# Multi-Jurisdictional Hazard Mitigation Plan Community of Sharp County, AR

# **Adoption Date:**



**Primary Point of Contact** 

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# SHARP COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION

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# **Section 1 – Community Information**

# 1.1 General Description

Hazard mitigation is the cornerstone of emergency management. It is defined as any sustained action to reduce or eliminate long-term risk to life and property from a hazard event. Mitigation encourages long-term reduction of hazard vulnerability. The goal of mitigation is to save lives and reduce property damage.

In the past, federal legislation has provided funding for disaster relief, recovery, and some hazard mitigation planning. The Disaster Mitigation Act of 2000 (DMA 2000) is the latest legislation to improve this planning process. DMA 2000 amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act by repealing the previous Mitigation Planning section (409) and replacing it with a new Mitigation Planning section (322). This new section emphasizes the need for State, Tribal, and local entities to closely coordinate mitigation planning and implementation efforts. The new legislation reinforces the importance of mitigation planning and emphasizes planning for disasters before they occur. As such, this Act establishes a pre-disaster hazard mitigation program and new requirements for the national post-disaster Hazard Mitigation Grant Program (HMGP). It also requires that communities must have an approved hazard mitigation plan in order to receive Stafford Act assistance, excluding assistance provided pursuant to emergency provisions.

The goals of this Sharp County Hazard Mitigation plan are to 1) Reduce the loss of life and decrease property losses in Sharp County due to natural disasters, and 2) Provide a framework and coordination to encourage all levels of government and public and private organizations to undertake mitigation to minimize potential disasters and to employ mitigation in the recovery following disasters. Specific planning objectives are to: 1) Identify, describe, and characterize the natural hazards to which Sharp County is susceptible, 2) Assess the risk of each hazard including probability and frequency, exposure, and consequences, 3) Examine feasible mitigation opportunities appropriate for the identified hazards and prioritize those opportunities, 4) Implement mitigation actions to reduce loss of lives and property, and 5) Identify mitigation opportunities for long-range planning consideration.

The Sharp County Hazard Mitigation Plan is being developed to assess the ongoing natural hazard mitigation activities in Sharp County, to evaluate additional mitigation measures that should be undertaken, and to outline a strategy for implementation of mitigation projects. This plan is multi-jurisdictional with a planning area that includes all of unincorporated Sharp County and eight municipalities within the County including the cities of Hardy, Ash Flat, Cave City, Cherokee Village, Highland and Evening Shade and the two towns of Sidney and Williford.



Figure 1.1-1: Location of Sharp County on an Arkansas County Map

Formal adoption and implementation of a hazard mitigation plan presents many benefits to Sharp County and its residents. By identifying problems and possible solutions in advance of a disaster, Sharp County and participating communities will be in a better position to obtain pre- and postdisaster funding. Specifically, the Disaster Mitigation Act of 2000 establishes a pre-disaster hazard mitigation program and new requirements for the national post-disaster Hazard Mitigation Grant Program (HMGP). It requires that states and communities have a FEMA approved hazard mitigation plan in place prior to receiving post-disaster HMGP funds. Adoption of this hazard mitigation strategy also increases Sharp County's eligibility for assistance from FEMA's Flood Mitigation Assistance (FMA) program. Sharp County and participating communities will also gain additional credit points under FEMA's Community Rating System (CRS) program, which provides discounts on National Flood Insurance Program (NFIP) flood insurance premiums for residents of communities that voluntarily participate in this program. Most importantly, Sharp County will be able to recover faster and more wisely from a disaster. Through planning and acting on local mitigation strategies, the jurisdiction will reduce vulnerability to disasters and identify opportunities for mitigation. In addition, the communities may meet comprehensive planning and other planning requirements and achieve community goals.

## 1.2 Purpose and Authority

The purpose of the Sharp County Hazard Mitigation Plan is to provide guidance for hazard mitigation activities in Sharp County. The Sharp County Office of Emergency Management has the responsibility to coordinate all local activities relating to hazard evaluation and mitigation and to prepare and submit to FEMA a Local Mitigation Plan following the criteria established in 44 CFR 201.4 and Section 322 of the Disaster Mitigation Act of 2000 (Public Law 106-390).

The Disaster Mitigation Act of 2000 became law on October 30, 2000, and amends the Robert T. Stafford Disaster Relief and Emergency Assistance Act (the "Stafford Act") (Public Law 93-288, as amended). Regulations for this activity can be found in Title 44 of the Code of Federal Regulations Part 206, Subpart M.

This plan meets requirements for a local mitigation plan under Interim Final Rule 44 CFR 201.4, published in the Federal Register by the Federal Emergency Management Agency (FEMA) on February 28, 2002. Meeting the requirements of the regulations cited above keeps Sharp County qualified to obtain all disaster assistance including hazard mitigation grants available through the Robert T. Stafford Disaster Relief and Emergency Assistance Act, P.L. 93-288, as amended.

## 1.3 County Description

#### 1.3.1 Topography

Located in the U.S. state of Arkansas, in very remote and scenic foothills of the Ozark Mountains, Sharp County was formed in 1868. A July 17, 1868, Legislative Act created Sharp County as we know it today.

Sharp County seat is located in Ash Flat. Sharp County is located in the northeastern part of Arkansas, bordering on Missouri, Sharp County's elevation ranges from 561 feet in the southern section to 1,000 feet on the northwestern part of the Ozarks. Sharp County is served by U.S. Highways 63, 167, and 62/412, and by State Highways 56, 58, 115, 230, 175, 175-S and 354. According to the United States Census Bureau, Sharp County has a total area of 606.35 square miles, and 1.99 square mile of it is covered by water.

Hardy has several buildings on the National Register of Historic Places. Within Sharp County are the Harold E. Alexander Wildlife Management Area, and the Arkansas Game and Fish Commission.

#### 1.3.2 Climate

The average daily temperature in Sharp County is 61 degrees with a low daily average temperature of 38 degrees in January and a high daily average temperature of 81 degrees in July. The average maximum temperature for the year is 71 degrees with a monthly high of 91 degrees in July and a low of 48 degrees in January. The average minimum temperature for the year is 51 degrees with a monthly high of 71 degrees in July and a low of 24 degrees in January. The average precipitation for the year is 51 inches. The highest average monthly rainfall of 5.6 inches occurs in May and the lowest average monthly rainfall of 3.1 inches occurs in August.

#### 1.3.3 Population and Demographics

#### 1.3.3.1 Sharp County

As of the census of 2020, there were 17,271 people, 9,499 households, and 6,841 families residing in Sharp County. The racial makeup of Sharp County is 94.9% White, 1.1% Black or African American, 1.1% Native American, and 2.7% of the population is Hispanic or Latino of any race.

There are 6,841 households out of which 21% have children under the age of 18 living with them. The median household income is \$37,361 and 18.3% of people in the County are below poverty level.

The 2020 census data online only shows cities/counties with a population of 5,000 or more. The population and demographic data for each city in Sharp County has been documented from data.census.gov

#### 1.3.3.2 City of Ash Flat

There are 1,137 people, 451 households, and 490 families residing in the city. The population density is 204 people per square mile. The racial makeup of the city is 91% White, .6% Black or African American, 3% Hispanic or Latino. The median income is \$33,000.00 and 18.5% are below poverty level.

#### 1.3.3.3 City of Cave City

There are 1,922 people, 854 households, and 760 families residing in the city. The population density is 327 people per square mile. The racial makeup of the city is 89.9% White, 2.8% Black or African American, 2.8% Hispanic or Latino. The median income is \$40,750.00 and 22.2% are below poverty level.

#### 1.3.3.4 City of Evening Shade

There are 420 people, 219 households, and 192 families residing in the city. The population density is 217 people per square mile. The racial makeup of the city is 91.2% White, 0% Black or African American, 8.8% two or more and 5.2% Hispanic or Latino. The median income is \$27,768 and 24% are below poverty level.

#### 1.3.3.5 City of Hardy

There are 743 people, 598 households, and 369 families residing in the city. The population density is 138 people per square mile. The racial makeup of the city is 93.1% White, .1% Black or African American, .1% Asian, 1.2% American Indian and 2.6% Hispanic or Latino. The median income is \$33,173 and 19.3% are below poverty level.

#### 1.3.3.6 City of Highland

There are 982 people, 480 households, and 391 families residing in the city. The population density is 136 people per square mile. The racial makeup of the city is 95.4% White, .1% Black or African American, 4.5% two or more and 3.1% Hispanic or Latino. The median income is \$42,969 and 11.4% are below poverty level.

#### 1.3.3.7 Town of Sidney

There are 192 people, 92 households, and 76 families residing in the city. The population density is 91 people per square mile. The racial makeup of the city is 88.5% White, 0.0% Black or African American, 11.5% two or more, 8.3% Hispanic or Latino. The median income is \$52,750.00 and 9.6% are below poverty level.

#### 1.3.3.8 Town of Williford

There are 79 people, 33 households, and 19 families residing in the city. The population density is 144 people per square mile. The racial makeup of the city is 82.3% White, 0% Black or African American, 2.5% Hispanic or Latino and 17.7% who are multi-racial. The median income is \$23,000.00 and 12% are below poverty level.

#### 1.3.3.9 City of Cherokee Village

There are 4,780 people, 2,895 households, and 2,175 families residing in the city. The population density is 244 people per square mile. The racial makeup of the city is 97.8% White, 1.2% Black or African American, 4.7% two or more and 1.7%% Hispanic or Latino. The median income is \$32,730.00 and 16.1% are below poverty level.

#### 1.3.3.10 Cave City School District

The Cave City School District is comprised of 3 campuses including an Intermediary School on the High School Campus and a Preschool on the Elementary Campus. There is also a Middle School campus as well. There are approximately 1,223 students enrolled at all three campuses with 97 teachers/employees present on the campuses.

#### 1.3.3.11 Highland School District

The Highland School District is comprised of 3 campuses including an Elementary, Middle School and High School campus. There are approximately 1,600 students enrolled at all three campuses.

#### 1.3.4 Incorporated Cities and Towns

#### Table 1.3.4-1: Participating Incorporated Cities, Towns and School Districts in Sharp County.

Along with Sharp County and all unincorporated areas, the following are the Cities and Towns that are participating in the Multi-Jurisdictional Hazard Mitigation Plan.

<b>Sharp County Cities and Towns</b>
City of Hardy
City of Ash Flat
City of Cave City
Town of Sidney
Town of Williford
City of Cherokee Village
City of Highland
City of Evening Shade
Cave City School District
Highland School District

# Section 2 – Adoption

## 2.1 Multi-Jurisdictional Plan Adoption

The Sharp County Natural Hazard Mitigation Plan is a multi-jurisdictional plan for nine (9) total jurisdictions and two school Districts - the County government, six (6) incorporated cities, and two (2) Towns and two (2) School Districts. Each jurisdiction has provided information and participated in the process. Under the requirements of the Disaster Mitigation Act of 2000, each of these jurisdictions will officially adopt the final plan and forward a signed adoption resolution to FEMA. Adoption resolutions from the respective governing bodies of the participating jurisdictions listed below will include the dates of formal adoption. These signed adoption resolutions will be included upon the completion of FEMA's formal plan review.

Participating Jurisdictions and School Districts:

Table 2.1-1: Sharp County Participating Jurisdictions.

Jurisdiction Name
Sharp County
City of Hardy
City of Ash Flat
City of Cave City
City of Cherokee Village
City of Highland
City of Evening Shade
Town of Sidney
Town of Williford
Cave City School District
Highland School District

# 2.2 Adoption by Local Governing Body

In addition to unincorporated areas in Sharp County, six cities, and two towns within Sharp County are included in this plan. These include the City of Ash Flat, City of Cave City, City of Cherokee Village, City of Evening Shade, City of Hardy, City of Highland, Town of Sidney, and Town of Williford. The signatories for each of these communities are listed below.

Signature:	Date:	
Name: Mark Counts		
Title: County Judge		
Organization: Sharp County		
Signature:	Date:	
Name: Larry Fowler		
Title: Mayor		
Organization: City of Ash Flat		
Signature:	Date:	
Name: Jonas Anderson	Date	
Title: Mayor		
Organization: City of Cave City		
Signature:	Date:	
Name: Steven Rose	Butc	
Title: Mayor		
Organization: City of Cherokee Village		
Signature:	Date:	
Name: Susan Perkey		
Title: Mayor		
Organization: City of Evening Shade		
, c		
Signature:	Date:	
Name: Ethan Barnes		
Title: Mayor		
Organization: City of Hardy		
Signature:	Date:	
Signature Name: Kyle Crawford	Date	
Title: Mayor		
Organization: City of Highland		
Signature:		
Name: Nate Bloch	Date	

Title: Mayor	
Organization: Town of Sidney	
Signature:	Date:
Name: Brandon Bettis	
Title: Mayor	
Organization: Town of Williford	
Signature:	Date:
Name: Steven Green	
Title: Superintendent	
Organization: Cave City School District	

Signature:\_\_\_\_\_ Date: \_\_\_\_\_ Date: \_\_\_\_\_

Title: Interim Superintendent

Organization: Highland School District

# 2.3 Promulgation Authority Information

This Hazard Mitigation Plan was reviewed and approved by the following Promulgation Authorities:

Table 2.3-1: Sharp County Promulgation Authorities.

Name	Title	Organization	Jurisdiction	Phone #
Mark Counts	Sharp County Judge	County Administrator	Sharp County	870-994-7335
Larry Fowler	Mayor	City of Ash Flat	City of Ash Flat	870-994-7742
Jonas Anderson	Mayor	City of Cave City	City of Cave City	870-283-5103
Steven Rose	Mayor	City of Cherokee Village	City of Cherokee Village	870-257-5522
Kimberly Graddy	Mayor	City of Evening Shade	City of Evening Shade	870-266-3833
Ethan Barnes	Mayor	City of Hardy	City of Hardy	870-856-3811
Kyle Crawford	Mayor	City of Highland	City of Highland	870-856-6199
Nate Bloch	Mayor	Town of Sidney	Town of Sidney	870-286-6556
Phillip Alan	Mayor	Town of Williford	Town of Williford	870-266-3622
Steven Green	Superintendent	Cave City School District	Cave City School District	870.283.3333
Jeremy Lewis	Superintendent	Highland School District	Highland School District	870.856.3275

# 2.4 Adoption Resolution (SAMPLE)

# **SAMPLE ADOPTION RESOLUTION**

The following resolution was adopted by	on	, 2024.	
RESOLU	JTION NO		
	MITIGATION		ZARD
WHEREAS, the <u>city/county of</u> recognizes tornado/severe thunderstorm, flood, severe wint and recognizes the importance enhancing its a reducing the human suffering, property damage those hazards; and	er weather, drought ability to withstand	, heat wave, earthquake, dam failure natural hazards as well as the imp	or wildfire ortance of
WHEREAS, the <u>city/county of</u> may have floodplain management regulations, zoning ordinated of natural hazards; and			
WHEREAS, the Federal Emergency Manage Management Agency have developed a natural to become Disaster-Resistant Communities the reconstruction that brings the community to preplanned manner; and	hazard mitigation p nat focus, not just	rogram that assists communities in the on disaster relief, but also on rec	heir efforts overy and
WHEREAS, by participating in the Natural Haza be eligible to apply for post-disaster mitigation fu		am, the <u>city/county of</u>	will
WHEREAS, the <u>city/county of</u> will impler community partners and by incorporation of relev appropriate; and			
WHEREAS, the <u>city/county of</u> will particity well as complete a mandated five-year update Federal Emergency Management Agency for rev	submitted to the St	tate Emergency Management Agend	
NOW, THEREFORE BE IT RESOLVED BY THE FOLLOWS:	E GOVERNING BO	DY OF THE city/county_of	AS
The <u>city/county of</u> hereby approves the Re attached hereto for the purpose of building a saf			า
Approved:	Attest:		

# **Section 3 – Planning Process**

## 3.1 Current Multi-Jurisdictional Planning Participation

This Hazard Mitigation Plan is multi-jurisdictional with a planning area that includes all of unincorporated Sharp County and the two towns of Sidney and Williford along with the six cities of Hardy, Ash Flat, Cave City, Cherokee Village, Highland, and Evening Shade. There are two school districts: Cave City School District and Highland School District.

All jurisdictions listed above actively participated in the planning process from its inception. Each jurisdiction provided at least one representative to participate on the planning team, with larger jurisdictions providing more members. Planning team members participated in meetings, reviewed plan drafts, solicited input from members of their communities, and ensured that all jurisdiction information was reflected in the plan.

## 3.2 Documentation of the Planning Process

The Sharp County Hazard Mitigation Plan is a product of many hours of relentless work by the participants in gathering and assimilating data for the preparation of this plan. The Planning Team, consisting of a representative from each participating entity, included business people, elected officials, emergency response personnel, and local citizens. Adjoining communities, counties were invited to attend and participate in the planning process. As an effort to reach lower income individuals and elderly citizens, flyers were placed at Mission of Hope (thrift store/food pantry) and several churches around the county. Places posted are: Ash Flat City Hall, Ash Flat Post Office, Ozarka College, Highland City Hall, Cherokee Village City Hall, Hardy City Hall, Hardy Post Office, Evening Shade Post Office, Cave City City Hall, Cave City Post Office, Poughkeepsie Post Office and Williford Post Office.

#### 3.2.1 Multi-Jurisdictional Planning Team Member Information

The Sharp County Hazard Mitigation Planning Team consists of representatives from the participating entities: business people, elected officials, emergency response personal, local emergency planning committee, stake-holders, and local citizens.

This Hazard Mitigation Plan was compiled and authored by members of the Sharp County Hazard Mitigation Planning Team:

Table 3.2.1-1: Sharp County Hazard Mitigation Planning Team.

Name	Title	Organization	Roles/Responsibilities
Dennis Gay	Sharp Co. OEM Coordinator	Sharp Co. OEM	Planning Coordinator
Mark Counts	Sharp Co. Judge	Sharp Co. LEPC	Planning Team Leader, Consultant on Existing Plans, Review Plan Drafts
Todd Price	Superintendent	Sharp Co. Road Dept.	Risk Assessment, Response Planning

Jeremy Lewis	Superintendent	Highland School District	Co-Contact for Highland School District Mitigation Issues and Information
Adam Bates	Fire Chief	Ash Flat Fire Department	Mitigation, Preparedness and Response Planning
Brian Barnett	Police Chief	Cave City Police Department	Mitigation, Preparedness, Response Planning and Code Enforcement
Jonas Anderson	Mayor	City of Cave City	Executive Administrator, Contact for Cave City Mitigation Issues and Information
Billy Penn	Fire Chief	City of Cave City	Mitigation, Preparedness and Response Planning
Tim Lewis	Emergency Response	Spring River Paramedic Ambulance Service	Mitigation, Preparedness, and Response Planning
Jackson Bates	Fire Chief	Highland Fire Department	Mitigation, Preparedness and Response Planning
Danny Denton	Volunteer	Poughkeepsie VFD	Mitigation, Preparedness and Response Planning
Kyle Crawford	Mayor	City of Highland	Executive Administrator, Contact for Highland Mitigation Issues and Information
Kal Dienst	Fire Chief	City of Cherokee Village	Mitigation, Preparedness and Response Planning
Susan Perkey	Mayor	City of Evening Shade	Executive Administrator, Contact for Highland Mitigation Issues and Information
Scott Rose	Police Chief	City of Hardy	Mitigation, Preparedness and Response Planning
Joe Blackburn	Volunteer	Sidney Fire Department	Mitigation, Preparedness and Response Planning
Steven Rose	Mayor	City of Cherokee Village	Executive Administrator, Contact for Cherokee Village Mitigation Issues and Information

Ethan Barnes	Mayor	City of Hardy	Executive Administrator, Contact for Hardy Mitigation Issues and Information
Larry Fowler	Mayor	City of Ash Flat	Executive Administrator, Contact for Ash Flat Mitigation Issues and Information
Nate Bloch	Mayor	Town of Sidney	Executive Administrator, Contact for Sidney Mitigation Issues and Information
Steven Green	Superintendent	Cave City School District	Executive Admin for Cave City School District Mitigation Issues and Information
Philip Alan	Mayor	Town of Williford	Executive Administrator, Contact for Williford Mitigation Issues and Information
Carrie McIntosh	Project Coordinator	White River Planning & Development District	Consultant/Planner

#### 3.2.2 Planning Participation

All public hearings and planning meetings for the plan update were open to the public. Adjoining communities and counties were invited to attend and participate in the planning process.

A point of secondary contact was established for many participating jurisdictions due to the time restraints that were placed on many part-time officials. These contacts could review the draft and were also designated to answer any questions and make comments by phone or in person.

#### 3.3 Public Involvement

Sharp County no longer has a website, so public comment was not requested using this source of advertisement. The county posted the notice below in several areas around the county. In an effort to reach lower-income individuals and elderly citizens, flyers were placed at Mission of Hope (thrift store/food pantry) and several churches around the county. Places posted are Ash Flat City Hall, Ash Flat Post Office, Ozarka College, Highland City Hall, Cherokee Village City Hall, Hardy City Hall, Hardy Post Office, Evening Shade Post Office, Cave City City Hall, Cave City Post Office, Poughkeepsie Post Office and Williford Post Office.

Sharp County is a member of the White River Planning and Development District, who manages the north-central workforce investment and opportunity act (WIOA). This program helps provide supportive services, training, and workforce skills to underserved and underprivileged individuals in Sharp County.

# Sharp County Hazard Mitigation Plan Update 2023

Sharp County is in the process of updating the Sharp County Hazard Mitigation Plan. Public input is important to include as a part of the mitigation plan. Please email comments to <a href="mailto:carrie@wrpdd.org">carrie@wrpdd.org</a> or contact Carrie McIntosh at 870.793.5233.

The purpose of the mitigation plan is to plan for future natural disasters. The focus is on mitigating the problems before the hazard occurs. If you would like a copy of the final plan one can be emailed to you. Please email <a href="mailto:carrie@wrpdd.org">carrie@wrpdd.org</a> for a copy.

Community stakeholders such as school officials, fire department representatives, media, Mayors, citizens and emergency response representatives were all involved in the planning process and throughout the mitigation plan development. **The following were invited to participate in the plan update:** 

Stakeholder	Title	Invitation
Citizens (General Public)	N/A	Posted Notices
ADEM	Kyle Key, Mitigation Grants Coordinator	By Email
Area wide Media/The News	General Manager	By Email
Spring River Ambulance	Tim Lewis, Paramedic	By Letter
Ash Flat Fire Dept.	Adam Bates, Fire Chief	By Letter
Cave City Fire Dept.	Billy Penn, Fire Chief	By Letter
Cherokee Village Fire Dept.	Kal Dienst, Fire Chief	By Letter
Evening Shade Fire Dept.	David Biewer, Fire Chief	By Letter
Highland Fire Dept.	Kal Dienst, Fire Chief	By Letter
Hardy Fire Dept.	Fire Chief, Volunteer	By Letter
Center Fire Dept.	Fire Chief, Volunteer	By Letter
Poughkeepsie Fire Dept.	Fire Chief, Volunteer	By Letter
Sidney Fire Dept.	Fire Chief, Volunteer	By Letter
Grange-Calamine Fire Dept.	Fire Chief, Volunteer	By Letter
Martin Creek Fire Dept.	Fire Chief, Volunteer	By Letter
Ozark Acres SID Fire Dept.	Fire Chief, Volunteer	By letter
Highland School District	Jeremy Lewis, Superintendent	By Email
Cave City School District	Steven Green, Superintendent	By Email
Sharp County Judge	Judge Mark Counts	By Email
Sharp County OEM	Dennis Gay, OEM	By Email
City of Cherokee Village	Mayor Steven Rose	By Email
City of Cave City	Mayor Jonas Anderson	By Email
City of Highland	Mayor Kyle Crawford	By Email
City of Ash Flat	Mayor Larry Fowler	By Email
Town of Hardy	Mayor Ethan Barnes	By Email
Town of Evening Shade	Mayor Susan Perkey	By Email
Town of Sidney	Mayor Nate Bloch	By Email
Town of Williford	Mayor Philip Alan	By Letter

#### **Plan Development Timeline**

Planning Team Contact	August 2022
Planning Meeting #1	September 2022
Risk Assessment Start-up	September 2022-December 2022
Mitigation Action Development	January 2023 – July 2023
Planning Meeting #2	August 2023
Finalization of Plan	December 2023
Submission to ADEM	February 2024
Submission to FEMA	March 2024
During the rick assessment and mitigation action develop	ment numerous phone calls and

During the risk assessment and mitigation action development numerous phone calls and emails were made to various planning team members to gather pertinent information to incorporate into the plan. The planning team members consist of representatives from county government, local city governments, public works officials, emergency management officials, and academic faculty. All participating jurisdictions actively participated in the planning process through soliciting input from their communities, providing mitigation actions, and participation in meetings. All formal list of the stakeholders and planning team members involved in the plan development is included on pages 14-18 of this plan.

# 3.4 Review and Incorporation of Technical Information, Reports, Studies and Existing Plans

The Sharp County Hazard Mitigation Plan Update planning team reviewed all existing county and city plans that were in accordance with or could benefit the plan update. Plans, reports, studies and technical information reviewed were the following:

Sharp County Emergency Management Operations Plan

Sharp County Insurance Study

Sharp County Existing and Past Flood Insurance Claims

Sharp County Stream Management Ordinances

Sharp County Zoning Management Ordinance

Sharp County Floodplain Management Ordinances State of Arkansas Hazard Mitigation Plan Sharp County Hazard Mitigation Plan- 2017 Policies, procedures, information and ideas from the preceding plans were incorporated throughout various sections of the Sharp County Hazard Multi-Jurisdictional Hazard Mitigation Plan.

