STATE OF ARKANSAS
ALL-HAZARDS MITIGATION PLAN

SEPTEMBER 2018

Arkansas Department of Emergency Management

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List of Acronyms

Acronym	Meaning
A.C.A	Arkansas Code Annotated
ADEM	Arkansas Department of Emergency Management
ADEQ	Arkansas Department of Environmental Quality
ADH	Arkansas Department of Health
AGS	Arkansas Geological Survey
ANO	Arkansas Nuclear One
ANRC	Arkansas Natural Resources Commission
APA	Approvable pending adoption
ARCEMP	Arkansas Comprehensive Emergency Management Plan
ArDOT	Arkansas Department of Transportation
BCEGS	Building Code Effectiveness Grading Schedule
CDBG	Community Development Block Grant
CDC	Center for Disease Control
CFR	Code of Federal Regulations
CRS	Community Rating System
CTP	Cooperating Technical Partner
CUSEC	Central United States Earthquake Consortium
EAP	Emergency Action Plans
EMAP	Emergency Management Accreditation Program
EMPG	Emergency Management Performance Grant
EPZ	emergency planning zone
FEMA	Federal Emergency Managemnt Agency
FIRM	Flood Insurance Rate Maps
FMA	Flood Mitigation Assistance
GDP	Gross domestic product
GIS	Geographic Information System
HazMat	Hazardous Materials
HMA	Hazard Mitigation Assistance
HMGP	Hazard Mitigation Grant Program
HMP	Hazard Mitigation Plan
LEPC	Local Emergency Planning Committees
MAEC	Mid-America Earthquake Center
MPC	Mitigation Planning Committee
NCDC	National Climatic Data Center
NFIP	National Flood Insurance Program
NIMS	National Incident Management System
NLD	National Levee Database
NLIR	National Levee Inventory Report
NLSP	National Levee Safety Program
NMSZ	New Madrid Seismic Zone

Acronym	Meaning
NOAA	National Oceanic and Atmospheric Administration
NPL	National Priorities List
NRCS	Natural Resources Conservation Service
NWS	National Weather Service
OHMS	Office of Hazardous Materials Safety
PA	Public Assistance
PDM	Pre-Disaster Mitigation Program
PHMSA	Pipeline and Hazardous Materials Safety Administration
RISK MAP	Risk Mapping, Assessment and Planning
RL	repetitive loss
SHMO	State Hazard Mitigation Officer
SRL	Severe Repetitive Loss
USACE	U.S. Army Corps of Engineers
USDA	United States Department of Agriculture
USEPA	United State Environmental Protection Agency
USGS	United States Geological Service
WUI	Wildland Urban Interface

1.0 Introduction, Assurances and Adoption

1.1 – Introduction

The State of Arkansas Hazard Mitigation Plan (HMP) is one of many planning tools utilized in order to make our state more resilient to natural and man-made hazards. The information contained in the 2018 update will continue to serve as a guide toward community sustainability and the reduction of the state's vulnerability to hazards. Each hazard that poses a significant risk to the State of Arkansas has been assessed using the same methodology, providing historical background, vulnerability, exposure and potential loss.

The HMP outlines the mitigation strategy developed by the mitigation planning team and adopted by the State of Arkansas; this strategy includes long-term goals, short-term objectives and the assignment of specific, measurable actions. The HMP will be maintained regularly and updated on a five year planning cycle in accordance with Federal Emergency Management Agency (FEMA) regulations. This will ensure the state's future eligibility for federal disaster funding.

The implementation of this HMP is intended to help break the continuing cycle of disaster, damage, and reconstruction that our citizens have been suffering by focusing on the mitigation element of the comprehensive emergency management system. This mitigation element includes policy, planning and project activities that will reduce the vulnerability of Arkansas communities to all identified hazards.

1.2 – Assurances

44 CFR 201.4(c)(7) Assurances. The plan must include assurances that the State will comply with all applicable Federal statutes and regulations in effect with respect to the periods for which it receives grant funding, including 2 CFR parts 200 and 3002. The State will amend its plan whenever necessary to reflect changes in State or Federal statutes and regulations.

The State of Arkansas certifies that it will comply with all applicable Federal statutes and regulations during the periods for which it receives grant funding, in compliance with 44 Code of Federal Regulations (CFR) 13.11(c), and will amend its plan whenever necessary to reflect changes in State or Federal laws and statutes as required in 44 CFR 13.11(d).

This HMP was prepared to comply with all of the requirements of the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988, as amended by the Disaster Mitigation Act of 2000. This HMP complies with all the requirements of:

- Code of Federal Regulation (44 CFR) pertaining to hazard mitigation planning
- FEMA planning directives and guidelines
- Interim and final rules pertaining to hazard mitigation planning and grant funding
- Relevant presidential directives
- Office of Management and Budget circulars
- Any additional and relevant federal government documents, guidelines, and rules.

1.3 – Authorities

The HMP relies on the authorities given to the State of Arkansas by its citizens and encoded in state law. It is intended to be consistent with all policies and procedures that govern activities related to the mitigation programing and planning. In all cases of primacy, State of Arkansas laws, statutes, and policies will supersede the provisions of the plan. The HMP is consistent with the following state authorities:

- Constitution of the State of Arkansas, as amended
- Arkansas Code Annotated (A.C.A.) § 12-49-401 Emergency Management Assistance Compact
- A.C.A. § 12-75 Arkansas Emergency Services Act of 1973
- A.C.A. § 12-77-103 Arkansas Earthquake Program
- A.C.A. § 12-80 Earthquake Resistant Design for Public Structures
- A.C.A. § 14-14-1107 Natural Disasters
- A.C.A. § 14-16-112 Flood Control
- A.C.A. § 14-91-3 Construction in Levee or Flood Control District
- A.C.A. § 14-268 Flood Loss Prevention
- A.C.A. § 15-21-601 Earthquake Activity
- A.C.A. § 15-24 Flood Control
- A.C.A. § 18-15-309 Flood Control Improvements
- A.C.A. § 19-5-1006 Disaster Assistance Fund
- A.C.A. § 19-7-403 Lease of Lands for Flood Control Purposes
- A.C.A. § 23-102-101 Arkansas Earthquake Authority Act
- A.C.A. § 27-72-314 Disaster Counties

In addition, this HMP will be consistent with all relevant federal authorities as well as Emergency Management Accreditation Program (EMAP) mitigation standards.

1.4 – Adoption Resolution

44 CFR Requirement 201.4(c)(6): The plan must be formally adopted by the State prior to submittal to us for final review and approval.

The 2018 Arkansas All Hazards Mitigation Plan was approved and adopted by the Governor of Arkansas on September 5, 2018.

The adopted HMP was then submitted to the FEMA Region VI on September 6, 2018, and approved on September 7, 2018.

Administration and oversight of the hazard mitigation program is the responsibility of the Arkansas Department of Emergency Management (ADEM) Mitigation Branch. The HMP will be reviewed annually and will be updated every five years, or as required by changing hazard mitigation regulations or guidelines.

2.0 Planning Process

2.1 – Documentation of the Planning Process

44 CFR 201.4 (b)Planning process. An effective planning process is essential in developing and maintaining a good plan. The mitigation planning process should include coordination with other State agencies, appropriate Federal agencies, interested groups, and be integrated to the extent possible with other ongoing State planning efforts as well as other FEMA mitigation programs and initiatives.

44 CFR 201.4(c)(1) Description of the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how other agencies participated.

The process established for this planning effort is based on the Disaster Mitigation Act of 2000 planning and update requirements and the FEMA State Mitigation Plan Review Guide. To accomplish this, the following planning process methodology was followed:

- Inform, invite, and involve mitigation plan stakeholders throughout the state, including federal agencies, state agencies, regional groups, businesses, non-profits, and local emergency management organizations.
- Conduct a thorough review of all relevant current and historic planning efforts.
- Collect data on all related state plans and initiatives, local plans' hazard risk, local plans' mitigation strategies and actions, state owned facilities, floodplains, repetitive loss/severe repetitive loss properties, hazard events, on-going and completed mitigation actions, and mitigation program changes since the development of the previous plan. Additionally, all related and relevant state and local plans were reviewed for integration and incorporation.
- Develop the planning and project management process, including methodology, review procedures, details about plan development changes, interagency coordination, planning integration, and the contribution of stakeholders.
- Update the State of Arkansas profile.
- Complete a risk and vulnerability assessment using a Geographic Information System (GIS) driven approach using data from the FEMA and other federal and state agency resources. Analyses were conducted at the state level, county by county, of state owned facilities, and county by county drawing on local assessments.
- Develop a comprehensive mitigation strategy effectively addressing the hazards and mitigation program objectives. This includes identifying state and local capabilities, reviewing pre and post disaster policies and programs, identifying objectives and goals, identifying mitigation actions and projects, and assessing mitigation actions and projects.
- Determine and implement a plan maintenance cycle, including a timeline for plan upgrades and improvements.
- Submit the HMP to FEMA for review and approval and petition the Governor's Office of the State of Arkansas for a letter of formal plan adoption.

2.2 – 2018 Plan Changes

44 CFR 201.4 (d)Review and updates. Plan must be reviewed and revised to reflect changes in development, progress in statewide mitigation efforts, and changes in priorities and resubmitted for approval to the appropriate Regional Administrator every 5 years. The Regional review will be completed within 45 days after receipt from the State, whenever possible. We also encourage a State to review its plan in the post-disaster timeframe to reflect changing priorities, but it is not required.

The HMP has been completely rewritten since the 2013 update. Not only has ADEM made efforts to improve the functionality and effectiveness of the plan itself, but it has also improved its hazard mitigation program. The level of analysis and detail included in this risk assessment is far greater than the previous edition of the plan. This grants the state's improved and robust hazard mitigation program a better base to further mold and improve its mitigation strategy over the next five years.

As part of this planning effort, each section of the previous state mitigation plan was reviewed and analyzed. The sections were reviewed against the following elements:

- Compliance with the current regulatory environment
- Completeness of data
- Correctness of data
- Capability differentials
- Current state environment

2.3 – Mitigation Planning Committee

Upon project initiation, planners from BOLDplanning and ADEM's mitigation branch met and implemented the formation of a mitigation planning committee (MPC). The MPC consisted of 14 members from a cross section of state agencies and departments, with many of the departments and individuals identified from the 2013 planning effort. From project inception to completion, the MPC was notified at each major plan development milestone through on-site meetings and electronic communication. Prior to the plan's submission to FEMA, the MPC was invited to review the plan and provide input.

Additionally, the MPC was used as a conduit to solicit section reviews, confirm accuracy of data, information, and analysis, and solicit mitigation strategy ideas. Where appropriate, the MPC solicited the assistance of technical experts from various agencies and groups. When the MPC updated and improved the HMP's mitigation strategy, personnel from strategically selected agencies were interviewed to provide input on their mitigation capabilities.

In general, all MPC members were asked to participate in the following ways:

- Attend and participate in meetings
- Assist with the collection of data and information

- Review planning elements and drafts
- Integrate hazard mitigation planning elements with other planning mechanisms
- Facilitate agency coordination and cooperation
- Assist with the revision and development of mitigation actions

The following table presents the State of Arkansas MPC.

State of Arkansas MPC Members

Agency/Department	Representative
ADEM (Mitigation Branch)	Lacye Blake, SHMO
ADEM (Mitigation Branch)	Tyler Bridges
ADEM (Mitigation Branch)	Kyle Key
ADEM (Mitigation Branch)	Jennifer Oakley
ADEM (Planning Branch)	Danna Weaver
ADEM Earthquake Planner	Hilda Booth
Arkansas Department of Aeronautics	Jerry Chism
Arkansas Department of Health	Carol Walton
Arkansas Department of Health	Aaron Adams
Arkansas Department of Health	Alyce Wagner
Arkansas Department of Health	Amanda Guizar
Arkansas Department of Transportation	Brooks Booher
Arkansas Forestry Commission	Fred Burnett
Arkansas Forestry Commission	Don McBride
Arkansas Natural Resources Commission	Veronica Villalobos-Pogue
Arkansas Natural Resources Commission	Trevor Timberlake
Arkansas Public Service Commission	Jerry Keever
Arkansas Public Service Commission	Robert Henry

2.4 – Stakeholder Participation

44 CFR 201.4(b): The mitigation planning process should include coordination with other State agencies, appropriate Federal agencies, interested groups...

ADEM acknowledges that effective hazard mitigation planning should involve a diverse group of stakeholders, including government agencies, voluntary organizations, and private sector entities. The coordination and cooperation of these stakeholders assists with all aspects of plan development, including:

- Data collection
- Risk analysis
- Statewide capability assessment
- Mitigation action review, revision and development
- Plan implementation

All identified and vested entities were invited to attend the MPC scheduled meetings. If unable to attend, stakeholders were kept involved in the planning process through:

- Email or phone updates as to planning progress
- Review and comment opportunities on planning elements

The following entities participated in the planning effort:

Participating State Level Agencies

Arkansas Department of Education
Arkansas Department of Emergency Management Homeland Security Branch
Arkansas Department of Emergency Management Critical Infrastructure Branch
Arkansas Department of Emergency Management Recovery Branch
Arkansas Department of Environmental Quality
Arkansas Department of Human Services
Arkansas Department of Information Systems
Arkansas Department of Transportation
Arkansas Geological Survey
Arkansas Geographic Information Office
Arkansas Insurance Department
Arkansas National Guard
Arkansas Natural Resource Commission
Arkansas State Police
Arkansas State University System

Participating Federal Agencies

FEMA Region VI
National Weather Service
United States Army Corps of Engineers
United States Department of Agriculture

Participating Private Sector and Non-Profit Entities

Agency Name
American Red Cross
Arkansas Educational Television Network
Arkansas Electric Cooperative
Arkansas Wing, Civil Air Patrol
Central U.S. Earthquake Consortium

2.5 – Public Participation

As part of the overall planning process, the general public was provided with numerous opportunities to contribute and comment on the creation and adoption of the plan. These opportunities included:

- Open meeting invitations
- An open comment period upon completion of the draft plan

Input from the public can provide a clearer understanding of local concerns, increase the likelihood of citizen buy-in concerning proposed mitigation actions, and provide elected officials with a guide and tool to set policies, ordinances and regulations. Additionally, as citizens are made more aware of potential hazards and the local process to mitigate against their impacts, it is believed that they will take a stronger role in making their homes, neighborhoods, schools, and businesses safer from the potential effects of natural hazards. As of plan submission, no feedback has been received from the public.

2.6 – Planning Meetings

The State of Arkansas MPC held various public and interagency meetings to discuss the HMP process as well as receive input. These meetings provided opportunities for local governments, state agencies, and departments to be involved in the planning process.

MPC members were notified of every primary planning meeting. These meetings were used to establish ADEM's standard operating procedures, update the MPC on plan progress, and solicit input on the HMP's development. In the event an MPC member was not able to attend, meeting information and progress was electronically disseminated among them to maintain a common operating picture.

Three MPC meetings were convened over the course of plan development. These meetings were held near key project milestones to solicit both feedback and plan consensus.

Plan Initiation Meeting

On April 25, 2017, BOLDplanning and ADEM conducted an initiation meeting to begin the development of the HMP, foster agency coordination among plan partners, and bring together the MPC. ADEM's project manager, the State Hazard Mitigation Officer (SMHO), along with planners from BOLDplanning, presented the HMP's development process, planning expectations, objectives, and proposed timeline to the MPC members.

Risk Assessment and Mitigation Strategy Review Meeting

On November 7, 2017 MPC representatives met to review and revise, as necessary, the state's hazard list and vulnerability assessment. MPC members also reviewed the proposed mitigation strategy to ensure it was in-line with the current planning environment. Finally, each mitigation action item was reviewed, and a determination was made whether the action was still applicable and achievable if not already completed.

Mitigation Strategy Revision Meeting

On April 18, 2018 the ADEM Mitigation Branch met with Arkansas Natural Resources Commission (ANRC) to revise and add information to the draft mitigation strategy and repetitive loss strategy. The plan maintenance section was also discussed and updated. Since the ADEM Mitigation Branch is the lead for the plan, they established the schedule moving forward for the next revision.

SHMO Monthly Status Meetings

Monthly status meetings were convened with the State of Arkansas SHMO to review plan progress, address any data discrepancies or deficiencies, and to refine the plan on an on-going basis.

2.7 – Hazard Mitigation Program Integration

44 CFR 201.4(b): … be integrated to the extent possible with other ongoing State planning efforts, as well as other FEMA mitigation programs and initiatives.

The HMP is an overarching document that is both comprised of, and contributes to, various other state plans. In creating this HMP, all of the planning documents identified below were consulted and reviewed. In turn, when each of these other plans is updated, they will be measured against the contents of the HMP.

Information from the HMP is often used by local jurisdictions to incorporate into their hazard mitigation plans. This information includes hazard identification and risk assessment, goals and objectives, local capabilities, and mitigation initiatives.

The Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation Program (PDM), Earthquake Program, and mitigation planning are all the direct responsibility of ADEM. The Flood Mitigation Assistance (FMA) Program and floodplain management are the responsibility of the ANRC. ADEM and ANRC work closely to ensure that mitigation goals and initiatives are integrated to the extent possible into all planning activities for federal, state, and local governments.

A primary task in fulfilling ADEM's mission is the development and maintenance of the Arkansas Comprehensive Emergency Management Plan (ARCEMP). The ARCEMP is an all-inclusive, operational document that describes how resources of local, state, and federal governments may be most effectively used to ensure the State is prepared for all hazards. The ARCEMP integrates all federal emergency management plans, programs, initiatives, and policies to keep the state and all state planning activities aligned with federal goals and objectives. Per these design guidelines, ADEM works with FEMA to administer federal hazard mitigation assistance programs to the State of Arkansas.

Below is a list of the state's various planning efforts, sole or jointly administered programs, and documents. While each plan can stand alone, their review and functional understanding was pivotal in the development of this plan and further strengthens and improves Arkansas' resilience to disasters.

- ARCEMP
- Arkansas Department of Emergency Management Hazard Mitigation Administrative Plan
- Arkansas Economic Development Commission Action Plan for Disaster Recovery
- Arkansas Governor's Earthquake Advisory Council
- Arkansas Hazardous Materials Emergency Response Commission
- Arkansas Influenza Pandemic Response Plan
- Arkansas Natural Resources Commission Floodplain Management Program

- Arkansas Natural Resources Commission State Water Plan
- Arkansas Natural Resources Commission Dam Safety Program
- Critical Infrastructure Protection Program

Information from each of these plans and programs is utilized within the applicable hazard sections to provide data and fully inform decision making and prioritization.

This HMP is available to all state agencies to reference when seeking information and guidance on state mitigation goals and objectives. The general information in this plan is also intended for use by local governments, universities, businesses, and private associations, in addition to state and federal departments and agencies. Data from the 2013 hazard mitigation plan was utilized by ANRC on the 2014 Arkansas Water Plan Update and the development of the Drought Contingency Response Network group.

Federal Level Plan Integration

State-level mitigation is inherently integrated into a host of federal programs and initiatives. Utilizing federal grant programs, the state and its local jurisdictions have accomplished numerous mitigation activities, mitigating much of the adverse effects associated with hazards. Additionally, participation in some of the lesser utilized federal initiatives (Community Rating System and FireWise) is growing in the State of Arkansas. The following list illustrates federal programs integrated and referenced in the State of Arkansas' mitigation efforts.

- Community Rating System (CRS)
- Hazard Mitigation Grant Program (HMGP)
- Flood Mitigation Assistance (FMA)
- National Flood Insurance Program (NFIP)
- Pre Disaster Mitigation (PDM)
- FireWise Communities Program

Integration Challenges

ADEM is responsible for coordinating the development of local mitigation plans by providing grant funding, technical assistance and review. Limited staff as well as funding restrictions cause challenges in local mitigation plan development. There is a high demand for local mitigation plans, but funding is usually contingent upon a grant, which could cause the plan to lapse. It is important to keep local mitigation plans current so that their data may be used in the updates of the HMP.

ADEM is actively working at standardizing the methodology for all local mitigation plans. Currently, jurisdictions use different methodologies and data sets to determine risks and vulnerabilities. This creates a challenge in integrating plans into the HMP as data has to be translated to fit one planning standard.

3.0 State Level Data

3.1 – Introduction

44 CFR 201.4(c)(2)(ii): An overview and analysis of the State's vulnerability to the hazards described in this paragraph (c)(2), based on estimates provided in local risk assessments as well as the State risk assessment. The State shall describe vulnerability in terms of the jurisdictions most threatened by the identified hazards, and most vulnerable to damage and loss associated with hazard events. State owned or operated critical facilities located in the identified hazard areas shall also be addressed; ***(iii)*** *An overview and analysis of potential losses to the identified vulnerable structures, based on estimates provided in local risk assessments as well as the State risk assessment. The State shall estimate the potential dollar losses to State owned or operated buildings, infrastructure, and critical facilities located in the identified hazard areas.*

Data concerning development trends and conditions is of great importance in determining statewide risk and vulnerability to identified hazards, especially in locations which are susceptible to identified hazards. In general, any increase in population or development in hazard susceptible areas tends to increase both the risk and the vulnerability to that hazard. As such, the information presented in this chapter details relevant population and building statistics for the State of Arkansas. This data will then be used to determine and refine potential hazard vulnerability in succeeding sections.

3.2 – Statewide Population Data

The State of Arkansas has been experiencing drastic population changes since 1980. Of note:

- The state has gained 701,803 persons over the 35-year period of 1980 to 2015
- This population gain represents a growth of 30.7%
- This population gain equates to a yearly growth rate of 0.88%

The following tables present population data for the State. In general, the higher a county's population and population growth, the greater the chance their hazard vulnerability will increase as well.

