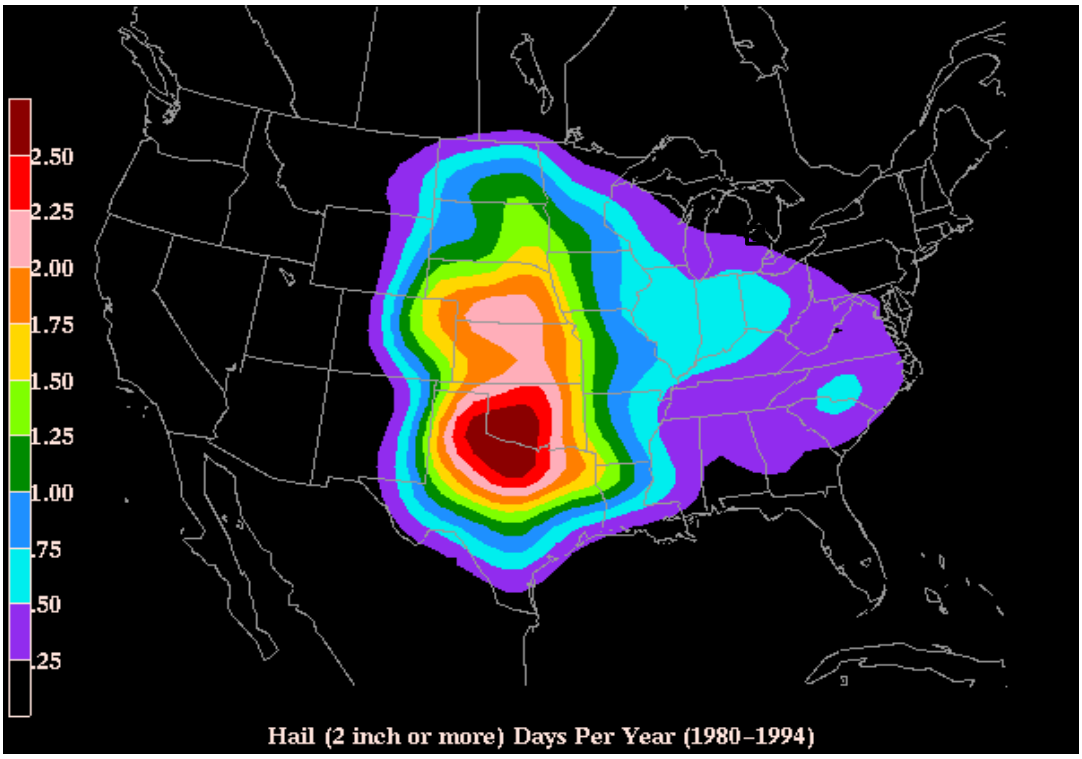
Thunderstorm Wind

There have been 81 days with a recorded thunderstorm wind events over a 23 year period from 1996 to 2019. This equates to approximately 3.5 thunderstorm wind occurrences in any given year with a 100% probability of occurrence. There were 36 events that resulted in $1,280,000 in property damages. This equates to an average of 1.5 damaging event per year with annualized losses of $55,652.

Hail

There have been 108 days with recorded hail events over a 23 year period from 1996 to 2019. This equates to 4.7 hail events in any given year with a 100% probability of occurrence. There were ten events that resulted in $292,000 in property damage. This approximately equates to 43% probability of occurrence. Annualized losses from damaging hail events is $12,695 per year. Figure 3.24 is a map based on hailstorm data from 1980 to 1994. It shows the probability of hailstorm occurrence (2" diameter or larger) based on number of days per year. Texas County is inside the dark blue zone on the map meaning that the county can be expected to experience hail greater than 2" in diameter approximately one day per year.

Figure 3.24. Annual Hailstorm Probability (2" diameter or larger), U 1980 - 1994



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

Lightning

It is known that the occurrence of severe thunderstorms include the risk of damaging and potentially life-threatening lightning strikes. The NCEI database includes three recorded occurrences of damaging lightning events from the years 1996 to 2019. Therefore, the occurrence probability of lightning events based on a 23-year record period is approximately 1.3%.

Vulnerability

Vulnerability Overview

High winds, hail, and lightning pose varying risk for jurisdictions in Texas County. Downbursts resulting from thunderstorms can be just as damaging as an EF-1 tornado. High winds have resulted in $1,280,000 in total property damage. Poorly built structures, barns, and outbuildings are most vulnerable to the impact of high winds during thunderstorms. Both high winds and hail can damage roofs. Hail can also damage crops and dent the exterior of vehicles. Total hail damage recorded in the NCEI database for Texas County over a 23-year record period has been $290,000 for an annualized loss of $12,695 per year. Lighting can cause wildfires and structure fires, damage utilities causing power outages, or result in injury or death. The NCEI reports three lightning storm events for Texas County in their database for the 23-year record period.

Potential Losses to Existing Development

The average annual loss determined from historical losses for high wind and hail are indicators of the potential losses to existing development. High wind events in the county have the potential to damage critical facilities, school facilities, local government properties, and private property alike. Potential annual losses for high wind and hail events are $55,562 and $12,695, respectively.

Future Development

Raymondville, Plato and Houston are the fastest growing communities in Texas County. All other municipalities are growing, but at a smaller rate. The unincorporated parts of the county is also gaining population. Additional development in these areas will result in the exposure of more households and business vulnerable to damages from high winds, hail and lightning.

Hazard Summary by Jurisdiction

Although thunderstorm high winds, hail and lightning are area-wide events, the communities of Texas County have varying degrees of percentage of structure built prior to 1939 – which are considered to be more vulnerable to the impacts of these events. The highest percentage of structures built prior to 1939 is the City of Summersville at 16.6%, followed by Houston (9.6%), Texas County (8.9%) and Cabool (8.5%). The county's school districts have mostly modernized facilities and are considered well-built structures. However, most districts have outbuildings used for storage and maintenance that may be at higher risk to high wind and hail events.

Problem Statement

Poorly built structures, barns, outbuildings are more vulnerable to the impact of high winds during thunderstorms. High winds can topple utility poles and lead to widespread or localized power outages. Both high winds and hail can damage roofs. Hail can also damage crops and vehicles. People are also at risk to injury and death during high wind and lightning events. Crop insurance can mitigate the risk to farmers and the agriculture sector within the county. Lightning events have also been known to cause structure fires.

The risk of property damage, injury and death in the county can potentially be mitigated by identifying safe refuge areas in public buildings, nursing homes and other facilities that house vulnerable populations that do not currently have a safe room. Retrofitting school district facilities with protective filming of windows and installation of blast proof doors will provide more protection for students and staff at school facilities. Additional warnings and alerts will also provide the public and schools more time to take cover during high wind events. In addition, public safety fairs and expos in the county could provide an opportunity to disseminate information to citizens about individual saferoom construction. Education and hazard awareness programs in public schools would also increase public safety in the event of severe thunderstorm occurrence.

3.4.9 Tornado

Hazard Profile

Hazard Description

The NWS defines a tornado as "a violently rotating column of air extending from a thunderstorm to the ground." It is usually spawned by a thunderstorm and produced when cool air overrides a layer of warm air, forcing the warm air to rise rapidly. Often, vortices remain suspended in the atmosphere as funnel clouds. When the lower tip of a vortex touches the ground, it becomes a tornado.

High winds not associated with tornadoes are profiled separately in this document in Section 3.4.8, Thunderstorm/High Wind/Hail/Lightning.

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

Although tornadoes have been documented in all 50 states, most of them occur in the central United States due to its unique geography and presence of the jet stream. The jet stream is a high-velocity stream of air that separates the cold air of the north from the warm air of the south. During the winter, the jet stream flows west to east from Texas to the Carolina coast. As the sun moves north, so does the jet stream, which at summer solstice flows from Canada across Lake Superior to Maine. During its move northward in the spring and its recession south during the fall, the jet stream crosses Missouri, causing the large thunderstorms that breed tornadoes.

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

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

Geographic Location

Tornadoes can occur anywhere in the planning area.

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 3.34**) 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 3.34. 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 Number	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 3.35**. The damage descriptions are summaries. For the actual EF scale it is necessary to look up the damage indicator (type of structure damaged) and refer to the degrees of damage associated with that indicator.

Table 3.35. Enhanced Fujita Scale with Potential Damage

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

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

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

Previous Occurrences

Table 3.36 includes NCEI reported tornado events and damages since 1996 in the planning area. Prior to that date, only exceptionally destructive tornadoes were recorded. There are limitations to the use of NCEI tornado data that must be noted. For example, one tornado may contain multiple segments as it moves geographically. A tornado that crosses a county line or state line is considered a separate segment for the purposes of reporting to the NCEI. Also, a tornado that lifts off the ground for less than 5 minutes or 2.5 miles is considered a separate segment. If the tornado lifts off the ground for greater than 5 minutes or 2.5 miles, it is considered a separate tornado. Tornadoes reported in Storm Data and the Storm Events Database are in segments.

Table 3.36. Recorded Tornadoes in Texas County, 1996 – Present

Date	Beginning Location	Ending Location	Length (mi.)	Width (yd.)	F/EF Rating	Death	Injury	Property Damage ($)	Crop Damage ($)
12/23/1996	TYRONE	TYRONE	1	50	F0	0	0	0	0
8/20/2007	ROBY	ROBY	0.1	50	EF0	0	0	0	0
1/8/2008	FOWLER	BADO	9.09	150	EF1	0	0	100,000	0
3/27/2008	LICKING	LICKING	0.09	50	EF0	0	0	0	0
9/11/2008	CABOOL	CABOOL	0.25	50	EF0	0	0	0	0
5/8/2009	DUNN	CABOOL	6.85	200	EF0	0	0	50,000	0
5/8/2009	DENT	LICKING	3.55	440	EF1	0	0	25,000	0
5/8/2009	PINE CREST	PINE CREST	3.61	880	EF0	0	2	500,000	0
8/19/2009	EVENING SHADE	EVENING SHADE	0.75	100	EF1	0	1	25,000	0
4/13/2018	UPTON	ROUBIDOUX	1.44	50	EF1	0	0	20,000	0
Total	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**$720,000**	**0**

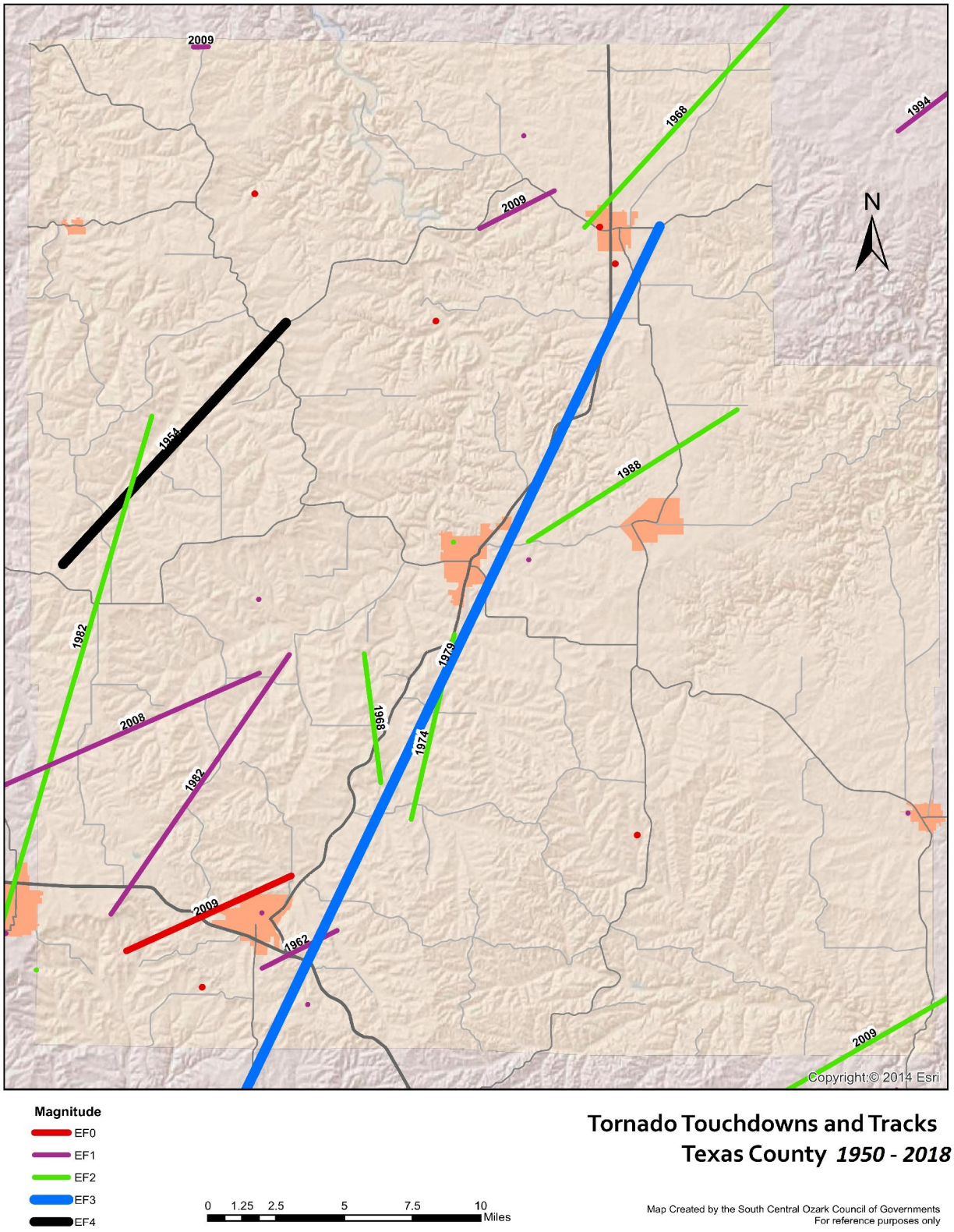
Source: National Center for Environmental Information, http://www.NCEI.noaa.gov/stormevents/

There were 10 tornado events recorded in the NCEI database from 1996 – 2019. The damages from these events resulted in zero deaths and three injuries and resulted in $720,000 in property damage and zero dollars in crop damage. Two of the most damaging tornado events are summarized below:

May 8, 2009: This tornado is a continuation of the Howell County tornado. A National Weather Service storm survey revealed that an EF-2 tornado entered southeastern Texas County from northern Howell County. The tornado tracked across rural portions of southeastern Texas County, destroying one home and several outbuildings. Two injuries occurred to the residents of the home. Numerous trees were snapped or uprooted. The tornado eventually tracked into west central Shannon County.