# 3.5 Method and Schedule for Keeping Plan Current

After the Sharp County Multi-Hazard Mitigation Plan is accepted by FEMA, the participating jurisdictions will adopt the official plan and an official copy will be kept at each Jurisdiction's town, city, or county office. Sharp County will publicize its approval and locations for viewing through the local newspaper, social media and advertisement at the courthouse/city halls. WRPDD will also send school districts a memo of approval that can be distributed as needed.

As new events of hazards, ordinances, policies or mitigation opportunities arise; Sharp County will take note of these, monitor new mitigation efforts and add them accordingly to their existing plan.

Regulations require a plan update every five years. The County will form a Hazard Mitigation Plan Evaluation Sub-Committee consisting of members of the existing Sharp County Local Emergency Planning Committee, some of whom served on the planning team, along with members appointed by the participating jurisdictions. The LEPC consists of members from fire service, health officials, emergency management, law enforcement, hospital personnel, and emergency medical personnel.

The County OEM office will be responsible for monitoring, evaluating and updating the plan. The OEM Coordinator will serve as the Planning Team Leader. The Planning Team Leader will contact the Hazard Mitigation Plan Evaluation Sub-Committee to set up meeting dates and ensure that each community will maintain a representative on the team. Meeting dates will be published in area newspapers, and posted in participating communities.

Plan members are to meet at least annually, to review and evaluate accomplishments and discuss any problems encountered and monitor progress. If necessary, changes may be made to better achieve the proposed goals and objectives. The parties or agencies responsible for the various implementation actions (identified in Section 5) will report on the status of their projects and will evaluate which implementation processes worked well, any difficulties encountered, how coordination efforts were proceeding, and which strategies should be revised.

At this time, the maintenance procedures for the Mitigation Plan will be conducted at the annual meeting. Each community representative will be responsible for monitoring and evaluating the progress of the mitigation strategies in the plan. The team members will monitor the plan by providing a mitigation planning update at each meeting.

The responsible party for overseeing and assuring plan updates is Sharp County. This may be done in-house or contracted as needed. An update will be done on an "as-needed" basis, as conditions and circumstances change. A complete update will be done at least every five years. With 2 years remaining on the 5-year plan date, Sharp County will contact White River Planning and Development to discuss updating the plan again and adding the records they have been keeping before the current plan expires. With the help of Sharp County officials, White River Planning will evaluate the information Sharp County had kept and collected over the past 5 years of the previous plan for the next Multi-Hazard Mitigation plan update.

## Section 4 - Risk Assessment

The goal of mitigation is to reduce the future impacts of a hazard including property damage, disruption to local and regional economies, and the amount of public and private funds spent to assist with recovery. However, mitigation should be based on risk assessment.

Risk Assessment, as defined by FEMA, is the process of measuring the potential loss of life, personal injury, economic injury, and property damage resulting from hazards by assessing the vulnerability of people, buildings, and infrastructure to natural hazards. It identifies the characteristics and potential consequences of hazards, how much of the community could be affected by a hazard, and the impact on community assets. It tells you:

- A. The hazards to which your state or community is susceptible;
- B. What these hazards can do to physical, social, and economic assets;
- C. Which areas in the communities are most vulnerable to damage from these hazards; and
- D. The resulting impact of damages or costs avoided through future mitigation projects.

In addition to benefiting mitigation planning, risk assessment information also allows emergency management personnel to establish early response priorities by identifying potential hazards and vulnerable assets. The following goals are what the Sharp County Hazard Mitigation Plan hopes to achieve:

#### **Plan Goals and Objectives**

- 1. Reduce the injury and loss of life in Sharp County due to natural disasters.
- 2. Reduce property loss in Sharp County due to natural disasters.
- 3. Provide support to encourage all levels of government, public and private sectors and school districts to engage in mitigation, to minimize devastating results from natural disasters and to initiate mitigation in the recovery after a disaster has occurred.
- 4. Identify and describe hazards that could potentially threaten Sharp County, assess the risk of each hazard, implement mitigation actions for the reduction of loss of life and property, assess past mitigation efforts and update long-term mitigation plans.

## 4.1 Sharp County Hazard Identification

Hazard Identification, the process of identifying hazards that threaten a given area, is the first step in the risk assessment process. Sharp County identified several natural hazards that, because they pose a significant risk to Sharp County and its residents, warranted a complete profile in this hazard mitigation plan.

The Sharp County Hazard Mitigation Planning Team pursued the following steps to identify natural hazards that may affect Sharp County:

- Discussions and correspondence with experts in the community and State including the National Weather Service, the Arkansas Department of Emergency Management, the Arkansas Forestry Commission, the Arkansas Highway and Transportation Department
- Research of internet websites
- Research of newspapers and other historical records
- Review of past State and Federal disaster designations (See Table 4.1-1)
- Review hazards identified in the State of Arkansas Hazard Mitigation Plan
- Review of FIRM (Flood Insurance Rate Maps)

One way to identify priority hazards for a community, particularly those hazards with relatively short recurrence intervals, is to examine past Federal Major Disaster Declarations. Since 1969, Sharp County has reported thirteen Federally Declared Major Disasters. Three of these disasters involved severe winter storms and 7 of these included flooding along with either tornadoes or severe storms. A list of all Presidential Declared Disasters occurring in Sharp County since 1969 is presented in Table 4.1-1. Smaller, non-Federally declared disasters are much more frequent and are not reflected in the above figures. Potential hazards with long recurrence intervals, such as earthquakes, are also not reflected in the above figures and require more extensive research to determine their local hazard potential. The county does not foresee an unusual increase in population, major land use changes within the next 5 years. Although there is no indication of rapid climate change there is the potential for the effects of climate change on various natural hazards. These are addressed throughout the plan as warranted. This may help preserve the vulnerable assets in the County, but would stagnate the economic development of the area. Vulnerable assets in the area include: Schools, Police Departments, Fire Departments, Hospitals, Medical clinics, Water/wastewater systems, ambulance services large industries such as Emerson, City and County offices, and bridges.

Table 4.1-1: Presidential Disaster Declarations since 1969

Designation	Date Declared	Incident Type
DR-254	2/15/1969	Severe Storms/Flooding
DR-471	6/7/1975	Heavy Rains/Flooding
DR-673	12/13/1982	Tornadoes/Flooding
DR-907	5/30/1991	Severe Storm
DR-1176	4/14/1997	Severe Storms/Flooding
DR-1354	12/29/2000	Severe Winter Storm
DR-1450	1/06/2003	Severe Ice Storm
DR-1744	2/7/2008	Severe Storms/ Tornadoes/Flooding
DR-1751	3/26/2008	Severe Storms/Tornadoes/Flooding
DR-1804	10/22/2008	Tropical Storm Ike/Severe Storms
DR-1819	2/6/2009	Severe Winter Storm
DR-1861	12/3/2009	Severe Storms/Tornadoes/Flooding
DR-4160	1/6/2014	Severe Winter Storm
DR-4174	4/29/2014	Severe Storms, Tornadoes, Flooding

As a result of this research described above, the Sharp County Hazard Mitigation Planning Team determined that the Sharp County Mitigation Plan needed to address the risk associated with the following natural hazards:

- Drought
- Earthquake
- Flooding
- Severe Thunderstorms (Including Hail, Lightning and Severe Winds)
- Severe Winter Storms
- Tornado
- Wildfires

The preceding Sharp County Hazard Mitigation Plan which was adopted in 2017 covered the same hazards as the 2023 updated plan. Dam failure assessments have been included in flooding.

(Please see the following chart which describes the determined hazards for Sharp County.)

Hazard	How Identified	Why Identified
Tornadoes	<ul> <li>Review of past disaster declarations</li> <li>Review of NCDC Severe Storms Database</li> <li>National Weather Service input and data</li> </ul>	<ul> <li>Sharp County experiences a tornado in the past years</li> <li>Tornadoes have caused extensive damage and loss of life to County residents</li> </ul>
Flooding	<ul> <li>Review of past disaster declarations</li> <li>Review of FIRM's</li> <li>Input from County floodplain manager</li> <li>Identification of NFIP repetitive loss properties in Sharp County</li> <li>NFHL Data</li> <li>Review of ANRC Dam Failure Safety Program</li> </ul>	<ul> <li>Sharp County is affected by flooding nearly every year</li> <li>Floods have caused extensive damage and loss of life in Sharp County in the past</li> <li>Although Dam Failure has not caused significant damage in recent history, however it can cause extensive damage to property and loss of life.</li> </ul>
Severe Winter Weather	<ul> <li>Review of past disaster declarations</li> <li>Review of NCDC Severe Storms Database</li> <li>Public input</li> </ul>	<ul> <li>Sharp County is affected by severe winter storms nearly every year</li> <li>Recent severe ice storms caused extensive damage</li> </ul>
Wildfires	<ul> <li>Arkansas Forestry         Commission statistics and input         Forestry Service         Southern Wildfire Risk Assessment         Public input     </li> </ul>	<ul> <li>Sharp County experiences wildfires every year</li> <li>Some events have caused significant damage to timber</li> </ul>
Earthquakes	<ul> <li>HAZUS-MH</li> <li>Arkansas Geological Commission data</li> <li>Public input</li> <li>Historical reports</li> </ul>	<ul> <li>Although earthquakes have not caused significant damage in recent history, repeat or historical earthquakes would be devastating to Sharp County.</li> <li>Entire State lies within &gt;2% g on USGS PGA map</li> </ul>
Severe Storms (Hail, Lightning, Thunderstorms)	<ul> <li>National Weather Service         Data     </li> <li>Review of NCDC Hail         Database     </li> <li>Public input</li> </ul>	<ul> <li>Sharp County experiences damaging severe hail events annually</li> <li>Some events have caused significant damage to structures</li> </ul>
Drought	NOAA Paleoclimatology     Data     National Weather Service     Data	<ul> <li>A past emergency declaration in the State for drought</li> <li>State Mitigation Plan</li> </ul>

#### 4.2 Hazard Profiles

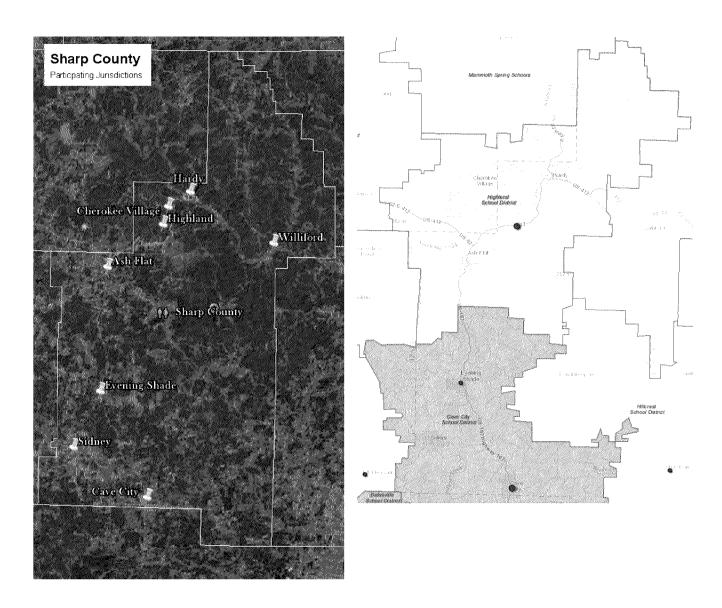
The hazards identified above have been explained in detail for Sharp County, the City of Ash Flat, City of Cave City, City of Cherokee Village, City of Evening Shade, City of Hardy, City of Highland, Town of Sidney, Town of Williford, Cave City School District and Highland School District. (The multi-jurisdictional planning area will be referred to as Sharp County, the participating jurisdictions and school districts, to eliminate repetitiveness throughout the plan unless otherwise specified.)

Each hazard includes four elements: (A) Location, (B) Extent, (C) Previous Occurrences and (D) Probability of Future Events. Also described are the potential impact and the community's vulnerability assessment to the associated hazard. Definitions for the four elements including impact and vulnerability are provided below:

- A. **Location-** The geographic areas within the planning area that are affected by the hazard.
- B. **Extent-** The strength or magnitude of the hazard. Extent defines the characteristics of the hazard regardless of the people and built environment it affects.
- C. **Previous Occurrences-** History of previous events for each identified hazard.
- D. **Probability of Future Events-** The likelihood of the hazard occurring in the future.

The **Impact** refers to the *effect* of that hazard on the people and the property in the community while the **Vulnerability Assessment** highlights how susceptible that community is to this particular hazard.

The first map on the following page indicates the location of each participating city or town and the second map indicates the location of the school district boundaries:



## 4.2.1 Drought

A drought is a period of unusually constant dry weather that persists long enough to cause deficiencies in water supply (surface or underground). Droughts are slow onset hazards, but, over time, they can severely affect crops, municipal water supplies, recreational resources, and wildlife. If drought conditions extend over a number of years, the direct and indirect economic impacts can be significant. High Temperatures, high winds, and low humidity can worsen drought conditions and also make areas more susceptible to wildfire. In addition, human actions and demands for water resources can accelerate drought-related impacts.

Source: FEMA

#### 4.2.1 (A) Location

The areas affected by drought are Sharp County, the City of Ash Flat, City of Cave City, City of Cherokee Village, City of Evening Shade, City of Hardy, City of Highland, Town of Sidney and the Town of Williford. Cave City School District and Highland School District have not been directly affected by drought in the past and are not expected to in the future.

Except the school districts, all drought events have affected Sharp County and the participating jurisdictions equally during any particular event. This trend of where drought has affected areas in Sharp County is expected to stay the same throughout the future.

#### 4.2.1 (B) Previous Occurrences

Sharp County including the participating jurisdictions excluding the school districts has all experienced drought or drought-like conditions in the past. There have been 13 recorded instances of drought since 2000 with no reported crop damages or property damages and no reported deaths. There have been 2 additional events since updates in 2023 with no crop or property damages and no reported deaths. All 15 reported events affected Sharp County and all of the participating jurisdictions equally. The school districts were not reported to be affected by the drought events.

## 4.2.1 (C) Extent (Magnitude and Severity)

The Palmer Drought Severity Index (PDSI) is used nationally to determine long-term drought. The objective of the PDSI is to provide measurements of moisture conditions that are standardized so that comparisons using the index can be made between locations and between months. The Palmer Classifications are as follows:

Palmer Classifications				
PDSI Value Weather Conditions				
4.0 or More	Extremely Wet			
3.0 to 3.99	Very Wet			
2.0 to 2.99	Moderately Wet			
1.0 to 1.99	Slightly Wet			
0.5 to 0.99	Incipient Wet Spell			
0.49 to -0.49	Near Normal			
-0.5 to -0.99	Incipient Dry Spell			
-1.0 to -1.99	Mild Drought			
-2.0 to -2.99	Moderate Drought			
-3.0 to -3.99	Severe Drought			
-4.0 or Less Extreme Drought				

Sharp County and the participating jurisdictions have a PDSI ranging from moderately wet (2.0-2.99) to severe drought (-3.00- -3.99) therefore the average extent of drought that occurs in Sharp County or any of the participating jurisdictions would be -1 or "Mild Drought" as indicated on the palmer classifications of drought. This means that during a typical dry event in Sharp County or any of the participating jurisdictions may not have any precipitation for up to a month. Most events of drought in the past lasted for one month or more. The Cave City School District and the Highland School District will also experience the same extent as the rest of the participating jurisdictions due to their locations being within the City limits; however, they are not expected to be affected as their water sources are not typically limited by city officials. This extent for events of drought is expected to remain the same in the future. Although climate change is likely to increase the risk of flooding, droughts are also likely to become more severe. Average rainfall is likely to decrease during the 21st century, especially in spring and summer. In addition, rising temperatures increase evaporation, which dries the soil and decreases the amount of rain that runs off into rivers. The total amount of water running off into rivers or recharging ground water each year is likely to decline by 5 percent or more. Droughts are likely to be more severe, because periods without rain will be longer and very hot days will be more frequent.

#### 4.2.1 (D) Probability

Previous data indicates that Sharp County and the participating jurisdictions are all expected to experience events of mild drought in the future. Both school districts are not expected to be affected by drought at any time in the future.

Since recording, there have been 13 recorded events of drought in Sharp County and the participating districts since 2017. Upon implementation of updated data in 2023, there have been a total of 15 events as of 2023. This information concludes that there is a reduction from an 81% chance of drought occurring to 65% in any year in Sharp County or the participating jurisdictions.

#### Impact of Drought on Planning Area

The overall significance and impact of drought for Sharp County and the participating jurisdictions have not been devastating since the recording of this hazard began for Sharp County. For citizens, however, there have been some occurrences and areas that were slightly affected. Although there is a chance that drought could occur in any year, the expected impact of drought on Sharp County and the participating jurisdictions is minimal for citizens and might include that they were to participate in light conservation of water and relocation of livestock if drought were to persist.

In the rare event of an abnormally long drought throughout the County, there could be a possible substantial loss of crops and livestock which could occur. In 2012, Sharp County and the participating jurisdictions produced a market value of \$1,031,000.00 in crops sold and \$74,530,000.00 in livestock assets. Depending on what season it was for the crops and access to water for the livestock, there could be a substantial loss to market value revenue for agriculture. Respectively there are 648 farms in Sharp County which cover 158,279 acres. Prolonged drought throughout the county could have a substantial impact on agriculture revenue.

Cave City and Highland School Districts have not been impacted by drought in the past and therefore are not expected to be impacted by events of drought in the future.

#### Vulnerability Assessment

Since recording began in 2000, there has been no reported loss of life due to drought in Sharp County or any of the participating jurisdictions. However, drought could cause damage to all of these areas if the lack of precipitation was unusually prolonged during the late summer months. Shortage of water for human consumption is not likely; however, the use of water by citizens concerning outdoor activities such as car washes, swimming pools and recreational usage could be limited during drought-like conditions. Water for farm animals and crops could be greatly limited. Citizens living in Sharp County and the participating jurisdictions during a drought event could be asked to conserve water by canceling outdoor water recreation including city swimming pools or washing vehicles. Water systems in Sharp County and all the participating jurisdictions are expected to hold enough water to withstand typical droughts in the area, yet extreme conditions could cause gradual shortages. Farmers in the area would be the most affected as they could experience crop loss and possibly death of livestock. Overgrazing of farm animals in one particular area has been linked to drought vulnerability during some seasons of the year around Sharp County.

Sharp County and the participating jurisdictions are all equally vulnerable to drought. However, during prolonged drought conditions, a possibility of 648 farms located throughout the county with a market value of \$1,031,000.00 in crop production and \$74,530,000.00 in livestock gains could potentially be lost and usual residential activities such as lawn watering, vehicle washing and outdoor recreational events could be limited by authorities.

Cave City and Highland School District have not demonstrated any vulnerability to drought in the past and are not expected to throughout future events.

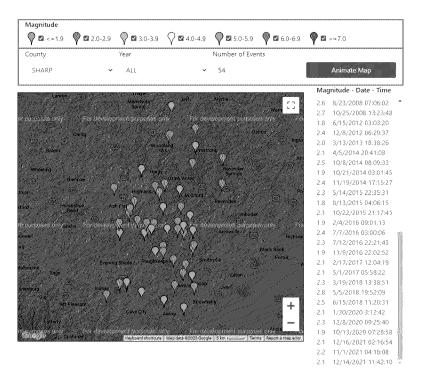
# 4.2.2 Earthquake

An earthquake is a sudden release of energy that creates a movement in the earth's crust. Most earthquake-related property damage and deaths are caused by the failure and collapse of structures due to ground shaking. The level of damage depends upon the extent and duration of the shaking.

Source: FEMA

#### 4.2.2 (A) Location

Small earthquakes have occurred throughout the entire multi-jurisdictional planning area of Sharp County, the City of Ash Flat, City of Cave City, City of Cherokee Village, City of Evening Shade, City of Hardy, City of Highland, Town of Sidney, Town of Williford, Cave City School District and Highland School District in the past. Although only certain incorporated and non-incorporated areas of the county have experienced single-point seismic activity, Sharp County and the jurisdictions within have the possibility of being affected by this hazard due to the geological makeup of the county. The following map indicates the locations of all reported earthquakes in Sharp County since recording began in 1976 up to 2023:



Source: Arkansas Geological Survey

#### 4.2.2 (B) Previous Occurrences

There have been 39 reported earthquakes throughout the planning area since 1976. According to the Arkansas Geological Survey, there were 13 reported earthquakes with epicenters in the multijurisdictional planning district and 26 reported quakes with epicenters in unincorporated Sharp County. Upon further updates in 2023, there have been an additional 15 events of earthquakes in the county and planning area.

There have been no reported deaths, injuries or property damage due to the above earthquakes since the recording began. Sharp County lies in the New Madrid Seismic Zone which caused catastrophic damage in parts of Arkansas during 1843. The quake could be felt in Sharp County, however, the epicenter was in North East Arkansas and there was no recorded information indicating loss of life or property damage in Sharp County or any of the participating jurisdictions or school districts.

#### 4.2.2 (C) Extent (Magnitude and Severity)

Typically, geologists use a combination of the *Mercalli Scale* and the *Richter Scale* to determine the extent of an earthquake. The following is a summarized chart of these two scales which helps to explain the measurement of the extent concerning earthquakes:

	Scale/Index	Weak	Moderate	Severe	Extreme
Earthquake	Modified Mercalli	I - IV	V - VII	VII	IX - XII
-	Richer Magnitude	2, 3	4,5	6	7,8

Source: USGS.gov Earthquake Hazards Program

Past events in Sharp County, the participating jurisdictions and school districts have all been below a 2.8 on the richer scale and could be classified as weak earthquakes. Future extents of earthquakes are expected to fall in the same range of 0.6-2.7 for Sharp County, the participating jurisdictions and the school districts. Earthquakes are not influenced by climate change, although plate tectonics, of which earthquakes are a manifestation, can impact climate over vast periods of geological time. The Richter Scale is a measurement of the energy released while the Mercalli Scale measures the intensity.

# 4.2.2 (D) Probability

Considering the data for past events in Sharp County, the participating jurisdictions and both school districts it shows that there has been a history of relatively weak earthquakes. There were 54 reported weak earthquakes in 47 years arriving at a 100% chance of a weak earthquake occurring in any year in Sharp County and the participating jurisdictions. All participating jurisdictions and school districts would have the same percent chance of an earthquake occurring due to most earthquakes can be felt for miles if not throughout the entirety of the county.

## Impact of Earthquake Events on Planning Area

The overall impact of an earthquake on Sharp County including the participating jurisdictions and school districts would be minimal. Since recording, there has been no reported property damage or deaths due to earthquakes in Sharp County. No additional damages, death or injury has occurred since updates in 2023.

If future earthquakes in the planning area are typical and continue to be weak (0.6-2.7 on the Richer Scale), then earthquakes will be noticeable, however, no significant damage or loss of life is expected to occur with these typical quakes. It is possible that residential homes and businesses could have cracking or shifting of their foundational structures causing owners to make small repairs. Also, there is potential for objects and valuables inside the homes and businesses to sustain small damages from falling off the walls or shelves that could potentially cause small injuries to citizens residing in the homes. Nevertheless, there is no expected substantial damage to any area in the planning district during a typical earthquake.

If an extreme earthquake were to occur in the New Madrid Seismic Zone as did in 1843, potentially devastating damage could occur. In the most extreme situations, there could be loss of life and excessive damage to structures due to a lack of building codes and preparedness for these types of earthquakes. The following chart indicates the effect of an extreme earthquake on the people and property of Sharp County, the participating jurisdictions and school districts. Any earthquakes less than 6.0 in Sharp County are not expected to cause extensive building damage or loss of life.

# Sharp County, Arkansas

Population: 17,271 Buildings: 5,644

	Richter Magnitude		
P C C C C C C C C C C C C C C C C C C C	6.0 - 6.9	7.0 - 7.9	8.0 - 8.9
Effects on People			
Percentage Feeling Quake	100%	100%	100%
Serious Injury (night/day)	0/3	0 / 14	14 / 141
Fatalities (night/day)	0 / 0	0/3	3 / 28
Displaced	141	1,411	4,656
Effects on Buildings			
Damage to Contents	50%	80%	100%
Architectural Damage	25%	70%	95%
Slight Structural Damage	5%	45%	90%
Moderate Structural Damage	0.1%	5%	30%
Severe Structural Damage	0%	0.1%	10%
Collapsed Buildings	0%	0%	1%
Effects on Lifelines			
Electric Outage	Possible	Probable	Yes
Telephone Outage	Possible	Probable	Yes

Source: UALR Arkansas Earthquake Center

#### **Vulnerability Assessment**

There has been no recorded loss of life or property damage due to any recent earthquake event in Sharp County, the participating jurisdictions or either school districts. All of Sharp County could potentially experience some type of seismic activity in the future due to proximity and the unlikely event of a large-scale quake that could occur in the New Madrid Seismic Zone.

During a typical Sharp County earthquake (below 2.8 on the Richter Scale), those at the highest risk for damage would be residential homes and businesses. The damage would likely consist of personal items in the homes and businesses with only minimal costs associated. Typical earthquakes would only affect citizens by possibly causing minimal damage to the structures of homes or businesses and possibly personal contents inside the structures. Citizens could sustain minimal injuries from unsecured objects in homes and businesses. Also, the possibility of bridges collapsing throughout the county is a point of concern as well. Some of the older bridges were not constructed per the IBC and IRC codes.