Of note:

- Population gains were noted in 29 counties
- Population declines were seen in 42 counties
- Static population change (less than 100 people difference) was seen in four counties
- The greatest population increase was seen in urban areas of the state, including counties surrounding the city of Little Rock (Lonoke Faulkner, and Pulaski) and the cities of Bentonville and Fayetteville (Benton and Washington)
- Eight counties (Benton, Craighead, Faulkner, Lonoke, Pulaski, Sebastian, Washington, and White) contributed 310,523 people to the statewide population gain of 314,848 persons (98.6%)

State of Arkansas Population Data

County	Population 2000	Population 2010	Population 2015	Numeric Population Change 2000 - 2015	Percent Population Change 2000 to 2015
State of Arkansas	**2,673,400**	**2,915,918**	**2,988,248**	**314,848**	**11.77%**
Arkansas	20,749	19,019	18,214	-2,535	-12.21%
Ashley	24,209	21,853	20,492	-3,717	-15.35%
Baxter	38,386	41,513	41,062	2,676	6.97%
Benton	153,406	221,339	258,291	104,885	68.37%
Boone	33,948	36,903	37,304	3,356	9.88%
Bradley	12,600	11,508	10,996	-1,604	-12.73%
Calhoun	5,744	5,368	5,144	-600	-10.44%
Carroll	25,357	27,446	27,646	2,289	9.02%
Chicot	14,117	11,800	10,945	-3,172	-22.46%
Clark	23,546	22,995	22,657	-889	-3.77%
Clay	17,609	16,083	14,920	-2,689	-15.27%
Cleburne	24,046	25,970	25,264	1,218	5.06%
Cleveland	8,571	8,689	8,241	-330	-3.85%
Columbia	25,603	24,552	23,901	-1,702	-6.64%
Conway	20,336	21,273	20,937	601	2.95%
Craighead	82,148	96,443	105,835	23,687	28.83%
Crawford	53,247	61,948	62,267	9,020	16.93%
Crittenden	50,866	50,902	49,235	-1,631	-3.20%
Cross	19,526	17,870	17,037	-2,489	-12.74%
Dallas	9,210	8,116	7,469	-1,741	-18.90%
Desha	15,341	13,008	11,876	-3,465	-22.58%
Drew	18,723	18,509	18,651	-72	-0.38%
Faulkner	86,014	113,237	122,227	36,213	42.10%
Franklin	17,771	18,125	17,626	-145	-0.81%
Fulton	11,642	12,245	12,123	481	4.13%
Garland	88,068	96,024	97,477	9,409	10.68%
Grant	16,464	17,853	18,082	1,618	9.82%
Greene	37,331	42,090	44,598	7,267	37.94%
Hempstead	23,587	22,609	21,974	-1,613	-6.83%
Hot Spring	30,353	32,923	33,374	3,021	9.95%
Howard	14,300	13,789	13,377	-923	-6.45%
Independence	34,233	36,647	37,168	2,935	8.57%
Izard	13,249	13,696	13,433	184	1.38%
Jackson	18,418	17,997	17,221	-1,197	-6.49%
Jefferson	84,278	77,435	70,016	-14,262	-16.92%
Johnson	22,781	25,540	26,176	3,395	14.9%
Lafayette	8,559	7,645	6,847	-1,712	-20.00%
Lawrence	17,774	17,415	16,735	-1,039	-5.84%
Lee	12,580	10,424	9,310	-3,270	-25.99%
Lincoln	14,492	14,134	13,705	-787	-5.43%

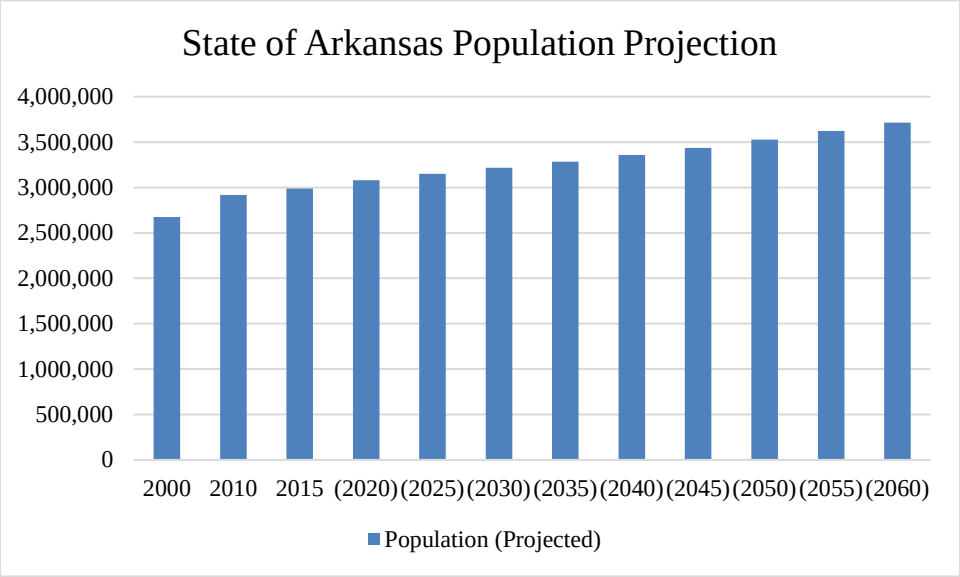
State of Arkansas Population Data

County	Population 2000	Population 2010	Population 2015	Numeric Population Change 2000 - 2015	Percent Population Change 2000 to 2015
Little River	13,628	13,171	12,451	-1,177	-8.63%
Logan	22,486	22,353	21,792	-694	-3.08%
Lonoke	52,828	68,356	72,228	19,400	36.72%
Madison	14,243	15,717	16,072	1,829	12.84%
Marion	16,140	16,653	16,325	185	1.14%
Miller	40,443	43,462	43,787	3,344	8.26%
Mississippi	51,979	46,480	42,835	-9,144	-17.59%
Monroe	10,254	8,149	7,169	-3,085	-30.08%
Montgomery	9,245	9,487	8,879	-366	-3.95%
Nevada	9,955	8,997	8,398	-1,557	-15.64%
Newton	8,608	8,330	7,936	-672	-7.80%
Ouachita	28,790	26,120	24,098	-4,692	-16.29%
Perry	10,209	10,445	10,132	-77	-0.75%
Phillips	26,445	21,757	18,975	-7,470	-28.24%
Pike	11,303	11,291	10,832	-471	-4.16%
Poinsett	25,614	24,583	24,023	-1,591	-6.21%
Polk	20,229	20,662	20,173	-56	-0.27%
Pope	54,469	61,754	63,779	9,310	17.09%
Prairie	9,539	8,715	8,251	-1,288	-13.50%
Pulaski	361,474	382,748	393,250	31,776	8.79%
Randolph	18,195	17,969	17,448	-747	-4.10%
St. Francis	29,329	28,258	26,196	-3,133	-10.68%
Saline	83,529	107,118	118,703	35,174	42.10%
Scott	10,996	11,233	10,277	-719	-6.53%
Searcy	8,261	8,195	7,967	-294	-3.55%
Sebastian	115,071	125,744	127,793	12,722	11.05%
Sevier	15,757	17,058	16,910	1,153	7.31%
Sharp	17,119	17,264	17,157	38	0.22%
Stone	11,499	12,394	12,539	1,040	9.04%
Union	45,629	41,639	39,887	-5,742	-12.58%
Van Buren	16,192	17,295	16,628	436	2.69%
Washington	157,715	203,065	228,049	70,334	44.59%
White	67,165	77,076	79,263	12,098	18.01%
Woodruff	8,741	7,260	6,641	-2,100	-24.02%
Yell	21,139	22,185	21,552	413	1.95%

Source: US Census Bureau

The University of Arkansas, Little Rock Arkansas Economic Development Institute developed population projections for the state using historical and trend data. Indications are the state will experience steady growth in the population through the year 2060. Between 2015 and 2060 the population is expected to

increase from 2,988,248 to 3,715,523, an increase of 24.4%, or 0.54% per year. This information is highly speculative, but can assist with determining potential increased vulnerability to identified hazards.



The National Response Framework defines at risk populations as "populations whose members may have additional needs before, during, and after an incident in functional areas, including but not limited to: maintaining independence, communication, transportation, supervision, and medical care."

In general, at risk populations may have difficulty with medical issues, poverty, extremes in age, and communications due to language barriers.

The following tables present information on potential at risk populations within the State of Arkansas. In general, the higher a county's vulnerable population, the greater their hazard vulnerability. Of note:

- Population gains in children under 5 years of age were noted in 22 counties, a 5.5% increase over the 15-year period
- Population gains in adults over 65 years of age were seen in 57 counties, a 22.3% increase over the 15-year period
- A large increase of 61.5% was seen in persons speaking a language other than English at home

State of Arkansas Potentially Vulnerable Population Data

County	Population 5 and Under (2000)	Population 5 and Under (2015)	Population 65+ (2000)	Population 65+ (2015)	Person Speaking Language Other Than English At Home (2000)	Person Speaking Language Other Than English At Home (2015)
State of Arkansas	**181,585**	**191,490**	**369,467**	**451,688**	**123,755**	**199,882**
Arkansas	1,362	1,257	3,360	3,217	436	542

State of Arkansas Potentially Vulnerable Population Data

County	Population 5 and Under (2000)	Population 5 and Under (2015)	Population 65+ (2000)	Population 65+ (2015)	Person Speaking Language Other Than English At Home (2000)	Person Speaking Language Other Than English At Home (2015)
Ashley	1,633	1,342	3,342	3,730	914	974
Baxter	1,713	1,757	10,282	12,134	1,146	870
Benton	11,616	17,622	21,973	30,185	14,509	31,426
Boone	2,124	2,178	5,659	7,225	987	883
Bradley	749	775	2,202	2,041	593	1,176
Calhoun	305	264	917	402	122	103
Carroll	1,632	1,606	4,013	5,131	2,692	3,859
Chicot	981	750	2,174	2,158	633	528
Clark	1,403	1,198	3,433	3,517	905	1,108
Clay	1,054	709	3,408	3,201	295	334
Cleburne	1,232	1,330	5,071	6,467	591	558
Cleveland	560	421	1,162	1,535	187	147
Columbia	1,568	1,448	4,073	3,961	686	1,155
Conway	1312	1,216	3280	3,817	560	860
Craighead	5,640	7,076	9,662	12,687	2,942	4,900
Crawford	3,940	3,800	6,002	9,195	2,143	4,001
Crittenden	4,270	3,870	5,058	5,928	1,612	1,369
Cross	1,312	1,133	2,668	2,927	470	256
Dallas	565	331	1,564	1,547	305	298
Desha	1,149	885	2,173	2,075	531	549
Drew	1,253	1,144	2,402	2,953	562	529
Faulkner	5,908	8,084	3,381	12,949	3,216	4,937
Franklin	1,149	1,066	2,801	3,226	488	280
Fulton	635	591	2,353	3,009	170	246
Garland	4,879	5,312	18,652	20,767	4,035	4,983
Grant	1,055	1,041	2,055	2,829	335	336
Greene	2,490	2,777	5,192	6,397	681	962
Hempstead	1,769	1,478	3,326	3,576	2,063	2,344
Hot Spring	1,913	1,791	4,783	5,701	736	514
Howard	959	875	2,160	2,181	977	1,624
Independence	2,194	2,339	4,957	6,072	966	1,682
Izard	677	583	2,800	3,316	294	258
Jackson	1,052	989	3,043	2,909	370	293
Jefferson	5,801	4,502	10,888	10,757	2,670	2,572
Johnson	1,521	1,803	3,364	4,023	1,327	2,746
Lafayette	515	370	1,517	1,531	228	83
Lawrence	1,128	953	3,095	3,277	251	297
Lee	807	507	1,758	1,662	443	168
Lincoln	831	626	1,721	1,836	260	374

State of Arkansas Potentially Vulnerable Population Data

County	Population 5 and Under (2000)	Population 5 and Under (2015)	Population 65+ (2000)	Population 65+ (2015)	Person Speaking Language Other Than English At Home (2000)	Person Speaking Language Other Than English At Home (2015)
Little River	939	648	2,054	2,404	437	411
Logan	1,455	1,218	3,599	4,155	547	608
Lonoke	3,774	4,844	5,491	8,614	1,297	1,910
Madison	915	926	2,048	2,677	497	819
Marion	810	737	3,232	4,271	414	265
Miller	3,005	3,042	5,307	6,413	1,124	941
Mississippi	4,223	3,254	6,535	5,851	1,551	1,527
Monroe	709	487	1,774	1,586	224	166
Montgomery	562	454	1,749	2,208	356	283
Nevada	635	538	1,606	1,723	290	346
Newton	501	359	1,276	1,829	127	38
Ouachita	1,768	1,627	4,873	4,450	613	440
Perry	644	593	1,508	1,888	276	133
Phillips	2,245	1,602	3,686	3,227	743	342
Pike	719	677	1,918	2,032	407	580
Poinsett	1,746	1,548	3,658	4,083	610	505
Polk	1,357	1,217	3,439	4,265	847	879
Pope	3,559	4,021	6,943	8,788	1,842	4,008
Prairie	570	436	1,651	1,800	219	100
Pulaski	25,905	27,244	41,425	50,080	18,541	28,604
Randolph	1,093	986	3,098	3,473	387	346
St. Francis	2,252	1,779	3,480	3,644	595	1,425
Saline	5,383	6,924	10,420	18,901	2,395	5,231
Scott	806	609	1,612	1,953	619	927
Searcy	457	389	1,590	1,849	145	55
Sebastian	8,473	8,744	14,907	17,774	9,979	18,227
Sevier	1,235	1,376	2,077	2,320	2,576	4,747
Sharp	940	821	4,041	4,267	367	398
Stone	629	602	2,134	3,066	245	213
Union	2,942	2,324	7,350	6,653	1,074	1,425
Van Buren	833	793	3,777	4,114	366	575
Washington	11,639	15,860	15,596	22,579	15,342	34,482
White	4,214	5,166	9,253	11,716	2,183	3,888
Woodruff	614	394	1,458	1,411	135	22
Yell	1,378	1,452	3,178	3,573	2,654	3,892

Source: US Census Bureau

3.3 – Statewide Housing Data

Closely tracking population data, but tending to lag population changes, housing data is a good indicator of changing state demographics and growth. Over the period 2000 to 2015 the State of Arkansas has been experiencing a yearly housing increase of 15.49%, or 181,719 units. Counties experiencing marked housing growth are highlighted in green, while counties highlighted in yellow showed marked housing decreases. In general, the higher a county's housing stock, the greater the chance their hazard vulnerability will increase as well.

Of note:

- Housing gains were noted in 47 counties
- Housing declines were seen in 24 counties
- Static housing change (less than 100 units difference) was seen in four counties
- The greatest housing increase was seen in urban areas of the state, including counties surrounding the city Little Rock (Lonoke Faulkner, and Pulaski) and the cities of Bentonville and Fayetteville (Benton and Washington)
- Similar to the above referenced population data, eight counties (Benton, Craighead, Faulkner, Lonoke, Pulaski, Sebastian, Washington and White) contributed 133,125 housing units to the statewide housing units gain of 181,719 housing units (73.3%)
- Mobile homes make up a high percentage of the housing stock in the State of Arkansas. Mobile homes comprise 25% or greater of the housing stock in Calhoun, Cleveland, Drew, Grant, Hot Spring, Lincoln, Perry, Pike, Sevier, Stone and Van Buren Counties.
- Mobile home housing stock has increased in 48 counties from 2010 to 2015.

State of Arkansas Housing Data

County	Housing Units 2000	Housing Units 2015	Percent Housing Change 2000 - 2015	Mobile Homes 2015	Mobile Home Percent of Housing, 2015
State of Arkansas	**1,173,043**	**1,354,762**	**15.49%**	**170,060**	**14.5%**
Arkansas	9,672	9,445	-2.34%	-227	16.4%
Ashley	10,615	10,087	-4.97%	-528	22.5%
Baxter	19,891	22,662	13.93%	2,771	18.2%
Benton	64,281	102,139	58.89%	37,858	8.5%
Boone	15,426	16,925	9.72%	1,499	14.2%
Bradley	5,930	5,794	-2.29%	-136	16.4%
Calhoun	3,012	2,882	-4.32%	-130	24.7%
Carroll	11,828	13,597	14.96%	1,769	16.8%
Chicot	5,974	5,399	-9.63%	-575	16.8%
Clark	10,166	10,418	2.48%	252	21.3%
Clay	8,498	8,025	-5.57%	-473	9.7%
Cleburne	13,732	15,868	15.56%	2,136	24.2%
Cleveland	3,834	4,045	5.50%	211	29.7%
Columbia	11,566	11,588	0.19%	22	18.9%
Conway	9,028	9,732	7.79%	704	18.4%

State of Arkansas Housing Data

County	Housing Units 2000	Housing Units 2015	Percent Housing Change 2000 - 2015	Mobile Homes 2015	Mobile Home Percent of Housing, 2015
Craighead	35,133	44,394	26.36%	9,261	8.1%
Crawford	21,315	26,550	24.56%	5,235	15.0%
Crittenden	20,507	21,708	5.86%	1,201	8.5%
Cross	8,030	7,900	-1.62%	-130	17.8%
Dallas	4,401	4,282	-2.70%	-119	16.2%
Desha	6,663	6,297	-5.49%	-366	13.4%
Drew	8,287	8,484	2.38%	197	28.0%
Faulkner	34,546	49,321	42.77%	14,775	18.7%
Franklin	7,673	8,013	4.43%	340	16.1%
Fulton	5,973	6,761	13.19%	788	24.1%
Garland	44,953	50,563	12.48%	5,610	16.5%
Grant	6,960	7,847	12.74%	887	29.7%
Greene	16,161	18,737	15.93%	2,576	14.6%
Hempstead	10,166	10,459	2.88%	293	19.6%
Hot Spring	13,384	14,307	6.89%	923	25.2%
Howard	6,297	6,232	-1.03%	-65	14.7%
Independence	14,841	16,335	10.06%	1,494	21.7%
Izard	6,591	7,213	9.43%	622	21.4%
Jackson	7,956	7,587	-4.63%	-369	12.8%
Jefferson	34,350	33,244	-5.95%	-1,106	11.3%
Johnson	9,926	11,393	14.78%	1,467	17.9%
Lafayette	4,560	4,340	-4.82%	-220	23.8%
Lawrence	8,085	7,978	-1.32%	-107	13.0%
Lee	4,768	4,356	-8.64%	-412	12.7%
Lincoln	4,955	4,850	-2.11%	-105	32.7%
Little River	6,435	6,444	0.14%	9	16.2%
Logan	9,942	10,122	1.81%	180	14.1%
Lonoke	20,749	29,165	40.56%	8,416	22.3%
Madison	6,537	7,485	14.50%	948	23.1%
Marion	8,235	9,352	13.56%	1,117	21.6%
Miller	17,727	19,447	9.70%	1,720	14.0%
Mississippi	22,310	20,531	-7.97%	-1,779	9.5%
Monroe	5,067	4,423	-12.70%	-644	9.2%
Montgomery	5,048	5,745	13.80%	697	35.3%
Nevada	4,751	4,534	14.37%	-217	24.3%
Newton	4,316	4,671	8.22%	355	16.5%
Ouachita	13,450	13,051	-2.96%	-399	14.7%
Perry	4,702	4,901	4.23%	199	27.2%
Phillips	10,859	10,199	-6.07%	-660	10.4%
Pike	5,536	5,569	0.59%	33	25.5%
Poinsett	11,051	10,932	-1.07%	-119	11.1%
Polk	9,236	10,028	8.57%	792	22.2%

State of Arkansas Housing Data

County	Housing Units 2000	Housing Units 2015	Percent Housing Change 2000 - 2015	Mobile Homes 2015	Mobile Home Percent of Housing, 2015
Pope	22,851	26,015	13.84%	3,164	14.0%
Prairie	4,790	4,498	-6.09%	-292	23.2%
Pulaski	161,135	183,269	13.73%	22,134	6.6%
Randolph	8,268	8,567	3.61%	299	13.2%
St. Francis	11,242	10,905	-2.99%	-337	15.8%
Saline	33,825	47,858	41.48%	14,033	23.6%
Scott	4,924	5,210	5.80%	286	18.1%
Searcy	4,292	4,893	14.00%	601	21.5%
Sebastian	49,311	56,562	14.70%	7,251	4.8%
Sevier	6,434	6,882	6.96%	448	26.0%
Sharp	9,342	9,820	5.11%	478	14.5%
Stone	5,715	6,767	18.40%	1,052	29.8%
Union	20,676	19,792	-4.27%	-884	22.5%
Van Buren	9,164	10,340	12.83%	1,176	25.5%
Washington	64,330	92,028	43.05%	27,698	7.5%
White	27,613	33,345	20.75%	5,732	22.1%
Woodruff	4,089	3,876	-5.20%	-213	13.8%
Yell	9,157	9,779	6.79%	622	14.8%

Source: US Census Bureau

3.4 – State-Owned and Operated Facility Data

Data was collected statewide for State of Arkansas owned and operated facilities. Changes to the vulnerability of state-owned buildings, infrastructure and critical facilities have been insignificant over the past five years due to the lack of new construction.

In addition, a subset of these facilities was determined to be critical facilities, defined as structures that must operate before, during and after and emergency or hazard event and are vital to health and safety. The following State-owned and operated facility types have been identified as being critical to the State:

- Emergency Operations Center/ Command and Control Centers
- Public safety facilities
- Medical facilities
- Institutions and/or care facilities
- Corrections facilities
- Data and record storing facilities
- Utility infrastructure facilities, including power and water
- Vital transportation facilities, such as airports, bridges and tunnels

The following table displays the number of state owned facilities and critical facilities for each county, as well as their replacement values. The replacement values were obtained through the Arkansas Insurance

Department and ADEM using best available data, and represent total facility destruction. This data will be used to determine potential hazard vulnerability in subsequent sections. While the amounts below assume a worst-case scenario event, future state plan updates will have refined figures that estimate dollar losses specific to each hazard, rather than assuming total facility destruction.

When identifying critical facilities it was determined that any facility with a $0 valuation would not be included in the count.

State of Arkansas Owned and Operated Facilities

County	State-Owned Facilities	Total Valuation	Critical Facilities	Critical Facility Total Valuation
State of Arkansas	**5,730**	**$8,865,814,300**	**1,089**	**$2,194,373,128**
Arkansas	41	$416,319,788	5	$3,326,664
Ashley	12	$19,237,703	3	$1,608,294
Baxter	12	$40,906,210	2	$711,746
Benton	91	$63,237,979	11	$3,615,841
Boone	55	$29,546,068	24	$10,551,373
Bradley	63	$8,857,276	5	$2,359,090
Calhoun	22	$47,679,917	3	$944,746
Carroll	22	$32,328,304	1	$526,383
Chicot	86	$34,615,898	19	$38,351,802
Clark	150	$109,725,870	3	$1,957,006
Clay	35	$3,288,517	1	$353,957
Cleburne	18	$6,851,080	2	$1,283,923
Cleveland	8	$3,827,964	1	$300,599
Columbia	138	$78,843,077	1	$274,371
Conway	100	$15,569,386	4	$1,216,743
Craighead	290	$219,788,810	8	$4,135,316
Crawford	58	$210,139,702	5	$2,780,793
Crittenden	51	$119,025,900	7	$3,562,156
Cross	90	$185,863,362	10	$8,483,377
Dallas	10	$47,381,099	2	$940,742
Desha	22	$62,519,831	4	$1,649,509
Drew	26	$25,963,428	5	$1,607,565
Faulkner	375	$1,273,968,488	4	$2,126,375
Franklin	25	$178,318,097	1	$280,928
Fulton	40	$11,055,589	3	$921,378
Garland	210	$735,495,705	7	$4,579,645
Grant	12	$633,159	5	$3,039,299
Greene	75	$100,332,674	16	$9,525,474
Hempstead	114	$350,739,747	17	$12,560,915
Hot Spring	119	$175,934,326	28	$184,497,227
Howard	34	$3,519,004	7	$2,497,745
Independence	47	$8,598,781	34	$6,324,111
Izard	41	$19,836,647	15	$59,889,054
Jackson	101	$125,251,657	39	$136,959,919

State of Arkansas Owned and Operated Facilities

County	State-Owned Facilities	Total Valuation	Critical Facilities	Critical Facility Total Valuation
Jefferson	257	$726,196,049	157	$245,560,270
Johnson	32	$26,246,860	7	$1,799,137
Lafayette	23	$45,878,467	2	$797,085
Lawrence	58	$166,300,006	2	$989,381
Lee	52	$48,542,001	28	$117,373,491
Lincoln	185	$297,637,208	155	$233,084,346
Little River	24	$6,171,349	3	$1,601,796
Logan	147	$416,558,262	10	$1,351,839
Lonoke	51	$100,216,710	9	$5,467,923
Madison	35	$732,445	3	$1,824,844
Marion	25	$3,075,978	6	$2,301,351
Miller	32	$90,913,252	9	$90,913,252
Mississippi	82	$130,425,929	23	$20,186,394
Monroe	9	$14,302,601	1	$195,737
Montgomery	18	$10,973,961	2	$992,636
Nevada	38	$68,617,083	3	$1,281,237
Newton	16	$3,578,748	2	$925,237
Ouachita	95	$112,171,397	34	$19,270,995
Perry	13	$376,164	1	$275,160
Phillips	35	$71,350,166	4	$1,181,081
Pike	56	$43,228,530	2	$999,433
Poinsett	47	$27,827,627	3	$2,374,509
Polk	36	$16,232,150	2	$1,142,085
Pope	210	$212,100,639	26	$10,638,797
Prairie	24	$9,301,979	2	$959,696
Pulaski	626	$854,340,146	198	$848,605,823
Randolph	58	$33,177,986	3	$2,091,080
St. Francis	83	$41,077,656	7	$2,537,948
Saline	137	$131,688,684	8	$13,257,880
Scott	43	$17,011,227	4	$1,308,417
Searcy	15	$4,691,087	3	$1,629,588
Sebastian	59	$37,148,001	31	$21,655,697
Sevier	10	$3,780,275	2	$786,683
Sharp	19	$7,696,032	2	$905,356
Stone	75	$32,981,771	3	$4,440,517
Union	75	$49,769,839	3	$2,300,866
Van Buren	17	$5,200,672	2	$1,026,183
Washington	158	$116,099,895	12	$11,335,741
White	94	$94,458,624	6	$1,556,212
Woodruff	8	$6,015,359	2	$712,151
Yell	60	$61,679,129	5	$2,991,207

Source: HAZUS, Arkansas Insurance Department and ADEM

3.5 – Statewide Land Use Patterns

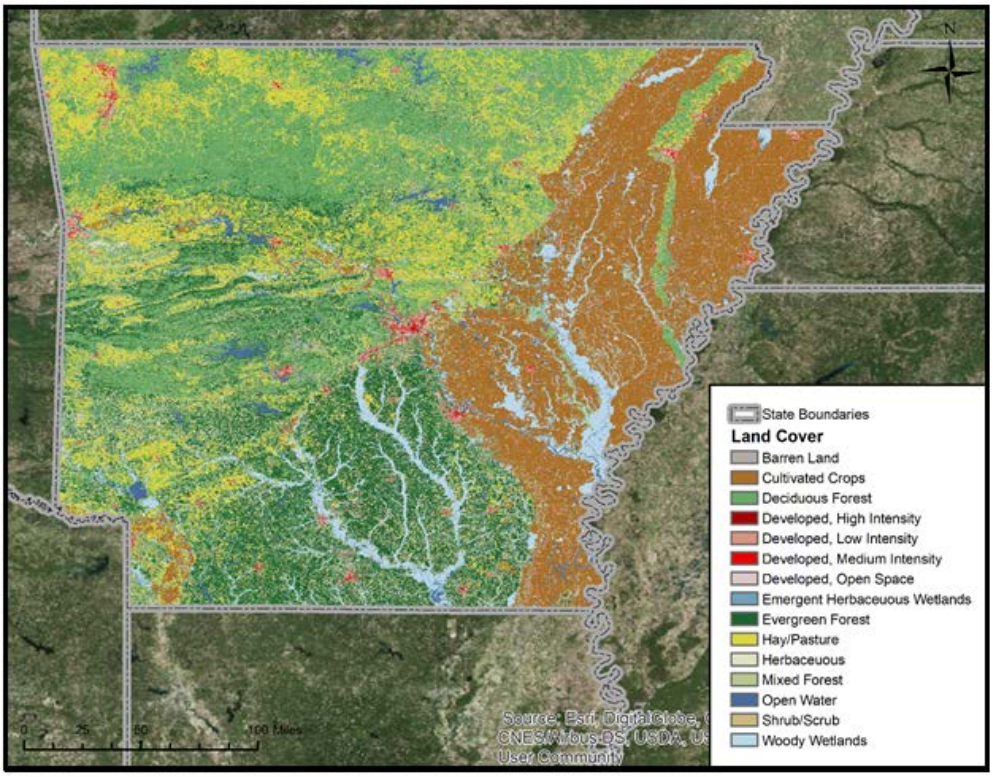
In general, statewide land use is determined by four major types of regulation, zoning ordinances, floodplain ordinances and building code requirements. In the State of Arkansas:

- Zoning regulations are determined by local governments
- State level floodplain regulations are determined by Arkansas Code, Title 14 – Local Government, Subtitle 16 – Public Health and Welfare Generally, Chapter 268 – Flood Loss Prevention.
- Fire: 2012 Arkansas Fire Prevention Code, Volume I (2012 IFC with Arkansas Amendments)
- Building: 2012 Arkansas Fire Prevention Code, Volume II (2012 IBC with Arkansas Amendments)

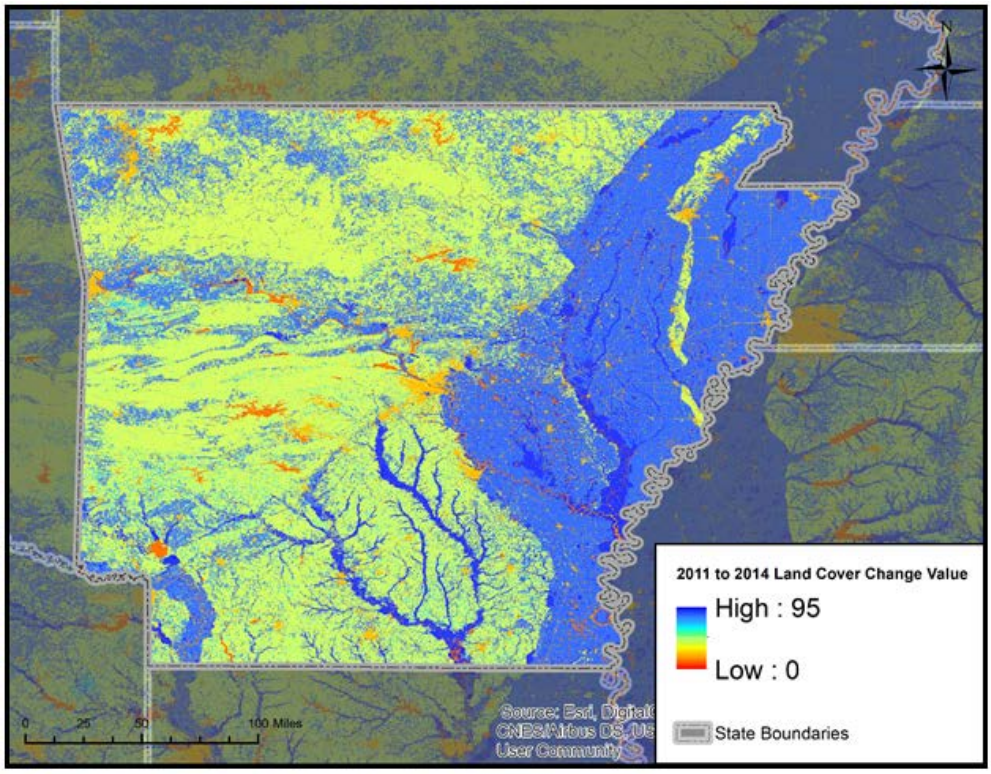
These four types of regulations have a major effect on land use changes and can significantly alter a state's hazard vulnerability landscape. Specific examples that can alter the landscape include:

- Unrestricted residential growth can increase a population's exposure to identified hazard prone areas.
- Rapid, unchecked development can put a strain on a community's vulnerable resources such as its energy infrastructure.
- Residential development constructed quickly and inexpensively to meet consumer demand will often lack long term mitigation measures and resiliency.
- Rapid development can alter the landscape in ways affecting urban runoff, drainage, or other environmental considerations which have drastic effects on floodplains.

The following map, derived from the United States Geological Service (USGS) Land Cover Institute, shows current land use conditions for the State. In general, the land cover map indicates that a majority of the state is either agricultural or forested, with small areas of medium intensity development.



The following map, derived from the USGS Land Cover Institute, shows landcover changes for the State from 2011 to 2014. The map illustrates that rural areas of the state are undergoing consistent changes in the land use environment, likely due to crop rotation and stewardship operations.



3.6 – Statewide Economic Activity Patterns

Arkansas's continued economic growth has similar impacts on its vulnerability as does its population and housing growth. Vulnerability can be increased in two ways, by location-based growth in identified hazard prone areas, or by the industry type itself as is the case with chemical manufacturing or mining.

Gross domestic product (GDP) is a measure of the entire output of a defined economy, and roughly equals the total dollar amount of all goods and services produced within a defined area. GDP is the most comprehensive measure of economic activity and business growth. The Bureau of Economic Analysis data indicates Arkansas has shown a slight increase in GDP over the 10 past years (0.16% per year on average), with the greatest growth during that period seen in 2016.

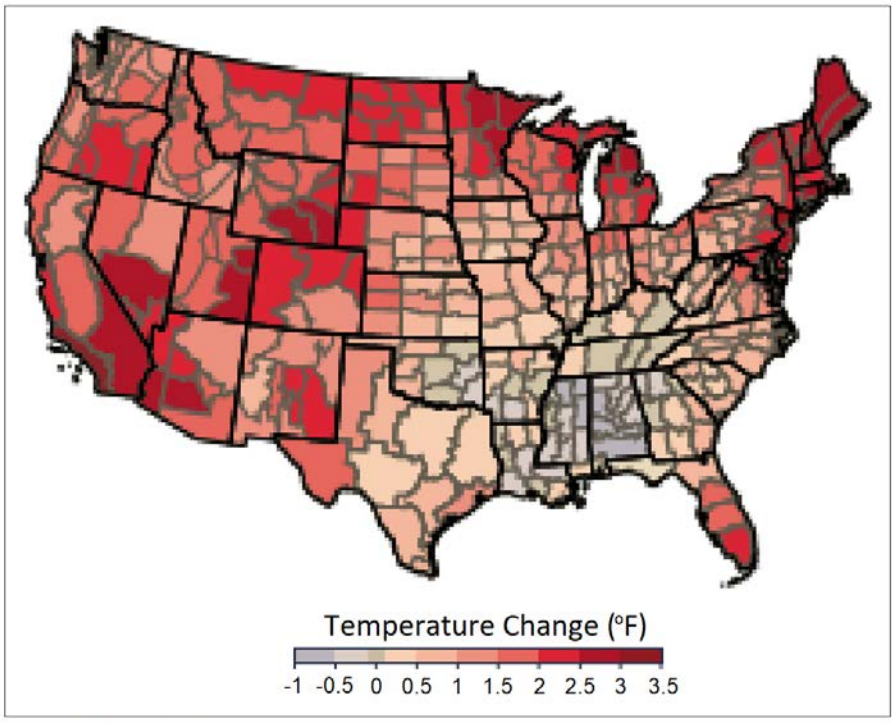
3.7 – Climate Change

For hazards that are affected by weather patterns, climate change should be considered as it may markedly change future weather-related events. There is a scientific consensus that climate change is occurring, and recent climate modeling results indicate that extreme weather events may become more common. Rising average temperatures produce a more variable climate system which may result in an increase in the frequency and severity of some extreme weather events including longer and hotter heat waves (and by correlation, an increased risk of wildfires), higher wind speeds, greater rainfall intensity, and increased tornado activity. As climate modeling improves, future plan updates should include climate change as a factor in the ranking of natural hazards as these are expected to have a significant impact on Arkansas

communities. Where applicable, and with proper scientific evidence, potential climate change factors will be addressed in subsequent sections for relevant identified hazards.

According to the United States Environmental Protection Agency (USEPA) "What Climate Change Means for Arkansas" (August 2016), "in the coming decades, Arkansas will become warmer, and the state will probably experience more severe floods and drought. Unlike most of the nation, Arkansas has not become warmer during the last 50 to 100 years. But annual rainfall has increased in much of the state, and more rain arrives in heavy downpours. Changing the climate is likely to increase damage from storms, reduce crop yields, harm livestock, increase the number of unpleasantly hot days, and increase the risk of heat stroke and other heat-related illnesses."

The following map illustrates USEPA modeled temperature changes during the last century.



Source: U.S. EPA, Climate Change Indicators in the United States

Additionally, according to the USEPA's "What Climate Change Means for Arkansas," "Changing 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."

"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."

"Changing the atmosphere will have both harmful and beneficial effects on farming. Seventy years from now, Arkansas is likely to have 30 to 60 days per year with temperatures above 95°F, compared with 15 to 30 days today. Hot weather causes cows to eat less and grow more slowly, and it can threaten their health. Even during the next few decades, hotter summers are likely to reduce yields of corn and rice. But the higher concentrations of atmospheric carbon dioxide will increase crop yields, and that fertilizing effect is likely to offset the harmful effects of heat on soybeans and cotton, assuming that adequate water is available. On farms without irrigation, however, increasingly severe droughts could cause more crop failures."

3.8 – Future Development

Future development speaks to the potential impacts of land use and demographic changes in hazard prone areas. Data in this section is speculative, as future conditions are subject to numerous unpredictable factors. While past trends are used to inform the discussion, previous historical trends are no guarantee of future conditions.

As indicated in the data above, the State of Arkansas has seen population gains in 29 counties and declines in 42 counties. For those counties experiencing population growth, the potential impacts of some hazards could increase the risk of death or injury to their populations. And while increasing populations will likely be a greater risk to natural disasters due to increased exposure, they will also increase the risk of major disease and potentially terrorism. Additionally, and of concern, is increasing population density in urban areas potentially resulting in a sizeable increase in population exposure to specific hazards such as flooding, dam or levee failure, and tornados.

As indicated in the data above, the State of Arkansas has seen housing gains in 47 counties. Increase building stock results in increase exposure to both natural and man-made hazards. Of importance is the location and building and design specifications of these new structures. Solid zoning and construction ordinances will assist in ensuring these structures are resilient to disaster and help protect the population from harm. Increasing building density in urban areas could potentially result in a sizeable increase in exposure to specific hazards such as flooding, dam or levee failure, and tornados. Additionally, and of concern, is the high percentage of mobile home housing stock, as these homes are particularly susceptible to a wide range of identified hazards. Mobile home housing stock has increased in 48 counties from 2010 to 2015.

Of specific future development note:

- In many parts of the state, the potential for development near dams is not limited by any ordinance or regulation. Additionally, many of the most populated counties, and counties experiencing the most population and building growth, are in high vulnerability areas.

- The potential for continued development in areas protected by levees is generally not limited, and may only be constrained by building code requirements or the requirement for flood insurance.
- Agriculture is the sector most impacted by drought. Arkansas has seen a 237% increase in the USDA estimated crop exposure value but a 63% decrease in USDA reported crop loss. However, it is likely that with increasing crop valuation, the impacts of future drought will be significant.
- Out of the 19 northeastern Arkansas counties identified as being most vulnerable to earthquakes, 15 have seen a population decrease and 13 have seen a housing unit decrease over the past 15 years. Both Craighead and White counties have seen substantial population and housing unit growth over the past 15 years, and as such, have increased vulnerability to earthquakes, liquefaction and lateral spreading.
- The effects of expansive soil can be mitigated with engineering design requirements and the institution/application of building codes.
- It is not known how much development is occurring in flood hazard areas, but for communities in counties that participate in the NFIP any development in the floodplain should occur according to its corresponding floodplain management ordinance.
- According to the State's minimum standards, the first-floor elevations of residential property must be above the base flood elevation. For non-residential properties, the standard is to either elevate or flood proof to above the base flood elevation.
- Communities/areas in which landslides do occur should consider placing construction standards, requiring construction permits, establishing planning zones/ordinances. This will protect the home owner, the bank, the insurance companies and nearby neighbors, property values.
- Agriculture has a significant potential for an economic impact resulting from severe storm and severe winter events. Arkansas counties with a large agricultural base, all of which showed an increase in crop exposure value according to the USDA Census of Agriculture, will continue to increase susceptibility to severe storm damage as agricultural development is expanded. In addition, continued population gains in the state will increase building and property exposure to these hazards.
- New development anywhere in Arkansas will be susceptible to tornado impacts. New manufactured housing development will be susceptible to damage, particularly if not anchored properly. Regional population centers, which are experiencing growth, would also be more susceptible to this hazard. These increased populations may result in an increased number of injuries and deaths as smaller tornados could have a magnified impact.
- New development anywhere in Arkansas will be susceptible to wildfire impacts, however development in the Wildland Urban Interface (WUI) will increase susceptibility. Urban development areas are generally low density, recently cleared of vegetation, and at a low risk for fires.
- Local growth along transportation corridors or near Hazardous Materials (HazMat) facilities will increase the risk to this hazard. As the infrastructure and population of urban centers increases, along with the number and type of hazardous chemicals stored and transported through the region, the amount of potential losses could increase.
- Any increase in the agricultural industry relating to the rearing, transporting and holding of animals will increase the risk of future impactful animal disease outbreaks.
- Any population increase within the federally mandated 50-mile radius emergency planning zone for Arkansas Nuclear One would increase the risk to a nuclear hazard.

- In general, acts of terrorism have historically been carried out in major population centers or on targets of high significance within the United States. When large public events are held in Arkansas, more potential exists for these venues to become targets of attack.

4.0 Hazard Profiles and Vulnerabilities

4.1 – Introductions

The ultimate purpose of this HMP is to minimize the loss of life and property in the state. To accomplish this, all relevant hazards, potential vulnerabilities and exposures have been identified. Then a strategy was developed to identify and prioritize mitigation actions to defend against these potential risks.

4.2 – Methodology

Each hazard (natural, man-made, or technological) that has historically, or could potentially affect the State of Arkansas is reviewed and discussed in detail. Each hazard reviews:

- Location and Extent
- Previous Occurrences
- Hazard Probability Analysis
- Vulnerability Assessments

In addition, EMAP standards require a hazard consequence analysis be conducted for each hazard covering:

- Health and Safety of the Public
- Health and Safety of Responders
- Continuity of Operations; Property, Facilities, and Infrastructure
- Environment
- Economic Conditions
- Public Confidence in the Jurisdiction's Governance.

4.3 – Declared Federal Disaster and Emergencies

The MPC reviewed federal and state disaster declarations to assist in hazard identification. Federal declarations may be enacted when the state is unable to cope with the magnitude of an event. These federal disaster declarations may be issued through a variety of agencies based on the scale and sectors affected.

For the period from 2002 to 2017 the State of Arkansas has had 27 federal disaster declarations and two emergency declarations. In general, declarations were issued for the following occurrences:

- Flooding
- Ice Storms
- Landslides
- Severe storms
- Straight line winds
- Severe winter storms
- Tornados

Information on past declared disasters and executive orders are presented in the following sections to provide a historical perspective on potential hazards that could impact the State of Arkansas.

4.4 – Identified Potential Hazards

The MPC discussed previously identified hazards and deliberated on changes or additions to the State hazard profile, based on the data above and previous mitigation plans. In reviewing identified hazards detailed in the 2010 and 2013 HMPs, no changes, additions or subtractions were indicated for any identified hazard. However, a thorough and comprehensive revision of data for each hazard was completed as part of this plan update.

The MPC confirmed ten natural hazards that may affect the State of Arkansas, as listed below:

- Dam and Levee Failure
- Drought
- Earthquake
- Expansive Soils
- Flood
- Landslides
- Severe Thunderstorms
- Severe Winter Weather
- Tornado
- Wildfire

The MPC confirmed four man-made hazards that may affect the State of Arkansas, as listed below:

- Hazardous Materials Incident
- Major Disease Outbreak
- Nuclear Event
- Terrorism

4.5 – Hazard Profiles

44 CFR 201.4(c)(2) Risk assessments that provide the factual basis for activities proposed in the strategy portion of the mitigation plan. Statewide risk assessments must characterize and analyze natural hazards and risks to provide a statewide overview. This overview will allow the State to compare potential losses throughout the State and to determine their priorities for implementing mitigation measures under the strategy, and to prioritize jurisdictions for receiving technical and financial support in developing more detailed local risk and vulnerability assessments. The risk assessment shall include the following:
(i) *An overview of the type and location of all natural hazards that can affect the State, including information on previous occurrences of hazard events, as well as the probability of future hazard events, using maps where appropriate;*

44 CFR 201.4(c)(2)(ii): An overview and analysis of the State's vulnerability to the hazards described in this paragraph (c)(2), based on estimates provided in local risk assessments as well as the State risk assessment. The

State shall describe vulnerability in terms of the jurisdictions most threatened by the identified hazards, and most vulnerable to damage and loss associated with hazard events. State owned or operated critical facilities located in the identified hazard areas shall also be addressed; ***(iii)*** *An overview and analysis of potential losses to the identified vulnerable structures, based on estimates provided in local risk assessments as well as the State risk assessment. The State shall estimate the potential dollar losses to State owned or operated buildings, infrastructure, and critical facilities located in the identified hazard areas.*

Each identified hazard is profiled in the subsequent sections, with the level of detail varying based on available information. Sources of information are cited in the detailed hazard profiles below.

With each update of this plan, new information will be incorporated to provide for better evaluation and prioritization of the hazards.

The following hazards are presented in alphabetical order, and not by planning significance, for ease of reference. Additionally, man-made hazards are presented, again in alphabetical order, after natural hazards.

4.6 – Dam and Levee Failure

A dam is a barrier across flowing water that obstructs, directs or slows down the flow, often creating a reservoir, lake or impoundments. Common reasons for dam failure include:

- Sub-standard construction materials/techniques
- Spillway design error
- Geological instability caused by changes to water levels during filling or poor surveying
- Sliding of a mountain into the reservoir
- Poor maintenance, especially of outlet pipes
- Human, computer or design error
- Internal erosion, especially in earthen dams
- Earthquakes

A levee is an artificial barrier, usually an earthen embankment, constructed along rivers to protect adjacent lands from flooding. Common reasons for levee failure include:

- Surface erosion due to water velocities
- Subsurface actions
- Flood waters exceeding the design capacity of the structure.

4.6.1 – Dam Location and Extent

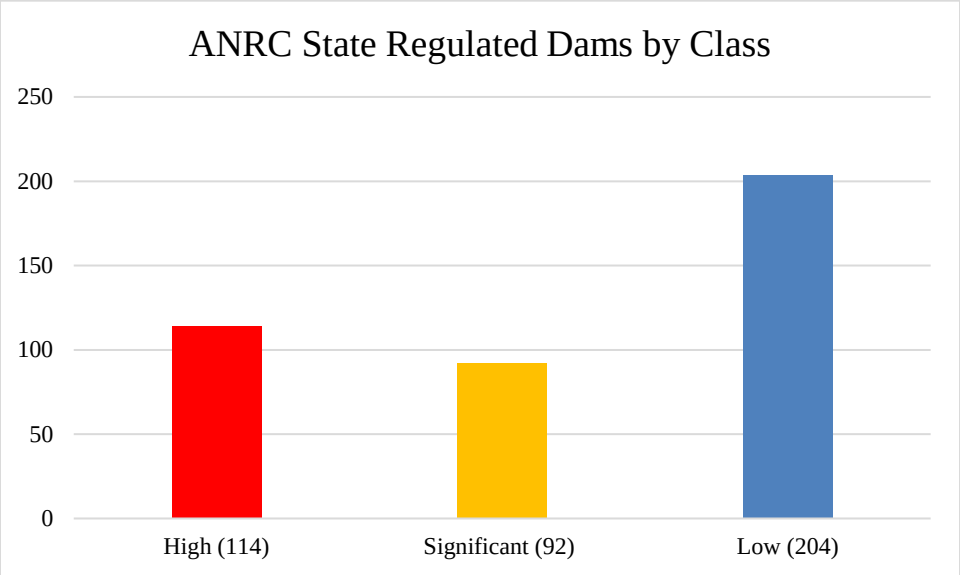
As per Arkansas Code, non-federal dams meeting the definition of a Jurisdictional Dam are governed and regulated by the ANRC. Dams overseen by the ANRC meet the following qualification as outlined in Subchapter 2 of Chapter 22 of Title 15 of the Arkansas Code of 1987:

- All dams with height of 25 or more feet and containing 50 acre-feet or more of storage at normal pool must have a valid construction and operation permit from the Commission, unless they are owned by the United States Government. If smaller dams pose a threat to life or property, they may also require regulation by the State based on petition by downstream landowners and results of public hearings.

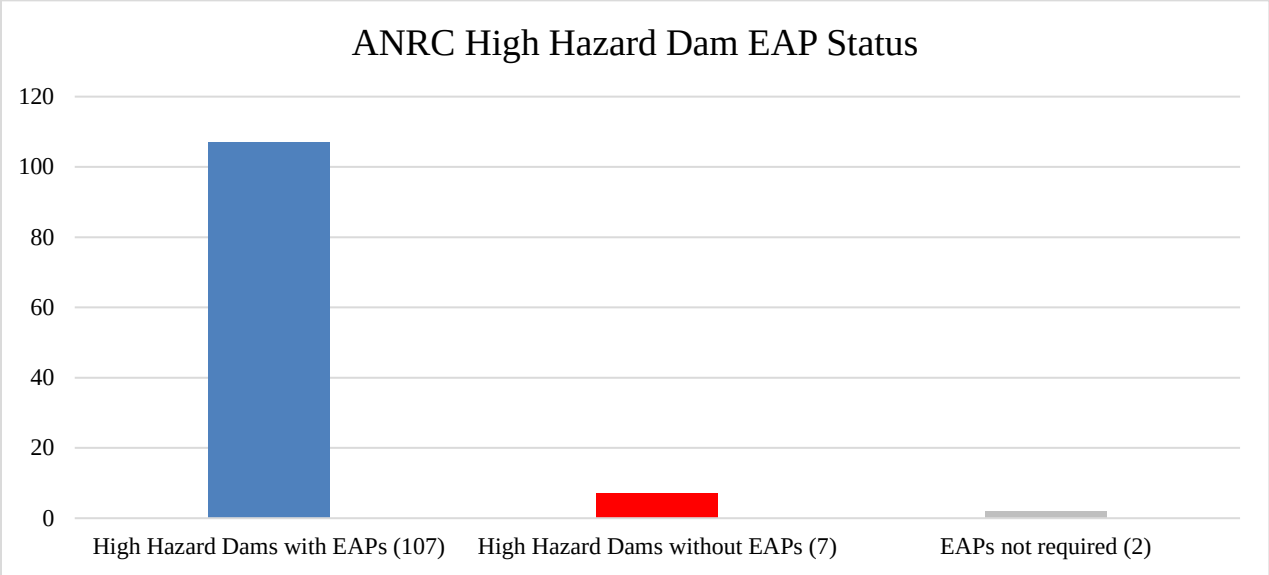
The ANRC uses a three-tiered classification system to describe the potential risk and severity associated with dam failure, with the tiers relating to potential downstream impact rather than the physical condition of the dam.

- **High Hazard:** Dams assigned the high hazard-potential classification are those where failure will probably cause loss of human life. Emergency Action Plans are required for all High Hazard Dams.
- **Significant Hazard:** Dams assigned the significant hazard-potential classification are those dams where failure would result in no probable loss of human life but can cause economic loss or disruption of lifeline facilities.
- **Low Hazard:** Dams assigned the low hazard-potential classification are those where failure would result in no probable loss of human life and low economic losses.

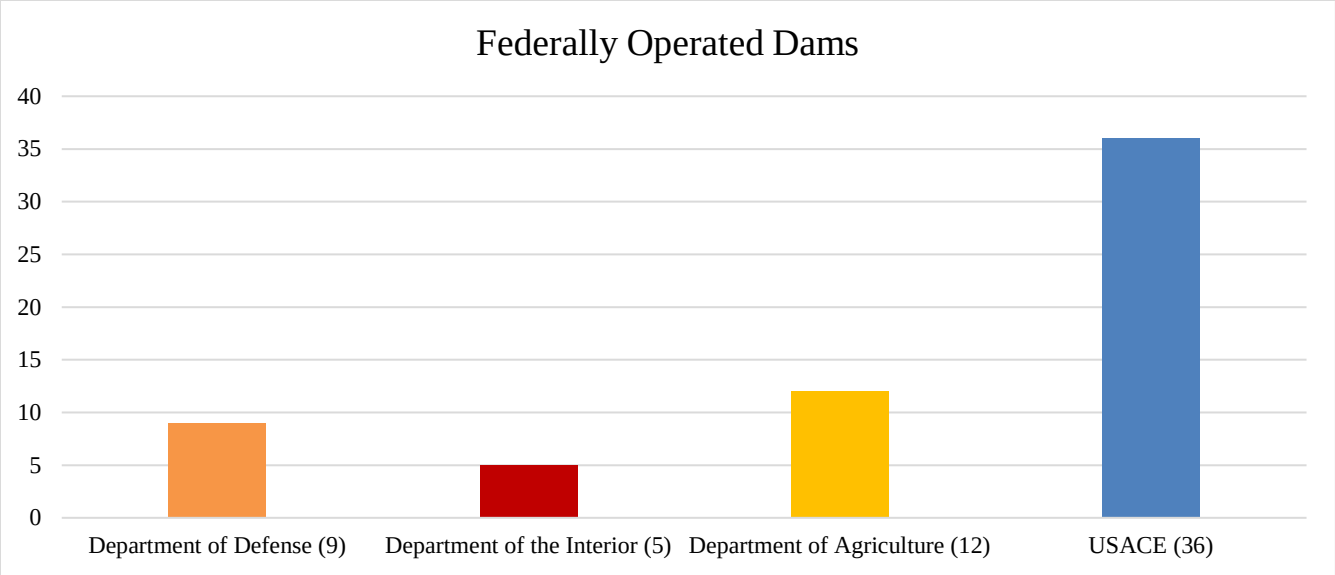
According to the National Inventory of Dams and the ANRC, there are 1,257 dams in Arkansas. Out of these, 410 dams are overseen by the ANRC. These dams are classified as follows.