January 8, 2008: This is an extension of the Wright County tornado. A National Weather Service storm survey revealed that an EF-1 tornado tracked across rural areas of southwest Texas County. A few barns and outbuildings sustained damage from this tornado.

Figure 3.25. Texas County Map of Historic Tornado Events



Source: Missouri Tornado History Project, http://www.tornadohistoryproject.com/tornado/Missouri

Probability of Future Occurrence

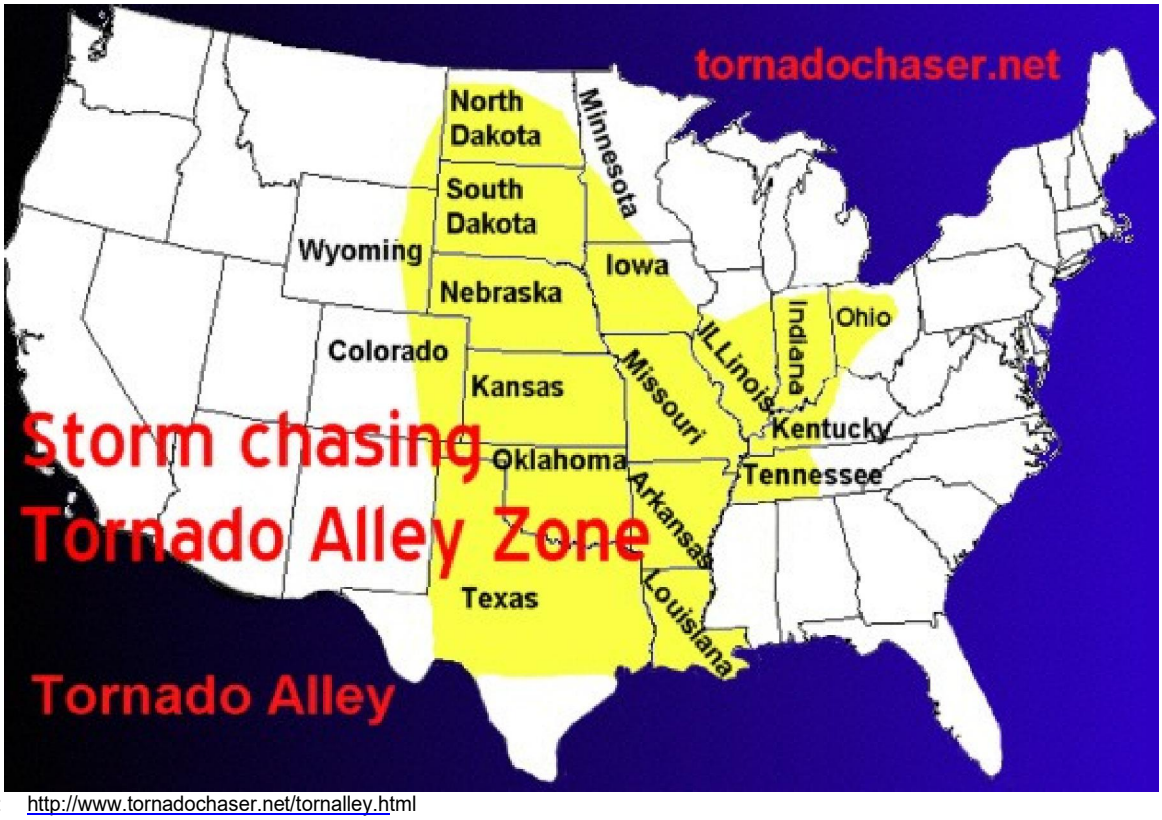
According to the NCEI, 10 tornadoes have occurred during the 23 year period from 1996 through 2018 resulting in a probability percentage of 43.4% of a tornado of any magnitude event in the planning area in any given year.

Vulnerability

Vulnerability Overview

Texas County is located in a region of the United States with high frequency of dangerous and destructive tornadoes referred to as "Tornado Alley" as is the entire State of Missouri. Figure 3.26 illustrates the areas where dangerous tornadoes historically have occurred.

Figure 3.26. Tornado Alley in the U.S.



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

The 2018 State Plan applies a certain methodology to each county in the state to determine each county's vulnerability to tornadoes. While this approach attempts to prioritize tornado vulnerable counties, it does not identify any particular geographic patters to tornado risk. The state's analysis combines annualized losses and frequency of occurrence to determine the greatest likelihood of being impacted by a tornado. The state's vulnerability rating ranged from very high, high, and moderate. The vulnerability for Texas County was rated as high.

Potential Losses to Existing Development

During the 23 year period from 1996 to 2019, a total of $720,000 in property losses equates to $31,304 in average annual losses countywide. This value indicates that potential future losses in the

county will remain significant. The most common tornado events recorded in the county are EF1 magnitude. The average magnitude for tornado events in the county is 0.55 on the Enhanced Fujita Scale.

Future Development

Texas County can be considered to have significant growth, relative to other rural counties across the state. Inside the county, fastest growing communities are the City of Houston and Village of Raymondville. It is anticipated that the unincorporated county will see the most growth along the U.S. Highway 63 corridor throughout the central part of the county. Additional population growth and development will increase exposure and risk to tornado events due to the area-wide geographic nature of this hazard.

Hazard Summary by Jurisdiction

Although tornado events are area-wide events, the communities of Texas County have varying degrees of percentage of structure built prior to 1939 – which are considered to be more vulnerable to the impacts of these events. The highest percentage of structures built prior to 1939 is the City of Summersville at 16.6%, followed by Houston (9.6%), Texas County (8.9%) and Cabool (8.5%). The county's school districts have mostly modernized facilities and are considered well-built structures. However, most districts have outbuildings used for storage and maintenance that may be at higher risk to the high winds associated with tornadic storms.

School district facilities and student populations are at risk to the damages of tornadoes. Fortunately, Cabool, Houston, Licking and Plato and Cabool School Districts have FEMA safe rooms. The Summersville School District has been selected and placed on a contingency funding list if funds become available.

Problem Statement

Tornadoes are the most violent of all atmospheric storms and are capable of tremendous destruction. Wind speeds can exceed 250 miles per hour and damage paths can be more than one mile wide and 50 miles long. Significant tornado events in Texas County since 1950 have resulted in deaths (4) numerous injuries (63) and millions of dollars in property damage ($38.75MM). Information in the 2018 State Plan indicates that Texas County has a high vulnerability to tornadoes based on frequency of occurrence and previous damages.

The risk of property damage, injury and death in the county can be mitigated by constructing FEMA standard saferooms in facilities that house vulnerable populations such as nursing homes, government buildings, and schools. In addition, identifying safe refuge areas in public buildings, nursing homes and other facilities with protective filming of windows and installation of blast proof doors will provide more protection for students and staff and school facilities that are not served by FEMA standard saferooms. Additional warnings and alerts will also provide the public and schools more time to take cover during tornado warnings. Aldo, public safety fairs and expos in the county hosted by communities provide an opportunity to disseminate information to homeowners about individual saferoom construction in residences.

Cities can adopt or update and enforce IBC 2012 building codes that include construction techniques such as roof tie down straps to mitigate damage to future development.

3.4.10 Winter Weather/Snow/Ice/Severe Cold

Hazard Profile

Hazard Description

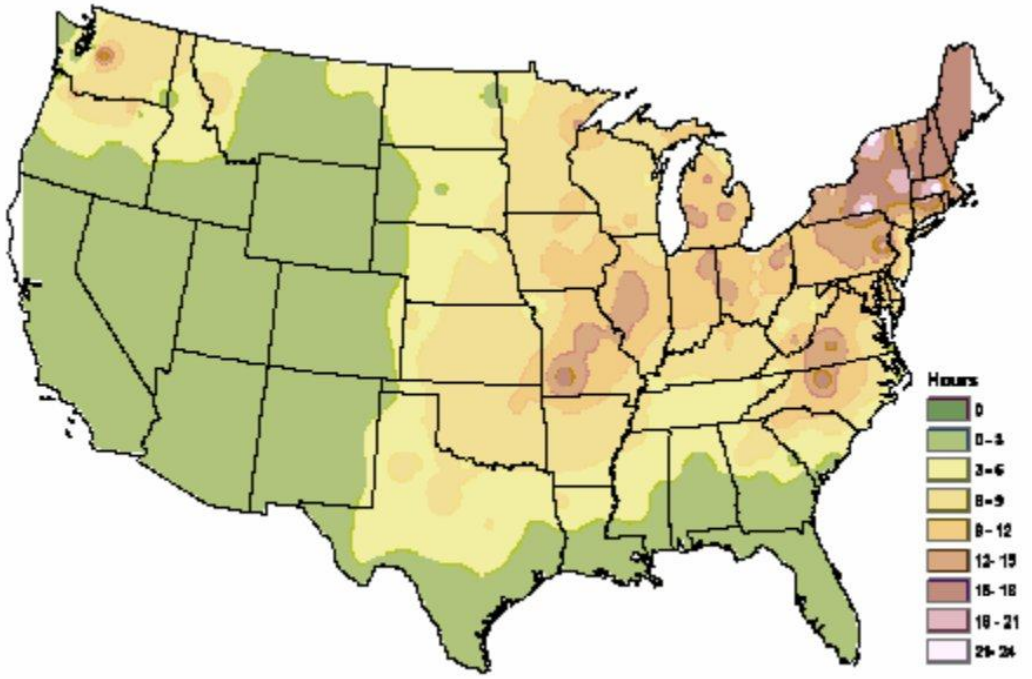
A major winter storm can last for several days and be accompanied by high winds, freezing rain or sleet, heavy snowfall, and cold temperatures. The National Weather Service describes different types of winter storm events as follows.

- **Blizzard**—Winds of 35 miles per hour or more with snow and blowing snow reducing visibility to less than ¼ mile for at least three hours.
- **Blowing Snow**—Wind-driven snow that reduces visibility. Blowing snow may be falling snow and/or snow on the ground picked up by the wind.
- **Snow Squalls**—Brief, intense snow showers accompanied by strong, gusty winds. Accumulation may be significant.
- **Snow Showers**—Snow falling at varying intensities for brief periods of time. Some accumulation is possible.
- **Freezing Rain**—Measurable rain that falls onto a surface with a temperature below freezing. This causes it to freeze to surfaces, such as trees, cars, and roads, forming a coating or glaze of ice. Most freezing-rain events are short lived and occur near sunrise between the months of December and March.
- **Sleet**—Rain drops that freeze into ice pellets before reaching the ground. Sleet usually bounces when hitting a surface and does not stick to objects.

Geographic Location

The entire county is vulnerable to heavy snow, ice, extreme cold temperatures and freezing rain. Figure 3.27 depicts the average number of hours per year with freezing rain. Texas County is located in a zone that can expect 9-12 hours of freezing rain per year.

Figure 3.27. NWS Statewide Average Number of Hours per Year with Freezing Rain



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

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.

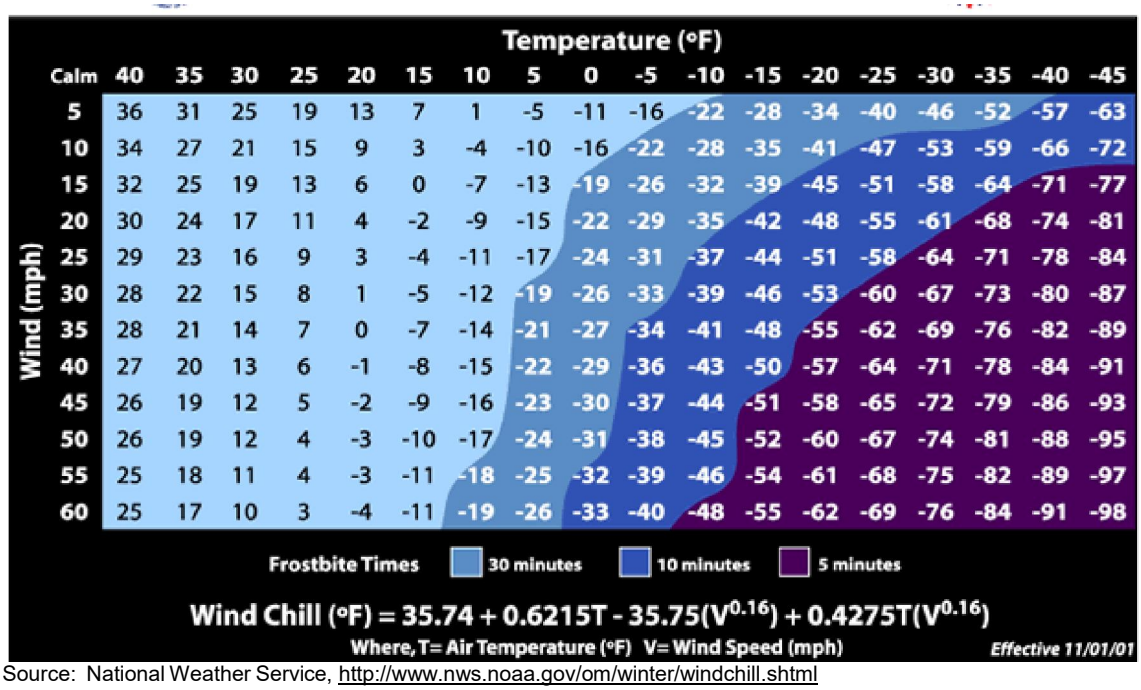
Buildings with overhanging tree limbs are more vulnerable to damage during winter storms when limbs fall. Businesses experience loss of income as a result of closure during power outages. In general heavy winter storms increase wear and tear on roadways though the cost of such damages is difficult to 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 3.28 on the following page shows the relationship of wind speed to apparent temperature and typical time periods for the onset of frostbite.