In the event of a *significant (6.0 or higher)* earthquake in Sharp County and the participating jurisdictions, the following charts demonstrate the damage that could be expected to occur to buildings and essential facilities in Sharp County:

# **Essential Facilities**

Classification	Total	At Least Moderate Damage> 50%	Complete Damage >50%	With Functionality > 50% on Day 1
Hospitals	1	0	0	1
Schools	2	0	0	2
EOC's	0	0	0	0
<b>Police Stations</b>	4	0	0	4
Fire Stations	5	0	0	5

# Expected Building Damage by Occupancy

Classification	None	Slight	Moderate	Extensive	Complete
Agriculture	0	0	0	0	0
Commercial	53	5	2	0	0
Education	0	0	0	0	0
Government	3	0	0	0	0
Industrial	4	0	0	0	0
Other Residential	1,082	159	85	5	0
Religion	6	1	0	0	0
Single Family	7,613	407	96	14	2
Total	8,761	571	184	19	2

# Expected Building Damage by Occupancy

Classification	None	Slight	Moderate	Extensive	Complete
Wood	6,758	311	46	3	0
Steel	20	2	1	0	0
Concrete	5	0	0	0	0
Precast	5	0	0	0	0
Reinforced Masonry	2	0	0	0	0
Unreinforced Masonry	920	102	52	11	2
Manufactured Housing	1,050	156	84	5	0
Total	8,761	571	184	19	2

## **4.2.3** Flooding

A flood is the partial or complete inundation of normally dry land. The various types of flooding include riverine flooding, coastal flooding, and shallow flooding. Common impacts of flooding include damage to personal property buildings, and infrastructure; bridge and road closures; service disruptions; and injuries fatalities or possible dam failure.

A **Riverine Flood** is a flood caused by precipitation, runoff or snowmelt over a relatively large watershed causing flooding over wide areas and cresting in over 8 hours. A **Flash Flood** is a flood caused by heavy precipitation or snowmelt over a limited watershed (typically less than 50 square miles), crests in eight hours or less, and generally occurs in hilly terrain. Riverine floods have relatively low velocity, cover a large area of land, and take longer to recede, whereas flash floods have a higher velocity and may recede quickly. A flash flood can also occur when extreme amounts of precipitation fall on any terrain if the precipitation accumulates more rapidly than the terrain can allow runoff.

# **NFIP Participation:**

Congress created the National Flood Insurance Program (NFIP) to help provide a means for property owners to financially protect themselves. The NFIP offers flood insurance to homeowners, renters, and business owners if their community participates in the NFIP. Participating communities agree to adopt and enforce ordinances that meet or exceed FEMA requirements to reduce the risk of flooding.

Sharp County has a Certified Floodplain Manager (Dan Melbourne) who is responsible for the floodplain management of Sharp County and all of the participating jurisdictions. Sharp County has one Flood Plain Manager that conducts SI/SD reporting and permitting. Sharp County and the participating jurisdictions utilize the OEM as the Flood Plain Manager. Current floodplain maps were approved in 2010 and are utilized from the flood insurance website and FEMA's map program. Sharp County and the participating Jurisdictions will use regulatory mapping products such as Flood Insurance Maps (FIRMs) or Base Level Engineering (BLEs) maps for communities participating in the NFIP.

The floodplain manager is also in charge of reviewing floodplain maps, permits (when issued) and inspections as needed. **Ordinance No. 99-10** was adopted June 14, 1999, applying to each jurisdiction listed below that are NFIP participants and stating that each will apply to the conditions and standards of the NFIP. As of November 2016, Sharp County and the participating jurisdictions listed below are all in good standing with the NFIP and there are no listed outstanding compliance issues. Each community anticipates their future participation in the program and has encouraged others to join. All of the communities listed that participate in the NFIP plan on maintaining compliance by ensuring future construction is regulated according to NFIP standards and existing structures or land areas that are issues are retrofitted to comply.

## NIFP participants in Sharp County are the following:

The County of Sharp
The City of Ash Flat
The City of Cave City
The City of Cherokee Village
The City of Hardy
The City of Highland
The Town of Evening Shade

Each of the above named Jurisdictions plans to continue to comply with NFIP standards and requirements throughout the future.

The following cities and towns included in the Sharp County Mitigation Plan are not currently (at the time of this plan update) NFIP Participants:

The Town of Sidney
The Town of Williford

The Town of Sidney does not participate in the NFIP because the town is not located in a flood plain nor is close to a major body of water.

The Town of Williford does not participate in the NFIP because flooding is not a frequent or costly event in the area.

The following are the NFIP claims according to the BureauNet and the Community Information Systems for Sharp County:

Severe Repetitive Loss:

There were no reported Severe Repetitive Loss claims in the BureauNet or Community Information Systems for Sharp County according to ANRC.

Repetitive Loss County Summary:

The Sharp County Repetitive Loss Summary reports that there are 16 total repetitive loss properties, with 1 being a severe repetitive loss. 10 of the properties are in Hardy, and the County's 1 severe loss is also in Hardy. Cherokee Village has 1 property reported and Williford has 1 property. The other 4 properties are scattered throughout the County. There are 30 NFIP flood insurance policies in force in the county. In the last 5 years, there were 2 losses reported.

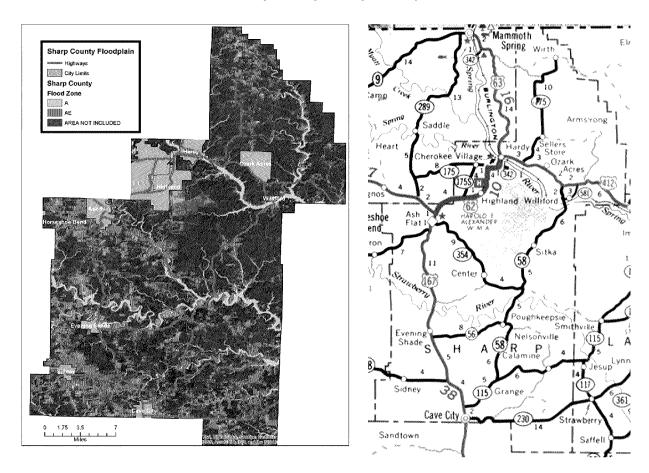
### 4.2.3 (A) Location

Sharp County and the participating jurisdictions are all susceptible to flooding and have experienced flooding throughout the past. Flash flooding due to heavy rains for an extended period is the typical reason that flooding occurs throughout the County. Cherokee Village and Hardy are more prone to severe flooding than the other jurisdictions, however, all jurisdictions have experienced some type of flooding in the past. It is typical of Sharp County and the participating jurisdictions to have flash flooding events throughout any time of the year but especially in the spring. The following maps depict the flooding areas:

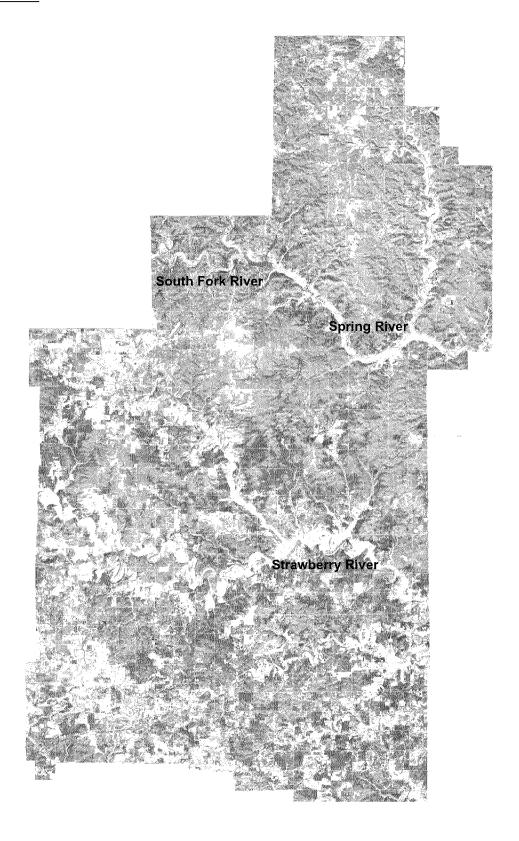
### Special Flood Hazard Area Maps

The following maps depict the special flood hazard areas for Sharp County and the participating jurisdictions. Most flooding that occurs in Sharp County and the participating jurisdiction is attributed to flash flooding.

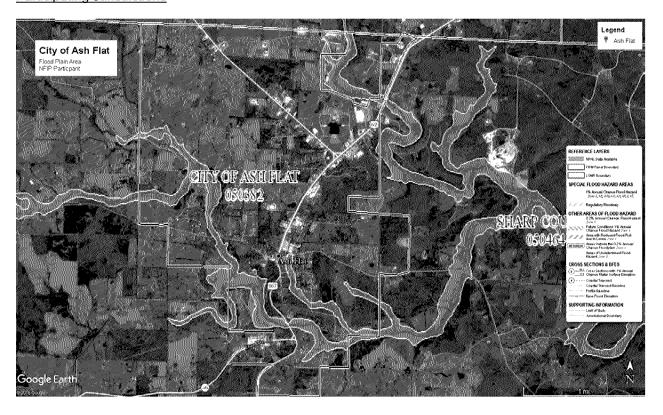
#### **Sharp County Floodplain Maps**



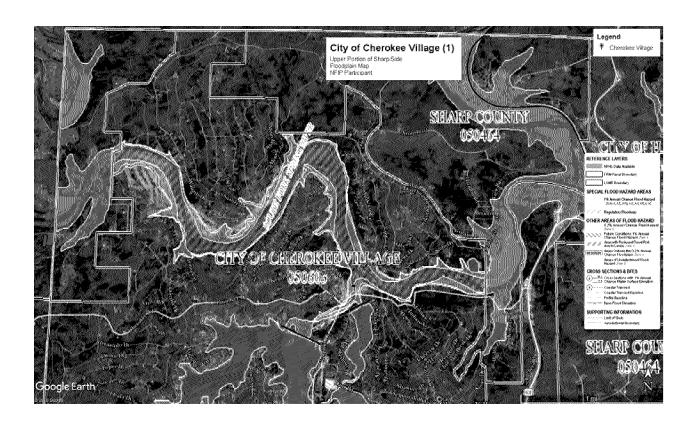
## Location of Rivers

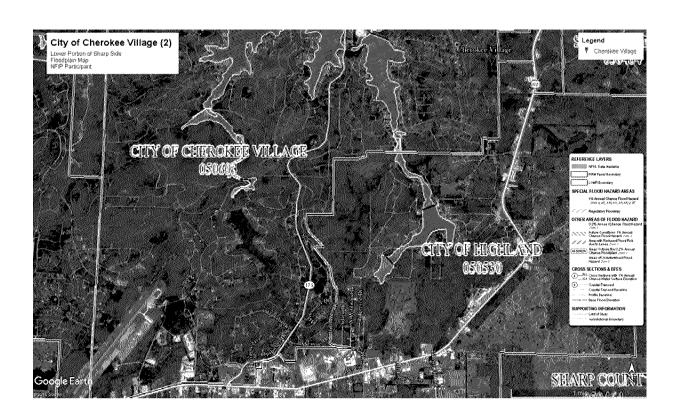


### Participating Jurisdictions

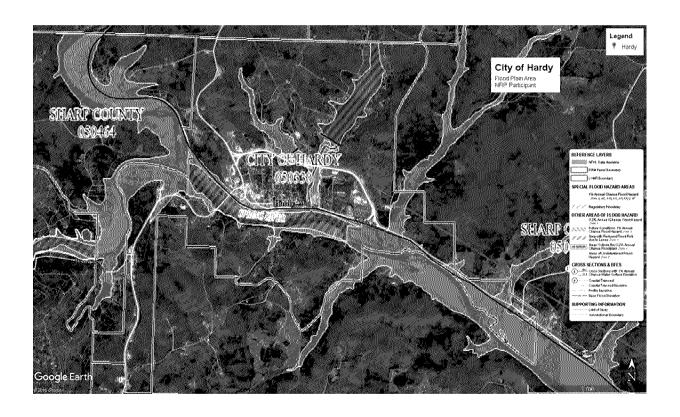


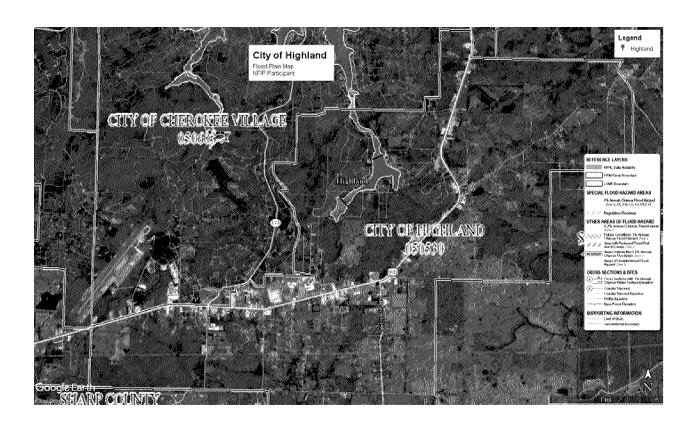


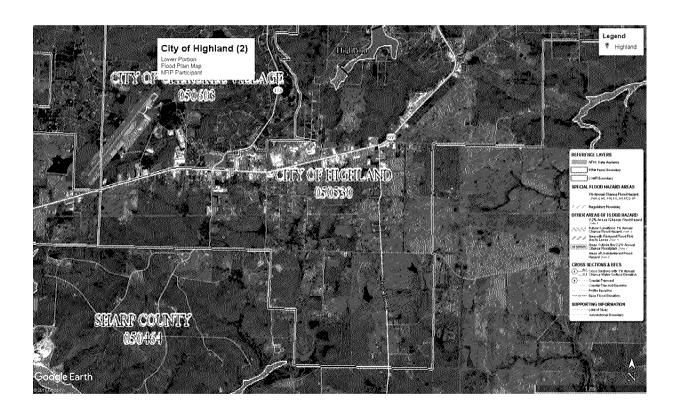








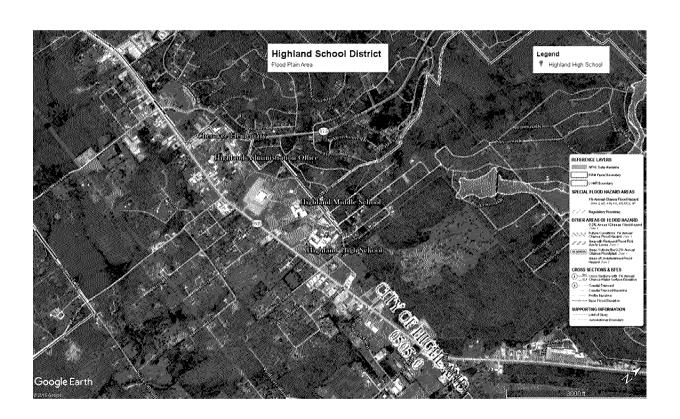












### 4.2.3 (B) Previous Occurrences

Since recording began in 1997, Sharp County and the participating jurisdictions have experienced 20 events of flooding. Since updates in 2023, 4 additional events have occurred in the area. According to county officials, there have been numerous other events of flooding that were not recorded before 1997. Damages accrued from these 24 events total 23.851M in property damage and 2.800M in crop damages. No deaths or injuries have been reported.

The following table depicts the data of <u>Flooding</u> in Sharp County and the participating jurisdictions:

Jurisdiction	Unincorp Sharp	Cherokee Village	Hardy
Events Recorded From 1997-2017	4	1	9
NCDC Reported Events 2017-2023	0	2	8
Probability of Event 1997-2017	20%	5%	45%
Probability of Event 2017-2023	0%	33%	100%
# of Days of event with death or injury	0	0	0
Days with death or injury 2017-2023	0	0	O
Days with property damage 1997-2017	3	1	5
Days with property damage 2017-2023	0	0	0
Probability of Property Damage/ Year	%	%	%
Property Damage 1997-2017	\$5.6M	\$500K	\$17.5M
Property Damage From 2017-2023	\$0	\$0	\$0
Average Property Damage Per Event	\$1.4M	\$167K	\$1.04M
Days with Crop Damage 1997-2017	1	0	2
Days with Crop Damage 2017-2023	0	0	1
Total Crop Damage From 1997-2017	\$250K	\$0	\$50K
Total Crop Damage From 2017-2023	\$0	\$0	\$2.5M
Average Crop Damage Per Event	\$250K	\$0	\$150K
Probability of Crop Damage Per Event	%	%	%

### Flash Flooding

Since recording in 1997, Sharp County and the participating jurisdictions have experienced 49 events of flash flooding. These incidents have caused \$4.226 million in property damage, 2 deaths and 3 injuries. Upon further recordings in 2023, 6 additional events have occurred. The total impacts of the 55 events amount to \$4.236 million in property damage, and no further death

or injury.

The following table depicts the data of <u>Flash Flooding</u> in Sharp County and the participating jurisdictions:

Jurisdiction	Unincorp Sharp	Ash Flat	Cave City	Cherokee Village	Eveneing Shade	Hardy	Highland	Sidney	Williford
Events Recorded From 1997-2017	17	4	2	4	3	10	1	0	1
NCDC Reported Events 2017-2023	0	1	2	3	1	5	0	1	0
Probability of Event 1997-2017	85%	20%	10%	20%	5%	50%	5%	0%	5%
Probability of Event 2017-2023	0%	17%	33%	50%	17%	83%	0%	17%	0%
# of Days of event with death or injury	0	0	O	0	0	4	0	0	1
Days with death or injury 2017-2023	0	0	0	0	0	0	o	0	0
Days with property damage 1997-2017	7	0	1	2	2	3	0	0	0
Days with property damage 2017-2023	0	0	0	0	O.	1	0	0	0
Probability of Property Damage/ Year	%	0%	5%	10%	10%	20%	0%	0%	0%
Property Damage 1997-2017	\$2.3M	\$0	\$2K	\$1.52M	\$15K	\$410K	\$0	\$0	\$0
Property Damage From 2017-2023	\$0	\$0	\$0	\$0	\$0	\$1K	\$0	\$0	\$0
Average Property Damage Per Event	\$135K	\$0	\$500	\$218K	\$3,750	\$27,400	\$0	\$0	\$0
Total Crop Damage From 1997-2017	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Crop Damage From 2017-2023	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Average Crop Damage Per Event	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Probability of Crop Damage Per Event	0%	0%	0%	0%	0%	0%	0%	0%	0%

### 4.2.3 (C) Extent (Magnitude and Severity)

Flooding in Sharp County and the participating jurisdictions including the school districts is usually attributed to flash flooding that can result in riverine flooding in extreme cases. Due to past data, it appears that the planning area is mostly susceptible to minor; moderate and even sometimes major flash flooding with minimal or no property damage during most instances with some rare events of inundation of structures and roads especially close to streams. Some evacuations have occurred and road closures due to a very quick onset from a downpour. Officials from Sharp County estimate that the most severe flash flooding events occurred within 30-45 min of an initial downpour. These quick downpours could have occurred in any of the jurisdictions included in the planning area.

The depth of water resulting from a flash flood is typically different for each flood as it depends on the length of the rain storm and the location of the heaviest rains. Cherokee Village and

Hardy are most likely to experience a backup of water that could cause road closures. The average range of inches of rainfall during a typical event in Sharp County and the participating jurisdictions would be 3-6 inches within 48 hours or less.

One major river in Sharp County has a history of flooding with significant impacts on the daily lives of the citizens who reside. The Spring River affects mainly the cities of Hardy, Williford and Cherokee Village in Sharp County. It also affects cities in neighboring Counties such as Lawrence and Fulton County.

The Spring River has the following flood categories (in feet):

Major Flood Stage: 16' – This would be a catastrophic event and would impact most of Hardy, Cherokee Village and Williford.

Moderate Flood Stage: 14' - Moderate Impacts to Hardy, Cherokee Village and Williford

Flood Stage: 10'

Action Stage – 8'

There have been past flooding events that reached 30-40 above flood level. These occurred in 1915, 1982 and 2008; damaging homes and businesses, destroying bridges and claiming lives.

The Strawberry River has the following flood categories (in feet):

Major Flood Stage: 16' – This would be a catastrophic event and would impact most of Evening Shade, Poughkeepsie, and South Lebanon.

Moderate Flood Stage: 14' – Moderate Impacts to Evening Shade, Poughkeepsie, and South Lebanon.

Flood Stage: 12'

Action Stage – 8'

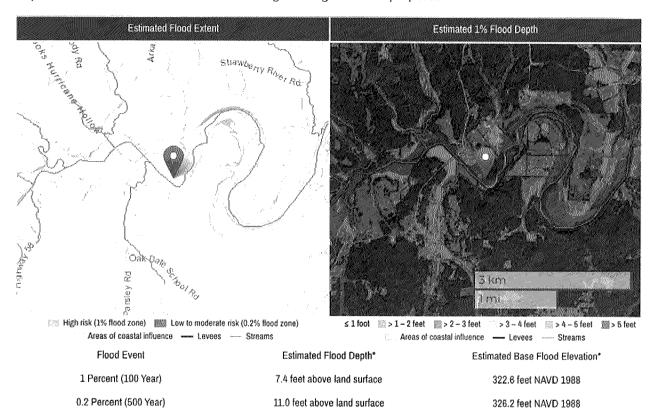
There have been no past flooding events of the Strawberry River since 1997. If a severe event of flooding were to occur from the Strawberry River, it would impact major roadways and nearby areas such as Evening Shade, Poughkeepsie, and South Lebanon.

See below for Base Flood Elevations per jurisdiction:

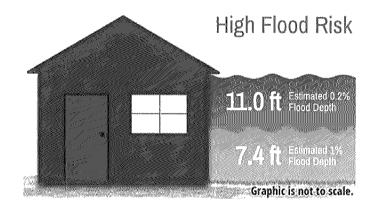


## Flood Risk Information Report

Latitude 36.1064, Longitude -91.4434 (Sharp County, AR)



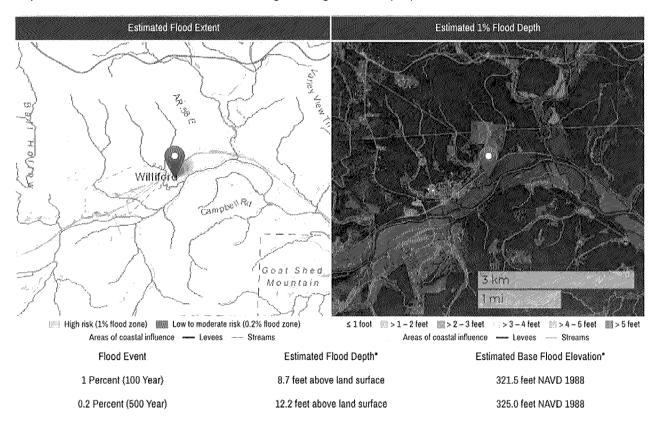
<sup>\*</sup> The information included in this report is based on the location marker shown in the map. Results are not considered an official determination.



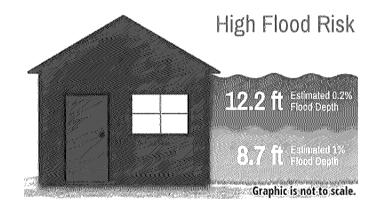


## Flood Risk Information Report

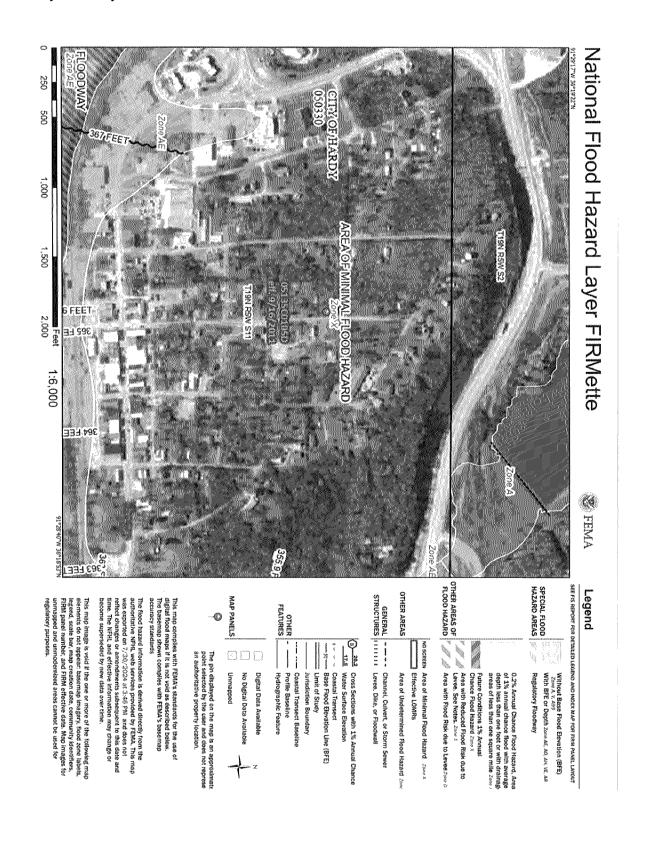
Latitude 36.2538, Longitude -91.3498 (Sharp County, AR)



<sup>\*</sup> The information included in this report is based on the location marker shown in the map. Results are not considered an official determination.