In the State of Arkansas, High Hazard dams are required to have Emergency Action Plans (EAPs). EAPs are plans that detail potential emergency conditions and prescribe procedures to reduce the likelihood of the loss of life and to minimize property damage. The following relates to EAPs for dams with ANRC oversight:



In addition, the ANRC indicates that there are 62 dams within the state that are operated by Federal Government agencies, including the Department of Defense, the Department of the Interior, the Department of Agriculture and the United States Army Corp of Engineers.



The following table details all identified dams by county and classification.

State of Arkansas Dams

	ANRC State Dams				Federal Dams			
County	**Low**	**Significant**	**High**	**Total State Dams**	**Low**	**Significant**	**High**	**Total Federal Dams**
Arkansas	1	0	0	1	3	1	0	4
Ashley	0	0	0	0	1	0	0	1
Baxter	0	0	0	0	0	0	2	2
Benton	3	6	4	13	0	0	0	0
Boone	0	0	0	0	0	0	0	0
Bradley	1	0	0	1	0	0	0	0
Calhoun	0	0	0	0	1	0	0	1
Carroll	3	0	1	4	0	0	1	1
Chicot	0	0	0	0	2	0	0	2
Clark	0	0	0	0	0	0	3	3
Clay	3	0	0	3	0	0	0	0
Cleburne	4	0	0	4	0	0	1	1
Cleveland	2	0	0	2	0	0	0	0
Columbia	1	1	0	2	0	0	0	0
Conway	12	7	2	21	0	1	0	1
Craighead	2	5	9	16	0	0	0	0
Crawford	2	0	5	7	0	0	0	0
Crittenden	0	0	0	0	0	0	0	0
Cross	3	2	3	8	0	0	0	0
Dallas	1	0	0	1	0	0	0	0
Desha	0	0	0	0	1	0	0	1
Drew	0	0	1	1	0	0	0	0
Faulkner	9	2	0	11	0	1	0	1
Franklin	7	2	0	9	1	1	1	3

State of Arkansas Dams

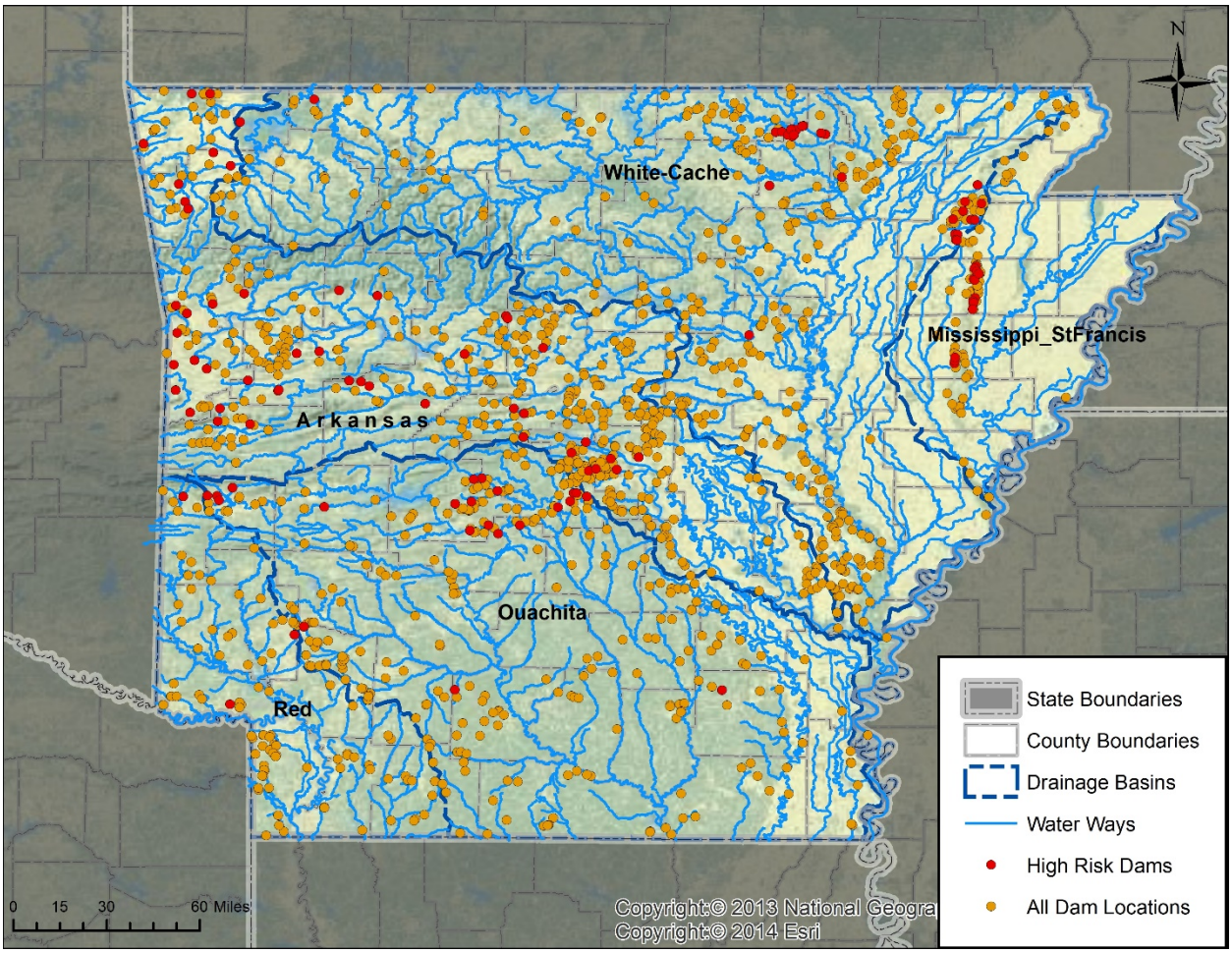
	ANRC State Dams				Federal Dams			
County	**Low**	**Significant**	**High**	**Total State Dams**	**Low**	**Significant**	**High**	**Total Federal Dams**
Fulton	5	1	2	8	0	0	0	0
Garland	6	6	7	19	2	0	2	4
Grant	2	1	0	3	0	0	0	0
Greene	1	2	2	5	0	0	0	0
Hempstead	13	0	1	14	0	0	0	0
Hot Spring	1	0	2	3	0	1	0	1
Howard	5	1	1	7	0	0	1	1
Independence	2	1	0	3	0	0	0	0
Izard	3	1	0	4	0	0	0	0
Jackson	0	0	0	0	0	0	0	0
Jefferson	3	0	0	3	3	3	0	6
Johnson	1	0	2	3	0	0	0	0
Lafayette	0	1	0	1	0	0	0	0
Lawrence	10	4	1	15	0	0	0	0
Lee	0	0	0	0	0	1	0	1
Lincoln	0	1	0	1	0	0	0	0
Little River	0	0	1	1	0	0	1	1
Logan	6	6	5	17	1	0	0	1
Lonoke	2	0	0	2	0	0	0	0
Madison	3	0	0	3	0	0	0	0
Marion	0	0	0	0	0	0	0	0
Miller	0	0	0	0	0	0	0	0
Mississippi	0	0	0	0	0	0	0	0
Monroe	1	0	0	1	1	0	0	1
Montgomery	2	1	1	4	0	0	0	0
Nevada	0	0	0	0	0	0	0	0
Newton	1	0	0	1	0	0	0	0
Ouachita	0	1	1	2	0	0	0	0
Perry	5	3	3	11	1	0	0	1
Phillips	0	0	0	0	0	1	0	1
Pike	1	1	0	2	0	0	1	1
Poinsett	6	1	9	16	0	0	0	0
Polk	2	0	5	7	0	1	0	1
Pope	5	4	2	11	0	0	0	0
Prairie	1	0	0	1	0	0	0	0
Pulaski	5	10	7	22	2	3	0	5
Randolph	3	5	0	8	0	0	0	0
St. Francis	1	0	0	1	0	0	0	0
Saline	11	4	4	19	0	0	0	0
Scott	11	5	3	19	0	0	0	0
Searcy	0	0	0	0	0	0	0	0
Sebastian	1	2	6	9	3	1	0	4
Sevier	3	0	0	3	0	0	2	2

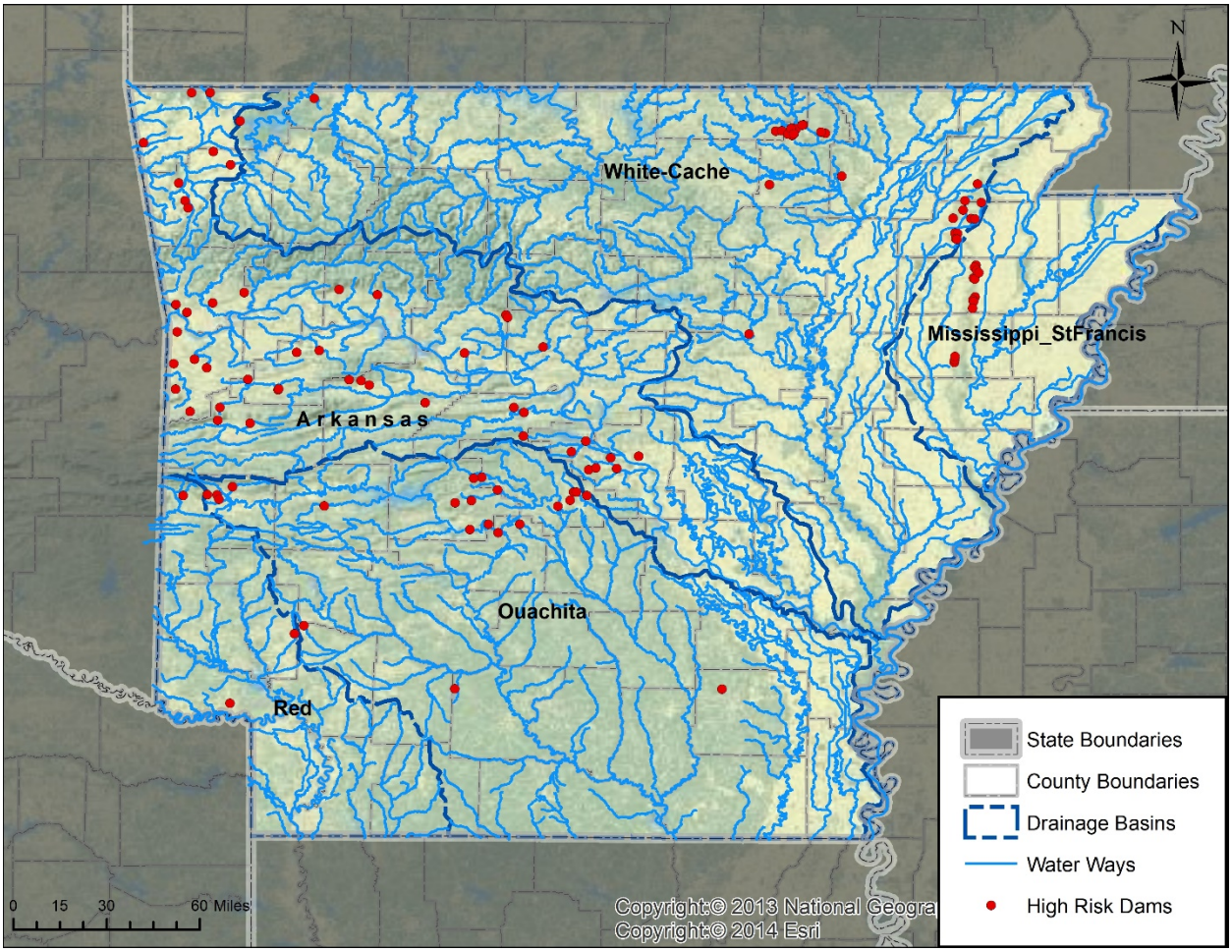
State of Arkansas Dams

	ANRC State Dams				Federal Dams			
County	Low	Significant	High	Total State Dams	Low	Significant	High	Total Federal Dams
Sharp	3	0	13	16	0	0	0	0
Stone	1	0	0	1	0	2	0	2
Union	0	0	0	0	3	0	0	3
Van Buren	6	0	0	6	0	0	0	0
Washington	4	2	5	11	0	1	0	1
White	10	2	1	13	0	0	0	0
Woodruff	0	0	0	0	0	0	0	0
Yell	2	0	4	6	0	2	2	4

Source: ANRC

The following maps show all identified dams within the State of Arkansas, and those with a high ANRC classification.





4.6.2 – Levee Location and Extent

As there is no one, comprehensive list of all levees within the state, two sources of data were reviewed to determine a list of all known levees. These sources are:

- The U.S. Army Corps of Engineers (USACE) Integrated National Levee Database (NLD), containing levees enrolled in the USACE National Levee Safety Program (NLSP).
- The FEMA National Levee Inventory Report (NLIR)

According the USACE Integrated NLD, there are 65 levees in the NLSP in Arkansas. The following table provides available information on these levees.

State of Arkansas USACE NLSP Levees

Congressional District(s)	Levee System Name	Arkansas Counties	Number of Segments	Length (miles)	Inspection Date	Inspection Rating
Arkansas – 01	Western Clay Drainage District	Clay	1	22.49	4/1/15	Unacceptable

State of Arkansas USACE NLSP Levees

Congressional District(s)	Levee System Name	Arkansas Counties	Number of Segments	Length (miles)	Inspection Date	Inspection Rating
Arkansas – 02, Arkansas – 03 (LR)	West of Morrilton	Conway, Pope	3	14.05	3/15/10	Unacceptable
Arkansas – 01, Arkansas – 02 (LR)	Village Creek White River Mayberry Levee District	Jackson, Woodruff	1	22.79	9/17/14	Unacceptable
Arkansas – 03 (LR)	Van Buren Levee District NO. 1/Crawford County Levee District	Crawford, Sebastian	2	21.52	2/21/13	Minimally Acceptable
Arkansas – 04 (LR)	T. A. Gibson Private Levee	Jefferson	1	3.98	9/12/1988	Unacceptable
Arkansas – 02 (LR)	Stalling Private Levee	Conway	1	0.22	10/13/2006	Unacceptable
Arkansas – 03 (LR)	Southern Enterprise Private Levee	Sebastian	1	3.16	3/10/15	Minimally Acceptable
Arkansas – 02 (LR)	Sloan Private Levee	Conway	1	0.91	-	-
Arkansas – 03(LR)	Russellville Dike and Pumping Station	Pope	1	1.2	6/24/14	Minimally Acceptable
Arkansas – 01 (LR)	Running Water Levee District	Lawrence, Randolph	1	7.63	12/14/16	Minimally Acceptable
Arkansas -02 (LR)	Roland Drainage District	Pulaski	1	4.09	11/15/12	Unacceptable
Arkansas – 02(LR)	Rock Creek Levee	Pulaski	1	0.59	2/12/16	Acceptable
Arkansas – 02 (LR)	Riverdale Private Levee	Pulaski	1	2.89	7/31/15	Minimally Acceptable
Arkansas – 02 (LR)	Pulaski County Farm private Levee	Pulaski	1	1.89	12/10/2012	Unacceptable
Arkansas – 02 (LR)	Point Remove Creek Drainage and Levee District	Conway	1	7.2	9/20/10	Unacceptable
Arkansas – 02 (LR)	Perry County Levee District No. 1	Perry	1	2.9	5/28/1990	Unacceptable
Arkansas – 01 (LR)	Padgett Island Levee District	Independence	1	2.76	9/30/10	Unacceptable
Arkansas – 02 (LR)	Ormand Peters Private Levee	Conway	1	0.35	10/13/06	Unacceptable
Arkansas – 01, Arkansas – 02, Arkansas – 04 (LR)	North Little Rock to Gillette	Jefferson, Lonoke, Pulaski	4	53.91	3/18/10	Unacceptable
Arkansas – 02 (LR)	North Little Rock Levee and Floodwall	Pulaski	1	2.97	7/21/14	Minimally Acceptable

State of Arkansas USACE NLSP Levees

Congressional District(s)	Levee System Name	Arkansas Counties	Number of Segments	Length (miles)	Inspection Date	Inspection Rating
Arkansas – 01 (LR)	Newport Levee District	Jackson	1	8.5	4/5/16	Minimally Acceptable
Arkansas – 04 (LR)	McLean Bottom	Logan	3	12.29	7/12/12	Minimally Acceptable
Arkansas – 01(LR)	Massey Alexander Levee District	Jackson	1	6.33	4/5/16	Minimally Acceptable
Arkansas – 03 (LR)	Lower Hartman Bottom Levee	Johnson	1	10.21	2/9/16	Minimally Acceptable
Arkansas – 04 (LR)	Little Rock to Pine Bluff (Tucker Lake)	Jefferson	1	8.77	5/16/12	Unacceptable
Arkansas – 02 (LR)	Little Rock Flood Protection	Pulaski	1	7.51	2/12/16	Minimally Acceptable
Arkansas – 02 (LR)	Little Red River Levee District No. 2	White	1	10.91	4/4/16	Minimally Acceptable
Arkansas – 02 (LR)	Little Red River Levee District No. 1	White	1	6.51	4/4/16	Minimally Acceptable
Arkansas – 02 (LR)	Little Private Levee	Faulkner	1	2.05	7/27/11	Unacceptable
Arkansas – 03 (LR)	Honeysuckle White Levee	Franklin	1	0.5	2/9/16	Minimally Acceptable
Arkansas – 02, Arkansas – 03(LR)	Holly Bend Levee District No. 1	Pope, Yell	1	3.52	7/27/11	Unacceptable
Arkansas – 03 (LR)	Holla Bend Drainage and Levee District No. 2	Pope	1	1.3	6/16/11	Unacceptable
Arkansas – 02, Arkansas – 04 (LR)	Head of Fourche Island to Pennington Bayou	Grant, Jefferson, Pulaski, Saline	2	21.38	4/21/10	Unacceptable
Arkansas – 03 (LR)	Fort Smith Levee District No. 1	Sebastian	1	1.81	12/14/15	Minimally Acceptable
Arkansas – 02 (LR)	Faulkner County Levee District No. 1	Faulkner	1	6.73	11/17/14	Minimally Acceptable
Arkansas – 02 (LR)	East of Morrilton	Conway	3	13.64	5/10/16	Minimally Acceptable
Arkansas – 02 (LR)	Daranelle Levee/ Carden Bottom Levee	Yell	2	28.83	5/7/10	Unacceptable
Arkansas – 01 (LR)	Curia Creek Drainage District	Independence	1	5.3	12/12/14	Unacceptable
Arkansas – 02 (LR)	Conway County Levee District No. 6	Conway	1	4.39	5/29/13	Minimally Acceptable
Arkansas – 02 (LR)	Conway County Drainage and Levee District No. 1	Conway	1	2.61	5/29/13	Minimally Acceptable

State of Arkansas USACE NLSP Levees

Congressional District(s)	Levee System Name	Arkansas Counties	Number of Segments	Length (miles)	Inspection Date	Inspection Rating
Arkansas – 03 (LR)	Clarksville Levee and Floodwall	Johnson	1	1.15	12/16/15	Minimally Acceptable
Arkansas – 01, Arkansas – 08 (LR)	Central Clay Drainage District	Clay	1	12.3	12/12/16	Minimally Acceptable
Arkansas – 01 (LR)	Big Gum Drainage District	Clay	2	8.87	4/8/10	Unacceptable
Arkansas – 01 (LR)	Batesville Levee and Floodwall	Independence	1	0.92	4/6/16	Acceptable
Arkansas – 01 (LR)	Bateman Levee District No. 3	Jackson	1	3.03	9/30/10	Unacceptable
Arkansas – 01	West Bank St. Francis Floodway System	Clay, Craighead, Cross, Greene, Poinsett	6	117.68	11/3/15	Unacceptable
Arkansas – 01,	St. Francis East to Big Lake West System	Craighead, Mississippi, Poinsett	5	112.75	11/30/16	Unacceptable
Arkansas – 04	Red River LB AR	Lafayette	1	28.09	4/4/16	Unacceptable
Arkansas – 04	RR RB Miller-Garland	Hempstead, Miller	2	62.58	4/22/15	Unacceptable
Arkansas – 01, Arkansas 04	Mississippi and White Rivers Below Helena System	Desha, Monroe, Phillips	6	114.62	4/13/17	Unacceptable
Arkansas – 04	McKinney Bayou - south	Miller	1	15.07	4/8/16	Unacceptable
Arkansas – 04	McKinney Bayou – Mid - North	Miller	2	13.94	4/6/16	Unacceptable
Arkansas – 04	Long Prairie AR	Lafayette	2	20.23	4/5/16	Unacceptable
Arkansas – 01	Little River Drainage District Levee of Missouri System	Clay	1	19.29	10/12/16	Minimally Acceptable
Missouri - 08	Inter- river Levee System	Clay	1	31.13	-	-
Arkansas – 04	Hempstead County AR	Hempstead	1	9.77	4/4/16	Unacceptable
Arkansas – 01	Des Arc Levee System	Prairie	1	1.42	12/8/15	Unacceptable
Arkansas – 01	Commerce MO – St. Francis River System	Clay, Craighead, Crittenden, Cross, Greene, Poinsett, Scott	6	277.32	2/2/17	Minimally Acceptable
Arkansas – 01	Clarendon Levee System	Monroe	1	6.18	11/29/16	Unacceptable

State of Arkansas USACE NLSP Levees

Congressional District(s)	Levee System Name	Arkansas Counties	Number of Segments	Length (miles)	Inspection Date	Inspection Rating
Arkansas – 04	Calion Protection Works AR	Union	1	2.9	3/28/16	Unacceptable
Arkansas – 04,	Caddo North LA	Miller	1	48.2	5/9/16	Minimally Acceptable
Arkansas – 01	Big Lake and St. Francis Floodway East System	Crittenden, Poinsett, St. Francis	1	122.47	11/3/16	Minimally Acceptable
Arkansas – 04	AR – LA MS River	Ashley, Chicot, Desha, Jefferson, Lincoln, Arkansas	5	359.64	3/18/15	Unacceptable
Arkansas – 01, Arkansas – 04	AR River North Bank	Arkansas, Jefferson	4	56.16	2/25/16	Unacceptable

Source: USACE
-: Data unknown

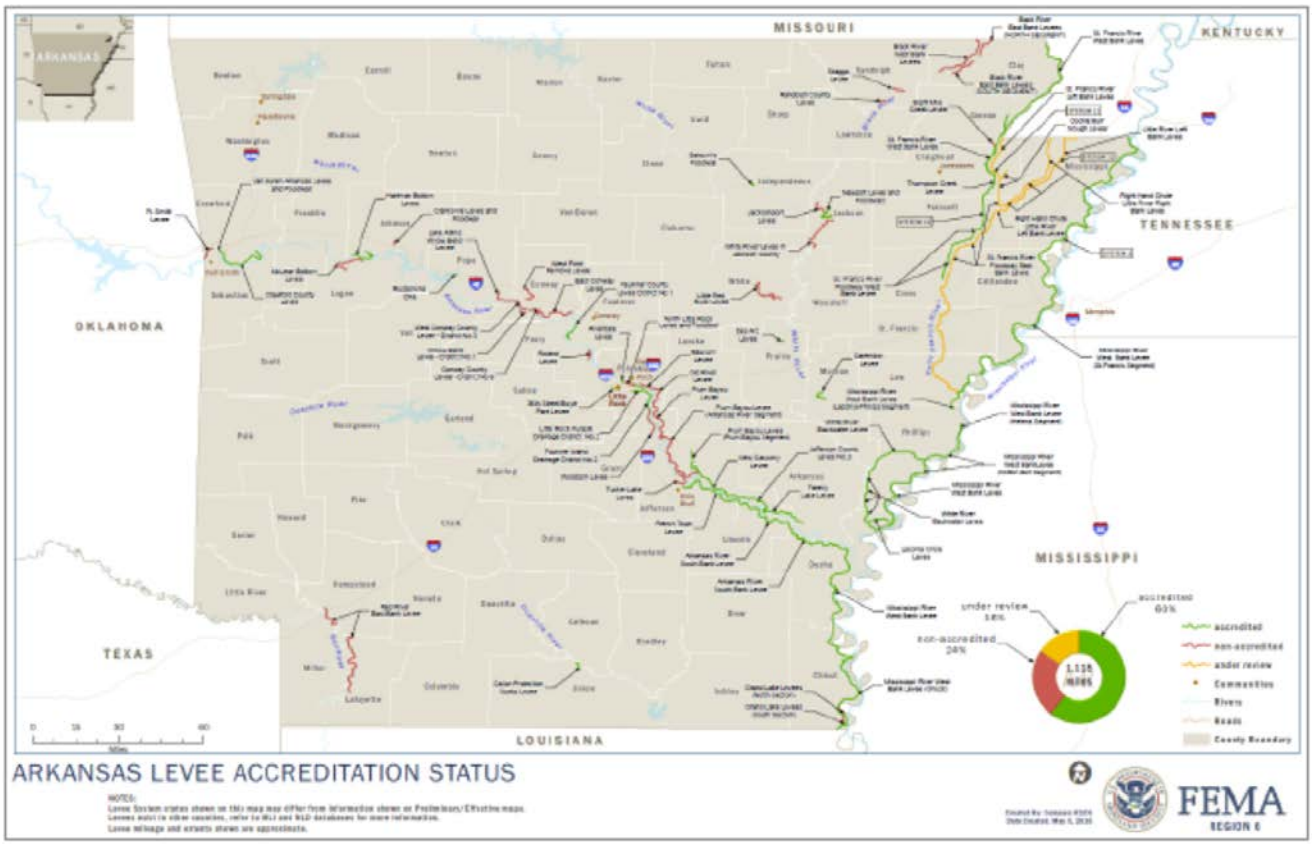
For the NFIP, FEMA will only recognize a levee system in its flood risk mapping effort that meet minimum design, operation, and maintenance standards as established by 44 CFR 65.10 – Mapping of Areas Protected by Levee Systems. In general, evaluated levees are assigned to one of these categories:

- **Accredited Levee:** Area behind the levee is mapped as a moderate-risk, with no mandatory flood insurance requirement.
- **To Be Accredited:** A levee system that has been approved for accreditation.
- **Provisionally Accredited Levee:** Area behind the levee is mapped as a moderate-risk, with no mandatory flood insurance requirement, for a two-year grace period while compliance with 44 CFR 65.10 is sought
- **Non-Accredited Levee:** Area behind the levee is mapped according to FEMA protocols, likely resulting in a high-risk area designation and associate flood insurance requirements
- **To Be Non-Accredited:** A levee system that no longer meets the requirements stipulated in 44 CFR 65.10 and is scheduled to lose accredited status

According to the July 31, 2017 National Levee Inventory Summary Report, the State of Arkansas has:

- 40 counties with levees
- 21 counties with accredited levees mapped on Effective Flood Insurance Rate Maps (FIRM)
- 107 levee systems
- 1,482 miles of levees

The following map shows all NLIR levees and the accreditation status.