Figure 3.28. Wind Chill Chart



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

Previous Occurrences

Table 3.37 summarizes the Winter Weather events in Texas County from 1996 through 2018

Table 3.37. NCEI Texas County Winter Weather Events Summary, 1996-2019

Type of Event	Inclusive Date	Deaths	Injuries	Property Damage ($)	Crop Damage ($)
Winter Storm	1/1/1996	0	0	0	0
Winter Storm	12/20/1998	0	0	0	0
Winter Storm	1/1/1999	0	0	150,000	0
Winter Storm	3/13/1999	0	0	10,000	0
Winter Storm	12/4/2002	0	0	0	0
Winter Storm	12/24/2002	0	0	0	0
Winter Storm	2/23/2003	0	0	0	0
Winter Storm	2/5/2004	0	0	0	0
Winter Storm	11/30/2006	0	0	0	0
Winter Storm	1/20/2007	0	0	0	0
Winter Storm	1/26/2009	0	0	0	0
Winter Storm	2/28/2009	0	0	0	0
Winter Storm	1/28/2010	0	0	0	0
Winter Storm	2/1/2011	0	0	0	0
Winter Storm	2/21/2013	0	0	0	0
Winter Storm	3/21/2013	0	0	0	0
Winter Storm	12/5/2013	0	0	0	0
Winter Storm	1/5/2014	0	0	0	0
Winter Storm	3/2/2014	0	0	0	0
Winter Storm	2/15/2015	0	0	0	0
Winter Storm	2/20/2015	0	0	0	0
Winter Storm	2/28/2015	0	0	0	0
Winter Storm	3/4/2015	0	0	0	0
Ice Storm	11/24/1996	0	0	150,000	0
Ice Storm	12/15/2000	0	0	0	0
Ice Storm	2/21/2001	0	0	5,000	0

Ice Storm	1/25/2004	0	0	0	0
Ice Storm	12/10/2007	0	0	0	0
Ice Storm	2/11/2008	0	0	0	0
Ice Storm	1/13/2017	0	0	0	0
Heavy Snow	1/8/1997	0	0	15,000	0
Heavy Snow	12/12/2000	0	0	0	0
Heavy Snow	3/4/2008	0	0	0	0
				$330,000	

Source: NCEI, data accessed [JAN 2019]

Of the 33 events listed in the NCEI data, seven were Ice Storms, three were Heavy Snow events, and the remainder term generally as "Winter Storm". The most damaging event as listed in the NCEI database was the January 1999 Winter Storm in which $150,000 in property damages were reported in the county. There are no reported deaths, injuries, or crop damage associated with these winter weather events.

Ice Storm

The most significant Ice Storm event in terms of regional impact was the January 2009 event when a significant winter storm brought a combination freezing drizzle, freezing rain, sleet and snow to the Missouri Ozarks January 26 and 27, 2009. Freezing drizzle and light freezing rain developed area wide at the onset of the event causing multiple traffic accidents. Freezing rain persisted for much of the event across far southern Missouri resulting in significant ice accretion of one half to one inch. This ice storm downed tree limbs and power lines causing numerous power outages. As many as 20,000 residences lost power along the Arkansas border from Branson to Cabool in Texas County. Sleet was the predominant precipitation type for much of the area with accumulations of 1 to 3 inches common. As much as 6 inches of sleet fell across far south central Missouri. The weight of freezing rain and sleet across far southern Missouri caused the roofs of several buildings and a boat dock to collapse. The sleet transitioned to snow toward the end of the event with 2 to 4 inches of snow common on top of the freezing rain and sleet.

Probability of Future Occurrence

The probability for all of the different types of winter weather are included as one probability, since one storm generally includes a lot of the different types of events. There were 33 severe winter weather events in Texas County from 1996 to 2019. This equates to a 100% probability of occurrence in any given year with approximately 1.43 events in any given year.

Vulnerability

Vulnerability Overview

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 excessive snow. Repair and snow removal costs can be significant. Ice buildup can collapse utility lines and communication towers, as well as make transportation difficult and hazardous. People over 65 and those living in poverty have an increased risk of hypothermia and frostbite due to extreme cold and wind chill hazards.

In the 2018 State Plan, seven factors were considered in determining overall severe winter storm vulnerability as follows: housing density, likelihood of occurrence, building exposure, crop exposure, average annual property loss ratio, average annual crop insurance claims and social vulnerability. The state ranked each of these criteria using a scale from one to five, one being lowest and five being the highest, to rank each county's vulnerability to severe winter weather. Texas County received a vulnerability rating of medium.

Potential Losses to Existing Development

During the 23 year period of record from 1996 to 2019, a total of $330,000 in property losses equates to $14,347 in average annual losses countywide.

Future Development

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

Hazard Summary by Jurisdiction

Severe winter weather can cause power outages and put structures at risk to fires when individuals in homes resort fuel heaters. The risk of extreme cold deaths and frostbite varies among segments of the populations. People over 65 and those living below the poverty level have an increased vulnerability to severe winter weather. Table 3.38 includes information on population over 65 and the percent living below the poverty level by jurisdiction.

Table 3.38. Population over 65 and Percent Living Below the Poverty Level by Jurisdiction

Jurisdiction	% of Families Living Below Poverty Level	% Population over 65
Texas County	25.30%	19.60%
City of Cabool	**41.60%**	15.70%
City of Houston	28.10%	**22.90%**
City of Licking	29.30%	16%
Village of Plato	12.20%	**22.20%**
Village of Raymondville	15.60%	11.40%

Source: ACS Profiles; ACS five year estimates 2017

All jurisdictions have large percentages of families living below the poverty level. The City of Cabool and City of Licking have the highest percentages of impoverished families. The largest populations of people over 65—by percentage—reside in Houston and the Village of Plato. These communities have the greatest risk based on these populations.

Problem Statement

Heavy snow can bring a community to a standstill by inhibiting transportation (in whiteout conditions), weighing down utility lines, and by causing structural collapse in buildings not designed to withstand the weight of the snow. Repair and snow removal costs can be significant. Ice buildup can collapse utility lines and communication towers, as well as make travelled extremely difficult and hazardous. People over 65 and those living in poverty have an increased risk of hypothermia and frostbit due to extreme cold and wind chill.

It is important that the Texas County EMA maintain a list of heating centers throughout the county as they become available. These locations could be promoted through avenues such as radio, Facebook or the county government's website. These locations can provide individuals who are at risk refuge from periods of extreme cold. Public works departments can develop snow removal plans and maintain adequate snow removal equipment and slat to quickly open roads after periods of heavy snow and freezing rain. The county and cities can work with local electric cooperatives to development vegetation management programs in rights of way to minimize damages of falling tree limbs laden with ice resulting from ice storms to minimize power outages throughout the county.

44 CFR Requirement §201.6(c)(3): The plan shall include a mitigation strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.

This section presents the mitigation strategy updated by the Mitigation Planning Committee (MPC) based on the [updated] risk assessment. The mitigation strategy was developed through a collaborative group process. The process included review of [updated] general goal statements to guide the jurisdictions in lessening disaster impacts as well as specific mitigation actions to directly reduce vulnerability to hazards and losses. The following definitions are taken from FEMA's *Local Hazard Mitigation Review Guide (October 1, 2012)*.

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

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

4.1 Goals

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

This planning effort is an update to Texas County's existing hazard mitigation plan approved by FEMA on February 3rd, 2016. Therefore, the goals from the 2015 Texas County Hazard Mitigation Plan were reviewed to see if they were still valid, feasible, practical, and applicable to the defined hazard impacts. During planning meetings, MPC members and local stakeholders held a discussion in order to review and update the plan goals. To ensure that the goals developed for this update were comprehensive and supported State goals, the 2018 State Hazard Mitigation Plan goals were reviewed. The MPC also reviewed the goals from current surrounding county plans.

In the 2015 plan, the organization of the plan goals included a broad goals and a set of objectives linking the actions to the goals. The MPC opted to remove Goal 2 from the 2015 plan update as it was considered redundant to Goal 1. The 2019 Texas County Hazard Mitigation Plan Goals are as follows:

Goal 1: Protect the Lives and Property of all Citizens of Texas County

OBJECTIVES:

- Identify and provide sufficient emergency shelters
- Review and maintain current warning systems for sufficient coverage

Goal 2: Preserve the Functioning of Civil Government During Natural Disasters

OBJECTIVES:

- Implement proper maintenance and necessary upgrades of critical buildings and infrastructures in the county
- Improve the efficiency, timing, and effectiveness of response and recovery efforts for natural hazard disasters

Goal 3: Maintain Economic Activities Essential to the Survival and Recovery from Natural Disasters

OBJECTIVES:

- Periodically review chain of command of government organizations for emergency situations and keep up-to-date
- Continuously review communications systems and keep in good working order

4.2 Identification and Analysis of Mitigation Actions

44 CFR Requirement §201.6(c)(3)(ii): The mitigation strategy shall include a section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.

During the hazard mitigation planning meetings in the county and at the final MPC work session, the results of the risk assessment update were provided to the participants for review and the key issues were identified for specific hazards. Changes in risk since adoption of the previously approved plan were discussed. The meetings concluded with the distribution of a list of possible mitigation actions submit to the MPC for their review and approval. The list included possible new mitigation actions, as well as actions from the previously approved plan that were candidates for removal, due to the nature of them not being measurable or fundable. Actions from the previous plan included completed actions, on-going actions, and actions upon which progress had not been made. SCOCOG planners discussed SEMA's identified funding priorities and the types of mitigation actions generally recognized by FEMA.

The focus of the MPC work session then shifted to development the mitigation strategy. For a comprehensive range of mitigation actions to consider, the SCOCOG planners provided information to the MPC reviewing 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 assessment and vulnerability analysis;
- State priorities established for Hazard Mitigation Assistance grants, and
- Public input via the online survey tool, and other efforts to involve the public in the plan development process.

Table 4.1 provides a summary of the completed and deleted actions from the previous plan. The 2015 Plan had a series of county-wide mitigation actions that address five mitigation goals. Based on the status updates, there were 8 completed actions, 11 deleted actions, and 2 continuing actions.

Table 4.1. Summary of Completed and Deleted Actions from the Previous Plan

Completed Actions	Completion Details (date, amount, funding source)
Identify existing planning area shelter locations and amass shelter needs	The area's shelter needs have been identified and notice of interests for funding are on file
Use public service announcements and other available media to educate the public about shelter locations	This has been completed and coordinated as part of the Regional Homeland Security Oversight Committee (RHSOC) planning framework
Establish and maintain a volunteer committee to monitor and maintain storm shelters when activated	On-call lists have been developed to ensure volunteers are available to activate the shelters (saferoom) when needed.
Partner with the Red Cross to provide shelter management	Yes, the regional Red Cross office has coordinated with school districts.
Ensure partnerships with local service organizations, such as DHS and volunteer organizations such as the Red Cross are developed and maintained	Area partnerships have been established
Encourage the use of shelters and ongoing shelter awareness before severe weather strikes by posting notices periodically by way of local media	Local jurisdictions routinely post on social media that saferoom are available to the public. Also, availability is announced in real-time when severe weather is imminent
Promote the use of NOAA weather radios as warning devices	Completed via the Regional Homeland Security planning framework. Local radio stations routinely promote the use of weather radios
Discuss the possibility of future funding for more shelters	This is ongoing-completed through the efforts of the regional planning commission, the South Central Ozark Council of Governments
Deleted Actions	**Reason for Deletion**
Establish partnerships with food banks with can supply water, food, and other essentials	Preparedness Action – not mitigation

Form partnerships with local medical centers and other providers for disease control measures	Preparedness Action – not mitigation
Obtain more sirens in order to cover a larger area, especially rural areas	This action was deleted from the plan because it is too vague. Specific jurisdictional needs have been included in this plan update.
Apply for grants to purchase new items	This action was deleted from the plan because it is too vague. Specific jurisdictional needs have been included in this plan update.
Ensure current tests are conducted for correct application and coverage of existing systems	This action was deleted from the plan because it is too vague. Specific jurisdictional needs have been included in this plan update.
Budget for maintenance and replacements as needed for continued service	This action was deleted from the hazard mitigation plan because this should be considered standard operating procedure for local jurisdictions and not part of an action
Encourage awareness and support of programs to mitigate injuries and property damage	This action was deleted from the plan because it is too vague. Specific jurisdictional needs have been included in this plan update.
Implement upgrades or refurbishment of critical buildings and infrastructures	This action was deleted from the plan because it is too vague. Specific jurisdictional needs have been included in this plan update.
Keep emergency access routes clear of obstacles	Response Action – not mitigation
Review chain of commands of government organizations for emergency situations, and keep up-to-date	Preparedness Action, also this process is outlined in the Local Emergency Operations Plan very clearly and effectively
Review communications systems and keep in good working order	Preparedness Action – not mitigation

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

4.3 Implementation of Mitigation Actions

44 CFR Requirement §201.6(c)(3)(ii): The mitigation strategy shall include an action strategy describing how the actions identified in paragraph (c)(2)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefits review of the proposed projects and their associated costs.

A cost benefit review of all new and continuing actions in the finalized plan was conducted during the MPC work session. 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 worksheets to assign scores. The worksheets posed questions based on the STAPLEE elements as well as the potential mitigation effectiveness of each action. Scores were based on the responses to the following questions and ensuing discussion:

Definitely "YES"	Maybe "YES"	Probably "NO"	Definitely "NO"
3 points	2 points	1 point	Zero points

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)

The resulting list of actions were summed and divided into classes and labeled as high, medium, or low priorities. The result of the STAPLEE analysis is found in the forthcoming mitigation action worksheets.

Figure 4.1. Blank STAPLEE Worksheet

XXXXXX COUNTY
MULTI-JURISDICTIONAL
LOCAL HAZARD MITIGATION PLAN

Action Title:	**Jurisdiction:**
Action ID:	

STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score
S: Is it Socially acceptable?		
T: Is it Technically feasible and potentially successful?		
A: Does the jurisdiction have the administrative capacity to execute this action?		
P: Is it Politically acceptable?		
L: Is there Legal authority to implement?		
E: Is it Economically beneficial?		
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)		
Will historic structures be saved or protected?		
Could it be implemented quickly?		
STAPLEE Score		

Mitigation Effectiveness Criteria	**Evaluation Rating**	**Score**
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): _____

Priority Level: ☐ High (30+ points) ☐ Medium (25-29 points) ☐ Low (less than 25 points)

Completed by (name/title/phone #): _____

In addition to the STAPLEE cost benefit review prioritization at the final MPC meeting, an implementation plan for each action was discussed. An action worksheet was used to

development the implementation plan. The action worksheets are presented on the following pages.