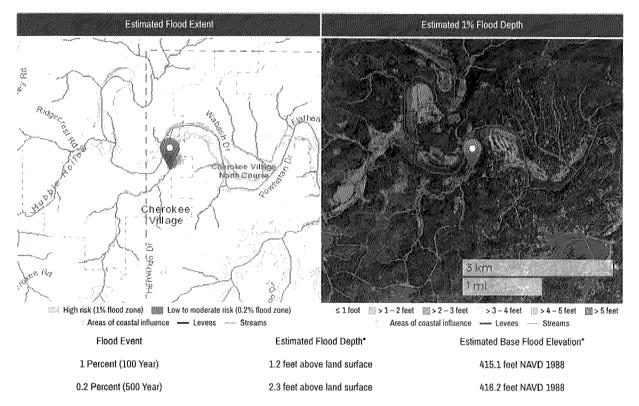
# City of Hardy



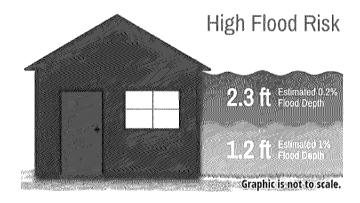


### Flood Risk Information Report

Latitude 36.3163, Longitude -91.5607 (Sharp County, AR)



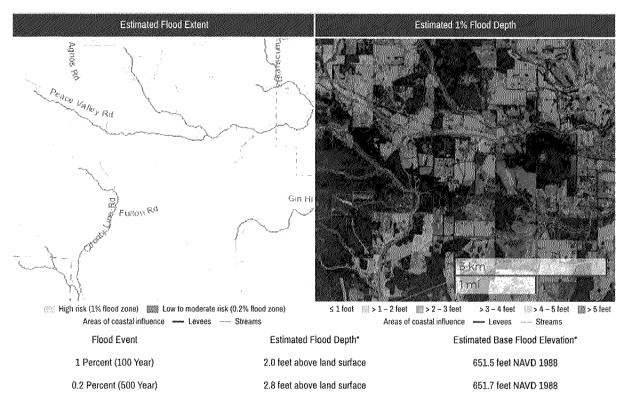
<sup>\*</sup> The information included in this report is based on the location marker shown in the map. Results are not considered an official determination.



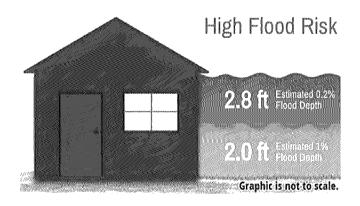


### Flood Risk Information Report

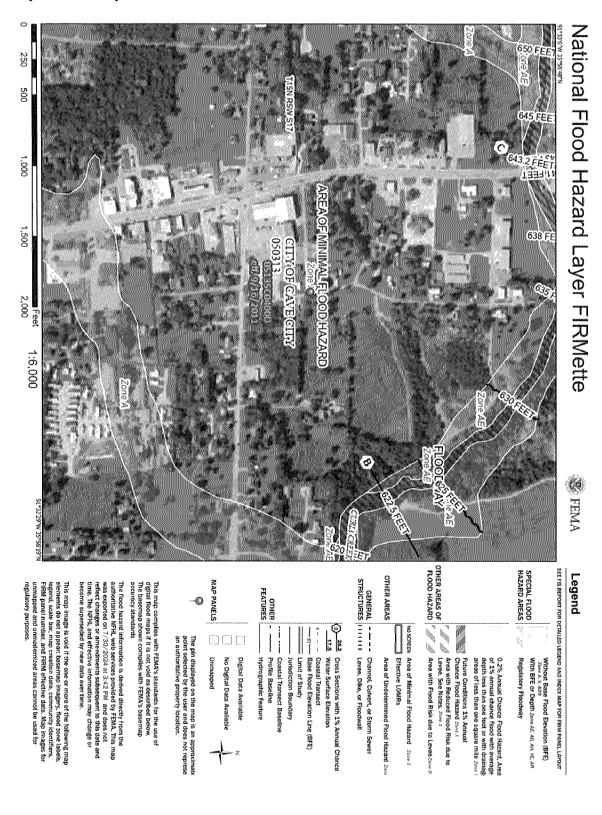
Latitude 36.2241, Longitude -91.6069 (Sharp County, AR)



<sup>\*</sup> The information included in this report is based on the location marker shown in the map. Results are not considered an official determination.



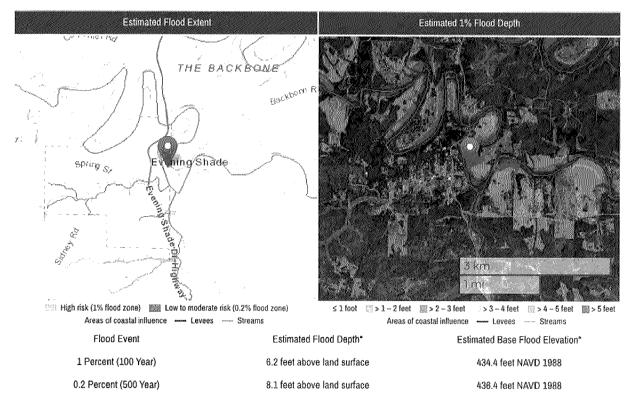
# City of Cave City



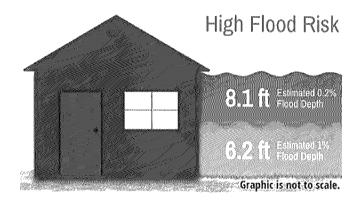


### Flood Risk Information Report

Latitude 36.0733, Longitude -91.6108 (Sharp County, AR)



<sup>\*</sup> The information included in this report is based on the location marker shown in the map. Results are not considered an official determination.



Please note: The City of Highland, Highland School District and City of Sidney do not fall into a special flood hazard area and has no risk of being affected by flooding.

The issue of dirt roads or low water bridges flooding out and becoming unpassable during an event is the biggest concern for the County, City, and Town officials from all of the participating jurisdictions have indicated that flooding in Sharp County often occurs very rapidly throughout the County and can rise creek and water levels in roads and bridges high enough where citizens cannot pass safely. However, the water is found to recede fairly quickly after precipitation has ceased. Citizens throughout the entire County are always asked to proceed with caution, especially through the more rural areas of Sharp County and the participating jurisdictions.

Changing of the climate is likely to increase inland flooding, particularly in communities along major rivers. Since 1958, the amount of precipitation falling during heavy rainstorms has increased by 27 percent in the Southeast, and the trend toward increasingly heavy rainstorms is likely to continue. The risk of flooding along the Mississippi River may also increase because the Midwest, which drains into that river, is also becoming wetter. Both annual rainfall and stream flows in the Midwest are increasing, and that trend is likely to continue. The U.S. Army Corps of Engineers manages dams and reservoirs to control flooding, but these dams cannot prevent all floods.

(Please see maps located in the *Location* section for inundation areas concerning the participating jurisdictions.)

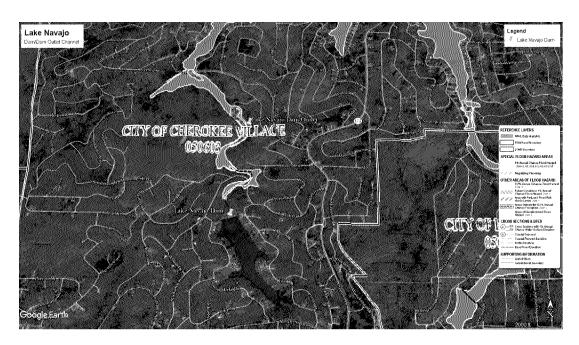
### Dam Failure

A possible effect of flooding in Sharp County is that of dam failure. Sharp County and the participating jurisdictions have no recorded instances of dam failure, seepage or overtopping and are not expected to do so in the future; however, there are 12 dams located throughout the County with 10 of those 12 considered "high-risk" dams. According to the U.S. Corps of Engineers, any dam within Sharp County that might become breached would take less than an hour and sometimes minutes to affect the soils of Sharp County. Sharp County has Emergency Action Plans for all Dams located within the County.

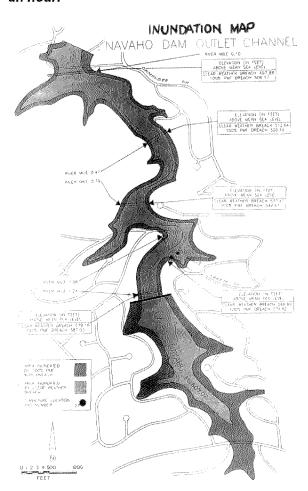
The following is a list of the dams located within Sharp County and 3 dams located within Fulton County that might affect land in Sharp if the dam were to be breached:

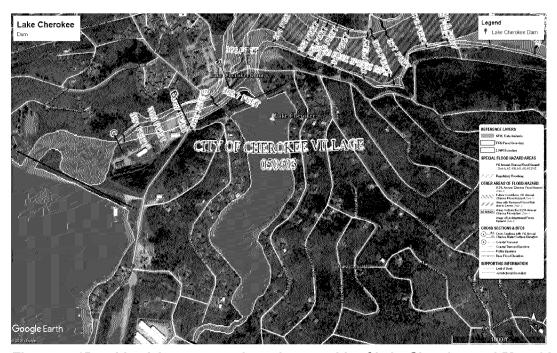
Name / Location	Latitude / Longitude	Owner	State Permit Required	Hazard Class	Possible Unsafe Spillway	Height (ft.)	Max. Volume (acre-ft.
Lake Navajo Dam Cherokee Village	36.1642 / 91.3247	Cherokee Village S.I.D.	YES 040	High	Not Evaluated	49	580
Cherokee Lake Dam Cherokee Village	36.1830 / 91.3136	Cherokee Village	YES 258	High	Yes	49	531
Sequoyah Lake Dam Cherokee Village	36.1754 / 91.3136	Cherokee Village	YES 259	High	Yes	56	3,000
Lake Thunderbird Dam Cherokee Village	36.1818 / 91.3200	Cherokee Village	YES 031	High	Not Evaluated	86	11,500

Lake Omaha Dam Cherokee Village (Fulton Co.)	36.1830/ 91.3530	Cherokee Village	YES 100	Low	<b>N</b> ot Evaluated	53	2,780
Lake Chanute Dam Cherokee Village (Fulton Co.)	36.1736/ 91.3430	Cherokee Village	YES 125	High	Not Evaluated	58	1,330
Lake Aztec Dam Cherokee Village (Fulton Co.)	36.1736/ 91.3600	Cherokee Village	YES 130	Low	Not Evaluated	65	870
Lake June Dam Highland	36.1654/ 91.3106	Hidden Valley P.O.A.	YES 13	Low	Not Evaluated	29	100
Wild Plum Lake Dam Highland	36.1513 / 91.3136	Hidden Valley P.O.A.	YES 097	High	Yes	25	100
Lake Mirandy Dam Highland	36.1648 / 91.3113	Hidden Valley P.O.A.	YES 13	High	Not Evaluated	39	1000
Rainbow Lake Dam Woodland Hills (Hardy)	36.1919 / 91.2846	Woodland Hills P.O.A. (Hardy)	YES 014	High	Not Evaluated	42	310
Sherwood Lake Dam Woodland Hills (Hardy)	36.1924 / 91.2825	Woodland Hills P.O.A. (Hardy)	YES 029	High	Yes	51	2,023
Spring Lake Dam Ozark Acres	36.1723 / 91.2335	Ozark Acres S.I.D.	YES 05	High	Not Evaluated	38	200
Vagabond Lake Dam Ozark Acres	36.1703 / 91.2217	Ozark Acres S.I.D.	YES 06	Signif.	Not Evaluated	58	1,634
Lake Kiwanie Dam	36.1818 / 91.3030	Unknown	Unknown	Signif	Not Evaluated	Unknown	Unknown



Two residential structures would be inundated by a dam failure of Lake Navaho. It is not likely that dam failure will occur in the future at Lake Navajo. These structures could be affected in less than an hour.

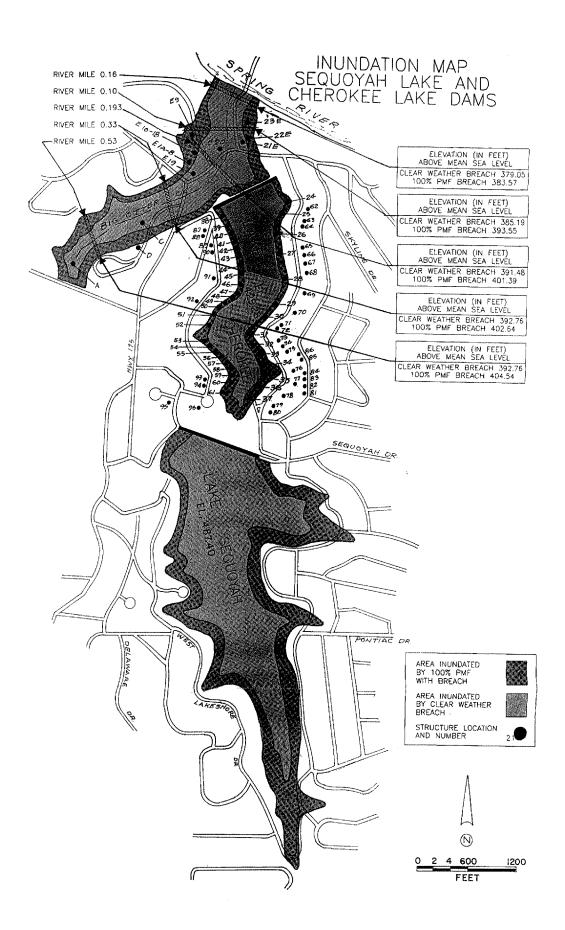




There are 15 residential structures along the east side of Lake Cherokee and 58 residential structures along the south and west side that would be impacted by dam inundation. These structures could be affected in less than an hour. It is not likely that dam failure will happen in the future at Lake Cherokee.



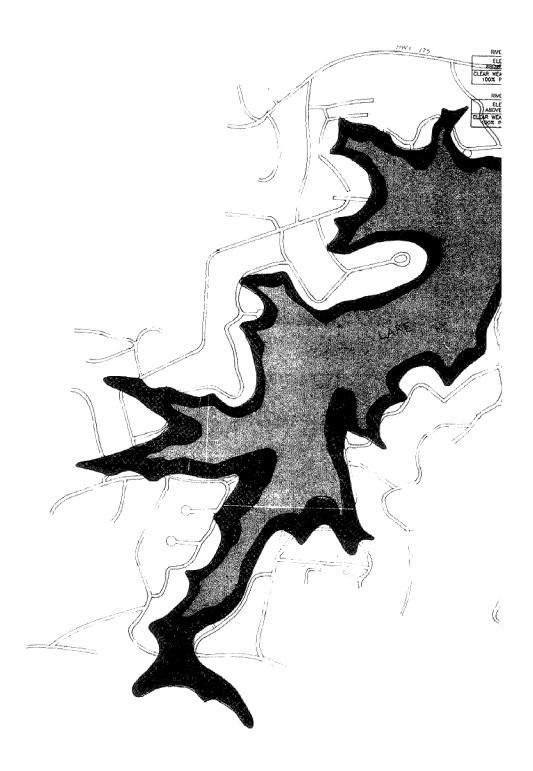
There are 29 structures, consisting primarily of commercial buildings, a post office, City Hall, bank, shopping center and few vacant buildings that would be impacted by dam inundation below Lake Sequoyah. These structures could be affected in less than an hour. The same structures will be affected by a breach in Lake Thunderbird. It is not likely that dam failure will happen in the future at Lake Sequoyah.

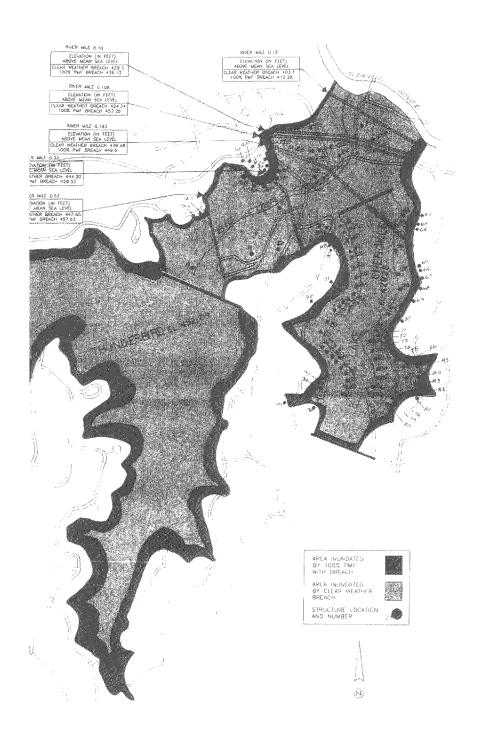




There are 29 structures, consisting primarily of commercial buildings, a post office, City Hall, bank, shopping center and a few vacant buildings that would be impacted by dam inundation below Lake Thunderbird. These structures could be affected in less than an hour. It is not likely that dam failure will happen in the future at Lake Thunderbird.

# Inundation Maps for Lake Thunderbird Dam

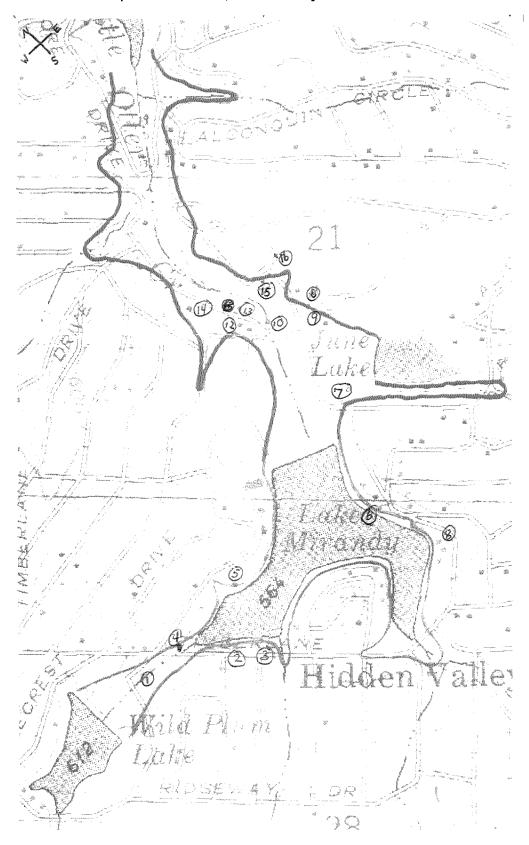


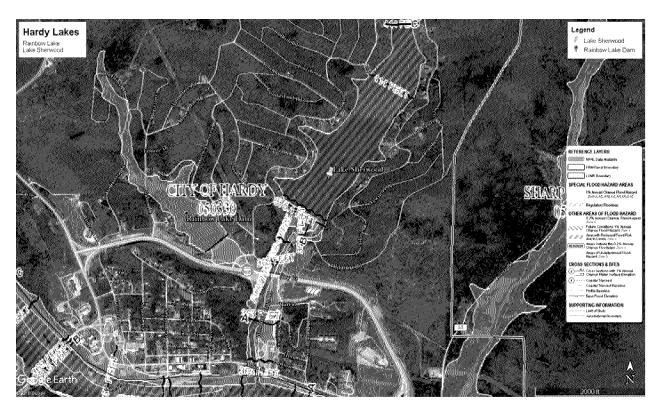




There are 22 residential structures, several serving as vacation retreats, would be impacted by dam inundation by the Wild Plum Lake and Mirandy Lake. These structures could be affected in less than an hour. It is not expected that June Lake will cause any destruction according to inundation maps. It is not likely that dam failure will occur in the future at Wild Plum Lake, Mirandy Lake or June Lake.

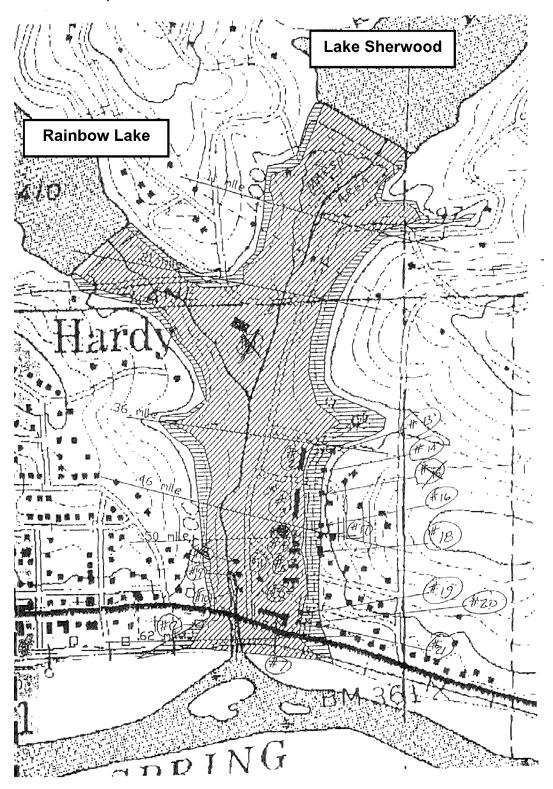
# Inundation Maps for Wild Plum, Lake Mirandy and June





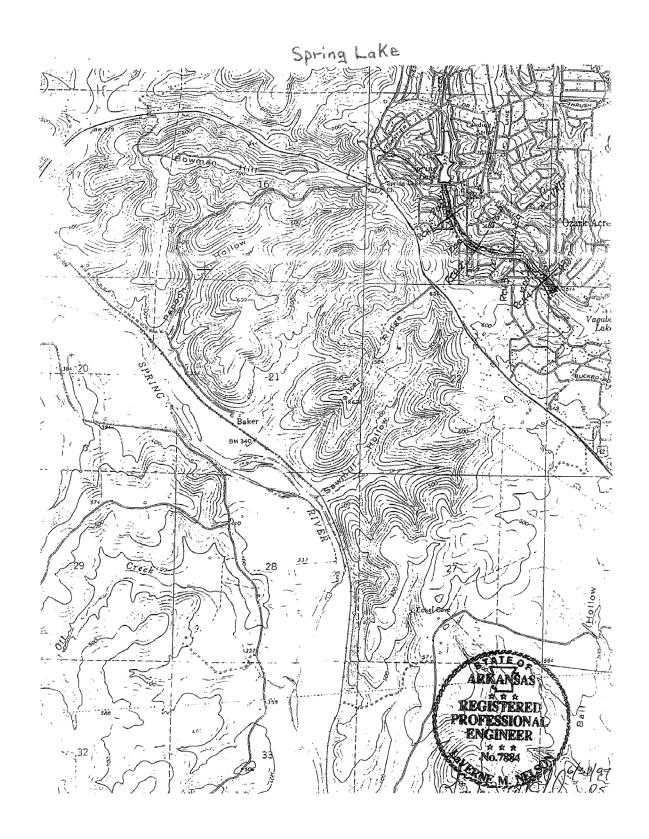
There are 21 structures consisting primarily of commercial buildings, a church, three restaurants, City Hall, six residential structures and a few vacant lots would be impacted by dam inundation below Rainbow Lake and Lake Sherwood. These structures could be affected in less than an hour. It is not likely that dam failure will occur in the future at Rainbow Lake or Lake Sherwood.

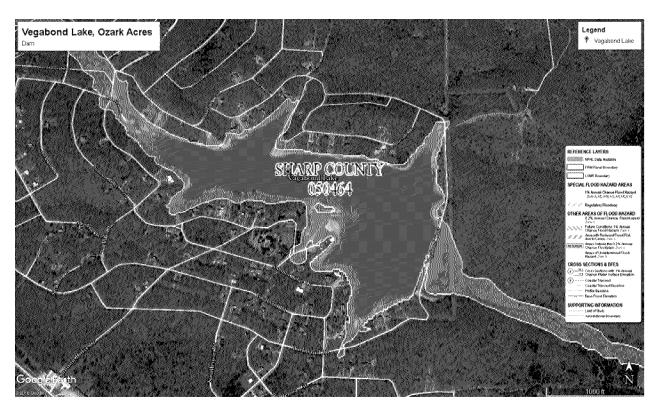
# Inundation Map for Rainbow Lake and Lake Sherwood



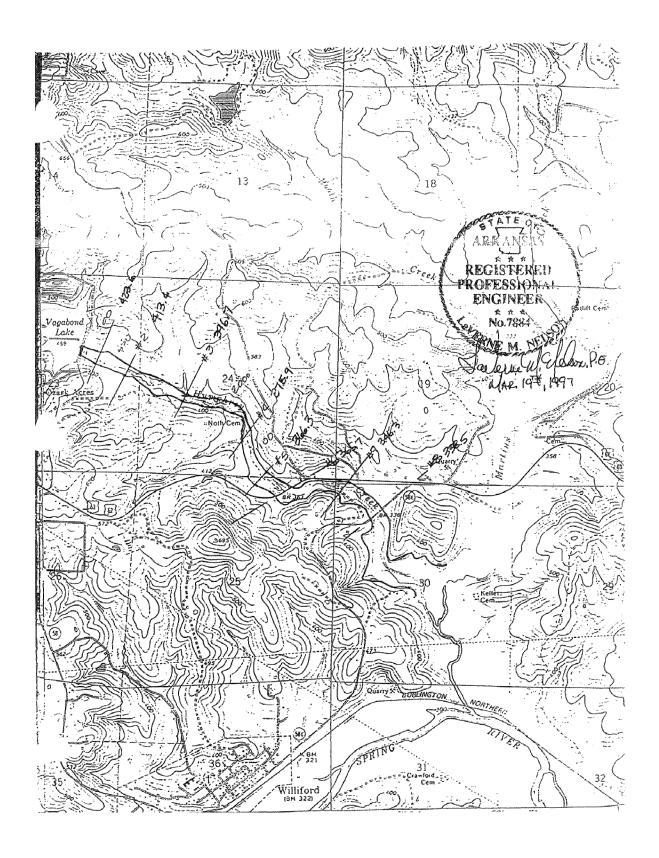


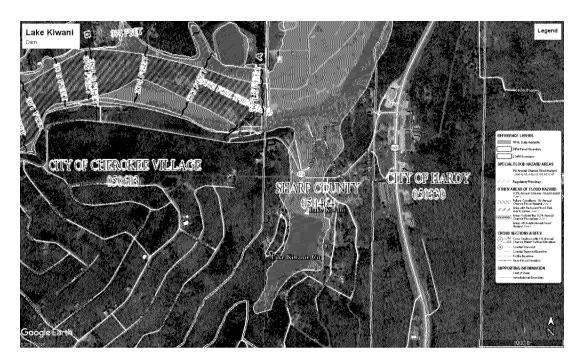
There are 9 residential structures that would likely be impacted by dam inundation at Spring Lake (Located in the Williford community). It is not likely that Dam failure will occur at Spring Lake in the future.