Source: FEMA National Levee Inventory Summary Report, July 31, 2017

4.6.3 – Previous Occurrences

There have been four dam failures in the state:

State of Arkansas Dam Incidents

Dam Name	ANRC Hazard Class	County	Incident Type	Failure	Incident Date	Deaths
Carpenter	High	Garland	Gate Mis-operation	No	March 2000	None Reported
Carpenter	High	Garland	Inflow Flood - Hydrologic Event	No	May 1994	None Reported
Tupelo Bayou Site 1	Low	Faulkner	Piping	Yes	1973	None Reported
Paris Dam	High	Logan	Inflow Flood - Hydrologic Event	Yes	1939	None Reported

Source: Stanford University National Performance of Dams Program

In the last twelve years, there have been three levee failures in the state, all on the same levee system.

- **Black River Levee, near the town of Pocahontas, Randolph County:** In March 0f 2008 a breach in the levee along the Black River near Pocahontas resulted in the flooding of an apartment complex and surrounding areas.

- **Black River Levee, near the town of Pocahontas, Randolph County:** On April 26, 2011 a large breach in the levee along the Black River near Pocahontas resulted in mandatory evacuations and damages to residences and businesses.
- **Black River Levee, near the town of Pocahontas, Randolph County**: On May 3, 2017, a 29-foot levee developed a hole in the foundation resulting in flood waters that damaged 50 homes. In addition, over 150 homes, dozens of businesses and an assisted living facility were evacuated. Numerous deaths were reported as a result of the storms and flooding that caused this breach.

4.6.4 – Hazard Probability Analysis

Historically, there have been four reported dam failure events in Arkansas over an 88-year period. Using the binomial probability equation (number of years with an event divided by total number of years in reporting period) we derive a probability 6.8% of a dam failure in a given year.

There have been three reported levee failure events in Arkansas over a 12-year period. Using the binomial probability equation, we derive a probability 25% of a levee failure in a given year. However, it is important to note that these three reported failures occurred on the same levee system, with no other statewide system reporting a failure during that period.

4.6.5 – Vulnerability Assessment

Facilities located within five miles of significant and high hazard dams were determined to be most vulnerable to potential dam failures as they would be within potential failure inundation zones. The following table indicates the number of state-owned facilities and bridges, by county, within five miles of a significant or high hazard dam, and the value of those facilities. Assuming an amount of damage to each facility is not possible due to the tremendous number of variables involved in a potential failure event.

State-Owned Facilities and Bridges Within Five Miles of Significant or High Hazard Dams

County	State-Owned Facilities	Value	State-Owned Critical Facilities	Value	State-Owned Bridges
Arkansas	0	$0	0	$0	17
Baxter	6	$52,004,086	6	$52,004,086	26
Benton	4	$75,797,981	4	$75,797,981	115
Calhoun	0	$0	0	$0	9
Carroll	0	$0	0	$0	8
Clark	15	$184,157,089	15	$184,157,089	47
Clay	0	$0	0	$0	9
Cleburne	2	$23,781,633	2	$23,781,633	15
Cleveland	0	$0	0	$0	4
Columbia	0	$0	0	$0	6
Conway	2	$17,587,250	2	$17,587,250	52
Craighead	35	$696,125,909	35	$696,125,909	106
Crawford	0	$0	0	$0	154
Cross	1	$5,092,398	1	$5,092,398	40

State-Owned Facilities and Bridges Within Five Miles of Significant or High Hazard Dams

County	State-Owned Facilities	Value	State-Owned Critical Facilities	Value	State-Owned Bridges
Dallas	0	$0	0	$0	10
Desha	0	$0	0	$0	8
Drew	0	$0	0	$0	22
Faulkner	40	$626,549,203	40	$626,549,203	66
Franklin	1	$7,361,419	1	$7,361,419	60
Fulton	0	$0	0	$0	16
Garland	4	$37,084,464	4	$37,084,464	121
Grant	0	$0	0	$0	21
Greene	1	$6,886,216	1	$6,886,216	50
Hempstead	0	$0	0	$0	8
Hot Spring	1	$16,902,314	1	$16,902,314	56
Howard	0	$0	0	$0	23
Independence	0	$0	0	$0	40
Izard	0	$0	0	$0	7
Jackson	0	$0	0	$0	4
Jefferson	9	$105,878,028	9	$105,878,028	103
Johnson	0	$0	0	$0	52
Lafayette	0	$0	0	$0	10
Lawrence	1	$6,905,290	1	$6,905,290	23
Lee	0	$0	0	$0	3
Lincoln	0	$0	0	$0	12
Little River	0	$0	0	$0	7
Logan	3	$65,308,841	3	$65,308,841	50
Lonoke	0	$0	0	$0	49
Marion	1	$6,349,013	1	$6,349,013	2
Miller	1	$85,128,428	1	$85,128,428	85
Montgomery	0	$0	0	$0	36
Nevada	0	$0	0	$0	13
Ouachita	2	$15,239,343	2	$15,239,343	41
Perry	0	$0	0	$0	63
Phillips	0	$0	0	$0	5
Pike	0	$0	0	$0	12
Poinsett	0	$0	0	$0	40
Polk	1	$6,756,549	1	$6,756,549	65
Pope	21	$283,229,787	21	$283,229,787	82
Prairie	0	$0	0	$0	11
Pulaski	74	$1,793,916,540	74	$1,793,916,540	363
Randolph	3	$26,176,489	3	$26,176,489	47
St. Francis	3	$22,272,436	3	$22,272,436	67
Saline	6	$98,449,015	6	$98,449,015	87
Scott	0	$0	0	$0	50
Searcy	0	$0	0	$0	11
Sebastian	2	$19,715,120	2	$19,715,120	149
Sevier	0	$0	0	$0	15

State-Owned Facilities and Bridges Within Five Miles of Significant or High Hazard Dams

County	State-Owned Facilities	Value	State-Owned Critical Facilities	Value	State-Owned Bridges
Sharp	0	$0	0	$0	33
Stone	0	$0	0	$0	2
Union	0	$0	0	$0	2
Van Buren	0	$0	0	$0	17
Washington	2	$12,450,737	2	$12,450,737	107
White	1	$7,232,966	1	$7,232,966	142
Yell	0	$0	0	$0	58

Source: ADEM and Arkansas Insurance Department

Facilities located within FEMA designated levee protected areas were determined to be most vulnerable to potential failures as they would be within potential failure inundation zones. The following table indicates the number of state-owned facilities and bridges, by county, within levee protected areas, and the value of those facilities. Assuming an amount of damage to each facility is not possible due to the tremendous number of variables involved in a potential failure event.

State Owned Facilities and Bridges Within Levee Protected Area

County	State-Owned Facilities	Value	State-Owned Critical Facilities	Value	State Owned Bridges
Ashley	0	$0	0	$0	1
Chicot	2	$4,268,922	2	$4,268,922	39
Conway	0	$0	0	$0	1
Crawford	0	$0	0	$0	1
Desha	0	$0	0	$0	12
Drew	0	$0	0	$0	0
Greene	0	$0	0	$0	0
Hempstead	0	$0	0	$0	2
Independence	0	$0	0	$0	0
Jefferson	2	$65,721,234	2	$65,721,234	21
Johnson	0	$0	0	$0	0
Lincoln	0	$0	0	$0	2
Logan	0	$0	0	$0	0
Poinsett	1	$849,665	1	$849,665	32
Pope	0	$0	0	$0	0
Pulaski	4	$62,810,960	4	$62,810,960	1

Source: ADEM and Arkansas Insurance Department

Due to the latest version of the Census Bureau data missing the population estimate per census block an accurate population per square mile analysis is not possible. Additionally, other resources such as HAZUS, TigerLine data, and datasets from the State of Arkansas do not have population estimates per square mile. As such, for each dam a determination of the number of structures within a potential five-mile inundation zone were determined. Counties with a higher number of structures within this five-mile area are to be considered to have a potentially greater vulnerability. Additionally, cities within five miles of a high or

significant hazard dam were plotted and 2015 populations calculated to give theoretical potentially vulnerable population. These assumed vulnerabilities should be viewed as theoretical due to the tremendous number of variables involved in a potential failure event and data limitations.

County Vulnerability Data for Population and Structures Within Five Miles of Significant and High Hazard Dams

County	Number of Significant Hazard Dams	Number of High Hazard Dams	Structures within Five Miles of Dams	Estimated Population within Five Miles of Dams
Arkansas	1	0	0	-
Baxter	0	2	0	-
Benton	6	4	32	263,325
Carroll	0	2	5	2,173
Clark	0	3	0	-
Clay	0	0	0	-
Cleburne	0	1	0	-
Columbia	1	0	0	-
Conway	8	2	0	781
Craighead	5	9	274	72,788
Crawford	0	5	20	10,366
Cross	2	3	70	8,367
Dallas	0	0	0	-
Desha	0	0	0	4,794
Drew	0	1	1	-
Faulkner	3	0	0	-
Franklin	3	1	0	-
Fulton	1	2	0	2,608
Garland	6	9	167	503
Grant	1	0	0	-
Greene	2	2	41	-
Hempstead	0	1	0	68
Hot Spring	1	2	1	46,468
Howard	1	2	6	4,627
Independence	1	0	0	-
Izard	1	0	0	-
Jefferson	0	3	0	-
Johnson	0	2	19	3,354
Lafayette	1	0	0	-
Lawrence	4	1	0	-
Lincoln	1	0	0	2,249
Little River	0	2	10	5,097
Logan	6	5	139	4,104
Lonoke	0	0	0	-
Miller	0	0	0	29,919
Montgomery	1	1	0	-
Nevada	0	0	2	124

County Vulnerability Data for Population and Structures Within Five Miles of Significant and High Hazard Dams

County	Number of Significant Hazard Dams	Number of High Hazard Dams	Structures within Five Miles of Dams	Estimated Population within Five Miles of Dams
Ouachita	1	1	3	-
Perry	3	3	13	1,730
Pike	1	1	0	-
Poinsett	1	9	25	-
Polk	1	5	18	5,737
Pope	4	2	40	30,758
Prairie	0	0	0	-
Pulaski	13	7	511	254,748
Randolph	5	0	0	-
St. Francis	0	0	0	-
Saline	4	4	136	21,165
Scott	5	3	40	3,618
Searcy	0	0	0	-
Sebastian	3	6	38	101,812
Sharp	0	13	16	7,411
Union	0	0	0	-
Van Buren	0	0	0	-
Washington	3	5	88	81,955
White	2	1	0	-
Yell	2	6	4	5,561

Source: ADEM and HAZUS
-: Data limitations preclude stating no vulnerable population

To determine a county by county vulnerability to levee failure, those counties with FEMA accredited levees and potential population and facility exposure were analyzed. For each area, a determination of the population and number of structures within levee protected areas was made. Counties with a higher identified population and number of structures within levee protected areas have a potentially greater vulnerability. However, these vulnerabilities should be viewed as theoretical due to the tremendous number of variables involved in a potential failure event.

County Vulnerability Data for Population and Structures Within Levee Protected Areas

County	Miles of Levees	Population within Levee Protected Area	Value of Exposed Facilities within Levee Protected Area
Ashley	1	2,025	$90,417,041
Chicot	2	10,668	$535,779,147
Conway	8	91	$5,189,401
Crawford	1	560	$59,224,356
Desha	0	1231	$674,064,449
Drew	0	12	$1,566,828
Greene	2	15	2,191,680
Hempstead	1	189	$10,443,626
Independence	9	4	$64,477,246

County Vulnerability Data for Population and Structures Within Levee Protected Areas

County	Miles of Levees	Population within Levee Protected Area	Value of Exposed Facilities within Levee Protected Area
Jefferson	5	8,632	$528,549,908
Johnson	1	5	$738,777
Lincoln	5	3,550	$97,729,334
Logan	1	28	$1,396,451
Poinsett	1	9,056	$536,082,856
Pope	1	149	$56,762,947
Pulaski	4	4,275	$1,057,999,534

Source: FEMA and HAZUS

4.6.6 – Impact and Consequence Analysis

As per EMAP standards, the information in the following table provides the Consequence Analysis.

Dam and Levee Failure Consequence Analysis

Subject	Impacts of Dam and Levee Failure
Health and Safety of the Public	In areas of inundation, the impact to the public is expected to be severe. Impacts to the public in adjacent or minimally impacted areas is expected to be minimal to moderate.
Health and Safety of Responders	Impact to responders is expected to be minimal with proper training. Impact could be severe if there is lack of training.
Continuity of Operations	Temporary relocation may be necessary if facilities or infrastructure is damaged.
Property, Facilities, and Infrastructure	In areas of inundation, impacts could be severe to facilities and infrastructure. .
Environment	In areas of inundation, impact to the environment are expected to be severe. Impact will lessen as distance increases.
Economic Conditions	In areas of inundation, impacts to the economy will depend on the scope of the inundation and the time it takes for the water to recede.
Public Confidence in the Jurisdiction's Governance	Perception of whether the failure could have been prevented, warning time, and response and recovery time will greatly impact the public's confidence.

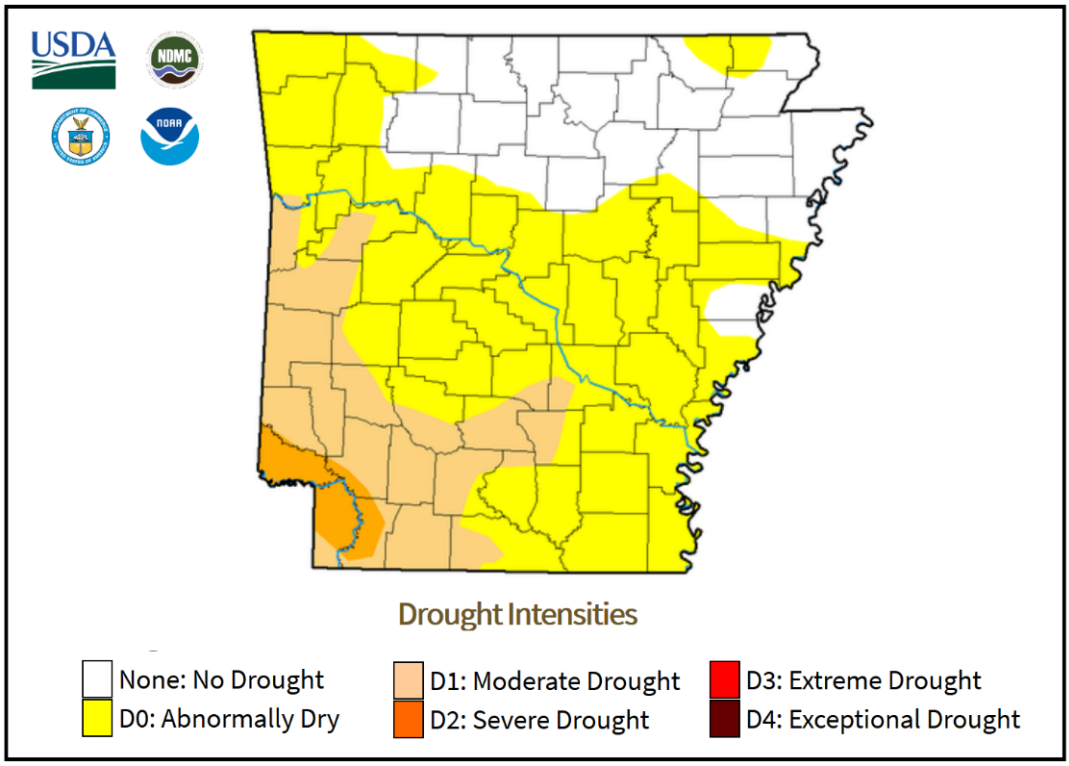
4.7 – Drought

Drought is an abnormally dry period lasting months or years when an area has a deficiency of water and precipitation in its surface and/or underground water supply. The hydrological imbalance can be grouped into the following non-exclusive categories.

- ***Agricultural:*** When the amount of moisture in the soil no longer meets the needs of previously grown crops.
- ***Hydrological:*** When surface and subsurface water levels are significantly below their normal levels.
- ***Meteorological:*** When there is a significant departure from the normal levels of precipitation.
- ***Socio-Economic:*** When the water deficiency begins to significantly affect the population.

4.7.1 – Location and Extent

While the whole state is vulnerable to drought, it is most disastrous in the eastern half of the state where the majority of agricultural businesses are located. The most commonly used drought index that is used to determine the onset and the severity of a drought is the Palmer Drought Severity Index. The map below indicates the drought conditions for the State of Arkansas through June 19, 2018.



4.7.2 – Previous Occurrences

One of the best indicators of historic drought periods is provided by the U.S. Drought Monitor, which lists weekly drought conditions for the State of Arkansas. The following table details the U.S. Drought Monitor categories.

U.S. Drought Monitor Categories

Rating	Described Condition
None	No drought conditions
D0	Abnormally Dry
D1	Moderate Drought
D2	Severe Drought
D3	Extreme Drought
D4	Exceptional Drought

Source: U.S. Drought Monitor

Historical data was gathered from the U.S. Drought Monitor weekly reports from the year 2000 through October 2017. This data was compiled and aggregated to provide a yearly estimate of the percentage of the State in each Drought Monitor category.

Percentage Arkansas in U.S. Drought Monitor Category

Year	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
2017	66.96	33.04	14.44	4.36	0.59	0.00
2016	71.16	28.84	14.83	3.05	0.06	0.00
2015	70.80	29.20	11.19	4.57	1.28	0.11
2014	76.37	23.63	3.42	0.00	0.00	0.00
2013	56.07	42.04	20.52	7.32	1.32	0.00
2012	39.57	60.43	51.43	39.54	23.98	6.75
2011	23.87	74.24	58.03	31.04	9.88	0.60
2010	58.24	41.76	25.39	12.51	1.16	0.00
2009	97.43	2.57	0.00	0.00	0.00	0.00
2008	91.91	6.20	0.00	0.00	0.00	0.00
2007	64.23	35.77	8.90	2.52	0.34	0.00
2006	17.79	82.21	50.99	23.27	6.39	1.24
2005	38.91	61.09	44.48	20.08	3.93	0.25
2004	86.88	13.12	1.98	0.00	0.00	0.00
2003	80.62	19.38	2.01	0.00	0.00	0.00
2002	83.43	14.68	1.38	0.00	0.00	0.00
2001	67.33	32.67	11.49	2.74	0.00	0.00
2000	28.84	71.17	39.36	17.21	6.72	0.31

Source: U.S. Drought Monitor

Another good indicator of historical droughts is USDA Disaster Declarations. The following table details USDA Drought Declarations during the period 2012 through October 2017 for the State of Arkansas. During that period all 75 Arkansas Counties has at least one Secretarial Drought Declaration.

State of Arkansas Secretarial Drought Declarations, 2012 - 2017

Year	Number of Secretarial Drought Disaster Declarations	Designation Numbers and (Number of Counties Included in Designation)
2017 (through October)	5	S4143 (29), S4149 (3), S4152 (7), S 4155 (2), and S4162 (22)
2016	5	S 4143 (29), S4149 (3), S4152 (8), S4155 (2), and S4162 (22)
2015	10	S3888 (10), S3889 (4), S3899 (3), S 3907 (15), S 3909 (10), S 3915 (17), S 3916 (1), S3917 (3), S 3922 (37), and S 3923 (1)
2014	1	S3625 (15)
2013	9	S3452 (61), S3460 (4), S3462 (8), S3465 (2), S3570 (1), S3608 (27), S3610 (6), S3615 (3), and S2681 (2)
2012	18	S3261 (30), S3266 (68), S3278 (4), S3279 (11), S3284 (5), S3287 (1), S3288 (2), S3291 (28), S 3294 (3), S3296 (2), S3299 (5), S3309 (5), S3316 (4), S3318 (1), S3323 (6), S3329 (2), S3336 (9), and S3340 (3)

Source: USDA Farm Service Agency

Available crop loss data from the USDA Risk Management Agency detailing cause of loss was researched to determine the financial impacts of drought on the State's agricultural base. Crop loss data for the years 2012- 2017 indicate $28,653,319 in crop loss on 1,079,433 acres.

USDA Risk Management Agency Cause of Loss Indemnities, Drought

Year	Number of Reported Claims	Acres Lost	Total Amount of Loss
2017	31	10,625	$892,777
2016	124	31,478	$3,187,899
2014	77	24,344	$2,338,300
2014	33	828,199	$8,916
2013	145	42,268	$4,646,627
2012	297	142,519	$17,578,800

Source: USDA Farm Service Agency

4.7.3 – Hazard Probability Analysis

Reviewing historical data from the U.S. Drought Monitor weekly reports from the year 2000 through October 2017 a yearly average can be created indicating the percentage of the State in each Drought Monitor category. This average can be used to extrapolate the potential likelihood of future drought conditions.

Estimated Probability of Being in U.S. Drought Monitor Category, Calendar Year

None	D0-D4	D1-D4	D2-D4	D3-D4	D4
62.25%	37.34%	19.99%	9.35%	3.09%	0.51%

There has been at least one USDA Declared Secretarial Drought Disaster over the past six years, equating to eight per year, or a 100% chance of occurrence.

4.7.4 Vulnerability Analysis

State owned structures are not directly vulnerable to losses as a result of drought. There is a small potential that state-owned bridges could be impacted by shrinking soil as a result of drought conditions that could cause foundational or support damages.

The USDA 2012 Census of Agriculture (the latest available data) provides data on the crop exposure value, the total dollar value of all crops, for each Arkansas county. In general, the higher the percentage loss, the higher the vulnerability the county has to drought events.