MITIGATION ACTIONS

Goal 1: Protect the Lives and Property of all Citizens of Texas County

Mitigation Action Worksheet	
Name of Jurisdiction:	Texas County
Risk / Vulnerability	
Problem being Mitigated:	Dangerous flash flooding at low water crossing sites around the county.
Hazard(s) Addressed:	Flooding (Flash and River)
Action or Project	
Action/Project Number:	**Texas1**
Name of Action or Project:	Low Water Crossing Safety
Action or Project Description:	Make improvements at various low water crossings throughout the county where incidents of flash flooding become hazardous. Improvements could include barricades, warning lights, or crossing replacement
Applicable Goal Statement:	Goal 1
Estimated Cost:	$500,000 to $1,000,000
Benefits:	Alleviate the roadway flooding that inundates the site(s) and the resulting hazardous situation
Plan for Implementation	
Responsible Organization/Department:	County Commission and Road & Bridge Department
Action/Project Priority:	HIGH
Timeline for Completion:	More than 5 years
MoDOT, FEMA	Local, MoDOT, FEMA
Local Planning Mechanisms to be Used in Implementation, if any:	Regional Transportation Plan
Progress Report	
Action Status	New
Report of Progress	New

Mitigation Action Worksheet	
Name of Jurisdiction:	Texas County
Risk / Vulnerability	
Problem being Mitigated:	The lack of knowledge of the location of vulnerable populations in the county
Hazard(s) Addressed:	All natural hazards
Action or Project	
Action/Project Number:	**Texas3**
Name of Action or Project:	Vulnerable Population ID
Action or Project Description:	Create a better methodology for identifying, locating, and supporting vulnerable populations in the county in the event of disaster
Applicable Goal Statement:	Goal 1
Estimated Cost:	$10,000 to $50,000
Benefits:	Provide efficient response for the county's population in the event of a disaster
Plan for Implementation	
Responsible Organization/Department:	County Commission and Emergency Management Director
Action/Project Priority:	MED
Timeline for Completion:	2-3 years
Potential Fund Sources:	Local
Local Planning Mechanisms to be Used in Implementation, if any:	Threat Hazard Identification Risk Assessment; Economic Development Plan (resiliency chapter)
Progress Report	
Action Status	New
Report of Progress	New

Mitigation Action Worksheet	
Name of Jurisdiction:	City of Cabool
Risk / Vulnerability	
Problem being Mitigated:	Threat of flooding to the built environment
Hazard(s) Addressed:	Flooding (Flash and River)
Action or Project	
Action/Project Number:	Cabool2
Name of Action or Project:	NFIP
Action or Project Description:	The city will attempt to improve floodplain management efforts by enforcing floodplain management requirements and identification of map amendments/updates
Applicable Goal Statement:	Goal 1
Estimated Cost:	Little or no cost
Benefits:	Improve the delivery of floodplain management services
Plan for Implementation	
Responsible Organization/Department:	City Floodplain Administrator
Action/Project Priority:	14 (low)
Timeline for Completion:	Other
Potential Fund Sources:	Local
Local Planning Mechanisms to be Used in Implementation, if any:	Local Floodplain Ordinance
Progress Report	
Action Status	New
Report of Progress	New

Mitigation Action Worksheet	
Name of Jurisdiction:	City of Houston
Risk / Vulnerability	
Problem being Mitigated:	Threat of flooding to the built environment
Hazard(s) Addressed:	Flooding (Flash and River)
Action or Project	
Action/Project Number:	Houston2
Name of Action or Project:	NFIP
Action or Project Description:	The city will attempt to improve floodplain management efforts by enforcing floodplain management requirements and identification of map amendments/updates
Applicable Goal Statement:	Goal 1
Estimated Cost:	Little or no cost
Benefits:	Improve the delivery of floodplain management services
Plan for Implementation	
Responsible Organization/Department:	City Floodplain Administrator
Action/Project Priority:	13 (low)
Timeline for Completion:	Other
Potential Fund Sources:	Local
Local Planning Mechanisms to be Used in Implementation, if any:	Local Floodplain Ordinance
Progress Report	
Action Status	New
Report of Progress	New

Mitigation Action Worksheet	
Name of Jurisdiction:	Village of Raymondville
Risk / Vulnerability	
Problem being Mitigated:	A portion of the community is not effectively covered by outdoor warning sires
Hazard(s) Addressed:	Tornado
Action or Project	
Action/Project Number:	Raymondville1
Name of Action or Project:	Outdoor Warning Siren
Action or Project Description:	Purchase and install an outdoor warning siren to protect the vulnerable portion of the community
Applicable Goal Statement:	**Goal 1**
Estimated Cost:	$10,000 to $50,000
Benefits:	Protect the lives of the citizenry located in this specific area
Plan for Implementation	
Responsible Organization/Department:	Village Chairperson
Action/Project Priority:	HIGH
Timeline for Completion:	2-3 years
Potential Fund Sources:	FEMA
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan: Economic Development Plan (resiliency chapter)
Progress Report	
Action Status	New
Report of Progress	New

Mitigation Action Worksheet	
Name of Jurisdiction:	Cabool School District
Risk / Vulnerability	
Problem being Mitigated:	Ineffective method of communication threat and risk to bus drivers who are out on route
Hazard(s) Addressed:	Flooding (Flash and River)
Action or Project	
Action/Project Number:	CaboolSchool1
Name of Action or Project:	Improved Communication
Action or Project Description:	purchase interoperable communications system to install on district buses and other vehicles
Applicable Goal Statement:	**Goal 1**
Estimated Cost:	$10,000 to $50,000
Benefits:	Protect the lives of the citizenry located in this specific area
Plan for Implementation	
Responsible Organization/Department:	Superintendent Office
Action/Project Priority:	MED
Timeline for Completion:	2-3 years
Potential Fund Sources:	FEMA
Local Planning Mechanisms to be Used in Implementation, if any:	Threat Hazard Identification Risk Assessment; Economic Development Plan (resiliency chapter)
Progress Report	
Action Status	New
Report of Progress	New

Mitigation Action Worksheet	
Name of Jurisdiction:	City of Licking
Risk / Vulnerability	
Problem being Mitigated:	Threat of flooding to the built environment
Hazard(s) Addressed:	Flooding (Flash and River)
Action or Project	
Action/Project Number:	Licking2
Name of Action or Project:	NFIP
Action or Project Description:	The city will attempt to improve floodplain management efforts by enforcing floodplain management requirements and identification of map amendments/updates
Applicable Goal Statement:	Goal 1
Estimated Cost:	Little or no cost
Benefits:	Improve the delivery of floodplain management services
Plan for Implementation	
Responsible Organization/Department:	City Floodplain Administrator
Action/Project Priority:	14 (low)
Timeline for Completion:	Other
Potential Fund Sources:	Local
Local Planning Mechanisms to be Used in Implementation, if any:	Local Floodplain Ordinance
Progress Report	
Action Status	New
Report of Progress	New

Mitigation Action Worksheet	
Name of Jurisdiction:	Houston School District
Risk / Vulnerability	
Problem being Mitigated:	Lack of available safe room for shelter from Tornadic Storms at the Elementary School
Hazard(s) Addressed:	Tornado
Action or Project	
Action/Project Number:	HoustonSchool1
Name of Action or Project:	Elementary Safe Room
Action or Project Description:	Construct a 361 design tornado saferoom on the campus of Houston Elementary
Applicable Goal Statement:	Goal 1
Estimated Cost:	$100,000 to $500,000
Benefits:	Protect the lives of the students and population in proximity to the school
Plan for Implementation	
Responsible Organization/Department:	Superintendent Office
Action/Project Priority:	HIGH
Timeline for Completion:	3-5 years
Potential Fund Sources:	FEMA
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan; Capital Improvement Plan
Progress Report	
Action Status	New
Report of Progress	New

Mitigation Action Worksheet	
Name of Jurisdiction:	Houston School District
Risk / Vulnerability	
Problem being Mitigated:	Lack of viable Public Address System throughout the campus
Hazard(s) Addressed:	Tornado
Action or Project	
Action/Project Number:	HoustonSchool2
Name of Action or Project:	Public Address System
Action or Project Description:	purchase and install an effective public address in order to mitigate the potential impacts of an impending disaster event
Applicable Goal Statement:	Goal 1
Estimated Cost:	$50,000 to $100,000
Benefits:	Protect the lives of the students and population in proximity to the school
Plan for Implementation	
Responsible Organization/Department:	Superintendent's Office
Action/Project Priority:	HIGH
Timeline for Completion:	1 year
Potential Fund Sources:	FEMA
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan; Economic Development Plan (resiliency chapter)
Progress Report	
Action Status	New
Report of Progress	New

Mitigation Action Worksheet	
Name of Jurisdiction:	Plato School District
Risk / Vulnerability	
Problem being Mitigated:	Ineffective method of communication threat and risk to bus drivers who are out on routes
Hazard(s) Addressed:	Flooding (Flash and River)
Action or Project	
Action/Project Number:	PlatoSchool1
Name of Action or Project:	Improved Communication
Action or Project Description:	purchase interoperable communications equipment to install on district buses and other vehicles
Applicable Goal Statement:	Goal 1
Estimated Cost:	$10,000 to $50,000
Benefits:	Protect the lives of the citizenry located in this specific area
Plan for Implementation	
Responsible Organization/Department:	Superintendent Office
Action/Project Priority:	LOW
Timeline for Completion:	2-3 years
Potential Fund Sources:	FEMA/LOCAL
Local Planning Mechanisms to be Used in Implementation, if any:	Threat Hazard Identification Risk Assessment; Economic Development Plan (resiliency chapter)
Progress Report	
Action Status	New
Report of Progress	New

Mitigation Action Worksheet	
Name of Jurisdiction:	Raymondville School District
Risk / Vulnerability	
Problem being Mitigated:	Lack of available safe room for shelter from Tornadic Storms
Hazard(s) Addressed:	Tornado
Action or Project	
Action/Project Number:	RVilleSchool1
Name of Action or Project:	Tornado Safe Room
Action or Project Description:	Construct a 361 design tornado saferoom on the campus of Raymondville School
Applicable Goal Statement:	Goal 1
Estimated Cost:	$100,000 to $500,000
Benefits:	Protect the lives of the students and population in proximity to the school
Plan for Implementation	
Responsible Organization/Department:	Superintendent Office
Action/Project Priority:	HIGH
Timeline for Completion:	3-5 years
Potential Fund Sources:	FEMA
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan; Capital Improvement Plan
Progress Report	
Action Status	New
Report of Progress	New

Mitigation Action Worksheet	
Name of Jurisdiction:	Summersville School District
Risk / Vulnerability	
Problem being Mitigated:	Lack of available safe room for shelter from Tornadic Storms
Hazard(s) Addressed:	Tornado
Action or Project	
Action/Project Number:	SvilleSchool1
Name of Action or Project:	Tornado Safe Room
Action or Project Description:	Construct a 361 design tornado saferoom on the campus of Summersville School
Applicable Goal Statement:	Goal 1
Estimated Cost:	$100,000 to $500,000
Benefits:	Protect the lives of the students and population in proximity to the school
Plan for Implementation	
Responsible Organization/Department:	Superintendent Office
Action/Project Priority:	HIGH
Timeline for Completion:	3-5 years
Potential Fund Sources:	FEMA
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan; Capital Improvement Plan
Progress Report	
Action Status	New
Report of Progress	New

Mitigation Action Worksheet	
Name of Jurisdiction:	Success School District
Risk / Vulnerability	
Problem being Mitigated:	Lack of available safe room for shelter from Tornadic Storms
Hazard(s) Addressed:	Tornado
Action or Project	
Action/Project Number:	SuccessSchool1
Name of Action or Project:	Tornado Safe Room
Action or Project Description:	Construct a 361 design tornado saferoom on the campus of Success School
Applicable Goal Statement:	Goal 1
Estimated Cost:	$100,000 to $500,000
Benefits:	Protect the lives of the students and population in proximity to the school
Plan for Implementation	
Responsible Organization/Department:	Superintendent Office
Action/Project Priority:	HIGH
Timeline for Completion:	3-5 years
Potential Fund Sources:	FEMA
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan; Capital Improvement Plan
Progress Report	
Action Status	New
Report of Progress	New

Goal 2: Preserve the Functioning of Civil Government During Natural Disasters

Mitigation Action Worksheet	
Name of Jurisdiction:	Texas County
Risk / Vulnerability	
Problem being Mitigated:	Minimal/ineffective warning for severe weather events
Hazard(s) Addressed:	Various
Action or Project	
Action/Project Number:	Texas2
Name of Action or Project:	Improved Warning
Action or Project Description:	Make general improvements to the existing framework for notification of severe weather events, primarily tornadic storms. Explore new avenues to disseminate warnings
Applicable Goal Statement:	Goal 2
Estimated Cost:	$10,000 to $50,000
Benefits:	Protect the lives of the citizenry
Plan for Implementation	
Responsible Organization/Department:	County Commission and Emergency Management Director
Action/Project Priority:	MED
Timeline for Completion:	2-3 years
Potential Fund Sources:	FEMA, RHSOC
Local Planning Mechanisms to be Used in Implementation, if any:	Threat Hazard Identification Risk Assessment; LEOP
Progress Report	
Action Status	New
Report of Progress	New

Mitigation Action Worksheet	
Name of Jurisdiction:	City of Licking
Risk / Vulnerability	
Problem being Mitigated:	Repetitive flood damage at sites located along or near Craven Street, Scott Street and Main Street
Hazard(s) Addressed:	Flooding (Flash and River)
Action or Project	
Action/Project Number:	Licking2
Name of Action or Project:	Localized Flood Reduction
Action or Project Description:	Make site specific drainage improvements at problematic sites in order to reduce the effects of flash flooding
Applicable Goal Statement:	Goal 2
Estimated Cost:	$100,000 to $500,000
Benefits:	Reduce flood damage to public and private property
Plan for Implementation	
Responsible Organization/Department:	City Administrator
Action/Project Priority:	MED
Timeline for Completion:	3-5 years
Potential Fund Sources:	CDBG, FEMA
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan; CEDS
Progress Report	
Action Status	New
Report of Progress	New

Mitigation Action Worksheet	
Name of Jurisdiction:	Licking School District
Risk / Vulnerability	
Problem being Mitigated:	Repetitive flooding at the school leads to overflow of sewage lines and resulting sewage spills inside the school building
Hazard(s) Addressed:	Flooding (Flash and River)
Action or Project	
Action/Project Number:	LickingSchool1
Name of Action or Project:	Flood Mitigation
Action or Project Description:	Improve stormwater drainage infrastructure around campus and replace failing sewer line
Applicable Goal Statement:	Goal 2
Estimated Cost:	$100,000 to $500,000
Benefits:	Mitigate the effects of flash flooding on the school property
Plan for Implementation	
Responsible Organization/Department:	Superintendent Office
Action/Project Priority:	HIGH
Timeline for Completion:	3-5 years
Potential Fund Sources:	CDBG, FEMA
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan; Capital Improvement Plan
Progress Report	
Action Status	New
Report of Progress	New