There are 28 residential structures around Vegabond Lake that would likely be impacted by dam inundation. (The lake located around Williford community.) It is not likely that dam failure will occur at Vegabond Lake in the future.





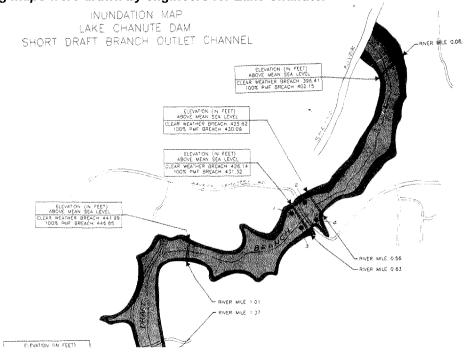
There are 13 residential structures located around Lake Kiwani that could possibly be impacted by dam inundation. These structures could be affected in less than an hour. There are no known Engineer maps of possible inundation areas. It is not likely that dam failure will occur at Lake Kiwani in the future.

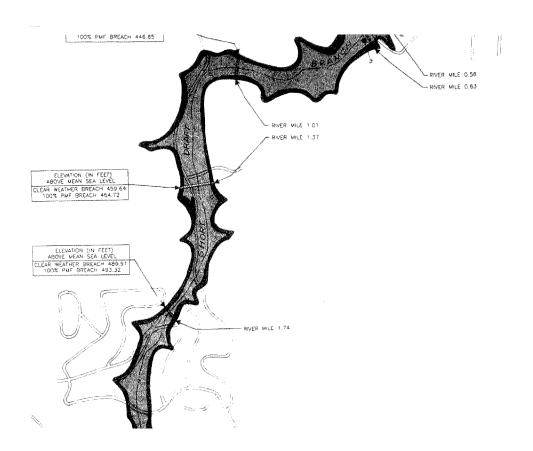
The following lakes are located in Fulton County, however there is suspicion that if the dams were to breach on these lakes it would also affect areas in Sharp County especially in the City of Cherokee Village.

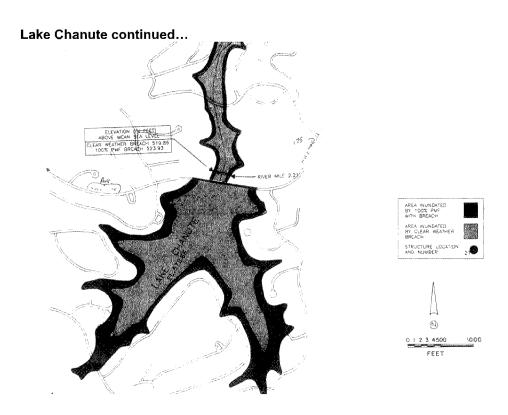


There could be 5 residences and a church in Cherokee Village affected by dam inundation of Lake Chanute. There are 67 residences located around Lake Omaha and 6 located around Lake Aztec

however there is no inundation data available for Lake Omaha or Lake Aztec. These structures could be affected in less than an hour. There is no FEMA NFHL data available for Fulton County. The following maps were drawn by engineers for Lake Chanute.







# 4.2.3 (D) Probability

Inundation data was found for Spring River in Sharp County. This includes flood level and impacts associated with each level.

Considering the past data for flooding in Sharp County and the participating jurisdictions and school districts, it is very likely that there will be events of flooding in the future throughout the entire planning district. All areas are equally susceptible to flash flooding while communities such as Cherokee Village, Hardy and some unincorporated areas also have chances of riverine flooding. This is expected to be the same for future events of flooding throughout the planning district.

Each of the participating jurisdictions is susceptible to flooding and it could occur within any year. Past data depicts that there have been 54 events in 19 years resulting in over 100% chance that some type of flooding could occur within Sharp County or any of the participating jurisdictions or school districts in a single year. However, it is not likely that any dam failure will occur due to flooding in the future.

## Impact of Flooding on Planning Area

All areas of the County and participating jurisdictions have experienced some type of flooding in the past. Flooding throughout the County and participating jurisdictions has caused over \$28 million in property damage and \$300k in crop damage since 1997. Citizens in the County and the participating jurisdictions have experienced interruptions in road services and the closing of low- water bridges in the past. Also, many of the parks located around the County, especially around the Cherokee Village and Hardy area have received damage and had to be closed for some time due to excessive flooding. The Cherokee Village and Hardy areas, which are very tourist-driven cities, have experienced a loss in revenue during the spring and summer when flooding was excessive that year. These areas draw in thousands of tourists each year to enjoy water activities on the Spring River and the many lakes around Cherokee Village.

For residents of Sharp County and the participating jurisdictions and school districts, the annual flash and riverine flooding that occurs mostly impacts the use of local roads. The planning area is very rural with many unpaved, dirt roads. The roads often become "washed out" or impassable especially where low-water bridges exist. Roads sometimes must be closed and citizens are advised not to drive across low-water bridges as they often wash out without notice of the citizen especially when driving at night. Some residents who live down dirt roads have found themselves trapped in their homes for days as the roads cannot be safely driven after a flooding event due to either high waters, muddy roads or washed-out bridges. Loss of life is possible if citizens do not heed warnings that are put in place by public officials when roads are closed.

Another risk of flooding would be damage that is caused to residences, businesses and structures around the planning area. Damage to structures can cost the owner thousands of dollars to fix and could result in relocation if water issues occur in the main living area. Homes located in Hardy that are close to the Spring River would be at the highest risk for flood damage as the Spring River typically reaches flood levels in the spring and summer months.

There has been no recorded dam breach, seepage or subsidence to any of the dams located in Sharp County or the participating jurisdictions however the impact of a breach in dams such as Lake Thunderbird, Omaha or the dams located in Hardy. There are many residences, summer and full-time homes, located around these lakes that could sustain damage in such an event. Loss of life is possible to occur if residents are not warned in a timely fashion. There are Emergency Action Plans in place for all these dams that warn the public of possible dam breaches and also warnings that suggest evacuation when necessary.

#### Vulnerability Assessment

Since recording began in 1997, there have been 2 deaths and 3 injuries due to flooding in Sharp County and the participating jurisdictions and school districts. The most vulnerable assets in this planning area would be personal property or residential buildings and roads/bridges. Most damage that occurs in the planning area is associated with the quick onset of flood waters and the amount of time it takes the waters to recede. The quick onset leaves residents with little time to prepare for the flood and the fact that it could take hours or days to recede will damage personal property sometimes beyond repair. Flooding has caused road closures, washed out bridges, and made it impossible for citizens to reach work and/or school throughout Sharp County and the participating jurisdictions and school districts. It has impacted emergency personal response when they are needed. Since the last plan was established, Sharp County road crews have worked

to minimize bridge loss during flooding. However, there are bridges throughout the County, especially around the Cherokee Village and Hardy areas that are still in need of repairs annually. Many low-water bridges need total mitigation to help them withstand future flood waters. Residential buildings and property content would be the most vulnerable to flooding aside from bridges and roads.

Sharp County has an Emergency Room located in the Highland area and the Spring River EMS located in Cherokee Village. These two facilities are very important to the response of emergency personnel when a disaster strikes and may become vulnerable if flooding were to become a problem in the area.

# <u>4.2.4</u> Severe Thunderstorms (Hail, Lightning and Severe Winds)

A severe thunderstorm as defined by the National Weather Service is a storm with hail equal to or less than 3/4" in diameter or convective wind gusts equal to or higher than 58 kts. Even if a storm is not severe, it remains a potential killer. Lightning, flash flooding, windblown hail (even small hail), and strong winds pose a threat to life and/or property. Severe thunderstorms also have the potential of producing a tornado with little or no advanced warning. A severe storm consists of a thunderstorm (an electrical storm accompanied by heavy rain and in some cases hail), hail and/or lightning. Hail, lightning and severe winds are the most common characteristics of a severe thunderstorm and are profiled under severe thunderstorms in this plan.

*Hailstorms* are a potentially damaging outgrowth of severe thunderstorms. Hailstorms frequently accompany thunderstorms, so their locations and spatial extents overlap. Hail can cause substantial damage to vehicles, roofs, landscaping, and other areas of the built environment. U.S. agriculture is typically the area most affected by hail storms, which cause severe crop damage even during minor events.

**Lightning** is a discharge of electrical energy that results from the buildup of positive and negative charges in a thunderstorm, which creates a "bolt" when the buildup of charges becomes strong enough. On average, 27 people are killed and hundreds are injured each year by lightning strikes in the United States. Lightning can strike communications equipment and hamper communication and emergency response. Lightning strikes can also cause significant damage to buildings, critical facilities, and infrastructure, largely by igniting a fire. Lightning can also ignite a wildfire.

**Severe Wind** can occur alone, such as during straight-line wind events or it can accompany other natural hazards, including severe thunderstorms. Severe wind poses a threat to lives, property, and vial utilities primarily due to the effects of flying debris or downed trees and power lines. Severe wind will typically cause the greatest damage to structures of light construction, particularly manufactured homes.

Source: FEMA

## 4.2.4 (A) Location

The entire multi-jurisdictional planning area of Sharp County, the City of Ash Flat, City of Cave City, City of Cherokee Village, City of Evening Shade, City of Hardy, City of Highland, Town of Sidney, Town of Williford, Cave City School District and Highland School District have all experienced Severe Storms with hail, lightning or severe winds in the past.

Severe thunderstorms including hail, lightning and strong winds have occurred throughout Sharp County and the participating jurisdictions equally in the past and are expected to occur in each area in the future.

# 4.2.4 (B) Previous Occurrences

Sharp County, the participating jurisdictions and both school districts have all experienced severe thunderstorms with hail, lightning or severe winds in the past. Severe Thunderstorms are reported by their characteristics such as hail, lightning or severe thunderstorm winds.

#### **Recorded Hail Events**

The NOAA has recorded 66 events of hail since 1964. Since further updates in 2023, an additional 39 events of hail have been reported. The total events of hail in 2023 amount to 105 events. There has been no reported property damage or crop damage in Sharp County, the participating jurisdictions, or either school districts since previous recordings or updates. There have been no reported deaths or injuries due to hailstorms in any of the planning areas.

#### **Recorded Lightning Events**

The NOAA has recorded 5 events of lightning since 1997. There have been \$11,500 in property damage and no crop damage in Sharp County, the participating jurisdictions or either school districts since recording began. There have been no reported deaths and 1 injury due to lightning in any of the planning area. There have been no further events have been recorded since the updates in 2023.

#### **Recorded Severe Winds**

The NOAA has recorded 80 events of severe winds associated with thunderstorms since 1979. There has been \$2.841 million worth of property damage and no reported crop damage in Sharp County, the participating jurisdictions or either school districts since recording began. There has been 1 reported death and 1 injury due to severe winds in the planning area. An additional 54 events have been reported since updates in 2023. An additional \$280,000 of property damage has occurred since these events. No crop damage, injury, or death has occurred since the 2023 updates.

#### 4.2.4 (C) Extent (Magnitude and Severity)

Severe Thunderstorms and more specifically their outgrowths of Hail, Lightning and Severe Winds often occur on a severe level in Sharp County including the participating jurisdictions and

both school districts. The extent of these storms is typically the same throughout the entire planning area. The following breaks down the extent of the separate components (hail, lightning and severe winds) of the severe thunderstorms that usually occur each year.

#### Previous Occurrences, Extent, Probability, Vulnerability and Impacts

The following tables will reflect past occurrences, extent, probability, vulerability and impacts of **hail** which is a component of severe storms. If there is a lot of moisture in the air, and the wind holding it up is very strong, a hailstone will grow bigger. Climate change makes these conditions more likely, as warmer air contains more water vapor. The entire planning area, based on past occurrences, can expect to experience, on average a hailstone of 1.75". The likelihood of experiencing a hailstone of 3" is possible but not probable.

Jurisdiction	Unincorp	Ash Flat	Cave City	Cherokee	Evening Shade	Hardy	Highland	Sidney	Williford
Events Recorded From 1964-2017	18	20	14	6	8	18	i.	0	4
NCDC Reported Events From 2017-2023	1.	3	3	5	1	1	Ō	2	2
Probability of Event 1964-2017 data	33%	43%	32%	21%	17%	36%	2%	4%	11%
Probability of Event 2017-2023	17%	50%	50%	83%	17%	17%	0%	33%	33%
Largest Hailstone Recorded	1.75"	3"	1.75"	2.75"	1.75"	1.75"	1.75"	1"	1.75"
Average Size Hailstone Reported	1.16"	1.2"	1.11"	1.17"	.95″	1.03"	1.75"	1**	1.06″
# of Days of event with death or injury	0	Ō	Ó	Ō	Ō	0	0	0	0
Days with death or injury 2017-2023	o	0	o	0	o	O	0	0	O
Days with property damage 1964-2021	Ó	0	Ō	0	Ó	0	O	0	0

Days with property damage 2017-2023	0	0	O	0	0	0	O	0	o
Probability of Property Damage Per Year	0%	0%	0%	0%	0%	0%	0%	0%	0%
Total Property Damage From 1964-2017	o	0	0	0	0	o	o	0	o
Total Property Damage From 2017-2023	0	0	0	0	Ó	0	0	0	0
Average Property Damage Per Year	0	o	o	0	o	0	o	o	0
Total Crop Damage From 1964-2017	0	0	0	Ö	0	0	0	0	0
Total Crop Damage From 2017-2023	0	0	0	0	O	0	O	0	0
Probability of Crop Damage Per Year	0%	0%	0%	0%	0%	0%	0%	0%	0%

# Previous Occurrences, Extent, Probability, Vulnerability and Impacts

The following tables will reflect past occurences, extent, probability, vulerability and impacts of **lightning** which is a component of severe storms. Please note the only jurisdictions with lightning data is listed below. Climate change may boost updraft within thunderstorms, causing hot lightning flashes to increase in frequency. The entire planning area, based on past occurrences, can expect to experience lightning events with little to no impact.

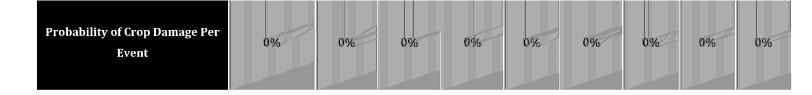
Jurisdiction	Ash Flat	Cave City	Cherokee Village
	A4	Ö	
NOAA Recorded Events 1979-2017	1	1	3
NOAA Recorded Events 2017-2023	0	0	0
Probability of Event 1979-2017	5%	5%	15%
Probability of Event 2017-2023	0%	0%	0%
# of Days of event with death or injury	1	0	0
Days with death or injury 2017- 2021	0	0	0
Days with property damage 1979- 2017	0	1	1
Days with property damage 2017- 2023	0	0	0
Probability of Property Damage/ Year	0%	5%	15%
Property Damage 1979-2017	\$0	\$1.5K	\$10K
Property Damage From 2017-2023	\$0	\$0	\$0
Average Property Damage Per Event	\$0	\$1.5K	\$10K
Total Crop Damage From 1979- 2017	\$0	\$0	\$0
Total Crop Damage From 2017- 2021	\$0	\$0	\$0
Average Crop Damage Per Event	\$0	\$0	\$0
Probability of Crop Damage Per Event	0%	0%	0%

# <u>Previous Occurrences, Extent, Probability, Vulnerability and Impacts</u>

The following tables will reflect past occurences, extent, probability, vulerability and impacts of **thunderstorm wind** which is a component of severe storms. Climate change is anticipated to decrease the amount of wind shear available to severe thunderstorms. The entire planning area, based on past occurrences, can expect to experience, on average wind speeds of 50Kts. The likelihood of experiencing an anything above 70Kts is possible but not probable.

Jurisdiction	Unincorp Sharp	Ash Flat	Cave City	Cherokee Village	Eveneing Shade	Hardy	Highland	Sidney	Williford
Events Recorded From 1979- 2017	34	19	11	10	5	19	4	3	4
NCDC Reported Events 2017- 2023	6	9	3	0	6	1	0	0	0
Probability of Event 1979-2017	89%	50%	29%	26%	13%	50%	11%	8%	11%
Probability of Event 2017-2023	100%	100%	50%	0%	100%	17%	0%	0%	0%
Largest Wind Speed Recorded	70kts	70kts	65Kts	75Kts	61Kts	78Kts	56Kts	61Kts	50Kts
Average Wind Speed Reported	32kts	52kts	46Kts	48Kts	51Kts	53Kts	52Kts	54Kts	38Kts
# of Days of event with death or injury	2	0	o III	0	o	0	0	O	0
Days with death or injury 2017- 2021	o	0	o	0	0	0	0	O	0

Days with property damage 1979-2017	8	8	3	5	1	7	3	1	1
Days with property damage 2017-2023	2	4	0	0	1	0	0	a	0
Probability of Property Damage/ Year	24%	37%	8%	13%	5%	18%	8%	3%	3%
Property Damage 1979-2017	\$666,500	\$276,000	\$590,000	\$581,000	\$5,000	\$626,500	\$36,000	\$50,000	\$10,000
Property Damage From 2017- 2023	\$100,000	\$160,000	\$0	\$0	\$20,000	\$0	\$0	\$0	\$0
Average Property Damage Per Event	\$19,163	\$15,571	\$42,142	\$58,100	\$2,500	\$32,973	\$9,000	\$16,666	\$2,500
Total Crop Damage From 1979- 2017	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Crop Damage From 2017- 2021	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Average Crop Damage Per Event	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0



#### **Hail Extent**

In Sharp County, the participating jurisdictions and both school districts events of hail due to severe thunderstorms have typically fallen in the size range of 0.75 –3.00 inches in diameter. The county, participating jurisdictions and both school districts have experienced this range of size in hail with any given severe thunderstorm event. This is expected to remain the case in future events of hail.

# **Lightning Extent**

For Sharp County, the participating jurisdictions and both school districts the extent of lightning can be measured by the duration and frequency of lightning events.

Lightning from severe thunderstorms in Sharp County, the participating jurisdictions and both school districts have had the same extent for all areas in the planning district. Typical severe thunderstorms in the planning district produce large amounts of lightning with several strikes per minute. Because the thunderstorms often travel over vast areas of the county and the planning area, it is typical for lightning storms to last 30min-1hr during a typical severe thunderstorm event according to Sharp County officials. Lightning events in Sharp County and the participating jurisdictions have ranged from very small events with only a few strikes to more intense events that could average 100 to more strikes in an hour. Lightning is unpredictable and can happen at any time; therefore an exact count of strike events in an hour is not typically reported but only estimated. The extent of lightning in Sharp County is expected to remain the same for future events.

#### **Severe Winds Extent**

Sharp County, the participating jurisdictions and both school districts all share the same extent from severe winds during any particular event and are expected to throughout future events.

Severe thunderstorms often produce severe winds that are not associated with Tornados; however, they may cause damage to structures, homes and above-ground services such as lighting and phone. All areas of Sharp County including the participating jurisdictions and both school districts have experienced severe winds associated with thunderstorms at a speed of 35kts as high as 78kts during any given thunderstorm event. Severe thunderstorm winds may last the duration of the actual storm which may be anywhere from 15 minutes to as long as an hour according to local officials. In Sharp County and the participating jurisdictions, these severe winds often have a quick onset and come with little or no advanced warning.

# 4.2.4 (D) Probability

Due to past events, data has indicated that Sharp County, the participating jurisdictions and both school districts are all expected to experience severe thunderstorms equally with one or more of its components such as hail, lightning or severe winds in the future.

Since recording began in Sharp County and the planning area, there have been a combined 243 events of a severe storm characteristic in 52 years. This information concludes that there is over a 100% chance that a severe thunderstorm with at least one characteristic of hail, lightning or severe winds will occur in any given year.

For **Hail**, there were 66 reported events since 1964 making it over 100% chance that a hail storm will occur in Sharp County and the participating jurisdictions. Since updated reporting in 2023, which totals 105 events in 59 years, there is still a 100% chance that future events of hail will occur in Sharp County and participating jurisdictions.

**Lightning** and **Severe Winds** also are expected to have a 100% chance of occurring during a thunderstorm due to the 1,000s of unreported incidents County Officials speculated occurred throughout Sharp County and the participating jurisdictions in the past and as of 2023.

## Impact of Severe Thunderstorms on Planning Area

Since the recording of Severe Thunderstorms and their components of Hail, Lightning and Severe Winds began for Sharp County, the participating jurisdictions and both school districts the impact of these storms has not been devastating but has caused significant property damage. Each area in Sharp County and the participating jurisdictions and school districts have been impacted equally by Severe Thunderstorms and their characteristics such as hail, lightning and severe winds due to the proximity and rural nature of Sharp County.

There is a chance that a severe thunderstorm which includes hail, lightning and/or severe winds could occur in any year and the most damage is predicted to be due to lightning or severe winds. Since recording began, there has been over \$11,500 worth of property damage due to Lightning and over \$2,000,000 worth due to severe winds. The estimated damage has occurred throughout Sharp County and the planning area and is expected to have the same impact in the future and is not expected to be limited to one specific location in the county.

Severe thunderstorms in Sharp County, the participating jurisdictions and both school districts not only impact property but also pose a danger to citizens living in the areas that these storms travel through. Since recording began, there has been one recorded injury due to severe winds and one recorded injury due to hail. There have been no injuries reported for lightning and one death recorded for Sharp County and the participating jurisdictions. The recorded death was due to straight-line winds which were not classified as a tornado yet the pressure from the winds was strong enough to cause a house to explode therefore killing the resident inside.

Hail in this area can pose a danger to those who are caught outside during one of these storms and also could potentially cause damage to vehicles, farm equipment and crops. Lightning that occurs in this area can ignite fires in homes and wooded areas causing potential damage to property and lives. Many electronics in homes are often damaged in Sharp County and the participating jurisdictions due to lightning storms each year. Severe Winds pose a threat to lives, property and vital utilities such as electricity poles and phone poles. Severe winds often cause

downed trees and power lines which can be a major hazard for citizens in the area.

Severe Thunderstorms due to the combination of hail, lightning and severe winds have the potential to cause electrical outings, fires, down trees, property damage and crop damage throughout Sharp County, participating jurisdictions and school districts. Citizens, the County and business owners could all be impacted by the property damage that one of these storms may cause. Most property damage that was reported in the past from across Sharp County and the participating jurisdictions was from down trees falling into homes and businesses due to thunderstorm winds and lightning.

## **Vulnerability Assessment**

All areas of Sharp County, the participating jurisdictions and both school districts have been equally affected by Severe Thunderstorms and their outgrowths of Hail, Lightning and Severe Winds in the past and are expected to be in the future. Since recording began, there has been 1 recorded loss of life and 1 injury due to Severe Thunderstorms which included Hail, Lightning or Severe Winds in Sharp County. Vulnerable assets that could be affected by these storms in the planning district could include injury to citizens, property damage to homes and businesses and possible crop damage.

Other vulnerable assets due to severe thunderstorms which may include hail, lightning or severe winds in any of the planning areas could include public service utilities such as electric poles or roads being blocked by down trees. Critical facilities such as the White River Medical Center Emergency Center located at Highland and local volunteer fire departments are not expected to sustain damages from severe thunderstorms as they have not been affected in the past, however, they may need to respond to citizens as there could be injuries or fires. Fire officials may have to assist the Sharp County Sheriff's Department in directing traffic or assisting citizens.

## 4.2.5 Severe Winter Weather

Severe Winter Weather storms may include snow, sleet, freezing rain or a mix of these wintry forms of precipitation. Severe Winter Weather can also down trees, cause widespread power outages, damage property and cause fatalities and injuries.

#### Source: FEMA

Severe Winter Weather is often reported to the National Climatic Data Center as separate offsets to winter weather such as heavy snow, ice storms, and sleet or just specified as only winter weather. The Sharp County Multi-Hazard Mitigation Plan includes all offsets reported to the NOAA but also those reported by local officials as well.

### 4.2.5 (A) Location

The entire multi-jurisdictional planning area of Sharp County including the City of Ash Flat, City of Cave City, City of Cherokee Village, City of Evening Shade, City of Hardy, City of Highland, Town of Sidney, Town of Williford, Cave City School District and Highland School District have all been affected by severe winter weather in the past.

All severe winter events have affected the entire county of Sharp County, participating jurisdictions and school districts equally during any particular event. Severe winter weather is expected to continue to be an incommodious hazard throughout the county and the participating jurisdictions in the future.

## 4.2.5 (B) Previous Occurrences

Sharp County, the participating jurisdictions and both school districts have all experienced some type of severe winter weather in the past. Many severe winter weather events that occur in the planning area are not reported if they do not have extensive damage associated with them therefore officials estimate there have been many more unrecorded severe winter weather events that have closed businesses, schools and roads due to winter weather conditions.

According to the NOAA, since recording began in 1997 there have been 50 events of severe winter weather recorded in Sharp County, the participating jurisdictions and both school districts. Of these events there have been no recorded deaths or injuries; however, there has been 60 thousand dollars of property damage. No further events, injuries, deaths, or damages have occurred since updates in 2023.

# 4.2.5 (C) Extent (Magnitude and Severity)

Sharp County including the participating jurisdictions and both school districts has typically experienced the same average rate of intensity during any severe winter weather event.