USDA Risk Management Agency Drought Data, 2012 - 2017

County	USDA Estimated Crop Exposure	USDA Crop Loss, 2012-2017 Yearly Average	Percentage Crop Loss per Year
State of Arkansas	$9,775,758,000	$4,906,287	0.050%
Arkansas	$298,173,000	$0	0.000%
Ashley	$78,844,000	$77,188	0.098%
Baxter	$20,367,000	$0	0.000%
Benton	$529,128,000	$87,312	0.017%
Boone	$124,065,000	$0	0.000%
Bradley	$43,633,000	$0	0.000%
Calhoun	$5,985,000	$0	0.000%
Carroll	$307,006,000	$9,546	0.003%
Chicot	$204,719,000	$137,888	0.067%
Clark	$15,083,000	$137,052	0.909%
Clay	$246,172,000	$16,342	0.007%
Cleburne	$47,871,000	$0	0.000%
Cleveland	$105,801,000	$0	0.000%
Columbia	$41,709,000	$0	0.000%
Conway	$161,648,000	$62,006	0.038%
Craighead	$261,600,000	$12,887	0.005%
Crawford	$67,408,000	$57,009	0.085%
Crittenden	$215,016,000	$339,016	0.158%
Cross	$188,778,000	$166,767	0.088%
Dallas	$1,305,000	$0	0.000%
Desha	$212,893,000	$67,479	0.032%
Drew	$88,347,000	$2,447	0.003%
Faulkner	$26,257,000	$90,639	0.345%
Franklin	$158,178,000	$10,549	0.007%
Fulton	$27,725,000	$0	0.000%
Garland	$24,099,000	$0	0.000%
Grant	$20,864,000	$0	0.000%
Greene	$177,326,000	$31,384	0.018%
Hempstead	$198,491,000	$0	0.000%
Hot Spring	$23,946,000	$2,937	0.012%

USDA Risk Management Agency Drought Data, 2012 - 2017

County	USDA Estimated Crop Exposure	USDA Crop Loss, 2012-2017 Yearly Average	Percentage Crop Loss per Year
Howard	$179,081,000	$0	0.000%
Independence	$131,867,000	$55,221	0.042%
Izard	$49,402,000	$0	0.000%
Jackson	$186,837,000	$68,405	0.037%
Jefferson	$215,265,000	$246,500	0.115%
Johnson	$141,042,000	$17,885	0.013%
Lafayette	$127,886,000	$96,651	0.076%
Lawrence	$149,140,000	$19,377	0.013%
Lee	$171,870,000	$533,210	0.310%
Lincoln	$219,452,000	$7,589	0.003%
Little River	$76,510,000	$200,871	0.263%
Logan	$187,983,000	$195,303	0.104%
Lonoke	$223,378,000	$48,964	0.022%
Madison	$208,163,000	$0	0.000%
Marion	$39,667,000	$0	0.000%
Miller	$45,538,000	$465,616	1.022%
Mississippi	$314,647,000	$246,187	0.078%
Monroe	$194,373,000	$65,817	0.034%
Montgomery	$42,148,000	$0	0.000%
Nevada	$47,918,000	$0	0.000%
Newton	$28,655,000	$0	0.000%
Ouachita	$16,465,000	$0	0.000%
Perry	$33,082,000	$4,959	0.015%
Phillips	$247,998,000	$595,739	0.240%
Pike	$82,335,000	$0	0.000%
Poinsett	$287,420,000	$118,212	0.041%
Polk	$117,773,000	$0	0.000%
Pope	$150,102,000	$83,036	0.055%
Prairie	$165,065,000	$41,550	0.025%
Pulaski	$39,970,000	$64,258	0.161%
Randolph	$79,585,000	$3,085	0.004%
St. Francis	$189,878,000	$159,736	0.084%
Saline	$4,495,000	$0	0.000%
Scott	$132,004,000	$0	0.000%
Searcy	$12,038,000	$0	0.000%
Sebastian	$97,410,000	$12,116	0.012%
Sevier	$137,415,000	$3,045	0.002%
Sharp	$75,561,000	$0	0.000%
Stone	$53,664,000	$0	0.000%
Union	$27,952,000	$0	0.000%
Van Buren	$19,947,000	$0	0.000%
Washington	$443,025,000	$0	0.000%
White	$100,373,000	$21,444	0.021%
Woodruff	$167,588,000	$188,883	0.113%

USDA Risk Management Agency Drought Data, 2012 - 2017

County	USDA Estimated Crop Exposure	USDA Crop Loss, 2012-2017 Yearly Average	Percentage Crop Loss per Year
Yell	$196,381,000	$34,183	0.017%

Source: USDA

Multiple factors can come into play when assessing drought vulnerability and loss analysis. However, for purposes of this estimate three major factors are being utilized to aid in the assessment:

- **Exposure Data:** The amount of agricultural crops at risk
- **Loss Data:** Historical losses from drought events
- **Percentage Loss:** Percent of agricultural crops lost to drought over the given period

The USDA 2012 Census of Agriculture (the latest available data) provides data on the crop exposure value, the total dollar value of all crops, for each Arkansas county.

USDA Risk Management Agency crop loss data allows us to quantify the monetary impact of drought conditions of the agricultural sector.

In general, the higher the percentage loss, the higher the vulnerability the county has to drought events.

USDA Risk Management Agency Drought Data, 2012 - 2017

County	USDA Estimated Crop Exposure	USDA Crop Loss, 2012-2017 Yearly Average	Percentage Crop Loss per Year
State of Arkansas	$9,775,758,000	$4,906,287	0.050%
Arkansas	$298,173,000	$0	0.000%
Ashley	$78,844,000	$77,188	0.098%
Baxter	$20,367,000	$0	0.000%
Benton	$529,128,000	$87,312	0.017%
Boone	$124,065,000	$0	0.000%
Bradley	$43,633,000	$0	0.000%
Calhoun	$5,985,000	$0	0.000%
Carroll	$307,006,000	$9,546	0.003%
Chicot	$204,719,000	$137,888	0.067%
Clark	$15,083,000	$137,052	0.909%
Clay	$246,172,000	$16,342	0.007%
Cleburne	$47,871,000	$0	0.000%
Cleveland	$105,801,000	$0	0.000%
Columbia	$41,709,000	$0	0.000%
Conway	$161,648,000	$62,006	0.038%
Craighead	$261,600,000	$12,887	0.005%
Crawford	$67,408,000	$57,009	0.085%
Crittenden	$215,016,000	$339,016	0.158%
Cross	$188,778,000	$166,767	0.088%
Dallas	$1,305,000	$0	0.000%
Desha	$212,893,000	$67,479	0.032%
Drew	$88,347,000	$2,447	0.003%

USDA Risk Management Agency Drought Data, 2012 - 2017

County	USDA Estimated Crop Exposure	USDA Crop Loss, 2012-2017 Yearly Average	Percentage Crop Loss per Year
Faulkner	$26,257,000	$90,639	0.345%
Franklin	$158,178,000	$10,549	0.007%
Fulton	$27,725,000	$0	0.000%
Garland	$24,099,000	$0	0.000%
Grant	$20,864,000	$0	0.000%
Greene	$177,326,000	$31,384	0.018%
Hempstead	$198,491,000	$0	0.000%
Hot Spring	$23,946,000	$2,937	0.012%
Howard	$179,081,000	$0	0.000%
Independence	$131,867,000	$55,221	0.042%
Izard	$49,402,000	$0	0.000%
Jackson	$186,837,000	$68,405	0.037%
Jefferson	$215,265,000	$246,500	0.115%
Johnson	$141,042,000	$17,885	0.013%
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Saline	$4,495,000	$0	0.000%
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USDA Risk Management Agency Drought Data, 2012 - 2017

County	USDA Estimated Crop Exposure	USDA Crop Loss, 2012-2017 Yearly Average	Percentage Crop Loss per Year
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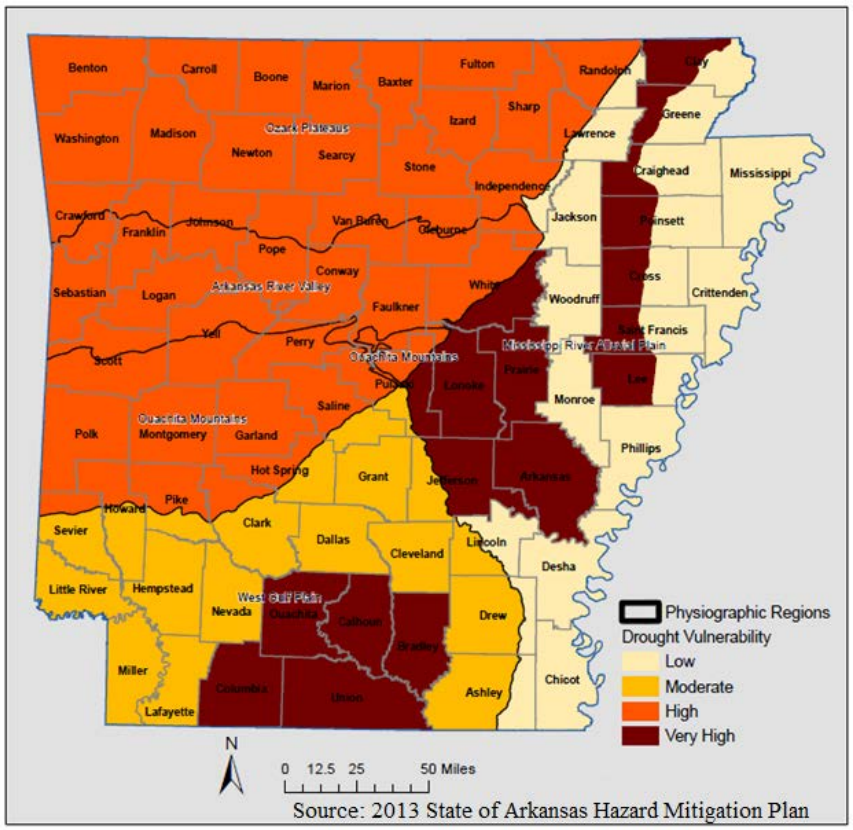
Sharp	$75,561,000	$0	0.000%
Stone	$53,664,000	$0	0.000%
Union	$27,952,000	$0	0.000%
Van Buren	$19,947,000	$0	0.000%
Washington	$443,025,000	$0	0.000%
White	$100,373,000	$21,444	0.021%
Woodruff	$167,588,000	$188,883	0.113%
Yell	$196,381,000	$34,183	0.017%

Source: USDA

Additional predictions about drought vulnerability can be made by reviewing the six physiographic sub-regions within the state, as the availability of ground water generally is controlled largely by the topography, geology, hydrogeology, and hydrology of these regions. Based on the natural state conditions of each of these sub-regions, the following map illustrates the potential susceptibility of areas of Arkansas to drought.



4.7.5 – Impact and Consequence Analysis

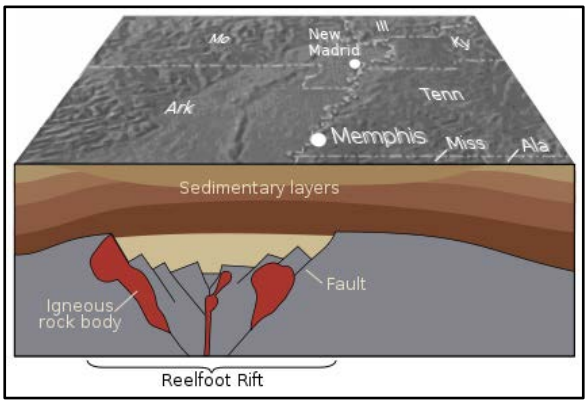
As per EMAP standards, the following table provides the consequence analysis for drought conditions.

Drought Consequence Analysis

Subject	Impacts of Drought
Health and Safety of the Public	Drought impact tends to be agricultural but water supply disruptions which affect people can occur. Impact is expected to be minimal.
Health and Safety of Responders	Impact to responders is expected to be minimal.
Continuity of Operations	Minimal expectation for utilization of the COOP.
Property, Facilities, and Infrastructure	Impact to property, facilities, and infrastructure could be minimal to severe, depending on the length and intensity of the drought. Structural integrity of buildings, and buckling of roads could occur.
Environment	The impact to the environment could be severe. Drought can severely affect farming, ranching, wildlife and plants.
Economic Conditions	Impacts to the economy will be dependent on how extreme the drought is. Communities that depend on an agricultural economic engine will likely be severely stressed.
Public Confidence in the Jurisdiction's Governance	Confidence could be an issue during periods of extreme drought if planning is not in place to address intake needs and loss of crops.

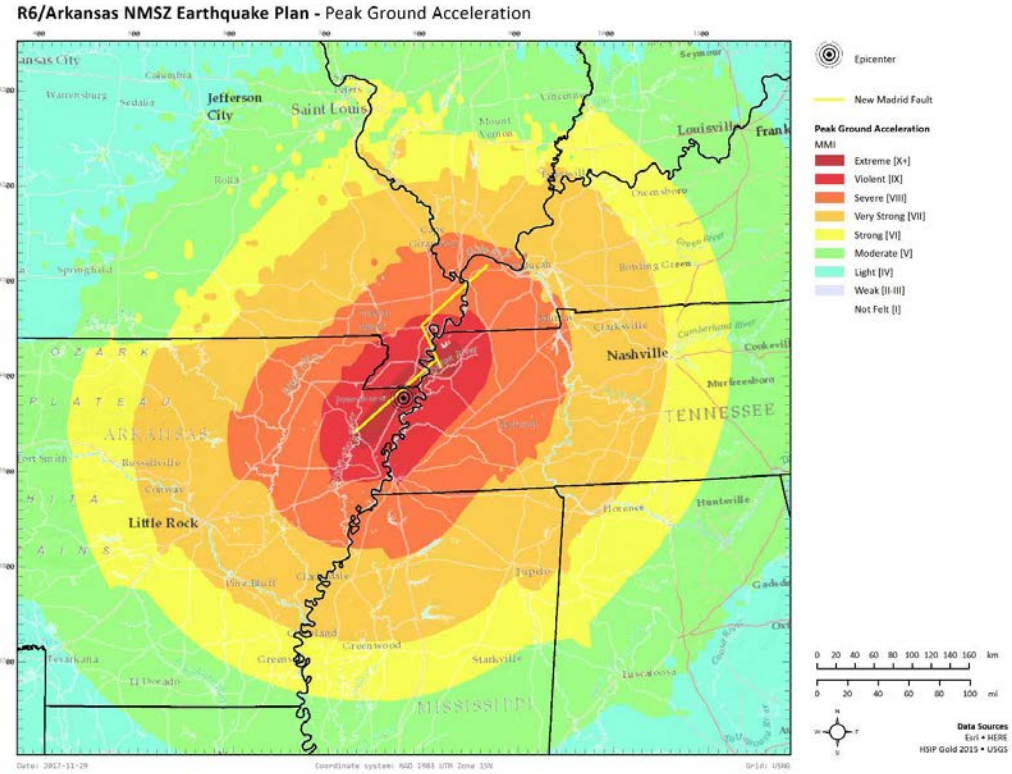
4.8 – Earthquake

An earthquake is the sudden release of energy in the earth's crust that creates seismic waves that are typically caused by the rupturing of geological faults.



4.8.1 – Location and Extent

The New Madrid Seismic Zone (NMSZ) stretches from northeast Arkansas to southern Illinois, passing through Missouri, western Tennessee, and western Kentucky, and is one-of the most active earthquake zones in the eastern United States. Most earthquakes in the NMSZ are small and are detected only with instruments. The USGS estimates that earthquakes as large as magnitude 7.5 are possible along NMSZ. The following map, from the Mid-America Earthquake Center (MAEC), illustrates the location of the NMSZ.



4.8.2 – Previous Occurrences

The Arkansas Geological Survey Earthquake Archive 1699 – 2016 is a list that was made from a selection of seismic events that occurred from 1699 to the present in Arkansas. The seismic data have been cited from publications of the Center for Earthquake Research and Information at the University of Memphis, the Department of Earth and Atmospheric Sciences at Saint Louis University, the USGS, the Eastern

Section of the Seismological Society of America and the University of Arkansas at Little Rock. According to this archive, Arkansas has had 3,292 earthquakes since 1811.

The following table details the Richter Scale Magnitude of these events.

Number of Earthquakes by Richter Scale Magnitude, 1811-2017

0.1 -3.9	4.0 – 4.9	5.0 – 5.9	6.0 – 6.9	7.0- 7.9	8.0 +
3,192	39	54	4	2	1

From the archive data, the table below represents selected events that had a Richter Scale Magnitude above 4.0 after 1965.

State of Arkansas Historic Earthquake Events above Magnitude 4.0, 1965 - 2017

Date	Richter Scale Magnitude	Incident Remarks	County
12/19/1965	5.3	None	Mississippi
3/25/1976	5	Reported to have been felt in six states (Arkansas Gazette).	Poinsett
02/27/11	4.7	None	Faulkner
1/20/1982	4.7	Enola swarm, largest event, Felt area ~75,000 km^2	Faulkner
1/1/1969	4.5	Felt area approximately 62,000 km^2	Pulaski
2/1/1972	4.5	Felt area approximately 27,000 km^2	Randolph
3/25/1976	4.5	None	Poinsett
11/17/1970	4.4	Felt area approximately 92,000 km^2	Mississippi
4/4/2001	4.4	Enola swarm, largest event since 1982	Faulkner
2/12/1966	4.3	Felt area approximately 2,500 km^2	Mississippi
6/2/1977	4.3	None	Polk
1/23/1982	4.3	Enola swarm, second largest event since 1982, felt area approximately 43,500 km^2	Faulkner
2/15/1974	4.2	Arkadelphia swarm	Clark
2/15/1974	4.2	Arkadelphia swarm	Clark
5/1/2005	4.2	CERI search shows mag 4.2	Mississippi
10/1/1971	4.1	Felt area approximately 62,000 km^2	Craighead
2/28/1982	4.1	Enola swarm, third largest event	Faulkner

Source: State of Arkansas

Of historical note to the State of Arkansas is the sequence of large earthquakes that occurred in 1811 and 1812, the New Madrid earthquakes. These quakes caused damage to an area of approximately 600,000 square kilometers and were felt over an area of 5,000,000 square kilometers. Because there were no seismographs at that time, and few people in the New Madrid region, the estimated magnitudes of these quakes vary considerably and depend on modern interpretation. However, it is generally agreed that these quakes had magnitudes of approximately 7.5 – 8.0 on the Richter Scale.

The Arkansas Geological Survey (AGS) website (www.geology.ar.gov) can provide more information on historic earthquake activity in the state under the geohazards section of the site.

4.8.3 – Hazard Probability Analysis

In 2009 the USGS published a study on the past, present, and future state of the NMSZ. Included in this study was a scientific prediction on the future probability of an earthquake event.

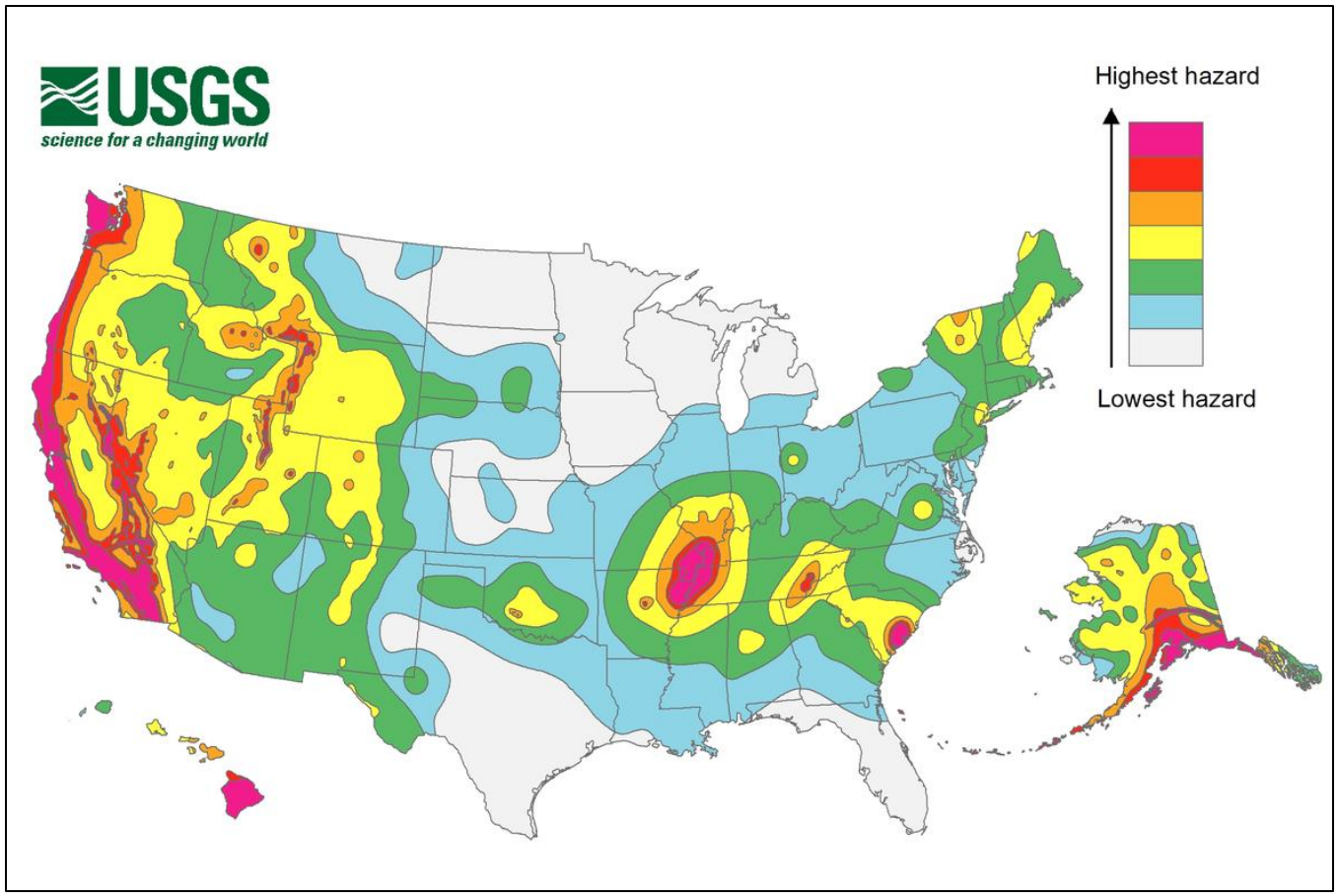
In summary, the study predicts the NMSZ will produce the following affecting Arkansas:

- A Magnitude 6 earthquake at a probability of 25% - 50% in the next 50 years.
- An earthquake sequence similar to the 1811-12 earthquakes at a probability of 7% - 10% in the next 50 years.

The USGS study on the NMSZ states:

- "It was the consensus of this broad group of scientists that (1) the evidence indicates that we can expect large earthquakes similar to the 1811–12 earthquakes to occur in the future with an average recurrence time of 500 years and that (2) magnitude 6 earthquakes, which can also cause serious damage, can be expected more frequently"

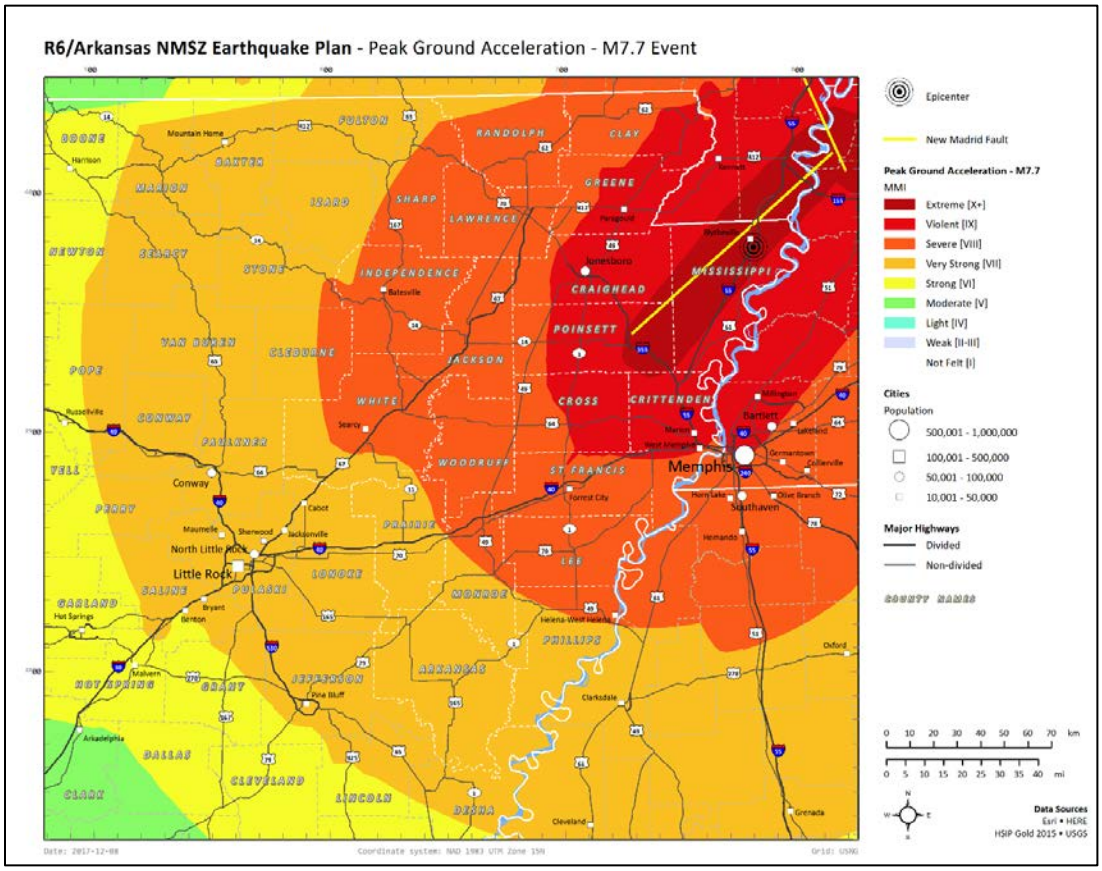
The following FEMA Seismic Risk Map for the United States indicates that a significant portion of the State of Arkansas falls into the moderate to high hazard rankings.