Goal 3: Maintain Economic Activities Essential to the Survival and Recovery from Natural Disasters

Mitigation Action Worksheet	
Name of Jurisdiction:	City of Cabool
Risk / Vulnerability	
Problem being Mitigated:	Severe erosion of the banks of the Big Piney River is threatening the city's wastewater treatment facility
Hazard(s) Addressed:	Flooding (Flash and River)
Action or Project	
Action/Project Number:	Cabool1
Name of Action or Project:	Erosion Control
Action or Project Description:	Strengthen and stabilize the banks of the Big Piney River in proximity to the Cabool WWTF
Applicable Goal Statement:	Goal 3
Estimated Cost:	$100,000 to $500,000
Benefits:	Mitigate potential future catastrophic failure of waste holding facilities
Plan for Implementation	
Responsible Organization/Department:	City Administrator
Action/Project Priority:	HIGH
Timeline for Completion:	2-3 years
Potential Fund Sources:	FEMA, CDBG
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan; Economic Development Plan (resiliency chapter)
Progress Report	
Action Status	New
Report of Progress	New

Mitigation Action Worksheet	
Name of Jurisdiction:	City of Houston
Risk / Vulnerability	
Problem being Mitigated:	Severe erosion of the banks of Brushy Creek is threatening the city's wastewater treatment facility and Emmett Kelly Park
Hazard(s) Addressed:	Flooding (Flash and River)
Action or Project	
Action/Project Number:	Houston1
Name of Action or Project:	Erosion Control
Action or Project Description:	Strengthen and stabilize the banks of Brushy Creek in proximity to Emmett Kelley Park and the Houston WWTF
Applicable Goal Statement:	Goal 3
Estimated Cost:	$100,000 to $500,000
Benefits:	Mitigate potential future catastrophic failure of waste holding facilities as well as protect the loss of real estate and recreational equipment at the City's primary Park
Plan for Implementation	
Responsible Organization/Department:	City Administrator
Action/Project Priority:	HIGH
Timeline for Completion:	2-3 years
Potential Fund Sources:	FEMA, CDBG
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan; Economic Development Plan (resiliency chapter)
Progress Report	
Action Status	New
Report of Progress	New

Mitigation Action Worksheet	
Name of Jurisdiction:	City of Licking
Risk / Vulnerability	
Problem being Mitigated:	Lack of back-up power source at the city's emergency operations center (PD) and Fire Department
Hazard(s) Addressed:	Thunderstorm/High Winds/Lightning/Hail
Action or Project	
Action/Project Number:	Licking1
Name of Action or Project:	EOC Backup
Action or Project Description:	Purchase and install a two backup generators. One at the emergency operations center and one at the city fire department
Applicable Goal Statement:	Goal 3
Estimated Cost:	$100,000 to $500,000
Benefits:	Ensure the continued operations of the critical facility to minimize the impacts of natural disasters
Plan for Implementation	
Responsible Organization/Department:	City Administrator
Action/Project Priority:	HIGH
Timeline for Completion:	2-3 years
Potential Fund Sources:	FEMA
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan ; Threat Hazard Identification Risk Assessment; Economic Development Plan (resiliency chapter)
Progress Report	
Action Status	New
Report of Progress	New

Mitigation Action Worksheet	
Name of Jurisdiction:	Village of Plato
Risk / Vulnerability	
Problem being Mitigated:	Lack of back-up power source at the city's water well
Hazard(s) Addressed:	Thunderstorm/High Winds/Lightning/Hail
Action or Project	
Action/Project Number:	Plato1
Name of Action or Project:	EOC Backup
Action or Project Description:	Purchase and install one backup generator to ensure continuity of service at the Village community water well
Applicable Goal Statement:	Goal 3
Estimated Cost:	$10,000 - $30000
Benefits:	Ensure the continued operations of the critical facility to minimize the impacts of natural disasters
Plan for Implementation	
Responsible Organization/Department:	Village EMD
Action/Project Priority:	HIGH
Timeline for Completion:	2-3 years
Potential Fund Sources:	FEMA
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan ; Threat Hazard Identification Risk Assessment; Economic Development Plan (resiliency chapter)
Progress Report	
Action Status	New
Report of Progress	New

Mitigation Action Worksheet	
Name of Jurisdiction:	Village of Raymondville
Risk / Vulnerability	
Problem being Mitigated:	Lack of back-up power source to mitigate the effects of a disruption in the delivery of public sanitary services
Hazard(s) Addressed:	Thunderstorm/High Winds/Lightning/Hail
Action or Project	
Action/Project Number:	Raymondville1
Name of Action or Project:	Water System Generator
Action or Project Description:	Purchase a trailered backup generator to be deployed as necessary to support community infrastructure
Applicable Goal Statement:	Goal 3
Estimated Cost:	$10,000 to $50,000
Benefits:	Ensure the continued operations of the critical facility to mitigate the impacts of natural disasters
Plan for Implementation	
Responsible Organization/Department:	Village Chairperson
Action/Project Priority:	HIGH
Timeline for Completion:	1 year
Potential Fund Sources:	FEMA
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan ; Threat Hazard Identification Risk Assessment; Economic Development Plan (resiliency chapter)
Progress Report	
Action Status	New
Report of Progress	New

Mitigation Action Worksheet	
Name of Jurisdiction:	Texas County
Risk / Vulnerability	
Problem being Mitigated:	The failure and increasing vulnerability of aging infrastructure and community failures
Hazard(s) Addressed:	VARIOUS
Action or Project	
Action/Project Number:	Texas4
Name of Action or Project:	Asset Management
Action or Project Description:	Continuously identify funding sources to update buildings and infrastructure to ensure that community assets are resilient to natural disaster
Applicable Goal Statement:	Goal 3
Estimated Cost:	Little or no cost
Benefits:	Ensure that the local governments are aware of the resources available to them
Plan for Implementation	
Responsible Organization/Department:	County Emergency Management Director County Commission
Action/Project Priority:	HIGH
Timeline for Completion:	Less than one year
Potential Fund Sources:	Local
Local Planning Mechanisms to be Used in Implementation, if any:	Hazard Mitigation Plan; Comprehensive Economic Development Strategy (resiliency chapter)
Progress Report	
Action Status	Continue In-Progress
Report of Progress	Local jurisdictions are continuously kept up to date by SCOCOG staff on hazard mitigation funding availability

5 PLAN MAINTENANCE PROCESS

5.1 Monitoring, Evaluating, and Updating the Plan

44 CFR Requirement 201.6(c)(4): The plan maintenance process shall include a section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

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 in existing planning mechanisms and how to address continued public involvement.

5.1.1 Responsibility for Plan Maintenance

The MPC is not a standing committee, with oversight by a responsible agency or elected body. The MPC representatives and stakeholders are represented on the Local Emergency Planning Committee (LEPC) in Texas County and the Regional Homeland Security Oversight Committee (RHSOC). The LEPC is responsible for developing and implementing the Local Emergency Operations Plan and is a standing committee that meets regularly and is administered through the Texas County Emergency Management agency. The RHSOC is responsible for developing and implementing the Threat Hazard Identification Risk Assessment for the region, including Texas County. The goals and actions and representation are aligned with the missions of the RHSOC, which is a standing committee. As such, the RHSOC will be responsible for plan monitoring, evaluation and maintenance.

- Meet annually, and after a disaster event, to monitor and evaluate the implementation of the plan;
- Act as a forum for hazard mitigation issues;
- Disseminate hazard mitigation ideas and activities to all participants;
- Pursue the implementation of high priority, low- or no-cost recommended actions;

- Maintain vigilant monitoring of multi-objective, cost-share, and other funding opportunities to help the community implement the plan's recommended actions for which no current funding exists;
- Monitor and assist in implementation and update of this plan;
- Keep the concept of mitigation in the forefront of community decision making by identifying plan recommendations when other community goals, plans, and activities overlap, influence, or directly affect increased community vulnerability to disasters;
- Report on plan progress and recommended changes to the County Board of Supervisors and governing bodies of participating jurisdictions; and
- Inform and solicit input from the public.

The RHSOC is an advisory body only, and can only make recommendations to local jurisdictions. Its primary duty is to see the plan successfully carried out and to report to the community governing boards and the public on the status of plan implementation and mitigation opportunities. Other duties include reviewing and promoting mitigation proposals, hearing stakeholder concerns about hazard mitigation, passing concerns on to appropriate entities, and posting relevant information in areas accessible to the public.

5.1.2 Plan Maintenance Schedule

The RHSOC agrees to meet annually and after a state or federally declared hazard event as appropriate to monitor the progress and update the mitigation strategy. The Texas County Emergency Management Director, who also serves on the RHSOC, will be responsible for initiating the plan reviews and will invite members of the Texas County contingent to the RHSOC 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. The State Emergency Management Agency Staff and the Missouri Association of Council of Governments Statewide Planning Coordinator will initiate the 5-year written update. The South Central Ozark Council of Governments will be prepared to complete the plan update.

5.1.3 Plan Maintenance Process

Progress on the proposed actions can be monitored by evaluating changes in vulnerabilities identified in the plan. The RHSCOC during the annual meeting should review changes in vulnerability identified as follows:

- Decreased vulnerability as a result of implementing recommended actions,
- Increased vulnerability as a result of failed or ineffective mitigation actions,
- Increased vulnerability due to hazard events, and/or
- Increased vulnerability as a result of new development (and/or annexations).

Future 5-year updates to this plan will include the following activities:

- Consideration of changes in vulnerability due to action implementation,
- Documentation of success stories where mitigation efforts have proven effective,

- Documentation of unsuccessful mitigation actions and why the actions were not effective,
- Documentation of previously overlooked hazard events that may have occurred since the previous plan approval,
- Incorporation of new data or studies with information on hazard risks,
- Incorporation of new capabilities or changes in capabilities,
- Incorporation of growth data and changes to inventories, and
- Incorporation of ideas for new actions and changes in action prioritization.

In order to best evaluate any changes in vulnerability as a result of plan implementation, the participating jurisdictions will adopt the following process:

- Each proposed action in the plan identified an individual, office, or agency responsible for action implementation. This entity will track and report on an annual basis to the jurisdictional RHSOC member on action status. The entity will provide input on whether the action as implemented meets the defined objectives and is likely to be successful in reducing risk.
- If the action does not meet identified objectives, the jurisdictional RHSOC member will determine necessary remedial action, making any required modifications to the plan.

Changes will be made to the plan to remedy actions that have failed or are not considered feasible. Feasibility will be determined after a review of action consistency with established criteria, time frame, community priorities, and/or funding resources. Actions that were not ranked high but were identified as potential mitigation activities will be reviewed as well during the monitoring of this plan. Updating of the plan will be accomplished by written changes and submissions, as the RHSOC deems appropriate and necessary. Changes will be approved by the Texas County Commission and the governing boards of the other participating jurisdictions.

5.2 Incorporation into Existing Planning Mechanisms

44 CFR Requirement §201.6(c)(4)(ii): [The plan shall include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.

Where possible, plan participants, including school and special districts, will use existing plans and/or programs to implement hazard mitigation actions. Those existing plans and programs were described in the *Community Profiles and Capabilities* chapter of this plan. Based on the capability assessments of the participating jurisdictions, communities in Texas County will continue to plan and implement programs to reduce losses to life and property from hazards.

This plan builds upon the momentum developed through previous and related planning efforts and mitigation programs and recommends implementing actions, where possible, through the following plans:

- Texas County Emergency Operations Plan;
- South Central Ozark Regional Transportation Plan;
- Comprehensive Economic Development Strategy
- Schools and Special District Plans and budgets

Table 5.1 Planning Mechanisms Identified for Integration of Hazard Mitigation Planning

HMP Participating Jurisdictions Included in Local Planning Process	Planning Mechanisms	Integration Process for Previous Plan	Integration Process for Current Plan
Texas County Cabool Houston Licking Plato Raymondville Summersville	South Central Regional Transportation Plan	Texas County Public Representatives on the Regional Transportation Advisory Committee (TAC) committee shared project priorities for transportation improvements that overlap with hazard mitigation action items.	Members of the regional TAC committee served on the MPC and also become HMP planning stakeholders. In doing so, they shared project priorities for transportation improvements that overlap with hazard mitigation action items.
Texas County Cabool Houston Licking Plato Raymondville Summersville	Texas County Emergency Operations Plan	None	The goals of the EOP were presented and discussed during initial planning meetings in Texas County
Texas County Cabool Houston Licking Plato Raymondville Summersville	South Central Missouri Comprehensive Economic Development Strategy (CEDS)	None	The new CEDS requires a chapter related to disaster resiliency. The goals outlined in the CEDS regarding mitigation aligns with goals 1 and 2 within this HMP. Several mitigation actions were identified concurrently in this update of the Texas County HMP and the CEDS.

HMP Participating Jurisdictions Included in Local Planning Process	Planning Mechanisms	Integration Process for Previous Plan	Integration Process for Current Plan
Cabool R-IV Houston R-I Licking R-VIII Plato R-V Raymondville R-VII Success R-VI Summersville R-II	Capital Improvement Plans	None	School Districts wishing to construct FEMA 361-standard safe rooms for the protection of staff & students have identified said safe rooms within their respective capital improvement plans, which have carried over in the mitigation actions of the HMP.
Texas County Cabool Houston Licking Plato Raymondville Summersville Cabool R-IV Houston R-I Licking R-VIII Plato R-V Raymondville R-VII Success R-VI Summersville R-II	Threat & Hazard Identification and Risk Analysis (THIRA)	None	The planning activities of the Regional Homeland Security Oversight Committee (RHSOC) during its THIRA development process, aligns very well with the purpose of the multi-jurisdictional HMP. Many of the identified hazards and mitigating actions identified in the THIRA have been rolled over into the County's HMP. Additionally, The RHSOC will review the HMP annually and recommend updates as needed.

The RHSOC members involved in updating these existing planning mechanisms will be responsible for integrating the findings and actions of the mitigation plan, as appropriate. The RHSOC is also responsible for monitoring this integration and incorporation of the appropriate information into the five-year update of the multi-jurisdictional hazard mitigation plan.