Areas of the County have recorded as much as 8 inches of snow and 1 inch of ice or freezing rain. Local officials suspect that there have been events with more than 8 inches; however, they have not been recorded since 1997. Speed of onset and depths vary greatly from event to event in Sharp County, yet a typical winter storm that could occur might bring between 3-6 inches within the first few hours of snowfall or ice. The events typically progress through nighttime hours or as the temperature drops. Some severe winter weather events in Sharp County, the participating jurisdictions and both school districts have lasted as long as 5-7 days with very cold temperatures and some type of winter precipitation throughout the event. Snowfall during <u>snowstorms</u> is an expected effect of climate change. That's because a warmer planet is evaporating more water into the atmosphere. That added moisture means more precipitation in the form of heavy snowfall or downpours.

Based on past events of snow accumulation, the average range of accumulation for Sharp County and the participating districts would typically be anywhere from 3-6 inches. This average is expected to stay the same for a typical future weather event.

## 4.2.5 (D) Probability

All areas of Sharp County, the participating jurisdictions and both school districts are equally susceptible to severe winter weather events. Since recording began for Sharp County in 1997, there have been 50 events of Severe Winter Weather reported in the planning area. 50 occurrences in 26 years warrant a probability of 100% chance of future occurrences in any year. Sharp County, the participating jurisdictions and both school districts are expected to

experience some form of severe winter weather every year.

## Impact of Severe Winter Weather on Planning Area

Sharp County including the City of Ash Flat, City of Cave City, City of Cherokee Village, City of Evening Shade, City of Hardy, City of Highland, Town of Sidney, Town of Williford, Cave City School District and Highland School District have all been equally impacted by severe winter weather in the past.

Severe winter storms in Sharp County and the participating jurisdictions and school districts have reported over \$60,000 worth of damage across the county. Reports indicate that most property damage resulted from fallen trees, power lines and power poles. Numerous reports of electricity outages occur each year and frequent minor vehicle accidents are reported as well. However, since recording began there have been no reported deaths or injuries from past severe winter storms. Ice and snow accumulation on houses and roads can also cause flooding problems when temperatures reach a point where ice or snow can melt.

Each winter residents of Sharp County, the participating jurisdictions and school districts are forced to miss work and school from road closures resulting from Severe Winter Weather. This costs school districts and places of employment money and time when they have to adhere to state regulations on the length of a school year. Also, extreme temperatures can be severe risks for the elderly and those who are not able to take care of themselves without the aid of another. There are no designated "warming" centers located throughout Sharp County or the participating jurisdictions, however many of the local churches often open their doors as shelters for the homeless or elderly during elongated periods of cold.

# **Vulnerability Assessment**

All of Sharp County, the participating jurisdictions and school districts are susceptible to severe winter storms.

The most vulnerable assets in the planning area during a Severe Winter Storm would be elderly residents of the area and road closures. According to the 2020 United States Census Bureau, there are 4,316 residents over the age of 65 living in Sharp County and the participating jurisdictions and 1,472 of those residing in the City of Cherokee Village. This population is particularly vulnerable to Severe Winter Weather due to their immobility during winter weather conditions such as ice and snow. Power outages at the homes of these residents could not only cause freezing temperatures inside the homes but also cause failure of medical equipment needed to survive. Loss of electricity has in the past lasted anywhere from a few hours to several days at a time.

Road closures could prevent medical and service personnel from reaching residents in need and also cause those who work and travel to school unable to leave their homes. Some residents trying to make it to work or the grocery store cannot adapt to the hazardous road conditions resulting in wrecking their vehicles or sliding off the road into nearby ditches especially those who reside in the areas of Cherokee Village and Hardy as there are many steep and curvy hills. Those who do choose to travel on ice or during a winter storm have an increased possibility of an automobile accident or being stranded away from home. Extreme caution should be taken when

traveling anywhere in the planning area during winter weather events. Road crews such as the local AHTD often work around the clock during these events to ensure that the roads are less hazardous.

Some areas carry an additional vulnerability such as Cave City and Highland School Districts. Their vulnerability to winter weather would be access to and from schools and also the conditions of walkways around the school campuses. If Severe Winter Weather were to occur during the normal school day, the school would have to be dismissed or classes canceled and if it were before noon the school day could not be counted for the public schools. Teachers or administrators may have difficulty reaching parents and some students could become stranded. Policies are in place in both school districts for Winter Weather events, however, if school districts miss over a certain amount of allotted days for inclement weather they must either make up those days at the end of the school year or apply for a waiver from the state. This could cause issues with budgets and also with travel and childcare plans for families.

## 4.2.6 Tornadoes

A tornado is a violently rotating column of air that has contact with the ground and is often visible as a funnel cloud. The destruction caused by tornadoes ranges from light to catastrophic depending on the intensity, size, and duration of the storm. Typically, tornadoes cause the greatest damage to structures of light construction, including residential dwellings and particularly manufactured homes. Tornadoes are more likely to occur during March through May and tend to form in the late afternoon and early evening.

Source: FEMA

#### 4.2.6 (A) Location

The entire multi-jurisdictional planning area of Sharp County including the City of Ash Flat, City of Cave City, City of Cherokee Village, City of Evening Shade, City of Hardy, City of Highland, Town of Sidney, Town of Williford, Cave City School District and Highland School District have all been affected by tornadoes based on history.

Tornados have occurred sporadically throughout the planning area and they cannot be expected to occur in the future more so in one area than another. The location of these storms is expected to stay the same with events occurring anywhere in the planning area.

# 4.2.6 (B) Previous Occurrences

Sharp County, the participating jurisdictions and both school districts have all experienced watches and warnings associated with tornadic weather in the past. Due to Sharp County's location, this is expected to continue for the planning area throughout the future.

According to the NOAA, since recording began in 1956 there have been 19 tornadoes recorded in Sharp County, the participating jurisdictions and both school districts. Of these 19 events there

have been no recorded deaths with 27 injuries. There has been \$57.28 million worth of property damage with no reported crop damage. Since further updates of previous recordings (2023), there have been 2 events of tornadoes. These 2 events have caused 100 thousand dollars in property damage with no death or injuries recorded. The total impact of the tornadoes has amounted to 27 injuries and \$57.389 million in property damage.

The following table depicts the data of <u>Tornadoes</u> in Sharp County and the participating jurisdictions:

Jurisdiction	Unincorp Sharp	Cave City	Cherokee Village	Eveneing Shade	Sidney	Williford
Events Recorded From 1956-2017	11	æ	1	1	2	1
NCDC Reported Events 2017-2023	1	0	0	1	0	0
Probability of Event 1956-2017	18%	5%	2%	2%	3%	2%
Probability of Event 2017-2023	17%	0%	0%	17%	0%	0%
Highest Fujita Scale Recorded	EF3	F2	F0	EF0	F3	F1
Average Fujita Scale Recorded	F2	F1	F0	EF0	F2	F1
# of Days of event with death or injury	5	1	0	0	0	0
Days with death or injury 2017-2023	0	0	0	0	0	0
Days with property damage 1956-2017	6	1	0	0	0	0
Days with property damage 2017-2023	1	0	0	1	O	0
Probability of Property Damage/ Year	11%	2%	0%	2%	0%	0%
Property Damage 1956-2017	\$55.8M	\$3K	\$0	\$0	\$	\$
Property Damage From 2017-2023	\$20K	\$0	\$0	\$80K	\$0	\$0
Average Property Damage Per Event	\$4.64M	\$3K	\$0	\$80K	\$0	\$0
Total Crop Damage From 1956-2017	\$0	\$0	\$0	\$0	\$0	\$0
Total Crop Damage From 2017-2023	\$0	\$0	\$0	\$0	\$0	\$0
Average Crop Damage Per Event	\$0	\$0	\$0	\$0	\$0	\$0
Probability of Crop Damage Per Event	0%	0%	0%	0%	0%	0%

#### 4.2.6 (C) Extent (Magnitude and Severity)

The Fujita and the Enhanced Fujita Tornado Scale measure tornado damage severity. A numerical value is assigned based on wind speeds and it categorizes tornadoes from EF0-EF5. Scale values above EF5 are not used because wind speeds above 318mph are not likely and have yet to be recorded. There are several different scales for rating the strength of tornadoes. The

Fujita scale rates a tornado by damage caused and has been replaced by the updated Enhanced Fujita Scale. An F0 or EF0 tornado, the weakest category, damages trees but not substantial structures. An F5 or EF5 rips buildings off their foundations and can deform large skyscrapers. Climate change is anticipated to decrease the amount of wind shear available to severe thunderstorms, which could deprive the storm of a key ingredient for tornado formation. Future conditions have been considered when identifying hazards for this plan. The entire planning area, based on past occurrences, can expect to experience an EF2 tornado or lower. The likelihood of experiencing an EF3, EF4 or EF5 is possible but not probable.

The following is a chart that depicts the rating scale and typical damage associated with that category:

F	-SCALE		Ξį	-SCALE
RATING	WIND SPEED	DAMAGE	RATING	WIND SPEED
F0	60-110 km/h	Light Damage	EF0	90-130 km/h
F1	120-170 km/h	Moderate Damage	EF1	135-175 km/h
F2	180-240 km/h	Significant Damage	EF2	180-220 km/h
F3	250-320 km/h	Severe Damage	EF3	225-265 km/h
F4	330-410 km/h	Devastating Damage	EF4	270-310 km/h
F5	420-510 km/h	Incredible Damage	EF5	> 315 km/h

Based on past occurrences, most tornadoes in Sharp County including the City of Ash Flat, City of Cave City, City of Cherokee Village, City of Evening Shade, City of Hardy, City of Highland, Town of Sidney, Town of Williford, Cave City School District and Highland School District have experienced tornados in the F0-F3 range and are expected to experience future tornadoes in this range as well. Although there has been one reported tornado that rated as F4, most tornadoes have scaled lower. The average rating for a tornado that might occur in the planning area would be an F1 and is suspected to stay that way for future events.

The path width of a single tornado is generally less than 0.6 miles, although some damage path widths are more than one mile. Sharp County, the participating jurisdictions and school districts have not reported any tornadoes since recording began that were more than one mile in width. The average path length of a tornado in Sharp County and participating jurisdictions is 4.5 miles; from reports, the average tornado width for the planning area is 195.5 yards. There has been a recorded tornado in Horseshoe Bend that was 580 yards and lasted for 14.76 miles. However, this is not a typical occurrence. The width of 195.5 yards with a 4.5-mile length is the expected damage path for future tornadoes in the planning area.

The average tornado in the planning area moves from southwest to northeast, however, one may move in any direction depending on the storm system that the tornado is derived from. The average forward speed is 30mph, but may vary from nearly stationary to greater than 70mph depending on the storm system. However, the lifespan of any tornado that has occurred in Sharp County, the participating jurisdictions, or school districts has not been longer than 20 minutes according to reports. Many tornadoes in the County do not make actual ground contact for more than a few minutes.

# 4.2.6 (D) Probability

Considering the data from past events, it is possible to assume that the entire planning area is expected to experience tornadic events in the future.

Sharp County, the participating jurisdictions and school districts have recorded 19 tornadoes since 1956 (61 years). Upon further updates in 2023, an additional 2 tornadoes have been recorded to total of 21 tornadoes. This information concludes that there is a 31% chance of a tornado occurring in any year to anyone in the planning area. These tornadoes have been spread throughout the County and the participating jurisdictions and have not been specific to one area. Because of a tornado's unpredictability, it is impossible to pinpoint which areas would be affected by future tornados. However, due to past data, tornadoes are likely to occur throughout the County, participating jurisdictions and school districts each year.

# Impact of Tornadoes on Planning Area

Sharp County including the City of Ash Flat, City of Cave City, City of Cherokee Village, City of Evening Shade, City of Hardy, City of Highland, Town of Sidney, Town of Williford, Cave City School District and Highland School District has all been impacted by tornadoes in the past.

Due to past tornadoes, the planning area has reported \$57,389,000 in damages. Of those storms, there were no reported deaths and 27 injuries. Most tornados have rated below an F4 on the Fujita Scale. With the tornado of 1982, it ranked as an F4 with its length at 9 miles and width at 250 yards. According to reports, this tornado destroyed 15 homes and 40 businesses in Highland and Hardy.

As with most tornadoes in Sharp County, the impact is most associated with the damage that it could cause in the future. It is predicted that if an F4 tornado were to hit the planning area's more populated cities such as the Cherokee Village or Cave City in present times, it could cause millions of dollars worth of damage, several hundred injuries and possibly an excess of deaths. With Cave City and Highland School District each having 3 campuses the impact of a tornado on these campuses could be astronomical if safety is not sought.

#### **Vulnerability Assessment**

All of Sharp County including the City of Ash Flat, City of Cave City, City of Cherokee Village, City of Evening Shade, City of Hardy, City of Highland, Town of Sidney, Town of Williford, Cave City School District and Highland School District is susceptible to tornadoes.

Based on past data it is likely future tornados will occur. Most were in the F0-F3 range. 64% of the rural residents would be exposed, with 24% of the commercial building stock and 50% of the industrial building stock being exposed. The impact of an F3 tornado or higher on the Fujita scale could be catastrophic to Sharp County and the participating jurisdictions.

In Sharp County, the participating jurisdictions and school districts the most vulnerable assets during or resulting from a tornado are the residents in its path. Since 1952 there have been 27 reported injuries associated with these storms. Tornadoes have not only injuries to citizens but have also cost them over \$57 million worth of damage since recording began.

All structures in Sharp County and the participating jurisdictions are vulnerable to tornadoes. The most vulnerable to tornadoes are wooden structures and mobile homes. As of 2012, there were 7,360 residentially owned or rented homes in Sharp County. Of those homes, officials suspect that 13% are mobile homes and 72% are wood structures. Significant damage could result to these structures in the event of a strong tornado.

Cave City and Highland School Districts along with the White River Medical Center Emergency Room in Highland, Cave City Nursing Home, Eaglecrest Nursing Home and Ash Flat Healthcare and Rehab are particularly vulnerable to tornadoes due to their on-campus population daily. Cave City School District has on-campus storm shelters. Highland School District hosts a designated area in the gym to which students are to be moved during a tornado; however, it does not have a functioning safe room on any campus. Also, the designated area is too far from Cherokee Elementary to bus the kids promptly.

None of the nursing homes or the emergency center has functioning safe rooms however they do have designated safe spots and procedures they follow when warnings are announced. Anyone in these structures during a tornado could suffer substantial injuries if the tornado was an F2 or higher.

Because they are essential to responding to a tornado disaster, emergency response and medical professionals should also be considered highly vulnerable. As mentioned previously, the White River Medical Center which is located in the City of Batesville in Independence County has a small Emergency Center located in the Highland/Cherokee Village area. If the medical center were to receive a direct hit from a F3-F5 tornado there could be catastrophic damage to not only the patients and workers inside but also the injured that would need to enter. Emergency response personnel would need to plan for alternate medical facilities to transport patients to if this damage would occur.

# **4.2.7** Wildfire

A wildfire is any outdoor fire that is not controlled, supervised, or arranged. Wildfire probability depends on local weather conditions; outdoor activities such as camping, debris burning, and construction; and the degree of public cooperation with fire prevention measures. Wildfires can result in widespread damage to property and loss of life.

Source: FEMA

Wildfire has been included in the Sharp County Multi-Jurisdictional Hazard Mitigation Plan as there are numerous burn bans enacted each year and brush fires are common throughout the planning district.

## 4.2.7 (A) Location

The entire multi-jurisdictional planning area of Sharp County including the City of Ash Flat, City of Cave City, City of Cherokee Village, City of Evening Shade, City of Hardy, City of Highland, Town of Sidney, Town of Williford, Cave City School District and Highland School District have all experienced some form of wildfire throughout the history of the county. Due to the rural nature of the county and the wooded/farm area throughout, the entire planning area is at risk of future wildfires.

Wildfires in the planning area have some chance of occurring in any of the areas and are expected to occur in any year in any of the areas included in multi-jurisdictional planning districts throughout the future.

#### 4.2.7 (B) Previous Occurrences

Sharp County, the participating jurisdictions and both school districts have all experienced the effects of wildfires throughout their areas.

Since 2010, there have been 7 recorded wildfires in the planning area, and no further events have been reported (NOAA). However, County officials calculated in past mitigation plans that there have been over 100 events of wildfire that have occurred in the past 20 years throughout Sharp County and the planning district that were not recorded due to fast response or lack of significant personal property damage. According to the Southern Wildfire Risk Assessment, there has been a total of 388,075 acres burned in Sharp County including the participating jurisdictions and school districts (as of 2023 recording). However, the Arkansas Forestry Commission reports that since 2010 a total of 3,976 acres were burnt with no damage to housing or human life. A large majority of this acreage represents grassland fires with little or no damage. No property damage was reported. Since the updated recording (2023), there have been no further events of wildfires in Sharp County or the participating jurisdictions.

# 4.2.7 (C) Extent (Magnitude and Severity)

Although Sharp County is not susceptible to large wildfires, they are more commonly associated with brush fires that burn out of control.

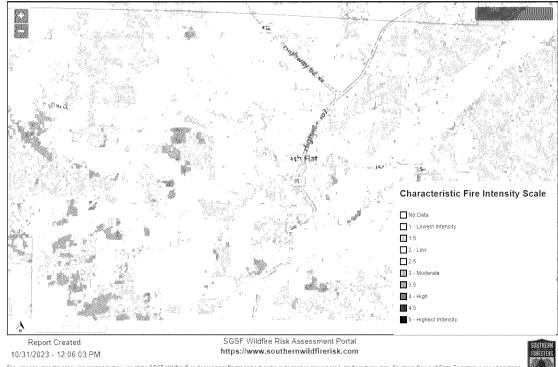
Wildfire behavior is based on three primary factors: fuel, topography, and weather. The type, and amount of fuel, as well as its burning qualities and level of moisture, affect wildfire potential and behavior. The continuity of fuels, expressed in both horizontal and vertical components is also a factor, in that it expresses the pattern of vegetative growth and open areas. Topography is important because it affects the movement of air (and thus the fire) over the ground surface. The slope and shape of the terrain can change the rate of speed at which the fire travels. Weather affects the probability of wildfire and has a significant effect on its behavior. Temperature, humidity and wind (both short and long-term) affect the severity and duration of wildfires.

According to Arkansas Forestry Commission information, a total of 3,976 acres were burnt as a result of wildfires from 2013-2019 (6 years) with no deaths or injuries reported and no homes destroyed. This equates to an average of 663 acres per year. Many are prescribed or controlled fires for farmland management purposes, however every year some residents burn brush or trash

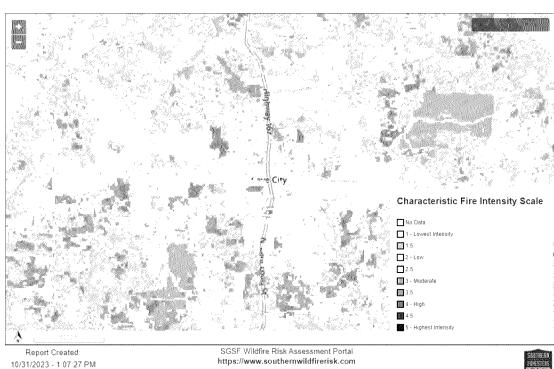
during undesirable weather (high winds/drought-like conditions) that cause uncontrolled burning for several acres before they are distinguished. The speed of onset for a typical wildfire that might occur in the planning area according to past reports and officials would range from quick to extremely quick. Due to the County being comprised of large amounts of wooded areas and its rural nature, brush fires in this area can spread very quickly. Response time by local fire departments could be as long as 30 minutes or longer because of the large area they have to serve in such a rural County and that most wildfires are brush fires in hard-to-reach areas. An average of 663 acres per year is expected to remain the same for future yearly wildfire events. It is anticipated people in Arkansas will experience especially increased risks from heat, precipitation, and fire due to climate change over the next 30 years. These risks, through 2050 and beyond, may change depending on how much we reduce emissions in the near future.

Below are maps from the Southern Wildfire Risk Assessment that depict the Average Burn Intensity and Rate of Speed for Sharp County and the participating jurisdictions. The School Districts could not be depicted on the map however Cave City School District can be included with the area around the City of Cave City and the Highland School District can be included with the area around the City of Highland/Hardy.

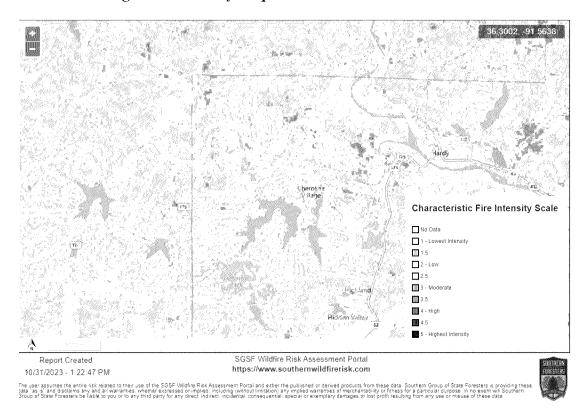
# City of Ash Flat Fire Intensity Map:



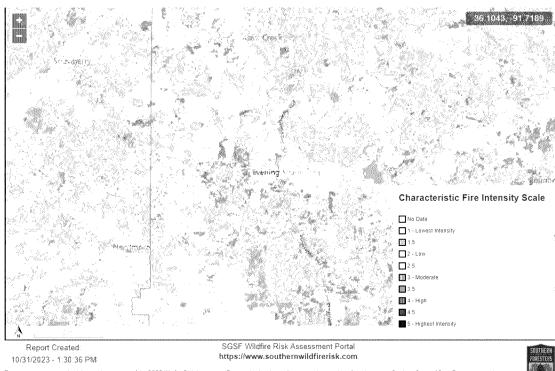
# City of Cave City Fire Intensity Map:



# **Cherokee Village Fire Intensity Map:**



# City of Evening Shade Fire Intensity Map:

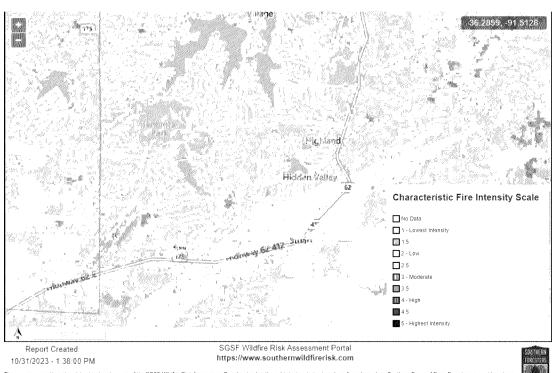


The user assumes the entric risk related to their use of the SQSF Wildfore Risk Assessment Portal and either the probleme or perived products from these data. Southern Group of State Foresters is providing their parts and and additions any and all warrantes, whether expressed or implied, including invitous immation) any implied warranties of merchantability of finess for a particular purpose. In no event will Southern Group of State Foresters be labele to you or to any third party for any direct, including invitous immation, applied warranties of merchantability of finess for a particular purpose. In no event will Southern Group of State Foresters be labele to you or to any third party for any direct, including invitous immation, and any other problems of the second party of

# **Town of Hardy Fire Intensity Map:**

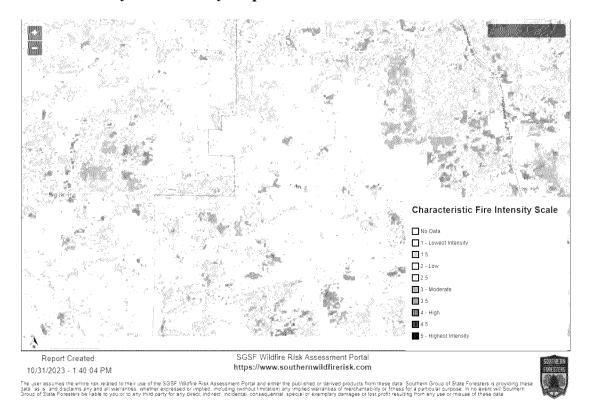


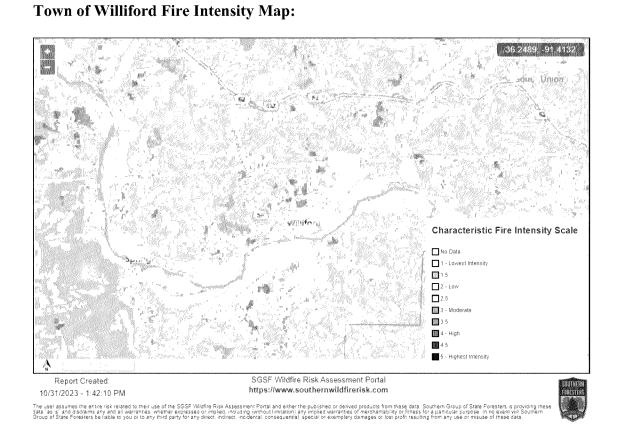
# City of Highland Fire Intensity Map:



The user assumes the entire risk related to their use of the SISSF Wildfire Risk Assessment Portal and either the published or serviced products from these data. Southern Group of State Foresters is providing these gata is as if and disclaring any and all warranties whether expressed or implied, including without limitation) any implied warranties of mechanizability or finess for a particular purpose. In no event will Southern Group of State Repressed by the product of the second product of the second provided variables or loss profit results for a particular purpose. In no event will Southern Group of State Repressed be skeled to you or to any with darry for any deed, indirect incidental consequential special or exemplically statement to loss profit results from the second product of the second product

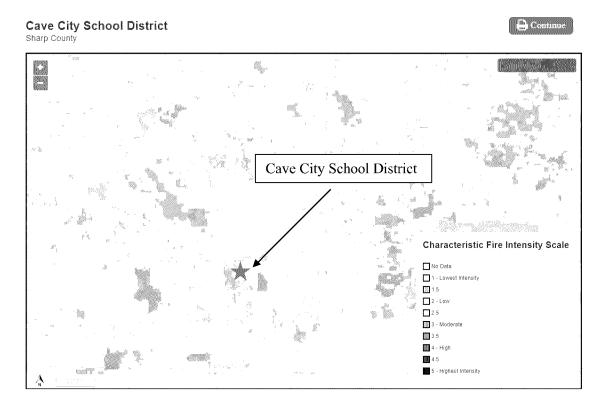
# Town of Sidney Fire Intensity Map:



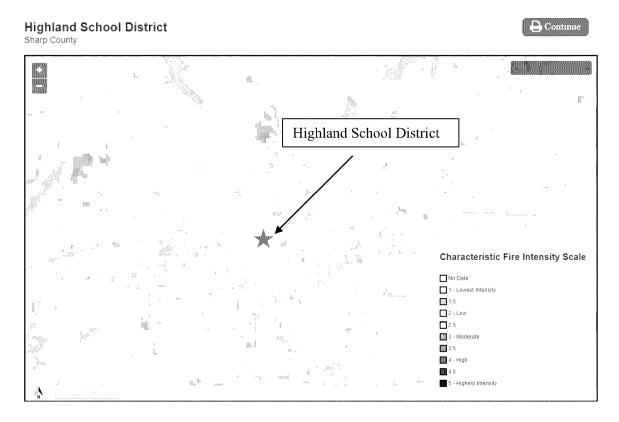


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# **Cave City School District Fire Intensity Map:**

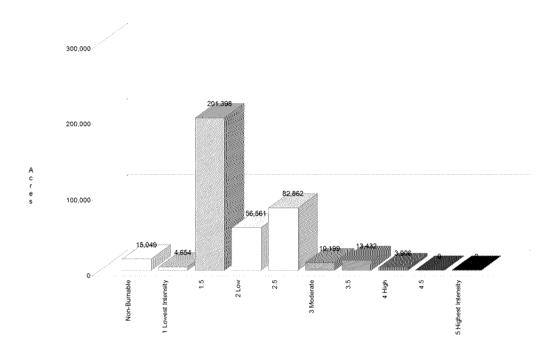


# **Highland School District Fire Intensity Map:**

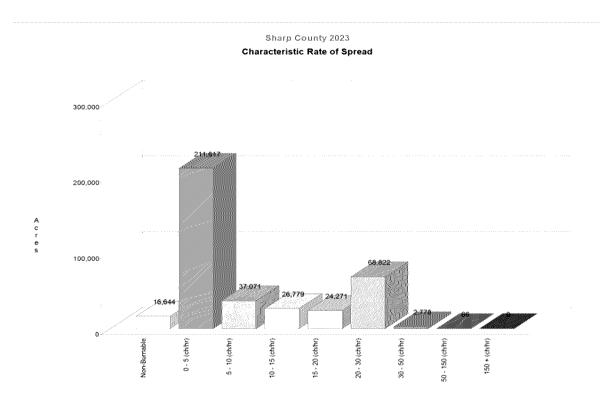


# Sharp County 2023

## Characteristic Fire Intensity Scale



The Fire Intensity Scale, according to this map, indicates that the most likely burn intensity for the planning area including both School Districts would fall in the range of 1.5-2.5 which would be low intensity. Most wildfires in the County are expected to fall in this range for future events which consist of small flames, usually less than two feet long with easy response by trained firefighters. There is a small chance that some areas around Cave City and the Cave City School District could see more moderate burn intensities depending on the conditions due to highly wooded and rural farm areas. Moderate conditions could create flames up to 8 feet in length and trained firefighters will find moderate fires difficult to suppress without outside equipment support.