While predicting the probability of an earthquake occurrence is not possible with any scientific certainty, based on the above data it is very likely that the State of Arkansas will experience earthquakes in the coming years.

4.8.4 – Vulnerability Analysis

Counties located within the northeast corner of the state were determined to be most vulnerable to potential earthquakes. The following map show peak ground acceleration, which represents the shaking or ground motion from an earthquake, for northeast Arkansas.



The following table indicates the number of state-owned facilities within those counties, the value of those facilities, and the number of bridges. Assuming an amount of damage to each facility is not possible due to the tremendous number of variables involved in a potential earthquake event.

State Owned Facilities in Northeast Arkansas

County	State-Owned Facilities	Total Value	State-Owned Critical Facilities	Value	State-Owned Bridges
Arkansas	41	$416,319,788	5	$3,326,664	75

State Owned Facilities in Northeast Arkansas

County	State-Owned Facilities	Total Value	State-Owned Critical Facilities	Value	State-Owned Bridges
Clay	35	$3,288,517	1	$353,957	85
Craighead	290	$219,788,810	8	$4,135,316	174
Crittenden	51	$119,025,900	7	$3,562,156	163
Cross	90	$185,863,362	10	$8,483,377	93
Greene	75	$100,332,674	16	$9,525,474	93
Independence	47	$8,598,781	34	$6,324,111	97
Jackson	101	$125,251,657	39	$136,959,919	111
Lawrence	58	$166,300,006	2	$989,381	98
Lee	52	$48,542,001	28	$117,373,491	54
Mississippi	82	$130,425,929	23	$20,186,394	182
Monroe	9	$14,302,601	1	$195,737	78
Phillips	35	$71,350,166	4	$1,181,081	58
Poinsett	47	$27,827,627	3	$2,374,509	127
Prairie	24	$9,301,979	2	$959,696	66
Randolph	58	$33,177,986	3	$2,091,080	84
St. Francis	83	$41,077,656	7	$2,537,948	154
White	94	$94,458,624	6	$1,556,212	203
Woodruff	8	$6,015,359	2	$712,151	62

Source: ADEM and Arkansas Insurance Department

Based on data presented in the hazard analysis section, the following is a table of Arkansas counties where the impacts of an earthquake along the New Madrid Seismic Zone would be most severe, along with the current population and housing figures and the percentage change from the year 2000. Counties with a higher identified population and number of structures within these areas, and counties in a higher hazard area are to be considered to have a potentially greater vulnerability. However, these assumed vulnerabilities should be viewed as theoretical due to the tremendous number of variables involved in a potential earthquake event.

Northeast Arkansas County Vulnerability Data

County	Population 2015	Percentage Change in Population 2000-2015	Housing Units 2015	Percentage Change in Housing Units 2000 - 2015	Building Valuation
Arkansas	18,214	-12.21%	9,445	-2.34%	$2,245,000
Clay	14,920	-15.27%	8,025	-5.57%	$1,532,000
Craighead	105,835	28.83%	44,394	26.36%	$696,125,909
Crittenden	49,235	-3.20%	21,708	5.86%	$60,202,216
Cross	17,037	-12.74%	7,900	-1.62%	$5,092,398
Greene	44,598	37.94%	18,737	15.93%	$6,886,216
Independence	37,168	8.57%	16,335	10.06%	$3,540,000
Jackson	17,221	-6.49%	7,587	-4.63%	$93,359
Lawrence	16,735	-5.84%	7,978	-1.32%	$6,905,290
Lee	9,310	-25.99%	4,356	-8.64%	$93,614,016
Mississippi	42,835	-17.59%	20,531	-7.97%	$68,402,598

Northeast Arkansas County Vulnerability Data

County	Population 2015	Percentage Change in Population 2000-2015	Housing Units 2015	Percentage Change in Housing Units 2000 - 2015	Building Valuation
Monroe	7,169	-30.08%	4,423	-12.70%	$850,000,000
Phillips	18,975	-28.24%	10,199	-6.07%	$1,6468,200
Pike	10,832	-4.16%	10,932	-1.07%	$749,737
Poinsett	24,023	-6.21%	4,498	-6.09%	$5,849,665
Prairie	8,251	-13.50%	8,567	3.61%	$823,000,000
Randolph	17,448	-4.10%	10,905	-2.99%	$26,176,489
St. Francis	26,196	-10.68%	33,345	20.75%	$22,272,436
White	79,263	18.01%	3,876	-5.20%	$75,477,729
Woodruff	6,641	-24.02%	9,445	-2.34%	$707,000,000

Source: US Census and HAZUS

In order to determine estimated losses, the Mid-America Earthquake Center's 2009 report "New Madrid Seismic Zone Catastrophic Earthquake Response Planning Project, Impact of New Madrid Seismic Zone Earthquakes on the Central USA" was used. The hazard employed in this investigation includes ground shaking for a single scenario event representing the rupture of all three New Madrid fault segments. Each segment is assumed to generate a deterministic magnitude 7.7 earthquake caused by a rupture over the entire length of the segment. While the data in this report is illustrative of 2009 planning conditions, the rationale and results are still indicative of potential losses. The following is a summary of the report, with data specific to Arkansas.

Population Impacts

Casualties at 2:00AM for Arkansas

	Level 1	Level 2	Level 3	Level 4	Total
Casualties at 2:00AM	11,245	3,075	344	641	15,305

Of note for injuries and deaths:

- Nearly 75% of all casualties are minor injuries that do not require hospitalization
- 650 deaths are expected
- Crittenden, Mississippi, and Craighead Counties are most severely impacted as each county is estimated to incur 2,000 to 3,000 total casualties

Essential Facilities Impact

Essential Facilities Damage for Arkansas

Essential Facility	Total Facilities	At Least Moderate Damage	Complete Damage
Schools	1,328	219	56
Fire Stations	1,330	179	65
Police Stations	515	107	48
Hospitals	125	24	18
EOCs	113	25	8

Source: Mid-America Earthquake Center's "New Madrid Seismic Zone Catastrophic Earthquake Response Planning Project, Impact of New Madrid Seismic Zone Earthquakes on the Central USA"

Of note for essential facility damages:

- Clay, Craighead, Crittenden, Cross, Greene, Jackson, Lee, Mississippi, Monroe, Phillips, Poinsett, Prairie, St. Francis, and Woodruff Counties are dramatically impacted, and most essential facilities, medical services, law enforcement and firefighting services are nearly non-existent immediately after the event.

Utility Impacts

Utility Facilities Damage for Arkansas

Utility Facility	Total Facilities	At Least Moderate Damage	Complete Damage
Potable Water	69	6	0
Waste Water	2,107	349	0
Natural Gas	422	47	0
Oil	96	14	0
Electric	800	147	0
Communications	4,626	633	0

Source: Mid-America Earthquake Center's "New Madrid Seismic Zone Catastrophic Earthquake Response Planning Project, Impact of New Madrid Seismic Zone Earthquakes on the Central USA"

Of note for utility systems:

- Approximately 330,000 households are without power
- Clay, Crittenden, Craighead, Cross, Greene, Independence, Jackson, Lawrence, Lee, Mississippi, Phillips, Poinsett, Randolph, St. Francis, White, and Woodruff Counties incur the majority of damage to waste water, communication, and other utility facilities

Building Impacts

Building Damage by Occupancy Type for Arkansas

Occupancy Type	Total Buildings	At Least Moderate Damage	Complete Damage
Single Family	833,500	69,700	35,800
Other Residential	408,500	75,000	27,400
Commercial	53,200	11,000	4,700
Industrial	14,600	2,800	1,100
Other	15,600	3,700	1,100
Total	1,325,400	162,200	70,700

Source: Mid-America Earthquake Center's "New Madrid Seismic Zone Catastrophic Earthquake Response Planning Project, Impact of New Madrid Seismic Zone Earthquakes on the Central USA"

Building Damage by Building Type for Arkansas

Occupancy Type	Total Buildings	At Least Moderate Damage	Complete Damage
Wood	902,100	68,800	35,000
Steel	25,300	7,300	2,700
Concrete	6,600	1,500	700
Precast	6,700	1,600	700
Reinforced Masonry	5,200	1,100	500
Unreinforced Masonry	181,900	29,100	15,500
Manufactured Housing	197,600	52,800	15,600
Total	1,325,400	162,200	70,700

Source: Mid-America Earthquake Center's "New Madrid Seismic Zone Catastrophic Earthquake Response Planning Project, Impact of New Madrid Seismic Zone Earthquakes on the Central USA"

Of note for building damage:

- Greene, Craighead, Poinsett, Crittenden, and Mississippi Counties are each estimated to incur at least 10,000 damaged buildings.

Transportation Lifeline Impacts

Essential Facilities Damage for Arkansas

Transportation Lifeline	Total Facilities	At Least Moderate Damage	Complete Damage
Highway Bridges	14,060	1,083	336
Railway Bridges	68	11	0
Railway Facilities	69	14	0
Bus Facilities	18	1	0
Port Facilities	103	17	0
Airport Facilities	335	37	0

Source: Mid-America Earthquake Center's "New Madrid Seismic Zone Catastrophic Earthquake Response Planning Project, Impact of New Madrid Seismic Zone Earthquakes on the Central USA"

Of note for transportation lifelines:

- Craighead, Crittenden, Mississippi, and Poinsett Counties incur the largest numbers of damaged bridges.
- The Harahan, Frisco, and Memphis/Arkansas bridges are damaged and impassible after the event.
- Most damage to rail, air and water transport facilities is located in Clay, Crittenden, Craighead, Cross, Greene, Mississippi, and Poinsett Counties.

Pipeline System Impacts

Utility Pipeline Damage for Arkansas

Pipeline System	Total Miles	Leaks	Breaks	Total Repairs
Potable Water Local	118,700	19,532	27,649	47,181
Waste Water Local	71,200	15,448	21,868	37,316
Natural Gas Local	47,500	16,513	23,376	39,889
Natural Gas Interstate	9,700	340	1,092	1,432

Utility Pipeline Damage for Arkansas

Pipeline System	Total Miles	Leaks	Breaks	Total Repairs
Oil Interstate	2,200	62	214	276

Source: Mid-America Earthquake Center's "New Madrid Seismic Zone Catastrophic Earthquake Response Planning Project, Impact of New Madrid Seismic Zone Earthquakes on the Central USA"

Of note for pipeline systems:

- Approximately 190,000 households are without water after the event.

Other Critical Infrastructure Impacts

Essential Facilities Damage for Arkansas

Essential Facility	Total Facilities	Damaged
Dams	1,228	55
Levees	124	20
Hazardous Materials	1,834	69

Source: Mid-America Earthquake Center's "New Madrid Seismic Zone Catastrophic Earthquake Response Planning Project, Impact of New Madrid Seismic Zone Earthquakes on the Central USA"

Of note for other critical infrastructure:

- All dams damaged are in Poinsett County
- All levees damaged are in in Craighead, Greene, Mississippi, and Poinsett Counties
- All fixed hazardous materials facilities damaged are in Mississippi County

Debris Impacts

- Infrastructure damage generates 9,400,000 tons of debris
- Nearly two million tons of debris is created in Craighead County, with another 1.5 million tons in Mississippi County and one million tons in Crittenden County. Poinsett, Pulaski, and Greene Counties also have debris estimates between 650,000 and 750,000 tons
- It would take approximately 375,000 truckloads to remove all debris generated by this event

Direct Economic Losses

- $39,029,000,000 in total direct economic losses
- $18,167,000,000 in building losses
- $2,347,000,000 billion in transportation losses
- $18,515,000,000 in utility losses

4.8.5 – Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis

Earthquake Consequence Analysis

Subject	Impacts of Earthquake
Health and Safety of the Public	Severity and location dependent. Impacts on persons near the epicenter are expected to be severe.
Health and Safety of Responders	Severity and location dependent. Impacts on persons near the epicenter are expected to be severe.
Continuity of Operations	Severity and location dependent. Event will likely require relocation, essential function prioritization based on capabilities and severe disruption of services.
Property, Facilities, and Infrastructure	Impact to property, facilities, and infrastructure could be minimal to severe, depending on the location of the facility and the severity of the event. Loss of structural integrity of buildings and infrastructure could occur.
Environment	The impact to the environment could be severe, including topological changes and severe destruction.
Economic Conditions	Impacts to the economy will be dependent on the severity of the earthquake and proximity to the epicenter. Impacts will likely be long lasting and possibly permanent for most severely impacted businesses.
Public Confidence in the Jurisdiction's Governance	Confidence could be an issue if planning is not in place to address the needs of the affected population.

4.9 – Expansive Soils

Expansive soils are slow to develop and do not usually pose a risk to public safety. The slow expansion and contraction of the clays and soils places pressure on structural foundations and subsurface dwellings. This pressure can become so great it damages foundations, cracks walls, and deforms structures.

4.9.1 – Location and Extent

Expansive soils risk is measured by quantifying the soils ability to swell and shrink from water content. The quality used to quantify the swelling capacity is called "linear extensibility." It is an expression of the length of change between water content 1/3 to 1/10 bar tension (33 kPascal to 10 kPascal) and oven dryness multiplied by the thickness of the soil layer. The Natural Resources Conservation Service (NRCS) uses four risk categories, from low to very high, measuring the change in the soils' volume expressed as a percent value of linear extensibility.

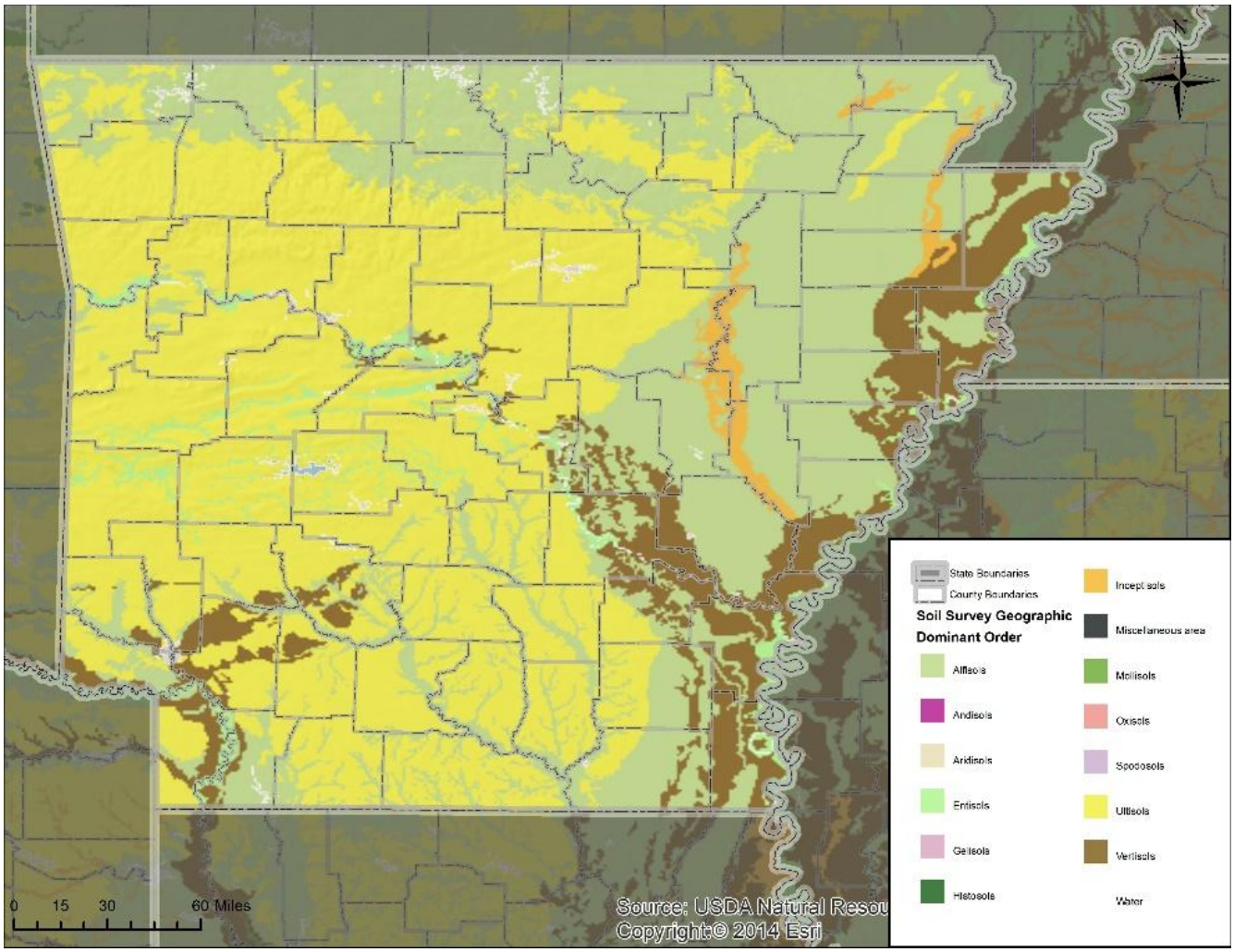
NRCS Soil Linear Extensibility Risk Categories

Ranking	Linear Extensibility %	Clay %
Low	0.0% - 3.0%	< 25
Moderate	3.0% - 6.0%	25 - 35
High	6.0% - 9.0%	35 - 45
Very High	> 9.0%	> 45

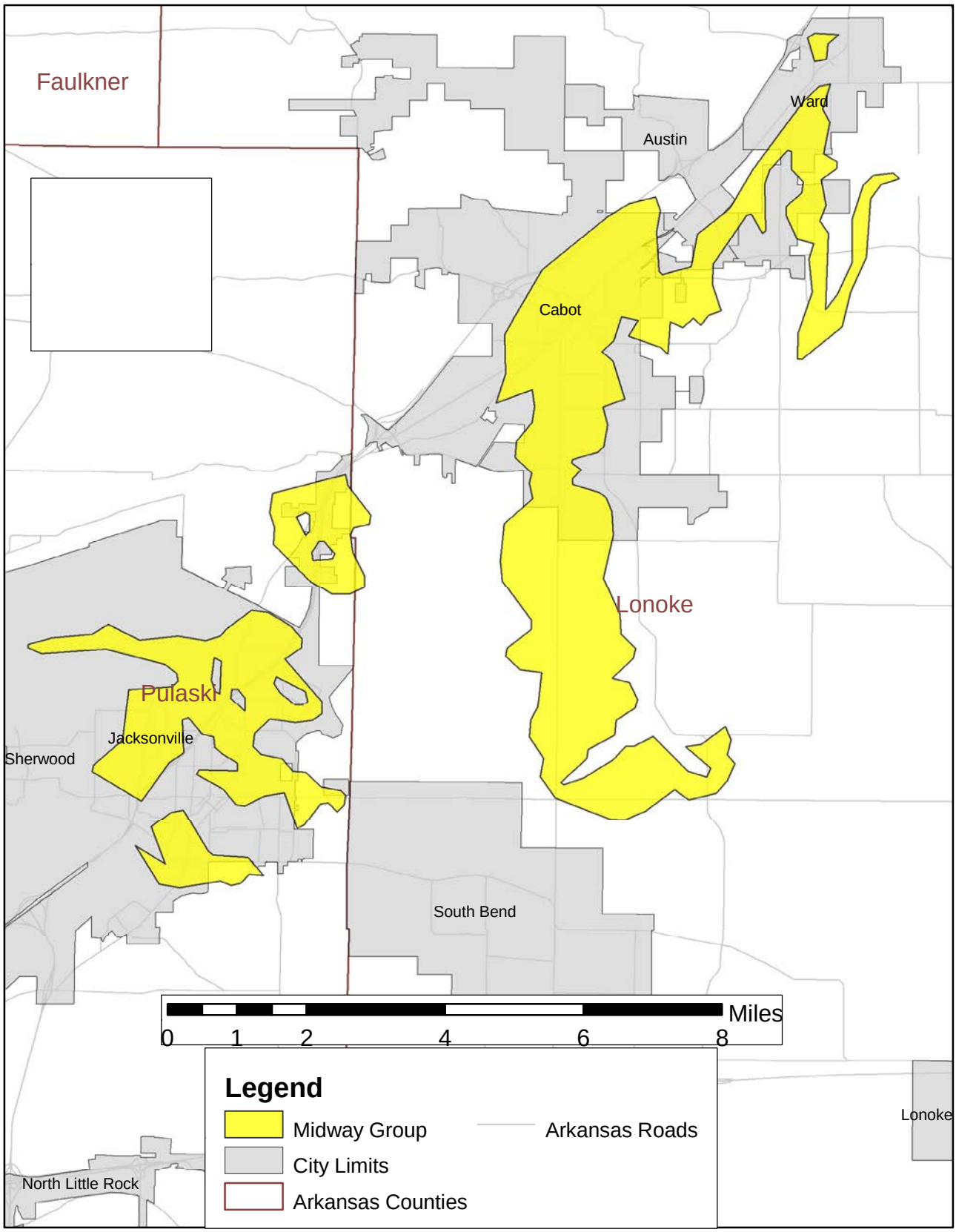
Source: NRCS

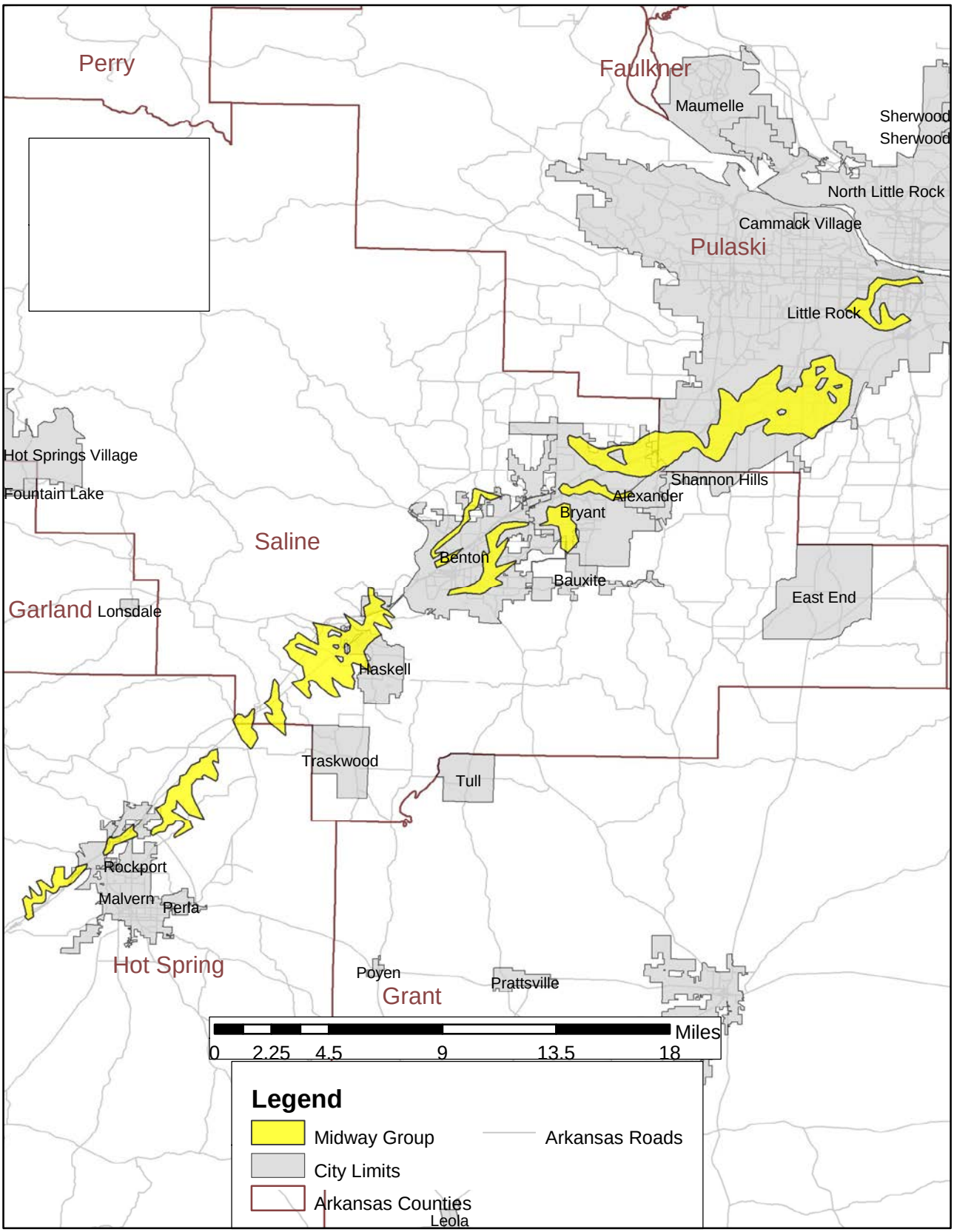
Each increase in linear extensibility increases the potential level of damage structures could incur.