Additionally, after the annual review of the Hazard Mitigation Plan, the Regional Hazard Mitigation Planner housed at the South Central Ozark Council of Governments will provide the updated mitigation strategy with current status of each mitigation action to the County Commission as well as all mayors, city clerks, and school superintendents. The Hazard Mitigation Planner will request that the mitigation strategy be incorporated, where appropriate, into other planning mechanisms.

5.3 Continued Public Involvement

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

The hazard mitigation plan update process provides an opportunity to publicize success stories resulting from the plan's implementation and seek additional public comment. Information about the annual reviews will be posted in the local newspaper as well as on the South Central Ozark Council of Governments website following each annual review of the mitigation plan. When the Mitigation Planning 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 MPC after the initial effort, to update and revise the plan. Public notice will be posted and public participation will be actively solicited, at a minimum, through available website postings and press releases to local media outlets, primarily newspapers.

APPENDIX A: PLANNING PARTICIPATION DOCUMENTATION

Affidavit Of Publication

STATE OF MISSOURI}
} SS.
County of Texas}

Bradley G. Gentry being sworn upon his oath states that he is editor of the **Houston Herald,** a weekly newspaper printed and published in Houston, Texas County, Missouri, that the notice, a copy of which is hereunto annexed, was published in said newspaper for **one** week, consecutively, as follows:

Volume __141_, No. _38__, Dated __1/17__, 2019

and that said newspaper is of general circulation in Texas County, Missouri, and has been admitted to the post office as periodical class matter in the city of publication and that said newspaper is and has been published regularly and consecutively for a period of three years prior to the date first above written and has a list of bona fide subscribers, voluntarily engaged as such, who have paid, or agreed to pay a stated price for a subscription for a definite period of time. And that said newspaper in which said notice was published has complied with the provisions of Section 493.050, Revised Statutes of Missouri 2002, and Section 59.310, Revised Statutes of Missouri 2002.

_____, Managing Editor

Subscribed and sworn to before me this 17th day of January, 2019.

Deanna M. McKinney, Notary Public.

My Commission Expires Aug 29, 2020

Publication Fee $76.50.

DEANNA M. McKINNEY
Notary Public
Commission #12555598
Texas County
Notary Seal
STATE OF MISSOURI
My Commission Expires Aug. 29, 2020

Update of the Texas County Hazard Mitigation Plan

The ***Texas County Hazard Mitigation Plan*** is currently in process of its mandatory five-year update. The purpose of Hazard Mitigation Plans are to devise and retain a strategy to reduce the impact of risks posed by disastrous natural events, such as tornados, ice storms and floods. The plan must be updated by the county every five years and approved by the Federal Emergency Management Agency in order for the county and its municipalities and school districts to remain eligible for FEMA grant funding for current and ongoing Hazard Mitigation projects such as tornado safe rooms, flood mitigation projects and purchases of disaster response equipment.

An essential part of the Hazard Mitigation planning process is to gain public input during the development of the plan. The South Central Ozark Council of Governments has created an online survey tool to obtain input from citizens of Texas County regarding the natural hazards that threaten your county and potential solutions to address those vulnerabilities. Please navigate to the following web address and take a few minutes to respond to the survey. The survey for Texas County can be found at www.SCOCOG.org/hazard-mitigation-planning.

AFFIDAVIT OF PUBLICATION

STATE OF MISSOURI)
) ss
COUNTY OF TEXAS)

I, Dala Whittaker, being duly sworn according to law, state that I am publisher of the *Cabool Enterprise*, a weekly newspaper of general circulation in the County of Texas, where located; which has been admitted to the Post Office as second-class matter in the city of Cabool, the city of publication, which newspaper has been published regularly and consecutively for a period of three years and has a list of bona fide subscribers voluntarily engaged as such who have paid or agreed to pay a stated price for a subscription for a definite period of time, and that such newspaper has complied with the provision of Section 493.050 Revised Statutes of Missouri 1949. The affixed notice appeared in said newspaper in the following consecutive issues.

First insertion January 17, 2019

Second insertion _____, 20___

Third insertion _____, 20___

Fourth insertion _____, 20___

Publication fee $ 70.00

Dala Whittaker

Subscribed and sworn to before me this 4th day of February, 2019.

Carolyn Walker
Notary Public

CAROLYN WALKER
Notary Public – Notary Seal
STATE OF MISSOURI
Douglas County
My Commission Expires Oct. 5, 2020
Commission #12400103

Received of _____ the sum of $_____ for publishing the attached notice.

_____

Update of the Texas County Hazard Mitigation Plan

The *Texas County Hazard Mitigation Plan* is currently in process of its mandatory 5-year update. The purpose of Hazard Mitigation Plans are to devise and retain a strategy to reduce the impact of risks posed by disastrous natural events, such as tornados, ice storms and floods. The Plan must be updated by the county every five years and approved by the Federal Emergency Management Agency in order for the County and its municipalities & school districts to remain eligible for FEMA grant funding for current and ongoing Hazard Mitigation projects such as Tornado Safe Rooms, Flood Mitigation projects, and purchases of disaster response equipment.

An essential part of the Hazard Mitigation planning process is to gain public input during the development of the Plan. The South Central Ozark Council of Governments has created an online survey tool to obtain input from citizens of Texas County regarding the natural hazards that threaten your county and potential solutions to address those vulnerabilities. Please navigate to the following web address and take a few minutes to respond to the survey. The survey for Texas County can be found at www.SCOCOG.org/hazard-mitigation-planning

MEETING SIGN-IN SHEET
PLEASE PRINT CLEARLY

Project: Texas County HMP – Planning Meeting	**Meeting Date:** 10:00 – FEB. 5, 2019
Facilitator: SCOCOG	**Place/Room:** Houston Storm Shelter

Name	Title	Organization/ County/City	Phone	E-Mail
GLEN D MCKINNEY	EMD	HOUSTON	c. 417-217-1881 417-967-7119	c#R79 PATROL@yahoo.com
Robbie Smith	Fire Chief	City of Houston	c#(417)293-7395	smith.farm09@yahoo.com
Jason Cook	Deputy EMD	Texas County	309-370-5029	wfd2604@gmail.com
Terra Culley	Asst. 911 Director	Texas County 911	417-967-5309 217-1651	terraculley911@hotmail.com
Susan Hale	Director TXS Co 911	TXS Co. 911	417-967-5309 417-217-8222	txs911_HaleSusan@outlook.
Debbie Schweighauser	city Clerk	Village of Raymondville	417-217-1980 417-457-6281	Vlgrvill@gotrain.org
Jon Johnson	H.S. Principal	Summersville	417-932-4929	johnsjt@summ.k12.mo.us
Keith Cantrell	MAYOR	Licking	417-217-3596	
Travis RC		Semo	5733018420	
Cristina Irwin	Superintendent	Licking R-VIII Schools	573-674-2911	cirwin@licking.k12.mo.us
Scott Long	Texas Co. Commission	Texas	417-967-3222	Commission@texascounty
Allen Moss	Superintendent	Houston R-1 School	417-967-3024	amoss@houston.k12.mo.
John Casey	Commissioner	TEXAS CO.	417-967-3222	commission@texascountymissouri

MEETING SIGN-IN SHEET
PLEASE PRINT CLEARLY

Project: Texas County HMP – Planning Meeting
Facilitator: SCOCOG
Meeting Date: 5-6-19
Place/Room: Cabool City Hall

Name	Title	Organization/ County/City	Phone	E-Mail
Ron Scheets	City Admin	Cabool	417 962-3136	rscheets@cabool-mo.org
Stacy Mouser	Emergency Manager	Cabool	417 254-4054	smouser@caboolelectric@gmail.com
[signature]	PLANNER	SCOCOG	417 256 4226	cdalton@scocog.org

Multi-Jurisdictional
Hazard Mitigation Plan Update

Data Collection Questionnaire
For Local Governments

County: Texas County Missouri

Community: _____

Return to: South Central Ozark Council of Governments
PO Box 100 Pomona, MO 65789 --OR—
Fax: (417) 256-6188
Scan & email: cdalton@scocog.org

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: Clinton C. Schwarz, EMD Texas County Missouri

Email: emd@texascountymissouri.gov

Date: 4/12/2019

Multi-Jurisdictional
Hazard Mitigation Plan Update

Data Collection Questionnaire
For Local Governments

County: Texas

Community: Cabool

Return to: South Central Ozark Council of Governments
PO Box 100 Pomona, MO 65789 --OR—
Fax: (417) 256-6188
Scan & email: cdalton@scocog.org

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.

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Prepared by: Ron Schuetz & Stacy Monter

Email: rschuetz@cabool-mo.org

Date: 5-6-19

Multi-Jurisdictional
Hazard Mitigation Plan Update

Data Collection Questionnaire
For Local Governments

County: Texas

Community: Lickins

Return to: South Central Ozark Council of Governments
PO Box 100 Pomona, MO 65789 --OR—
Fax: (417) 256-6188
Scan & email: cdalton@scocog.org

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: Renee Keaton

Email: lickingcity@hotmail.com

Date: 02/20/2019

Multi-Jurisdictional

Hazard Mitigation Plan

Data Collection Questionnaire

For School Districts and Educational Institutions

County: Texas

School District: Cabool 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: __Superintendent Karl Janson_____

Phone: ____417-962-3153_____

Email: _____kjanson@cabool.k12.mo.us_____

Date: _____4/1/2019_____

Please return questionnaires by mail, email, or fax to:

Multi-Jurisdictional
Hazard Mitigation Plan Update

Data Collection Questionnaire
For Local Governments

County: Texas County, Missouri

Community: Village of Plato

Return to: South Central Ozark Council of Governments
PO Box 130 Pomona, MO 65789 --OR--
Fax: (417) 256-6188
Scan & email: [redacted]

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 public's 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 Questionnaires indicated "For School Districts and Educational Institutions".

Prepared by: Harold T. Blanchard

Email: [redacted]@centurylink.net

Date: May 8, 2019

Multi-Jurisdictional
Hazard Mitigation Plan Update

Data Collection Questionnaire
For Local Governments

County: Texas

Community: Village Of Raymondville

Return to: South Central Ozark Council of Governments
PO Box 100 Pomona, MO 65789 --OR—
Fax: (417) 256-6188
Scan & email: cdalton@scocog.org

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: Debbie Schutzenhauser

Email: vbgrvill@gotrain.org

Date: 2-5-2019

Multi-Jurisdictional

Hazard Mitigation Plan

Data Collection Questionnaire

For School Districts and Educational Institutions

County: Texas

School District: Houston R-1

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: Allen Moss

Phone: 417-967-3024

Email: amoss@houston.K12.mo.us

Date: 2-5-19

Please return questionnaires by mail, email, or ~~fax~~ to:

417-256-6188

cdalton@scocog.org

Multi-Jurisdictional

Hazard Mitigation Plan

Data Collection Questionnaire

For School Districts and Educational Institutions

County: Texas

School District: Licking R-VIII School District

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: Cristina Irwin

Phone: 573-674-2911

Email: cirwin@licking.k12.mo.us

Date: 2/5/19

Please return questionnaires by mail, email, or fax to:

417-256-6188 -fax

cdalton@scocog.org

Multi-Jurisdictional

Hazard Mitigation Plan

Data Collection Questionnaire

For School Districts and Educational Institutions

County: Texas

School District: Raymondville R-VII

Return by: Dana Buschmann

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: Dana Buschmann

Phone: 417.457.6237

Email: buschmannd@rville.k12.mo.us

Date: 3-13-19

Please return questionnaires by mail, email, or fax to:

Multi-Jurisdictional

Hazard Mitigation Plan

Data Collection Questionnaire

For School Districts and Educational Institutions

County: Texas

School District: Plato

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: Kim Hawk

Phone: 417-458-3333

Email: khawk@plato.k12.mo.us

Date: 04/30/19

Please return questionnaires by mail, email, or fax to:

Multi-Jurisdictional

Hazard Mitigation Plan

Data Collection Questionnaire

For School Districts and Educational Institutions

County: Texas

School District: Success R-VI School District

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: David Russell

Phone: 417-967-2597

Email: drussell@success.k12.mo.us

Date: March 6, 2019

Please return questionnaires by mail, email, or fax to:

Multi-Jurisdictional

Hazard Mitigation Plan

Data Collection Questionnaire

For School Districts and Educational Institutions

County: Texas

School District: Summersville R-2

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: Rick Stark, Superintendent

Phone: 417-932-4045

Email: starkr@sville.k12.mo.us

Date: 2/7/2019

Please return questionnaires by mail, email, or fax to:

APPENDIX B: COMPLETED/DELETED 2011 MITIGATION ACTIONS

Completed Actions	Completion Details (date, amount, funding source)
Identify existing planning area shelter locations and amass shelter needs	The area's shelter needs have been identified and notice of interests for funding are on file
Use public service announcements and other available media to educate the public about shelter locations	This has been completed and coordinated as part of the Regional Homeland Security Oversight Committee (RHSOC) planning framework
Establish and maintain a volunteer committee to monitor and maintain storm shelters when activated	On-call lists have been developed to ensure volunteers are available to activate the shelters (saferoom) when needed.
Partner with the Red Cross to provide shelter management	Yes, the regional Red Cross office has coordinated with school districts.
Ensure partnerships with local service organizations, such as DHS and volunteer organizations such as the Red Cross are developed and maintained	Area partnerships have been established
Encourage the use of shelters and ongoing shelter awareness before severe weather strikes by posting notices periodically by way of local media	Local jurisdictions routinely post on social media that saferoom are available to the public. Also, availability is announced in real-time when severe weather is imminent
Promote the use of NOAA weather radios as warning devices	Completed via the Regional Homeland Security planning framework. Local radio stations routinely promote the use of weather radios
Discuss the possibility of future funding for more shelters	This is ongoing-completed through the efforts of the regional planning commission, the South Central Ozark Council of Governments
Deleted Actions	**Reason for Deletion**
Establish partnerships with food banks with can supply water, food, and other essentials	Preparedness Action – not mitigation
Form partnerships with local medical centers and other providers for disease control measures	Preparedness Action – not mitigation
Obtain more sirens in order to cover a larger area, especially rural areas	This action was deleted from the plan because it is too vague. Specific jurisdictional needs have been included in this plan update.
Apply for grants to purchase new items	This action was deleted from the plan because it is too vague. Specific jurisdictional needs have been included in this plan update.