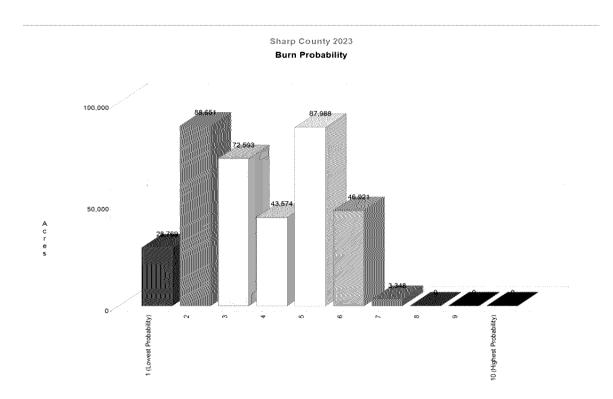
The most likely rate of fire spread that should occur in the planning area including the school districts would be 0-5 chains per hour/feet per minute. This rate of speed is expected to be the average for future events. Most recorded wildfires have been surface fires and this is expected to remain the same for future events.

# 4.2.7 (D) Probability

Sharp County including the City of Ash Flat, City of Cave City, City of Cherokee Village, City of Evening Shade, City of Hardy, City of Highland, Town of Sidney, Town of Williford, Cave City School District and Highland School District are likely to experience wildfires in the future due to unruly brush fires or uncontrolled burning during undesirable weather conditions.

In the past 10 years county officials calculate there have been 7 recorded wild fires with at least 100 smaller unrecorded fires. This information indicates that there is over a 100% chance of wildfires in any year in any of the participating jurisdictions, School Districts or Sharp County. Most wildfires in the planning area were attributed to civilian burning during undesirable weather conditions

The following maps generated from the Southern Wildfire Risk assessment demonstrate the burn probability of wildfire in the planning area. These maps depict the probability of an area burning given current landscape conditions, percentile weather, historical ignition patterns and historical fire prevention and suppression efforts. Although the burn probability rating differs on the scale from jurisdiction to jurisdiction, all jurisdictions have some chance of a wildfire occurring in the future. The average burn probability for the planning area would be from 3-4 on the probability scale.



# Impact of Wildfires on Planning Area

The overall significance and impact of wildfire for Sharp County, the participating jurisdictions and school districts has been significant because of the number of wildfires that have been recorded, however, the damage associated with the fires has been minimal. In the future, the largest impact from wildfires in the planning district would consist of loss of land and time/money from local volunteer fire departments spent responding to the fires.

The WUI Index is a rating of the potential impact of wildfire on people and their homes. The following map depicts the WUI for the planning area:

**WUI – Population and Acres** 

aneren er	Housing Density	WUI Population	Percent of WUI Population	WUI Acres	Percent of WUI Acres
	LT 1hs/40ac	1,108	6.5 %	63,862	47.9 %
	1hs/40ac to 1hs/20ac	1,883	11.0 %	31,548	23.7 %
	1hs/20ac to 1hs/10ac	1,954	11.4 %	15,958	12.0 %
	1hs/10ac to 1hs/5ac	2,638	15.4 %	10,533	7.9 %
	1hs/5ac to 1hs/2ac	4,824	28.2 %	8,420	6.3 %
	1hs/2ac to 3hs/1ac	4,691	27.4 %	2,911	2.2 %
	GT 3hs/1ac	0	0.0 %	0	0.0 %
	Total	17,098	100.0 %	133,232	100.0 %

There has been no reported loss of life or property/crop damage associated with wildfires in the planning area; however, the planning area has reported \$1,031,000 worth of crop sales in 2012 and livestock sales of \$74,530,000. This is an average of \$116,606 per 648 farms which are located throughout the county. All of the crop and agriculture sales could see substantial hits if a significant number of wildfires were to occur. Crop land, land for cattle grazing and also chicken farming could suffer the most in the event of wildfires.

Pastureland and Cropland make up 63.5% of land throughout the county with 31.8% being woodlands. Wildfires burning through woodlands could be a potential hazard to homes and citizens located close to those areas

#### **Vulnerability Assessment**

The entire planning area is susceptible to wildfires. Due to the County's rurality, most fire response teams are volunteer departments and response times could be as long as 30 minutes or more depending on the location of the wildfire and the report time. Sharp County has a total of 9,822 residential housing units located across the planning area with 158,279 acres of farmland. Wildfires in the planning area put at risk the residential, business and farm population located throughout the County. The most vulnerable assets would be the farm and wooded land that make up much of the planning area. Future wildfires are not expected to cause major damage to crops or civilian lives as they have not been a problem for either in the past, however, the possibility does still exist as the patterns and proximity of the fires are unpredictable.

Although more than 100 wildfires have been reported in the past 10 years, there have been no reports of damage aside from burned acreage. Due to past data, officials predict that there will be more wildfires in the future due mostly to civilian burning during undesirable conditions and possibly also due to lightning during drought-like conditions.

# **Section 5 – Mitigation Strategy**

# 5.1 Future Multi-Jurisdictional Planning Participation

This Hazard Mitigation Plan was reviewed and approved by the following Promulgation Authorities:

Name	Title	Organization	Jurisdiction	Phone #
Mark Counts	County Judge	Sharp County	Sharp County	870.994.7338
Larry Fowler	Mayor	Ash Flat	Sharp County	870.994.7324
Jonas Anderson	Mayor	Cave City	Sharp County	870.283.5455
Steven Rose	Mayor	Cherokee Village	Sharp County	870.257.5522
Susan Perkey	Mayor	Evening Shade	Sharp County	870.266.3833
Ethan Barnes	Mayor	Hardy	Sharp County	870.856.3811
Kyle Crawford	Mayor	Highland	Sharp County	870.856.6199
Nate Bloch	Mayor	Sidney	Sharp County	870.283.6556
Linda Brock	Mayor	Williford	Sharp County	870.966.3660
Steven Green	Superintendent	Cave City Schools	Sharp County	870.283.5391
Jeremy Lewis	Superintendent	Highland Schools	Sharp County	870.856.3275

Sharp County and the participating planning area plan to use staff, code enforcement, policies, extra areas within their budgets and grants to help supplement mitigation efforts throughout the planning area. The following details the capabilities of each planning area:

## **Sharp County**

The population of Sharp County, AR as of the 2020 Census was calculated to be 17,271 citizens. The County OEM at the Sharp County Office of Emergency Services serves as the Flood Plain Manager for the entire planning district and facilitates the coordination of emergency services throughout the county.

Fiscal resources to help aid in mitigation efforts include property taxes, sales taxes, general revenues, state turnback, grants, loans, misc. revenues. Sharp County is not currently a Fire Wise or Storm Ready participant. Sharp County can expand and improve programs that it currently has in order due to its yearly rise in population and grants provided by state and federal entities. The County plans to promote mitigation efforts through education, applying for grants to complete projects and working with the other planning areas to aid them in projects.

#### Ash Flat

Due to a small population of 1,137 (2020), and subsequent lack of financial and technical resources, the city has no regulatory plans in place to regulate development such as zoning and building codes, land use plans, or personnel to enforce them if they existed. Any issues that might occur are handled by the County officials or offices. Furthermore, the city is unable to control development by regulations due to these constraints. Through education and recommendations, the city will guide development as much as possible and the County will supplement where the City cannot.

The City of Ash Flat does have an organized Police Department and Fire Station.

Fiscal resources that could help aid in mitigation efforts consist of general revenue, state turn back, sales tax and property taxes. The City of Ash Flat is not currently a Fire Wise or Storm Ready community. The City has the ability to expand and improve programs that they currently have in order due to their yearly rise in population (increase in sales tax) and grants provided by state and federal entities. The City of Ash Flat plans to promote mitigation efforts through education, applying for grants to complete projects and working with the other planning areas to aid them in projects.

## **Cave City**

Due to a small population of 1,922 (2020), and subsequent lack of financial and technical resources, the city has no regulatory plans in place to regulate development such as zoning and building codes, land use plans, or personnel to enforce them if they existed. Any issues that might occur are handled by the County officials or offices. Furthermore, the city is unable to control development by regulations due to these constraints. Through education and recommendations, the city will guide development as much as possible and the County will supplement where the City cannot.

The City of Cave City does have an organized Police Department and fire station.

Fiscal resources that could help aid in mitigation efforts consist of general revenue, state turn back, sales tax and property taxes. The City of Cave City is not currently a Fire Wise or Storm Ready community. The City has the ability to expand and improve programs that they currently have in order due to their yearly rise in population (increase in sales tax) and grants provided by state and federal entities. The City of Cave City plans to promote mitigation efforts through education, applying for grants to complete projects and working with the other planning areas to aid them in projects.

### **Cherokee Village**

The City of Cherokee Village is the most populous in Sharp County with a population of 4,780 (2020) citizens. Cherokee Village serves as not only a retirement community but also a vacation destination for many around the region. The City has a Mayor, Code Enforcement Officer,

Building Inspector, Street Superintendent, Fire Chief with a local Fire Department, Ambulance Service (Spring River Ambulance), SID offices, and City Police Department.

Fiscal resources that would aid in future mitigation efforts would be general revenue, sales tax, utilities, property taxes, grants, loans or bond issues. The City of Cherokee Village is not currently a Fire Wise or Storm Ready community; however, the City does participate in some of the Fire Wise policies. The City of Cherokee Village has the ability to expand and improve programs that they currently have in order due to their yearly rise in population and grants provided by state and federal entities. They also have an active Planning and Zoning Commission that overviews all Planning Commission and Parks and Tourism Commission duties. Permits are issued by the City and floodplains are taken into consideration. The City of Cherokee Village plans to promote mitigation efforts through education, applying for grants to complete projects and working with the other planning areas to aid them in projects as needed.

## **Evening Shade**

Due to a small population of 420 (2020), and subsequent lack of financial and technical resources, the Town has no regulatory plans in place to regulate development such as zoning and building codes, land use plans, or personnel to enforce them if they existed. Any issues that might occur are handled by the County officials or offices. Furthermore, the Town is unable to control development by regulations due to these constraints. Through education and recommendations, the Town will guide development as much as possible and the County will supplement where the Town cannot.

Fiscal resources that could help aid in mitigation efforts consist of general revenue, state turn back, sales tax and property taxes. The Town of Evening Shade is not currently a Fire Wise or Storm Ready community. The Town has the ability to expand and improve programs that they currently have in order due to their yearly rise in population (increase in sales tax) and grants provided by state and federal entities. The Town of Evening Shade plans to promote mitigation efforts through education, applying for grants to complete projects and working with the other planning areas to aid them in projects.

#### Hardy

Due to a small population of 743 (2020), and subsequent lack of financial and technical resources, the Town has no regulatory plans in place to regulate development such as zoning and building codes, land use plans, or personnel to enforce them if they existed. Any issues that might occur are handled by the County officials or offices. Furthermore, the Town is unable to control development by regulations due to these constraints. Through education and recommendations, the Town will guide development as much as possible and the County will supplement where the Town cannot. The Town of Hardy does have an organized Police Department and fire station.

Fiscal resources that could help aid in mitigation efforts consist of general revenue, state turn back, sales tax and property taxes. The Town of Hardy is not currently a Fire Wise or Storm Ready community. The Town has the ability to expand and improve programs that they currently have in order due to their yearly rise in population (increase in sales tax) and grants provided by

state and federal entities. The Town of Hardy plans to promote mitigation efforts through education, applying for grants to complete projects and working with the other planning areas to aid them in projects.

#### Highland

Due to a small population of 982 (2020), and subsequent lack of financial and technical resources, the City has no regulatory plans in place to regulate development such as zoning and building codes, land use plans, or personnel to enforce them if they existed. Any issues that might occur are handled by the County officials or offices. Furthermore, the City is unable to control development by regulations due to these constraints. Through education and recommendations, the City will guide development as much as possible and the County will supplement where the City cannot. The City of Highland does have an organized Police Department and a Fire Station.

Fiscal resources that could help aid in mitigation efforts consist of general revenue, state turn back, sales tax and property taxes. The City of Highland is not currently a Fire Wise or Storm Ready community. The City has the ability to expand and improve programs that they currently have in order due to their yearly rise in population (increase in sales tax) and grants provided by state and federal entities. The City of Highland plans to promote mitigation efforts through education, applying for grants to complete projects and working with the other planning areas to aid them in projects.

## **Sidney**

Due to a small population of 192 (2020), and subsequent lack of financial and technical resources, the Town has no regulatory plans in place to regulate development such as zoning and building codes, land use plans, or personnel to enforce them if they existed. Any issues that might occur are handled by the County officials or offices. Furthermore, the Town is unable to control development by regulations due to these constraints. Through education and recommendations, the Town will guide development as much as possible and the County will supplement where the Town cannot. The Town of Sidney has a volunteer fire department.

Fiscal resources that could help aid in mitigation efforts consist of general revenue, state turn back, sales tax and property taxes. The Town of Sidney is not currently a Fire Wise or Storm Ready community. The Town has the ability to expand and improve programs that they currently have in order due to their yearly rise in population (increase in sales tax) and grants provided by state and federal entities. The Town of Sidney plans to promote mitigation efforts through education, applying for grants to complete projects and working with the other planning areas to aid them in projects.

#### Williford

Due to a small population of 79 (2020), and subsequent lack of financial and technical resources, the Town has no regulatory plans in place to regulate development such as zoning and building codes, land use plans, or personnel to enforce them if they existed. Any issues that might occur are handled by the County officials or offices. Furthermore, the Town is unable to control

development by regulations due to these constraints. Through education and recommendations, the Town will guide development as much as possible and the County will supplement where the Town cannot.

Fiscal resources that could help aid in mitigation efforts consist of general revenue, state turn back, sales tax and property taxes. The Town of Williford is not currently a Fire Wise or Storm Ready community. The Town has the ability to expand and improve programs that they currently have in order due to their yearly rise in population (increase in sales tax) and grants provided by state and federal entities. The Town of Williford plans to promote mitigation efforts through education, applying for grants to complete projects and working with the other planning areas to aid them in projects.

## **Cave City School District**

Cave City School District has an average student population of around 1,300 with 3 campuses. Cave City School District has safety policy plans, parent policies included in their handbooks for early dismissal due to natural disasters and an operating COOP plan. The school currently has two FEMA-approved safe rooms located on their campuses.

Cave City School District has the ability to expand on their current programs and improve them through state support of the local educational system. The District has seen growth in student population each year and has also experienced a growth in state funds towards education. The school district would aid in mitigation efforts by applying for various grants and also using grant monies already awarded to the school when able. Cave City School District plans to promote migration efforts through education, applying for grants to complete projects and working with the planning area it lies within to aid them in projects.

## **Highland School District**

Highland School District has an average student population of around 1,600 with 3 campuses. The District has safety policy plans, parent policies included in their handbooks for early dismissal due to natural disasters and an operating COOP plan. The school does not have any safe rooms on any of their campuses however they do have designated "safe spots" if a tornado or severe thunderstorm were to occur.

Highland School District can expand on its current programs and improve them through state support of the local educational system. The District has seen growth in student population each year and has also experienced a growth in state funds towards education. The school district would aid in mitigation efforts by applying for various grants and also using grant monies already awarded to the school when able. Highland School District plans to promote mitigation efforts through education, applying for grants to complete projects and working with the planning area it lies within to aid them in projects.

#### Other Utilized Resources and Plans

The following plans were reviewed and utilized to develop the Sharp County Multi-Jurisdictional Hazard Mitigation Plan. The Mitigation Plan will be incorporated into these plans as well as the local capital improvement plans as they are updated. In addition, the Hazard Mitigation Plan will be integrated into the State Plans (CEDP, CAERP, ERP, LEPC).

- State of Arkansas Hazard Mitigation Plan
- Community Awareness and Emergency Response Plan
- Sharp County Emergency Response Plan
- City of Cherokee Village: Land-use map, zoning map, subdivision rules, zoning regulations, flood plain management ordinances and building codes
- Cave City School District and Highland School District COOP Plans
- Cave City School District and Highland School District Emergency Response Manual
- Comprehensive Economic Development Strategy prepared by White River Planning and Development District
- Emergency Action Plan for Cherokee Village Dams: Sharp & Fulton Counties
- Emergency Action Plan Ozark Acres S.I.D.: Spring Lake Dam
- Emergency Action Plan Ozark Acres S.I.D.: Vagabond Lake Dam
- Emergency Action Plan for Wild Plum Lake Dam, Lake Mirandy Dam and June Lake Dam

The data contained in these plans was utilized to help identify potential action items and to integrate the plans and actions into a cohesive action plan.

## 5.2 Implementation through Existing Programs and Keeping Plan Current

Sharp County and plan participants currently use state laws about compliance with the Southern Building Code and the National Flood Insurance Program, as well as state fire codes, to encourage compliance with its hazard mitigation programs. The Planning Area, excluding Ash Flat, Cave City, Evening Shade, Hardy, Highland, Sidney and Williford, began enforcement of the 2002 International Building Codes with Arkansas Revisions as mandated by the 2003 Legislative action. These existing mechanisms had hazard mitigation strategies integrated into them.

Sharp County has a current Emergency Operations Plan. Sharp County has incorporated the Hazard Mitigation Plan into their emergency operations plan to further help determine actions needed to prevent additional effects of natural hazards the remaining participating jurisdictions have not incorporated the plan into their existing planning mechanisms. Each participating city will incorporate the plan into their existing emergency plans by way of adding the as an Appendix to the emergency plan. If there is no emergency plan present the participating city will include the plan in their overall city action plans as an Appendix. The school districts will incorporate the plan in their COOP plans as an Appendix as well to ensure all documents remain together and are easily accessible. A copy of the Plan will be available for public viewing at the County Office of Emergency Management for any entity or citizen who wishes to see it. Copies will also be made available at the county courthouse and each participating jurisdiction's city hall or administration office. Sharp County will publicize its approval and locations for viewing

through the local newspaper, social media and advertisement at the courthouse/city halls as well as post notices to inform the public of the plan and ask for public comment. WRPDD will also send school districts a memo of approval that can be distributed as needed. Other plan participants will be adopting the approved plan and will incorporate it into their existing local plans used for zoning and land use. Sharp County will bring the mitigation plan in front of its rt and approve its contents through a resolution including and mitigation actions that will be performed by the county. Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford will bring the plan and any mitigation actions thereof in front of their respective city/town councils and will approve by a resolution as well. Cave City School District and Highland School District will also approve any mitigation actions in front of their school boards and board of directors. This mitigation plan will be incorporated into any existing planning mechanisms for each planning area through the process of quorum court, town council and board approval. Any participant without previous plans in place will be encouraged to develop zoning plans and other land ordinance plans to incorporate mitigation strategies.

Participants incorporating the Sharp County Multi-Jurisdictional Hazard Mitigation Plan into their existing plans will set up meetings to discuss which areas in the Sharp County Hazard Mitigation Plan pertain to them. After these discussions, each incorporating mechanism will follow the local laws or guidelines necessary for implementation through open forum public meetings. Each incorporating party will monitor the progress of any incorporated mitigation strategies and report the success or failure to the Emergency Operations Council for inclusion in its annual report. After each update of the Sharp County Hazard Mitigation Plan, each incorporating participant will be informed of the changes so they can reflect these changes in their plans. Sharp County will work with White River Planning or an agency to their choosing every 5 years before their plan has expired to make necessary updates to the plan and keep the plan from expiring and current with FEMA. Once the plan is passed and approved the county will place flyers in each town at the various city halls and major businesses expressing to the public the importance of the mitigation plan, explaining how to access the plan and ask for public comment on the plan throughout the next five years to gather information for the next update. Flyers will also be placed at the Courthouse and Courthouse Annex and all local food banks/senior centers in the area.

More specifically, the Sharp County Hazard Mitigation Plan will be incorporated into the State of Arkansas Hazard Mitigation Plan. The risk assessment and mitigation strategies will be incorporated into the State Hazard Mitigation Plan during their updating process every three years. Sharp County will be incorporating the Sharp County Hazard Mitigation Plan into the Sharp County Emergency Operations Plan and county land use ordinances and/or plans by following the laws set forth by the county government. This process takes place monthly during regular quorum court meetings. The building and land use ordinances can be found in Chapter 13 of (Urban and Rural Development) of Sharp County's Code of Ordinances. Chapter 13 ordinances discuss matters revolving around construction of buildings and other economic development matters that are uniformly followed by Sharp County and the participating jurisdictions. The ordinances emplaced in the county follow the updated billing codes of 2021.

## 5.3 Mitigation Goals/Actions

## **Implementation of Mitigation Actions**

The Hazard Mitigation Planning Team identified a comprehensive range of 16 potential mitigation actions intended to reduce the effects of the 7 hazard types posing the highest critical risk for the area: Drought, Earthquakes, Flooding, Severe Thunderstorms, Severe Winter Weather, Tornados and Wildfire. Many mitigation actions address multi-hazards and include all hazards identified.

The actions were selected and prioritized based on their potential effects on the overall risk to life and property (particularly new and existing buildings and infrastructure), ease of implementation, community and agency support, consistency with local jurisdictions' plans and capabilities, and availability of funding.

## Assessments of the *implemented actions/projects* (2020) in Sharp County are as follows:

<u>Completed</u>: Project has been completed.

<u>In Progress:</u> Project has been funded, but not completed.

Not-Completed: Project has not been funded or completed.

<u>Deferred:</u> Project has not been funded or completed and is still a tentative plan.