Deleted Actions	Reason for Deletion
Ensure current tests are conducted for correct application and coverage of existing systems	This action was deleted from the plan because it is too vague. Specific jurisdictional needs have been included in this plan update.
Budget for maintenance and replacements as needed for continued service	This action was deleted from the hazard mitigation plan because this should be considered standard operating procedure for local jurisdictions and not part of an action
Encourage awareness and support of programs to mitigate injuries and property damage	This action was deleted from the plan because it is too vague. Specific jurisdictional needs have been included in this plan update.
Implement upgrades or refurbishment of critical buildings and infrastructures	This action was deleted from the plan because it is too vague. Specific jurisdictional needs have been included in this plan update.
Keep emergency access routes clear of obstacles	Response Action – not mitigation
Review chain of commands of government organizations for emergency situations, and keep up-to-date	Preparedness Action, also this process is outlined in the Local Emergency Operations Plan very clearly and effectively
Review communications systems and keep in good working order	Preparedness Action – not mitigation

APPENDIX C: PUBLIC ENGAGEMENT

AFFIDAVIT OF PUBLICATION
STATE OF MISSOURI
COUNTY OF HOWELL

I, Jim Perry, being duly sworn according to law, state that I am the Publisher of the WEST PLAINS DAILY QUILL, a newspaper of general circulation in the County of Howell, State of Missouri, which has been admitted to the United States Postal Service as periodical class matter in the city of West Plains, Missouri, and has been published regularly and consecutively for a period of more than three years and has a list of bona fide subscribers, voluntarily engaged as such, who have paid or agreed to pay a stated price for a subscription for a definite period of time, and that such newspaper has complied with the provisions of Section 493.050 Revised Statutes of Missouri 2000, and Section 59.310, Revised Statutes of Missouri 2000. The affixed notice appeared in said newspaper on the following dates:

04/13/2016

Publisher's Fee: $98.50

Jim Perry, Publisher

Signed and sworn to before me on this date
04/13/2016

Candace McLean
State of Missouri, Howell County
My commission expires 12-03-2016

CANDACE MCLEAN
Notary Public Notary Seal
State of Missouri
Howell County
Commission # 12593981
My Commission Expires DECEMBER 3, 2016

UPDATE OF THE
HOWELL COUNTY
HAZARD MITIGATION PLAN

The Howell County Hazard Mitigation Plan is currently in process of its mandatory 5-year update. The purpose of Hazard Mitigation Plans are to devise and retain a strategy to reduce the impact of risks posed by disastrous natural events, such as tornados, ice storms and floods. The Plan must be updated every five years and approved by the Federal Emergency Management Agency in order for the County and its municipalities & school districts to remain eligible for FEMA grant funding for current and ongoing Hazard Mitigation projects such as Tornado Safe Rooms, Flood Mitigation projects, and purchases of disaster response equipment.

An essential part of the Hazard Mitigation planning process is to gain public input during the development of the Plan. The South Central Ozark Council of Governments has created an online survey tool to obtain input from citizens of Howell County regarding the natural hazards that threaten your county and potential solutions to address those vulnerabilities. Please navigate to the following web address and take a few minutes to respond to the survey. The survey for Howell County can be found at www.SCOCOG.org/hazard-mitigation-planning

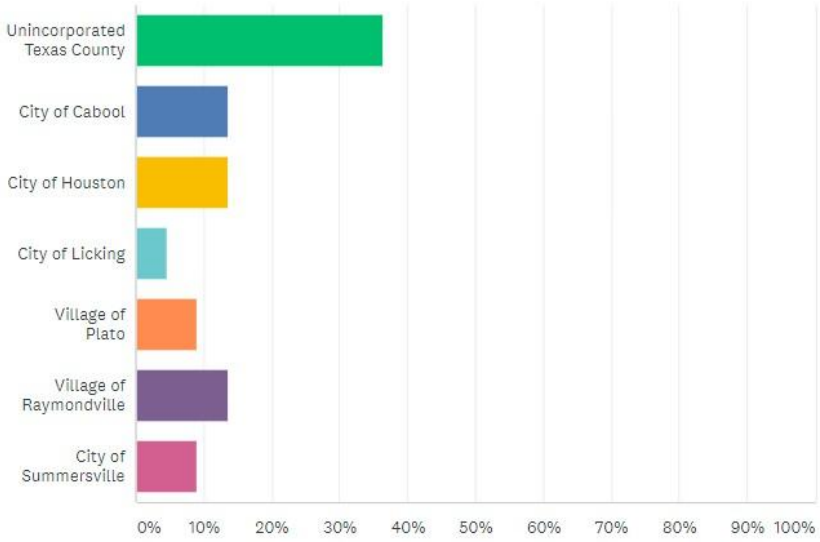
Insert date: April 13, 2016.

PUBLIC SURVEY RESPONSES

Q1

Please select your jurisdiction from the list. You may only select one for each survey completed.

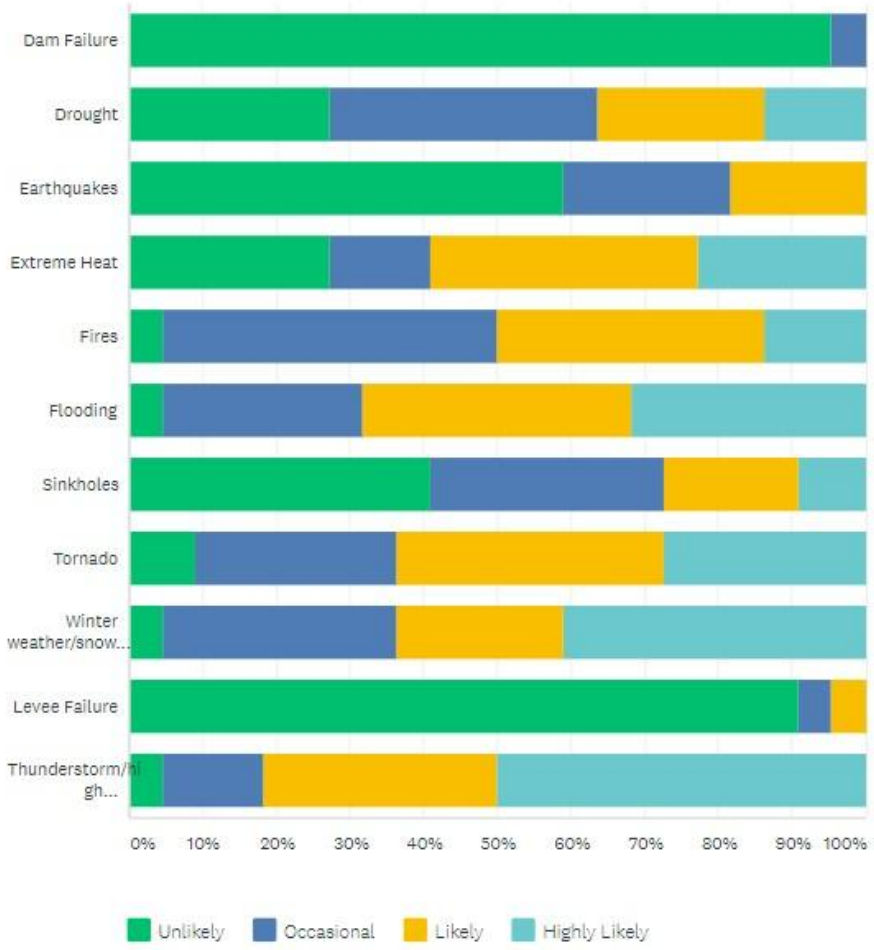
Answered: 22 Skipped: 0



Q2

The hazards addressed in the Multi-Jurisdictional Hazard Mitigation Plan Update are listed below. Please indicate your opinion opinion on the likelihood for each hazard. Please rate EACH hazard as follows: Unlikely, Occasional, Likely,Highly Likely

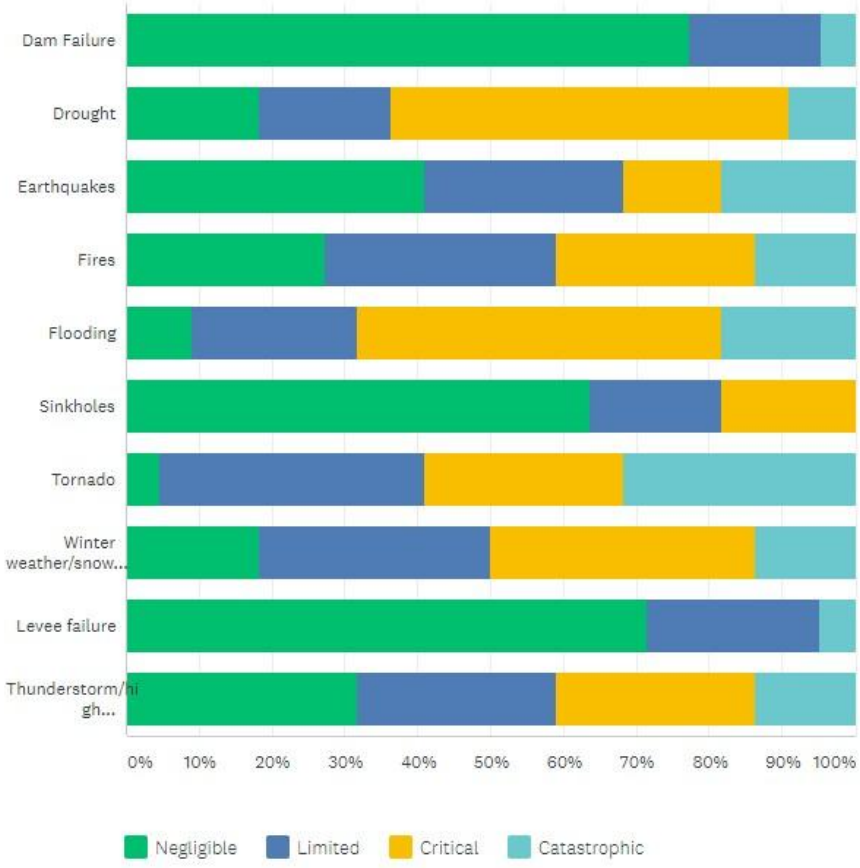
Answered: 22 Skipped: 0



Q3

Please indicate your opinion on the potential magnitude of each hazard's impact on your jurisdiction (identified above). Please rate EACH hazard as follows: Negligible, Limited, Critical, Catastrophic

Answered: 22 Skipped: 0



FEMA Hazard Mitigation Assistance Grants are administered by the State Emergency Management Agency. Listed below are some of the types of projects considered. Please check all those that could benefit your jurisdiction, in your opinion.

Answered: 22 Skipped: 0

ANSWER CHOICES	RESPONSES	
Flood-prone Property Acquisition & Structure Demolition/Relocation	22.73%	5
Flood-Prone Structure Elevation	9.09%	2
Dry Floodproofing of Historical Residential Structures and/or Non-residential Structures	13.64%	3
Minor Localized Flood Reduction Projects (storm water management or localized flood control projects)	59.09%	13
Structural Retrofitting of Existing Buildings to Add a Tornado Safe Room	36.36%	8
Retrofitting of Existing Buildings, and Facilities, from Wind Damage	31.82%	7
New Tornado Safe Room Construction	63.64%	14
Electrical Utilities Infrastructure Retrofit	63.64%	14
Soil Erosion Stabilization	54.55%	12
Wildfire Management	50.00%	11
Total Respondents: 22		

AFFIDAVIT OF PUBLICATION

STATE OF MISSOURI)
) ss
COUNTY OF TEXAS)

I, Dala Whittaker, being duly sworn according to law, state that I am publisher of the *Cabool Enterprise*, a weekly newspaper of general circulation in the County of Texas, where located; which has been admitted to the Post Office as second-class matter in the city of Cabool, the city of publication, which newspaper has been published regularly and consecutively for a period of three years and has a list of bona fide subscribers voluntarily engaged as such who have paid or agreed to pay a stated price for a subscription for a definite period of time, and that such newspaper has complied with the provision of Section 493.050 Revised Statutes of Missouri 1949. The affixed notice appeared in said newspaper in the following consecutive issues.

First insertion May 16, 2019

Second insertion _____, 20___

Third insertion _____, 20___

Fourth insertion _____, 20___

Publication fee $ 34.00

Dala Whittaker

Subscribed and sworn to before me this 30th day of May, 2019.

Carolyn Walker
Notary Public

CAROLYN WALKER
Notary Public – Notary Seal
STATE OF MISSOURI
Douglas County
My Commission Expires Oct. 5, 2020
Commission #12400103

Received of _____ the sum of $_____ for publishing the attached notice.

_____

NOTICE TO PUBLIC
Texas County All Hazard Mitigation Plan Update

Texas County, with the assistance of South Central Ozark Council of Governments, has finalized the 2019 update of the Multi-Jurisdiction Hazard Mitigation Plan. This plan is pursuant to Federal Emergency Management Agency's (FEMA) requirements.

A final draft of the plan is available at the SCOCOG office located at 4407 Co. Rd. 2340, Pomona; or at the SCOCOG website www.scocog.org. Please direct comments to mail@scocog.org. Planning staff will also be available for discussion, comments, or suggestions at SCOCOG on May 21st from 10:00 a.m. to 12:00 noon.

The purpose of the plan is to devise and retain a strategy to reduce the impact and risks posed by disastrous natural events, such as tornadoes, ice storms and floods. The plan must be updated by the County and approved by FEMA every five years in order for the County and its jurisdictions to remain eligible for FEMA funding for current and ongoing hazard mitigation projects.

(Published in the *Cabool Enterprise* May 16, 2019)

Affidavit Of Publication

STATE OF MISSOURI}
} SS.
County of Texas}

Bradley G. Gentry being sworn upon his oath states that he is editor of the **Houston Herald,** a weekly newspaper printed and published in Houston, Texas County, Missouri, that the notice, a copy of which is hereunto annexed, was published in said newspaper for **one** week, consecutively, as follows:

Volume __143_, No. _3__, Dated __5/16__, 2019

and that said newspaper is of general circulation in Texas County, Missouri, and has been admitted to the post office as periodical class matter in the city of publication and that said newspaper is and has been published regularly and consecutively for a period of three years prior to the date first above written and has a list of bona fide subscribers, voluntarily engaged as such, who have paid, or agreed to pay a stated price for a subscription for a definite period of time. And that said newspaper in which said notice was published has complied with the provisions of Section 493.050, Revised Statutes of Missouri 2002, and Section 59.310, Revised Statutes of Missouri 2002.

_____, Managing Editor

Subscribed and sworn to before me this 16th day of May 2019.

_____, Notary Public.

My Commission Expires Aug. 29, 2020

Publication Fee $59.52 pd 5-10-19 DM.