	Sharp Cou	ınty Multi-	Jurisdictio	nal Hazaro	d Mitigatio	n Projects	
Priority	Mitigation Action/ Project	Associated Hazard	New and Existing Buildings	Responsible Entity	Project Status	Cost/Benefit Considerations	Jurisdiction
Moderate	1. Implement water conservation measures for localized drought conditions	Drought	N/A	Sharp County Judge and OEM, Mayor of Ash Flat, Mayors of Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford	Not Completed, Current mitigation action.	Low cost but will require staff time. Will benefit greatly during warmer weather months. Cost will be mainly to the county general revenues.	Sharp County, Cities of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford
High	2. Develop a county wide drought warning system that warns local officials of likely drought conditions that improves timeliness and consistency.	Drought	N/A	Sharp County Judge and OEM, Mayor of Ash Flat, Mayors of Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford	Not Completed, Current mitigation action.	Low cost but will take extensive time from county officials to educate local officials on warning process. Cost will be incurred by the county general revenues.	Sharp County, Cities of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford

Priority	Mitigation Action/	Inty Multi- Associated Hazard	New and Existing	Responsible	Project Status	Cost/Benefit	Jurisdiction
	Project		Buildings	Entity	,	Considerations	
Very High	3. Develop an outreach program about earthquake risk and mitigation activities in homes, schools and businesses.	Earthquake	N/A	Sharp County Judge and OEM, Cities of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford and Superintendents from Cave City and Highland School Districts	Not Completed, Current mitigation action.	Low cost but will take staff time and resources to collect to speak to schools or pass out education materials to residential areas. Benefit will outweigh the cost of time and resources. Cost will be incurred by the county and planning area general revues and taxes.	Sharp County, Cities of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford, Cave City and Highland School Districts
Moderate	4. Retrofit older bridges and dams to withstand damages in the event of an earthquake to prevent collapsing or dam failure.	Earthquake, Flooding, Dam Failure	N/A	Sharp County Judge and OEM, Mayor of Ash Flat, Mayors of Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford	Not Completed, Current mitigation action.	Grant monies available through A.D.E.M. and F.E.M.A. County labor will be needed but cost will be low contingent upon receiving grant monies. Benefit of repairing bridges is significant	Sharp County, Cities of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford
Very High	5 Remove existing structures from Flood Hazard Areas as they become unused or vacated. Ensure anyone already living in dam flood zone has up to date insurance.	Flooding	New and Existing Buildings (NFIP consideration CRS 310 Elevation Certificates, CRS 340 Hazard Disclosure, CRS 430 Higher Regulatory Standards, CRS 510 Floodplain Management Planning).	Sharp County Judge and OEM, Cities of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford and Superintendents from Cave City and Highland School Districts	Not Completed, Current mitigation action.	Costs could be high to the County depending on where at and what the structure is. Grant monies through various federal entities will be utilized.	Sharp County, Cities of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford, Cave City and Highland School Districts
Very High	7. Mitigate County and City bridges to withstand flooding. Repair existing bridges and low water crossings.	Flooding	Existing Bridges	Sharp County Judge and OEM, Mayor of Ash Flat, Mayors of Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford	Not Completed, Current mitigation action.	Grant monies available through A.D.E.M. and F.E.M.A. County labor will be needed but cost will be low contingent upon receiving grant monies. Benefit of repairing bridges is significant. Cost will be incurred by the County and City/Towns that apply for monies.	Sharp County, Cities of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford

Priority	Mitigation Action/	Associated Hazard	Jurisdiction New and Existing	Responsible	Project Status	Cost/Benefit	Jurisdiction
	Project		Buildings	Entity		Considerations	
High	8. Start local "Turn Around. Don't Drown" campaign which educates residents and high school students about the risks of driving on flooded roadways during flood conditions.	Flooding	N/A	Sharp County Judge and OEM, Cities of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford and Superintendents from Cave City and Highland School Districts	Not Completed, Current mitigation action.	Low cost however will take staff time and resources. This action will greatly benefit the cities and counties by keeping it fresh on the citizen's minds to be cautious of driving during flash flooding. Cost will be incurred by the county revenue/taxes but will also fall on each City/Town or school District or Campus.	Sharp County, Cities of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford, Cave City and Highland School Districts
High	9. Install backup generators for schools, local critical facilities and large industry.	Severe Thunderstorms, Tornadoes, Severe Winter Weather, Earthquake, Flooding	New and Existing	Sharp County Judge and OEM, Cities of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford and Superintendents from Cave City and Highland School Districts	Not Completed, Current mitigation action.	Cost of generators can be anywhere from 50,000 upwards depending on the project. Grant monies available through ADEM and FEMA periodically. Cost is considerable, but benefits are great during and after storm systems. Cost would be incurred by the entity that is installing the generator from general revenues or grant monies.	Sharp County, Cities of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford, Cave City and Highland School Districts
Moderate	10. Develop an outreach program about the dangers of thunderstorms by educating citizens on the importance of having a safe room, taking shelter indoors during a hail or lightning storm and supporting a severe weather awareness week in schools.	Severe Thunderstorms	N/A	Sharp County Judge and OEM, Cities of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford and Superintendents from Cave City and Highland School Districts	Not Completed, Current mitigation action.	Low cost, however will take staff time and resources especially around the Spring. Benefit will outweigh the cost as it will help citizens and schools to understand the severity of thunderstorms. Cost would mostly be incurred by the County however will require cost to local city and school district through general revenue/taxes or grant monies.	Sharp County, Cities of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford, Cave City and Highland School Districts

		<del> </del>			d Mitigatio	· · · · · · · · · · · · · · · · · · ·	
Priority	Mitigation Action/ Project	Associated Hazard	New and Existing Buildings	Responsible Entity	Project Status	Cost/Benefit Considerations	Jurisdiction
High	11. Create warming centers/shelters for vulnerable, functional needs and at-risk population to reduce loss of life during prolonged winter weather events.	Severe Winter Weather	New and Existing Buildings	Sharp County Judge and OEM, Cities of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford and Superintendents from Cave City and Highland School Districts	Not Completed, Current mitigation action.	Will require minimal staff time and possible retrofitting. Costs depend on local participation, however should be low. Will benefit local at-risk citizens greatly and will increase as stations are established. Cost will be to the County, City and School District that participates with creating warming shelters and will be taken from general revenue, taxes and grants.	Sharp County, Cities of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford, Cave City and Highland School Districts
Moderate	12. Establish a severe storm (winter and thunderstorm) program which develops standards/policies for all utilities regarding tree pruning around power lines to minimize ice accumulation during severe winter storms and falling branches for severe thunderstorms	Severe Winter Weather, Severe Thunderstorms	New and Existing Structures	Sharp County Judge and OEM, Cities of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford and Superintendents from Cave City and Highland School Districts	Not Completed, Current mitigation action.	Will require staff pay for time and resources. Projected amounts of cost will depend on participation from local communities. Would benefit county and electric companies including citizens during storms. Cost will be to the County, City and School District that participates with creating warming shelters and will be taken from general revenue, taxes and grants.	Sharp County, Cities of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford, Cave City and Highland School Districts
Very High	13. Construct safe rooms to be utilized by schools, communities and businesses.	Tomado, Severe Thunderstorms	New and Existing Buildings	Sharp County Judge and OEM, Cities of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford and Superintendents from Cave City and Highland School Districts	Not Completed, Current mitigation action.	Grant Funds available through AEDC, CDBG and USDA. Cost per project ranges from \$500,000 to \$1,000,000 depending on size of safe room and population of community. No or little cost to the county, school district or community through the grant. Safe rooms would benefit the community substantially and aid in saving lives during tornadic events.	Sharp County, Cities of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford, Cave City and Highland School Districts

Priority	Mitigation Action/	Associated Hazard	New and Existing	nal Hazaro	Project Status	Cost/Benefit	Jurisdiction
1 Holliy	Project	110001111111111111111111111111111111111	Buildings	Entity	Troject States	Considerations	0 0115011011
High	14. Design and implement a one call or one message county-wide system to ensure all citizens and emergency personnel are alerted to hazardous conditions.	Tornado, Severe Thunderstorms	New and Existing	Sharp County Judge, County OEM	Not Completed, Current mitigation action.	Low cost but will require staff time and resources. Benefit will outweigh cost time and will help citizens be able to compute travel time to shelters in the event of a storm. Cost will be incurred by the County.	Sharp County, Cities of Ash Flat Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford, Cave City and Highland School Districts
Moderate	15. Pass ordinances/mandates requiring defensible boundaries (buffer zones) around critical facilities to prevent future wildfire damages.	Wildfire	New and Existing	Sharp County Judge and OEM, Cities of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford and Superintendents from Cave City and Highland School Districts	Not Completed, Current mitigation action.	Low cost but will require staff time and resources. Will benefit local fire departments when wild fire occurs. Cost will be incurred by the county or city/town through general revenue or tax income.	Sharp County, Cities of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford, Cave City and Highland School Districts
High	16. Participate in the National Fire Wise Communities Program.	Wildfire	New and Existing	Sharp County Judge and OEM, Cities of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford and Superintendents from Cave City and Highland School District	Not Completed, Current mitigation action.	Low cost but will require staff time and resources. Will benefit local fire departments and also citizens when wild fire occurs. Cost will be incurred by the county or city/town through general revenue or tax income	Sharp County, Cities of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford, Cave City and Highland School Districts
High	17. Local Fire Departments conduct a yearly education and outreach program for schools that teaches children the dangers of wildfire and how they can prevent them at home and school.	Wildfire	N/A	Sharp County OEM, Local Fire Departments, Cave City and Highland School Districts	Not Completed, Current mitigation action.	Low cost, however will take staff time and resources. Cost will be incurred by local fire departments through possible grant monies or county tax revenue and also through school district money from grants and tax revenue. Benefit will outweigh the cost as it will help school age children to start recognizing the dangers of wildfire from an early age and how they can prevent it.	Cave City and Highland School District

## **Mitigation Actions**

In the table of mitigation actions that follows, the explanation of how the criteria outlined above was used by the Planning Team to prioritize each action is presented in a column with each action. Very High priority actions were those deemed both very necessary to meeting the goals agreed upon and listed at the head of each subsection of mitigation actions. High Priority actions were those deemed very necessary to meeting the listed goals, particularly technical feasibility or cost effectiveness. Medium Priority actions are those that are deemed important to meeting the mitigation goals, and may be of questionable economic feasibility or technically difficult to implement. Low Priority actions are those that require significant local support and/or funding. In the event of potential actions not being chosen or pursued, an explanation is provided as to why it was not selected.

The identified mitigation actions and initiatives in the following table are not in a 1-2-3-priority order. Availability of funding, weather conditions, County matching, outside agency assistance, public support, and changing economic and development trends may cause some actions to begin before others; however, it is felt that all "very high" priority actions should begin as soon as possible.

The following mitigation actions identify those chosen for implementation and the evaluation criteria applied to each in determining their feasibility. Priorities are assigned as Very High, High and Moderate.

	Sharp Cou	nty Multi-	unty Multi-Jurisdictional Hazard Mitigation Goals	onal Haza	rd Mitigat	ion Goals	
Priority	Mitigation Action/ Project	Associated Hazard	and Existing dings	Responsible Entity	Projected Timeline	Cost/Benefit Considerations	Jurisdiction
Moderate	1. Implement water conservation measures for localized drought conditions	Drought	N/A	Sharp County Judge and OEM, Mayor of Ash Flat, Mayors of Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford	1-3 Years	Low cost but will require staff time. Will benefit greatly during warmer weather months. Cost will be mainly to the county general revenues.	Sharp County, Cities of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford
High	2. Develop a countywide drought warning system that warns local officials of likely drought conditions that improves timeliness and consistency.	Drought	N/A	Sharp County Judge and OEM, Mayors of Ash Flat, Mayors of Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford	2-5 Years	Low cost but will take extensive time from county officials to educate local officials on warning process. Cost will be incurred by the county general revenues.	Sharp County, Cities of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford
Very High	3. Develop an outreach program about earthquake risk and mitigation activities in homes, schools and businesses.	Earthquake	N/A	Sharp County Judge and OEM, Mayors of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford and Superintendents from Cave City and Highland School Districts	2-5 years	Low cost but will take staff time and resources to collect to speak to schools or pass out education materials to residential areas. Benefit will outweigh the cost of time and resources. Cost will be incurred by the county and planning area general revues and taxes.	Sharp County, Cities of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford, Cave City and Highland School Districts

	Jurisdiction	Sharp County, Cities of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford	Sharp County, Cities of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford, Cave City and Highland School Districts	Sharp County, Cities of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford
unty Multi-Jurisdictional Hazard Mitigation Goals	Cost/Benefit Considerations	Grant monies available through A.D.E.M. and F.E.M.A. County labor will be needed but cost will be low contingent upon receiving grant monies. Benefit of repairing bridges is significant	Costs could be high to the County depending on where at and what the structure is. Grant monies through various federal entities will be utilized.	Grant monies available through A.D.E.M. and F.E.M.A. County labor will be needed but cost will be low contingent upon receiving grant monies. Benefit of repairing bridges is significant. Cost will be incurred by the County and City/Towns that apply for monies.
rd Mitigat	Projected Timeline	2-5 years	3-5 years	5-10 Years
onal Haza	Responsible Entity	Sharp County Judge and OEM, Mayors of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford	Sharp County Judge and OEM, Mayors of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford and Superintendents from Cave City and Highland School Districts	Sharp County Judge and OEM, Mayors of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford
Jurisdicti	New and Existing Buildings	N/A	New and Existing Buildings (NFIP consideration CRS 310 Elevation Certificates, CRS 340 Hazard Disclosure, CRS 430 Higher Regulatory Standards, CRS 510 Floodplain Management Planning).	Existing Bridges
nty Multi-	Associated Hazard	Earthquake, Flooding, Dam Failure	Flooding	Flooding
Sharp Cou	Mitigation Action/ Project	4. Retrofit older bridges and dams to withstand damages in the event of an earthquake to prevent collapsing or dam failure.	S Remove existing structures from Flood Hazard Areas as they become unused or vacated. Ensure anyone already living in dam flood zone has up to date insurance.	7. Mitigate County and City bridges to withstand flooding. Repair existing bridges and low water crossings.
	Priority	Moderate	Very High	Very High

	Sharp Cou	unty Multi-Jurisdictional Hazard Mitigation Goals	Jurisdicti	onal Haza	rd Mitigat	ion Goals	
Priority	Mitigation Action/	Associated	New and Existing	Responsible	Projected	Cost/Benefit	Jurisdiction
	Project	Hazard	Buildings	Entity	Imeline	Considerations	i i
High	8. Start local "Turn	Flooding	N/A	Sharp County	1-3 Years	Low cost however	Sharp County,
	Around. Don't			Judge and OEM,		will take staff time	Cities of Ash Flat,
	Drown" campaign			Mayors of Ash Flat,		and resources. This	Cave City,
	which educates			Cave City,		action will greatly	Cherokee Village,
	residents and high			Cherokee Village,		benefit the cities	Evening Shade,
	school students			Evening Shade,		and counties by	Hardy, Highland,
	about the risks of			Hardy, Highland,		keeping it fresh on	Sidney and
	driving on flooded			Sidney and		the citizen's minds	Williford, Cave
	roadways during			Williford and		to be cautious of	City and Highland
	flood conditions.			Superintendents		driving during	School Districts
				from Cave City		flash flooding.	
				and Highland		Cost will be	
				School Districts		incurred by the	
						county	
						revenue/taxes but	
						will also fall on	
						each City/Town or	
						school District or	
						Campus.	
High	9. Install backup	Severe	New and Existing	Sharp County	2-5 Years	Cost of generators	Sharp County,
D	generators for	Thunderstorms.	)	Judge and OEM.		can be anywhere	Cities of Ash Flat.
	schools, local	Tornadoes, Severe		Mayors of Ash Flat.		from 50,000	Cave City.
	critical facilities and	Winter Weather,		Cave City,		upwards	Cherokee Village,
	large industry	Farthonake		Cherokee Village		denending on the	Evening Shade
	iaige manay.	Elooding		Evening Shada		acpending on an	Hordy Highland
		a roomig		Liveling Sudue,		project. Orani	Cidaxy, Inginana,
				Sidney, Ingilialiu,		through ADEM	Williford Cave
				Milliford and			City and Highland
				Willioid and		and reiving	City and ringinand
				Supermiendents		periodically, Cost	School Districts
				nom Cave City		Is considerable, but	
				and Highland		during and offer	
				SCHOOL DISCUSS		dumig and arter	
						Storm systems.	
						Cost would be	
						incurred by the	
						entity that is	
						installing the	
						generator from	
						general revenues	
						or grant monies.	

	Sharp Cou	unty Multi-Jurisdictional Hazard Mitigation Goals	Jurisdiction	onal Haza	rd Mitigat	tion Goals	
Priority	Mitigation Action/ Project	Associated Hazard	New and Existing Buildings	Responsible Entity	Projected Timeline	Cost/Benefit Considerations	Jurisdiction
Moderate	10. Develop an outreach program about the dangers of thunderstorms by educating citizens on the importance of having a safe room, taking shelter indoors during a hail or lightning storm and supporting a severe weather awareness week in schools.	Severe Thunderstorms	N/A	Sharp County Judge and OEM, Mayors of Ash Flat, Cave City, Cherokee Village, Brening Shade, Hardy, Highland, Sidney and Williford and Superintendents from Cave City and Highland School Districts	1-3 Years	Low cost, however will take staff time and resources especially around the Spring. Benefit will outweigh the cost as it will help citizens and schools to understand the severity of thunderstorms.  Cost would mostly be incurred by the County however will require cost to local city and school district through general revenue/taxes or grant monies.	Sharp County, Cities of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford, Cave City and Highland School Districts
High	11. Create warming centers/shelters for vulnerable, functional needs and at-risk population to raduce loss of life during prolonged winter weather events.	Severe Winter Weather	New and Existing Buildings	Sharp County Judge and OEM, Mayors of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford and Superintendents from Cave City and Highland School Districts	2-5 Years	Will require minimal staff time and possible retrofitting. Costs depend on local participation, however should be low. Will benefit local at-risk citizens greatly and will increase as stations are established. Cost will be to the County, City and School District that participates with creating warming shelters and will be taken from general revenue, taxes and grants.	Sharp County, Cities of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford, Cave City and Highland School Districts

	Sharp Cou	inty Multi-	unty Multi-Jurisdictional Hazard Mitigation Goals	onal Haza	rd Mitigat	ion Goals	
Priority	Mitigation Action/ Project	Associated Hazard	New and Existing Buildings	Responsible Entity	Projected Timeline	Cost/Benefit Considerations	Jurisdiction
Moderate	12. Establish a severe storm (winter and thunderstorm) program which develops standards/policies for all utilities regarding tree pruning around power lines to minimize ice accumulation during severe winter storms and falling branches for severe thunderstorms	Severe Winter Weather, Severe Thunderstorms	New and Existing Structures	Sharp County Judge and OEM, Mayors of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford and Williford and Superintendents from Cave City and Highland School Districts	1-3 Years	Will require staff pay for time and resources. Projected amounts of cost will depend on participation from local communities. Would benefit county and electric companies including citizens during storms. Cost will be to the County, City and School District that participates with creating warming shelters and will be taken from general revenue, taxes and grants.	Sharp County, Cities of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford, Cave City and Highland School Districts
Very High	13. Construct safe rooms to be utilized by schools, communities and businesses.	Tomado, Severe Thunderstorms	New and Existing Buildings	Sharp County Judge and OEM, Mayors of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford and Williford and Superintendents from Cave City and Highland School Districts	2-5 Years	Grant Funds available through AEDC, CDBG and USDA. Cost per project ranges from \$500,000 to \$1,000,000 depending on size of safe room and population of community. No or little cost to the county, school district or county, school district or community through the grant. Safe rooms would benefit the community substantially and aid in saving lives during tornadic events.	Sharp County, Cities of Ash Flat, Cave City, Cherokee Village, Evening Shade, Hardy, Highland, Sidney and Williford, Cave City and Highland School Districts

	Sharp Cou	inty Multi-	Jurisdiction	onal Haza	rd Mitigat	unty Multi-Jurisdictional Hazard Mitigation Goals	
Priority	Mitigation Action/	Associated	New and Existing	Responsible	Projected Timeline	Cost/Benefit	Jurisdiction
	r Ioject	1 1azalu	Dullullys	Cliuty 31		COIISIGEIGIUS	ō
High	14. Design and	Tornado, Severe	New and Existing	Sharp County	2 Years	Low cost but will	Sharp County,
	or one message	THERECISION		Judge, County OFM		and resources	Cave City
	county-wide system			OFF		Benefit will	Cherokee Village,
	to ensure all citizens					outweigh cost time	Evening Shade,
	and emergency					and will help	Hardy, Highland,
	personnel are alerted					citizens be able to	Sidney and
	to hazardous					compute travel	Williford, Cave
	conditions.					time to shelters in	City and Highland
						the event of a	School Districts
						storm. Cost will be	
						incurred by the	
Moderate	15. Pass	Wildfire	New and Existing	Sharp County	2-5 Years	Low cost but will	Sharp County,
	ordinances/mandates			Judge and OEM,		require staff time	Cities of Ash Flat,
	requiring defensible			Mayors of Ash Flat,		and resources. Will	Cave City,
	boundaries (buffer			Cave City,		benefit local fire	Cherokee Village,
	zones) around			Cherokee Village,		departments when	Evening Shade,
	critical facilities to			Evening Shade,		wild fire occurs.	Hardy, Highland,
	prevent future			Hardy, Highland,		Cost will be	Sidney and
	wildfire damages.			Sidney and		incurred by the	Williford, Cave
				Williford and		county or	City and Highland
				Superintendents		city/town through	School Districts
				from Cave City		general revenue or	
				and Highland School Districts		tax income.	
High	16. Participate in	Wildfire	New and Existing	Sharp County	2 Years	Low cost but will	Sharp County,
•	the National Fire		•	Judge and OEM,		require staff time	Cities of Ash Flat,
	Wise Communities			Mayors of Ash Flat,		and resources. Will	Cave City,
	Program.			Cave City,		benefit local fire	Cherokee Village,
				Cherokee Village,		departments and	Evening Shade,
				Evening Shade,		also citizens when	Hardy, Highland,
				Hardy, Highland,		wild fire occurs.	Sidney and
				Sidney and		Cost will be	Williford, Cave
				Williford and		incurred by the	City and Highland
				Superintendents		county or	School Districts
				Irom Cave City		city/town through	
				and Highland School District		general revenue or	
				Scincia Consc		the meeting	

	Sharp Cou	nty Multi-	Jurisdicti	unty Multi-Jurisdictional Hazard Mitigation Goals	rd Mitigat	ion Goals	
Priority	Mitigation Action/ Project	Associated Hazard	New and Existing Buildings	Responsible Entity	Projected Timeline	Cost/Benefit Considerations	Jurisdiction
Moderate	17. Sharp County will conduct H&H research and drainage studies over the next 5 years and will determine inundation areas below dams and any vulnerable assets in the area.	Flooding	New and Existing	Sharp County OEM, Mayors,	2-5 years	Low cost, however will take staff time and resources. Cost would be incurred by the County and all participating jurisdictions. Funding Sources: Local Funds and FEMA funding	All participating jurisdictions
High	18. Local Fire Departments conduct a yearly education and outreach program for schools that teaches children the dangers of wildfire and how they can prevent them at home and school.	Wildfire	N/A	Sharp County OEM, Local Fire Departments, Cave City and Highland School Districts	1 уваг	Low cost, however will take staff time and resources. Cost will be incurred by local fire departments through possible grant monies or county tax revenue and also through school district money from grants and tax revenue. Benefit will outweigh the cost as it will help school age children to start recognizing the dangers of wildfire from an early age and how they can prevent it.	Cave City and Highland School District

\*The Sharp County Judge and County OEM will work alongside with the Superintendents of School Districts for any training or educational action items that are to occur on school based campuses.

## Section 6 – Plan Review, Evaluation, and Implementation

## **6.1 Changes in Development**

The Sharp County Multi-Jurisdictional Hazard Mitigation Plan was originally adopted in June of 2009. Since 2009, Sharp County and the participating jurisdictions have not experienced any significant growth in population or infrastructure development that has increased the impact of natural disasters on any of the communities' infrastructures, citizens or local economic functions. New manufacturing has come and already left the area but has shown no changes in the development of any infrastructure or land use. There has been an increase in the chicken farming industry with new chicken houses being located predominantly throughout the lower County, however at this point there is no rise in concern about the land or environmental use. There has been no change in community priorities for any participating jurisdiction since last plan update.

## **6.2 Progress in Local Mitigation Efforts**

Sharp County Multi-Jurisdictional Hazard Mitigation Plan does depict progress that the County and participating jurisdictions have made since the adoption of the original plan in 2009. The Plan depicts the County and participating jurisdictions' local mitigation efforts by highlighting the growing number of communities who have joined the NFIP, demonstrating how the plan has been incorporated into various other existing emergency management plans and deduction of hazards that are no longer a threat to the County or the participating jurisdictions due to innovative planning and hazard vulnerability reduction. Such hazards have decreased in their importance since the original plan would be extreme heat. According to local officials, extreme heat is not typically life-threating throughout the county and there are sufficient warning systems and offered programs for the disadvantaged and elderly that provide ways to cool during these events.

Since the last plan that was adopted in 2009, Sharp County has completed some of the actions that were specified in the plan and others are ongoing. Some actions were removed as the County's interests and needs have changed. The actions listed from the 2009 plan were individually written according to the jurisdictions; however, this plan has aimed at a more efficient attainable list that combines the jurisdictions as many share needs based on shared or similar rural areas. Completed actions from the previous plan would include the County's ability to notify jurisdictions of possible FEMA/ADEM funds, working with the jurisdictions to achieve NFIP status in many of the counties and identifying those that are not at risk and also improvements with dam inspection and maintenance.

The promotion of safe rooms and safe shelters is ongoing in the County and throughout the planning district; however, a more focused area specifically concerning the School Districts has been defined in the plan update. Also, the identification of repetitive loss areas has been removed as an action but is considered a function within the NFIP status.

Other actions such as research of alternative funding opportunities, data collection, and establishing community involvement have been removed as mitigation actions due to new definitions of actual mitigation rather than just preparedness.

# 6.3 Changes in Priorities

The priority of the Sharp County Multi-Jurisdictional Hazard Mitigation Plan Update of 2017 remains consistent with those of the original plan adopted in 2009. Due to the rural nature of the County and participating jurisdictions and the consistency of issues that occur in the area, the priorities have not changed for this update.

**ADOPTION RESOLUTIONS**