DEANNA M. McKINNEY
Notary Public
Commission #12555588
Texas County
Notary Seal
STATE OF MISSOURI
My Commission Expires Aug. 29, 2020

Notice to Public: Texas County All Hazard Mitigation Plan Update

Texas County, with the assistance of South Central Ozark Council of Governments, has finalized the 2019 update of the Multi-Jurisdiction Hazard Mitigation Plan. This plan is pursuant to Federal Emergency Management Agency's (FEMA) requirements.

A final draft of the plan is available at the SCOCOG office located at 4407 Co Rd 2340, Pomona; or at the SCOCOG website www.scocog.org. Please direct comments to mail@scocog.org. Planning staff will also be available for discussion, comments, or suggestions at SCOCOG on May 21st from 10:00 a.m. to 12:00 noon.

The purpose of the plan is to devise and retain a strategy to reduce the impact and risks posed by disastrous natural events, such as tornadoes, ice storms and floods. The plan must be updated by the County and approved by FEMA every five years in order for the County and its jurisdictions to remain eligible for FEMA funding for current and ongoing hazard mitigation projects.

3/1t

APPENDIX D: JURISDICTIONAL ADOPTION DOCUMENTATION

Resolution # 7-24-19

Adopting the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan

Whereas, the County of Texas recognizes the threat that natural hazards pose to people and property within our community; and

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

Whereas, the U.S. Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") emphasizing the need for pre-disaster mitigation of potential hazards;

Whereas, the Disaster Mitigation Act made available hazard mitigation grants to state and local governments; and

Whereas, an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre-and post-disaster mitigation grant programs; and

Whereas, the County of Texas fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region VII officials will review the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan, and approved it as to form and content; and

Whereas, the County of Texas desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts *by formally adopting* the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for the County of Texas demonstrates the jurisdictions' desire to fulfill the mitigation goals outlined in this Multi-Jurisdictional Local Hazard Mitigation Plan; and

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

Now, therefore, be it resolved, that the County of Texas has adopted the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan as an official plan

Date: 7-24-19

Certifying Official: Presiding Commission

Resolution No. 2019-007R

Adopting the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan

Whereas, the City of Cabool recognizes the threat that natural hazards pose to people and property within our community; and

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

Whereas, the U.S. Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") emphasizing the need for pre-disaster mitigation of potential hazards;

Whereas, the Disaster Mitigation Act made available hazard mitigation grants to state and local governments; and

Whereas, an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre-and post-disaster mitigation grant programs; and

Whereas, the City of Cabool fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region VII officials will review the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan, and approved it as to form and content; and

Whereas, the City of Cabool desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts *by formally adopting* the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for the City of Cabool demonstrates the jurisdictions' desire to fulfill the mitigation goals outlined in this Multi-Jurisdictional Local Hazard Mitigation Plan; and

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

Now, therefore, be it resolved, that the Board of Aldermen of the City of Cabool has adopted the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan as an official plan on August 19, 2019.

Danny Cannon, Mayor

ATTEST:

Kim Elliott, City Clerk

Bill No. 105 Resolution 2019-105R

A ADOPTING THE TEXAS COUNTY MULTI-JURISDICTIONAL LOCAL HAZARD MITIGATION PLAN

WHEREAS, the City of Houston recognizes the threat that natural hazards pose to people and property within our community; and

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

WHEREAS, the U.S. Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") emphasizing the need for pre-disaster mitigation of potential hazards;

WHEREAS, the Disaster Mitigation Act made available hazard mitigation grants to state and local government; and

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

WHEREAS, the City of Houston fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

WHEREAS, the Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region VII official will review the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan, and approved it as to form and content; and

WHEREAS, the City of Houston desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by *formally adopting* the Texas County Mulit-Jurisdictional Local Hazard Mitigation Plan; and

WHEREAS, adopting by the governing body for the City of Houston demonstrates the jurisdictions' desire to fulfill the mitigation goals outline in this Multi-Jurisdictional Local Hazard Mitigation Plan; and

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

Now, therefore, be it resolved, that the City of Houston has adopted the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan as an official plan.

Passed and approved this 5th day of August, 2019.

Attest: _____
City Clerk

_____
Mayor

RESOLUTION

BE IT HEREBY RESOLVED, by the Board of Alderman of the City of Licking, Missouri as follows:

Adopting the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan

Whereas, the City of Licking recognizes the threat that natural hazards pose to people and property within our community; and

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

Whereas, the U.S. Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") emphasizing the need for pre-disaster mitigation of potential hazards;

Whereas, the Disaster Mitigation Act made available hazard mitigation grants to state and local governments; and

Whereas, an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre-and post-disaster mitigation grant programs; and

Whereas, the City of Licking fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region VII officials will review the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan, and approved it as to form and content; and

Whereas, the City of Licking desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts *by formally adopting* the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for the City of Licking demonstrates the jurisdictions' desire to fulfill the mitigation goals outlined in this Multi-Jurisdictional Local Hazard Mitigation Plan; and

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

Now, therefore, be it resolved, that the City of Licking has adopted the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan as an official plan.

ADOPTED AS A RESOLUTION OF THE CITY OF LICKING, MISSOURI on this 13th day of August, 2019.

Keith Cantrell, Mayor

ATTEST:

Renee Keaton

Renee Keaton

City Clerk

Resolution # 19-07-01

Adopting the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan

Whereas, the Village of Plato recognizes the threat that natural hazards pose to people and property within our community; and

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

Whereas, the U.S. Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") emphasizing the need for pre-disaster mitigation of potential hazards;

Whereas, the Disaster Mitigation Act made available hazard mitigation grants to state and local governments; and

Whereas, an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre-and post-disaster mitigation grant programs; and

Whereas, the Village of Plato fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region VII officials will review the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan, and approved it as to form and content; and

Whereas, the Village of Plato desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts *by formally adopting* the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for the Village of Plato demonstrates the jurisdictions' desire to fulfill the mitigation goals outlined in this Multi-Jurisdictional Local Hazard Mitigation Plan; and

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

Now, therefore, be it resolved, that the Village of Plato has adopted the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan as an official plan

Date: July 23, 2019

Certifying Official: Bobby Brown

Chairman, Board of Trustees
Village of Plato

Resolution # 100-6/2004

Adopting the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan

Whereas, the Village of Raymondville recognizes the threat that natural hazards pose to people and property within our community; and

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

Whereas, the U.S. Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") emphasizing the need for pre-disaster mitigation of potential hazards;

Whereas, the Disaster Mitigation Act made available hazard mitigation grants to state and local governments; and

Whereas, an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre-and post-disaster mitigation grant programs; and

Whereas, the Village of Raymondville fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region VII officials will review the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan, and approved it as to form and content; and

Whereas, the Village of Raymondville desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts *by formally adopting* the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for the Village of Raymondville demonstrates the jurisdictions' desire to fulfill the mitigation goals outlined in this Multi-Jurisdictional Local Hazard Mitigation Plan; and

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

Now, therefore, be it resolved, that the Village of Raymondville has adopted the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan as an official plan

Date: 8-15-19

Certifying Official: Gene Hewitt

Resolution # C42019A

Adopting the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan

Whereas, the Cabool R-IV School District recognizes the threat that natural hazards pose to people and property within our community; and

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

Whereas, the U.S. Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") emphasizing the need for pre-disaster mitigation of potential hazards;

Whereas, the Disaster Mitigation Act made available hazard mitigation grants to state and local governments; and

Whereas, an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre-and post-disaster mitigation grant programs; and

Whereas, the Cabool R-IV School District fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region VII officials will review the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan, and approved it as to form and content; and

Whereas, the Cabool R-IV School District desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts *by formally adopting* the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for the Cabool R-IV School District demonstrates the jurisdictions' desire to fulfill the mitigation goals outlined in this Multi-Jurisdictional Local Hazard Mitigation Plan; and

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

Now, therefore, be it resolved, that the Cabool R-IV School District has adopted the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan as an official plan

Date: August 12, 2019

Certifying Official: Melissa Randall

Resolution # _____

Adopting the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan

Whereas, the Houston R-I School District recognizes the threat that natural hazards pose to people and property within our community; and

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

Whereas, the U.S. Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") emphasizing the need for pre-disaster mitigation of potential hazards;

Whereas, the Disaster Mitigation Act made available hazard mitigation grants to state and local governments; and

Whereas, an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre-and post-disaster mitigation grant programs; and

Whereas, the Houston R-I School District fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region VII officials will review the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan, and approved it as to form and content; and

Whereas, the Houston R-I School District desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts *by formally adopting* the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for the Houston R-I School District demonstrates the jurisdictions' desire to fulfill the mitigation goals outlined in this Multi-Jurisdictional Local Hazard Mitigation Plan; and

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

Now, therefore, be it resolved, that the Houston R-I School District has adopted the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan as an official plan

Date: 8-15-19

Certifying Official: Jo Hall

Resolution #_____

Adopting the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan

Whereas, the Licking R-VIII School District recognizes the threat that natural hazards pose to people and property within our community; and

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

Whereas, the U.S. Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") emphasizing the need for pre-disaster mitigation of potential hazards;

Whereas, the Disaster Mitigation Act made available hazard mitigation grants to state and local governments; and

Whereas, an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre-and post-disaster mitigation grant programs; and

Whereas, the Licking R-VIII School District fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region VII officials will review the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan, and approved it as to form and content; and

Whereas, the Licking R-VIII School District desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts *by formally adopting* the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for the Licking R-VIII School District demonstrates the jurisdictions' desire to fulfill the mitigation goals outlined in this Multi-Jurisdictional Local Hazard Mitigation Plan; and

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

Now, therefore, be it resolved, that the Licking R-VIII School District has adopted the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan as an official plan

Date: 7/22/19

Certifying Official: Dustin Wright

Resolution # _____

Adopting the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan

Whereas, the Raymondville R-VII School District recognizes the threat that natural hazards pose to people and property within our community; and

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

Whereas, the U.S. Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") emphasizing the need for pre-disaster mitigation of potential hazards;

Whereas, the Disaster Mitigation Act made available hazard mitigation grants to state and local governments; and

Whereas, an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre-and post-disaster mitigation grant programs; and

Whereas, the Raymondville R-VII School District fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region VII officials will review the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan, and approved it as to form and content; and

Whereas, the Raymondville R-VII School District desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts *by formally adopting* the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for the Raymondville R-VII School District demonstrates the jurisdictions' desire to fulfill the mitigation goals outlined in this Multi-Jurisdictional Local Hazard Mitigation Plan; and

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

Now, therefore, be it resolved, that the Raymondville R-VII School District has adopted the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan as an official plan

Date: 8/12/19

Certifying Official: Allan Bramlett - Board President

Resolution # _____

Adopting the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan

Whereas, the Success R-VI School District recognizes the threat that natural hazards pose to people and property within our community; and

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

Whereas, the U.S. Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") emphasizing the need for pre-disaster mitigation of potential hazards;

Whereas, the Disaster Mitigation Act made available hazard mitigation grants to state and local governments; and

Whereas, an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre-and post-disaster mitigation grant programs; and

Whereas, the Success R-VI School District fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region VII officials will review the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan, and approved it as to form and content; and

Whereas, the Success R-VI School District desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts *by formally adopting* the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for the Success R-VI School District demonstrates the jurisdictions' desire to fulfill the mitigation goals outlined in this Multi-Jurisdictional Local Hazard Mitigation Plan; and

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

Now, therefore, be it resolved, that the Success R-VI School District has adopted the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan as an official plan

Date: 8-5-19

Certifying Official: Bennie Boan

Resolution # 2019

Adopting the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan

Whereas, the Summersville R-II School District recognizes the threat that natural hazards pose to people and property within our community; and

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

Whereas, the U.S. Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") emphasizing the need for pre-disaster mitigation of potential hazards;

Whereas, the Disaster Mitigation Act made available hazard mitigation grants to state and local governments; and

Whereas, an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre-and post-disaster mitigation grant programs; and

Whereas, the Summersville R-II School District fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region VII officials will review the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan, and approved it as to form and content; and

Whereas, the Summersville R-II School District desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts *by formally adopting* the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for the Summersville R-II School District demonstrates the jurisdictions' desire to fulfill the mitigation goals outlined in this Multi-Jurisdictional Local Hazard Mitigation Plan; and

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

Now, therefore, be it resolved, that the Summersville R-II School District has adopted the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan as an official plan

Date: 8/13/2019

Certifying Official: Rick A. Stark

Resolution: Adopting the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan

The following resolution was adopted by Texas County Memorial Hospital on July 23, 2019.

Whereas, the Texas County Memorial Hospital recognizes the threat that natural hazards pose to people and property within our community; and

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

Whereas, the U.S. Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") emphasizing the need for pre-disaster mitigation of potential hazards;

Whereas, the Disaster Mitigation Act made available hazard mitigation grants to state and local governments; and

Whereas, an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre-and post-disaster mitigation grant programs; and

Whereas, the Texas County Memorial Hospital fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region VII officials will review the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan, and approved it as to form and content; and

Whereas, the Texas County Memorial Hospital desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts *by formally adopting* the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for the Texas County Memorial Hospital demonstrates the jurisdictions' desire to fulfill the mitigation goals outlined in this Multi-Jurisdictional Local Hazard Mitigation Plan; and

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

Now, therefore, be it resolved, that the Texas County Memorial Hospital has adopted the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan as an official plan.

Omanez Fockler, Board Vice-Chairperson

Wes Murray, CEO

Adopting the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan

Whereas, the Plato R-V School District recognizes the threat that natural hazards pose to people and property within our community; and

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

Whereas, the U.S. Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") emphasizing the need for pre-disaster mitigation of potential hazards;

Whereas, the Disaster Mitigation Act made available hazard mitigation grants to state and local governments; and

Whereas, an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre-and post-disaster mitigation grant programs; and

Whereas, the Plato R-V School District fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Missouri State Emergency Management Agency and the Federal Emergency Management Agency Region VII officials will review the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan, and approved it as to form and content; and

Whereas, the Plato R-V School District desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts *by formally adopting* the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for the Plato R-V School District demonstrates the jurisdictions' desire to fulfill the mitigation goals outlined in this Multi-Jurisdictional Local Hazard Mitigation Plan; and

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

Now, therefore, be it resolved, that the Plato R-V School District has adopted the Texas County Multi-Jurisdictional Local Hazard Mitigation Plan as an official plan

Date: 01/27/20

Certifying Official: Kevin Hardy