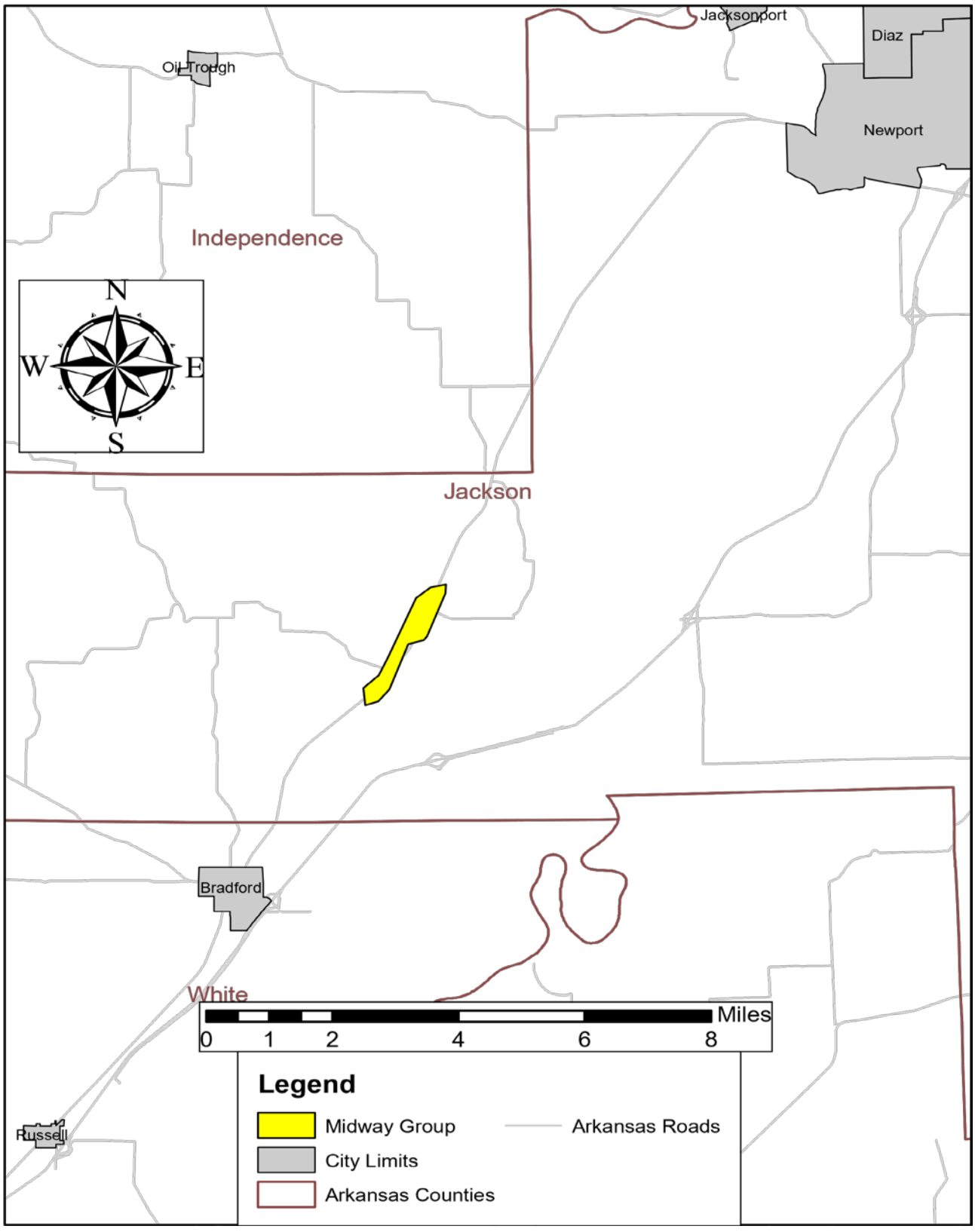
The following map, from the USDA's Digital General Soil Map of the United States, illustrates expansive properties of soils in Arkansas.

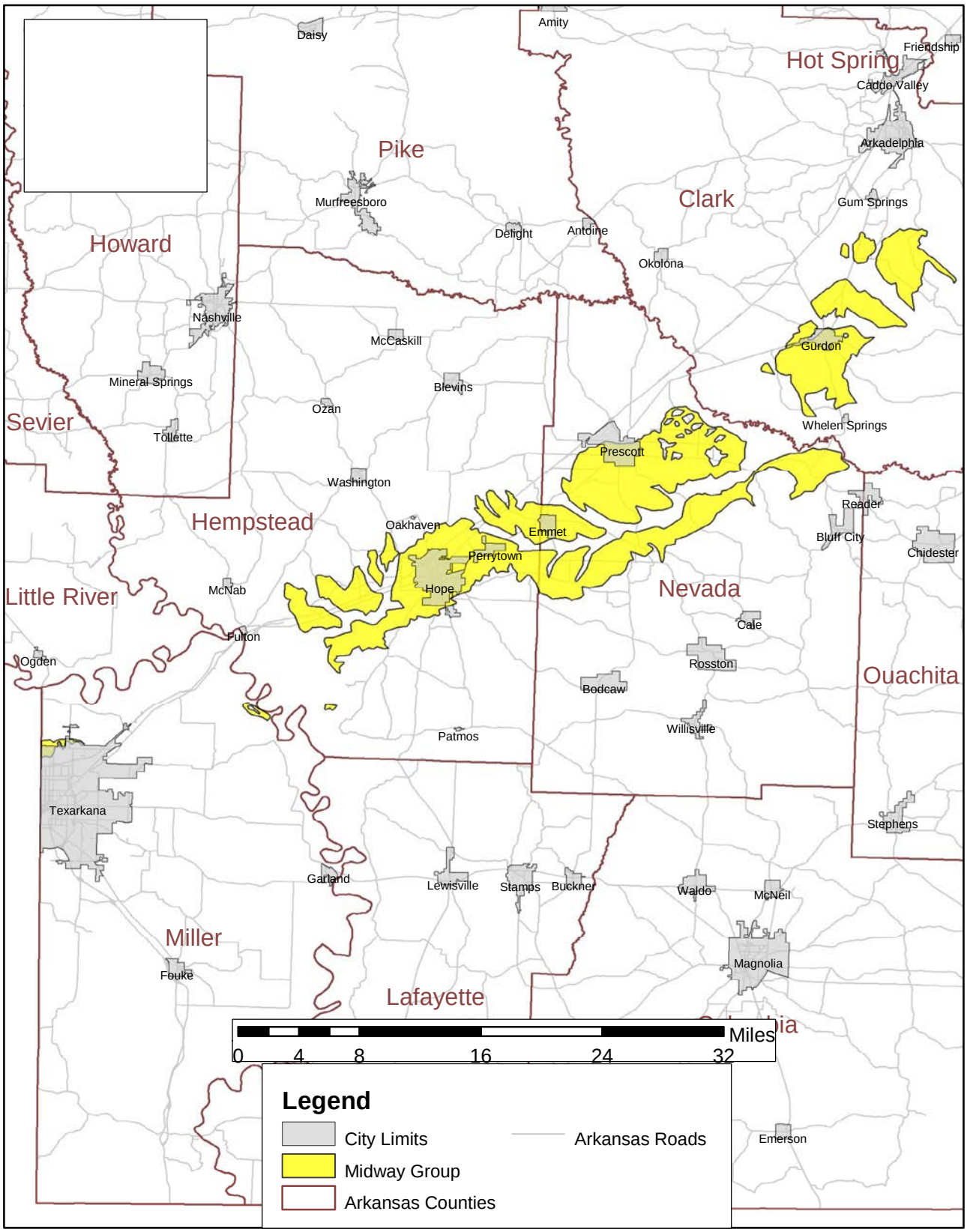


Of particular concern for the state, the clays of the Porter's Creek Clay of the Midway Group are highly expansive. The Porters Creek Clay outcrops in a narrow but continuous belt along the Fall Line from just south of Hope to near Arkadelphia and intermittently from Malvern to near Batesville. The following maps, provided by the Arkansas Geological Survey, indicate the locations of these soils.


Faulkner
Ward
Austin
Cabot
Lonoke
Pulaski
Jacksonville
Sherwood
South Bend
Miles
0 1 2 4 6 8
Legend
Midway Group
City Limits
Arkansas Counties
Arkansas Roads
Lonoke
North Little Rock


Perry
Faulkner
Maumelle
Sherwood
Sherwood
North Little Rock
Cammack Village
Pulaski
Little Rock
Hot Springs Village
Fountain Lake
Shannon Hills
Alexander
Bryant
Saline
Benton
Bauxite
East End
Garland
Lonsdale
Haskell
Traskwood
Tull
Rockport
Malvern
Perla
Hot Spring
Poyen
Prattsville
Grant
Miles
0 2.25 4.5 9 13.5 18
Legend
Midway Group
City Limits
Arkansas Counties
Arkansas Roads
Leola


Jacksonport
Diaz
Oil Trough
Newport
Independence
N
W
E
S
Jackson
Bradford
White
Miles
0 1 2 4 6 8
Legend
Midway Group
Arkansas Roads
City Limits
Arkansas Counties
Russell


Amity
Daisy
Friendship
Hot Spring
Caddo Valley
Arkadelphia
Pike
Murfreesboro
Clark
Gum Springs
Delight
Antoine
Howard
Okolona
Nashville
McCaskill
Gurdon
Mineral Springs
Blevins
Ozan
Sevier
Whelen Springs
Tollette
Prescott
Washington
Reader
Hempstead
Oakhaven
Emmet
Bluff City
Chidester
Perrytown
Little River
McNab
Hope
Nevada
Cale
Fulton
Ogden
Rosston
Ouachita
Bodcaw
Willisville
Patmos
Texarkana
Stephens
Garland
Lewisville
Stamps
Buckner
Waldo
McNeil
Miller
Magnolia
Fouke
Lafayette
Miles
0 4 8 16 24 32
Legend
City Limits
Arkansas Roads
Midway Group
Arkansas Counties
Emerson

4.9.2 – Previous Occurrences

Data from the AGS concerning expansive soils indicates that there are no expansive soil case studies reported at this time. While expansive soils are pervasive throughout the state no reports of damage have been documented, nor is there a central database of expansive soils events as the magnitude of each event is often very low. The Arkansas Geological Survey will begin mapping specific expansive soils within town/city limits to more closely identify the extent and characteristics of the soils.

4.9.3 – Hazard Probability Analysis

Currently there is limited available data on this hazard, but it is held that each year in the United States, expansive soils cause billions of dollars in damage to buildings, roads, pipelines, and other structures. But, as expansive soils cause damage over extended periods of time damages caused may be attributed to other factors such as extended drought or heavy periods of moisture, both of which may exacerbate the hazard.

Because there is abundant high clay content, high swell soils in the state, the probability of shrink/swell occurrence is 100%, especially in areas with Porter's Creek Clay of the Midway Group. However, the probability of damage is so poorly documented that is presently not possible to quantify the potential occurrence of a major damaging expansive soils event within the state.

4.9.4 – Vulnerability Analysis

Counties containing highly expansive soil were determined to be most vulnerable. The following table indicates the number and value of state-owned facilities and bridges within expansive soil areas for each identified county, and the value of those facilities.

State-Owned Facilities in Highly Expansive Soil Groups

County	State-Owned Facilities	Value	State-Owned Critical Facilities	Value	State Owned Bridges
Arkansas	10	$1,317,063	0	$0	18
Chicot	86	$64,068,396	2	$41,268,922	62
Clark	111	$281,228,764	0	$0	153
Conway	91	$38,227,268	0	$0	30
Crittenden	47	$83,299,744	6	$60,202,216	170
Cross	19	$6,333,549	0	$0	25
Desha	22	$2,281,140	0	$0	72
Drew	1	$690,740	0	$0	16
Faulkner	40	$47,246,166	0	$0	9
Jefferson	90	$132,124,878	0	$0	102
Hempstead	169	$20,352,078	0	$0	47
Lee	51	$124,801,137	0	$0	30
Lincoln	160	$231,376,717	0	$0	37
Lonoke	206	$8,798,901	0	$0	49

State-Owned Facilities in Highly Expansive Soil Groups

Mississippi	238	$86,622,094	0	$0	156
Nevada	214	$571,557	0	$0	26
Philips	21	$16,468,200	0	$0	23
Pike	1	$749,737	0	$0	23
Poinsett	18	$11,999,802	1	$5,849,715	35
Pope	5	$1,055,211	0	$0	0
Pulaski	674	$1,263,674,112	2	11,823,715	150
Sevier	1	$518,260	0	$0	16
Yell	2	0	0	$0	2

Source: ADEM and Arkansas Insurance Department

Counties containing highly expansive soil, as detailed in previous sections, were determined to be most vulnerable. The following table indicates the percentage area impacted by expansive soils for each vulnerable county, and the number and value of potentially impacted structures.

County Expansive Soil Vulnerability.

County	Percentage of the County Impacted	Number of Structures Within Potential Expansive Soil Area	Building and Content Valuation
Arkansas	24%	467	$168,483,000
Chicot	82%	2,228	$855,206,000
Clark	15%	2,439	$781,072,000
Conway	6%	274	$0
Crittenden	76%	16,328	$8,300,480,000
Cross	27%	694	$199,337,000
Desha	87%	2,297	$812,490,000
Drew	12%	243	$71,173,000
Faulkner	2%	500	$0
Jefferson	1%	1,212	$0
Hempstead	32%	3,104	$681,530,000
Lee	18%	256	$97,010,000
Lincoln	36%	691	$265,063,000
Lonoke	22%	788	$282,300,000
Mississippi	75%	4,329	$1,773,113,000
Nevada	11%	296	$0
Philips	46%	1,084	$258,166,000
Pike	7%	166	$0
Poinsett	9%	2,760	$1,143,712,000
Pope	1%	131	$0
Pulaski	3%	2,349	$4,801,314,000
Sevier	6%	1,303	$0
Yell	1%	115	$0

Source: ADEM and HAZUS

4.9.5 – Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Expansive Soils Consequence Analysis

Subject	Impacts of Expansive Soils
Health and Safety of the Public	Minimal impact.
Health and Safety of Responders	Minimal impact.
Continuity of Operations	Minimal expectation for utilization of COOP unless structures have extensive damage.
Property, Facilities, and Infrastructure	Localized impact could be moderate, including structural integrity to be lost, and roadways, railways to buckle.
Environment	Expansive soils could cause moderate damage to dams, levees, watersheds.
Economic Conditions	Economic impacts include rebuilding of the properties and infrastructure. Drought and extreme rain events could increase impact.
Public Confidence in the Jurisdiction's Governance	Confidence will be dependent on development trends and mitigation efforts at reducing the effect of expansive soils on new construction.

4.10 – Flood

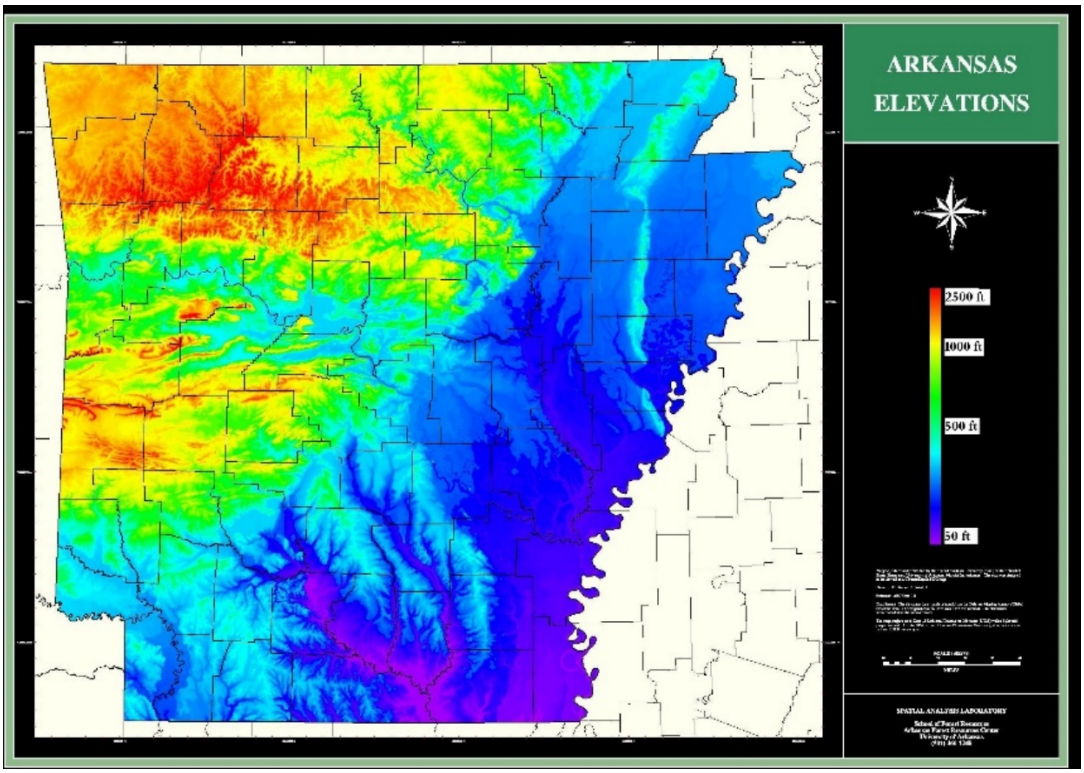
Floods are most common in seasons of rain and thunderstorms. Floods that threaten Arkansas can be generally classified under two categories:

- **Flash Flood:** The product of heavy, localized precipitation in a short time period over a given location
- **Riverine Flood:** Occurs when precipitation over a given river basin for a long period of time causes the overflow of rivers, streams, lakes and drains

4.10.1 – Location and Extent

Flash Flooding

History indicates that flash floods in Arkansas are more typical of the Interior Highlands Region. This is due to its large number of smaller drainage basins and steep stream gradients when compared to the Gulf Coastal Plain Region. The following map details State of Arkansas elevations.

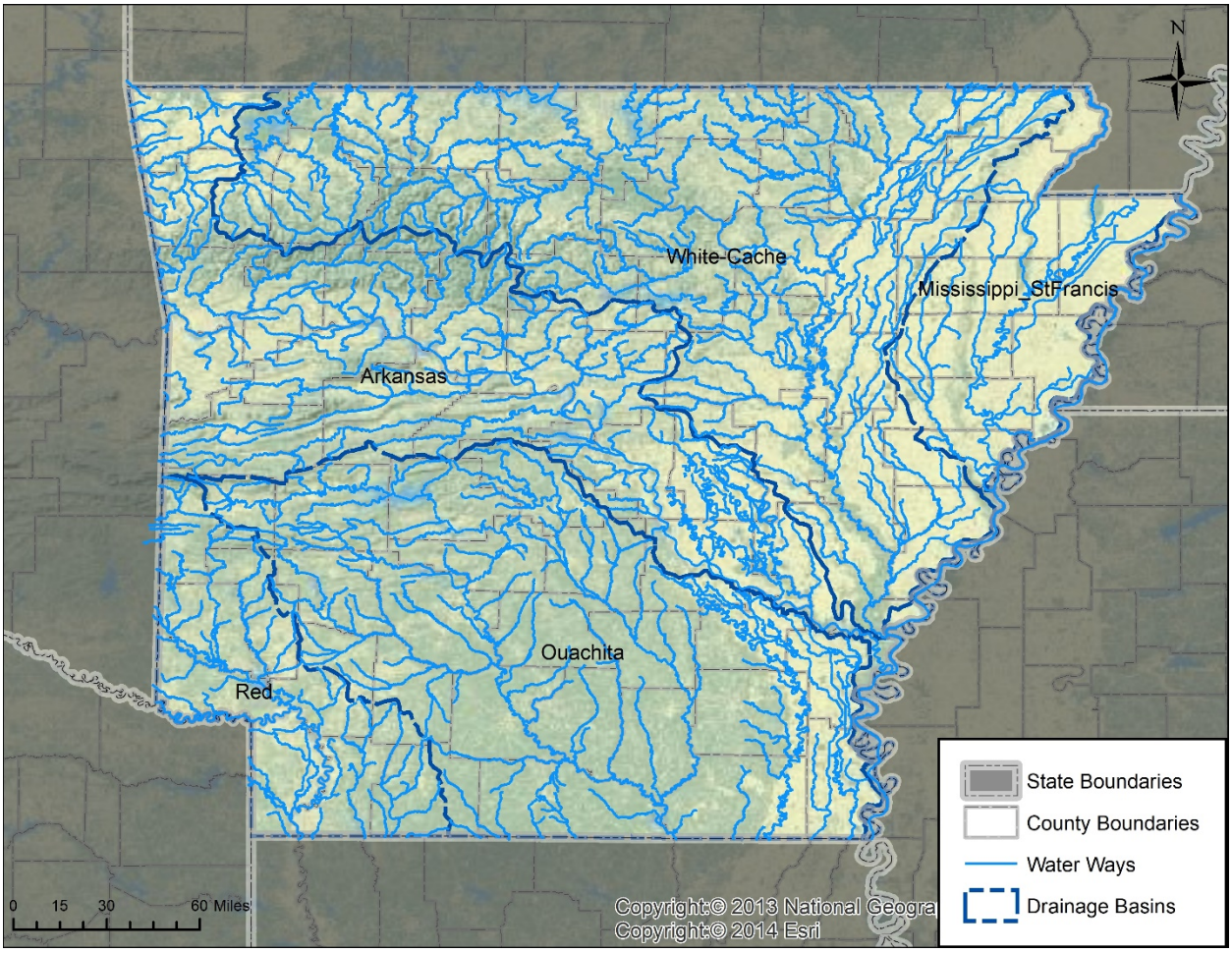


The National Weather Service (NWS) provides the following definitions of warnings for actual and potential flood conditions for Flash Floods:

- **Flash Flood Watch**: Issued to indicate current or developing hydrologic conditions that are favorable for flash flooding in and close to the watch area, but the occurrence is neither certain or imminent.
- **Flash Flood Warning**: Issued to inform the public, emergency management and other cooperating agencies that flash flooding is in progress, imminent, or highly likely.
- **Flash Flood Statement**: In hydrologic terms, a statement by the NWS which provides follow-up information on flash flood watches and warnings.

Riverine Flooding

In general, riverine flooding occurs from the overflow of rivers, streams, drains, and lakes due to excessive rainfall. The following map details the locations of both identified river basins, the land drained by a river and its branches, and major rivers in the state.



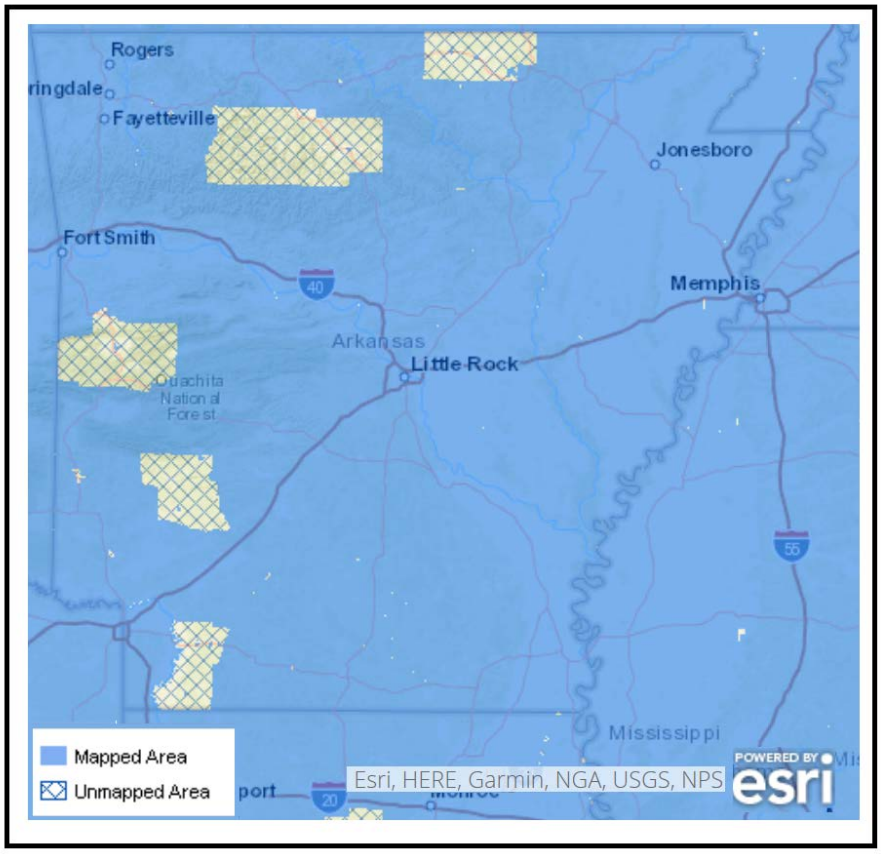
To help classify and map potential flood areas FEMA has identified flood zones for defined geographic areas according to varying levels of risk. These zones are show on Flood Insurance Rate Maps (FIRMs), that reflect the potential severity of flooding in an identified zone. The following table show the most

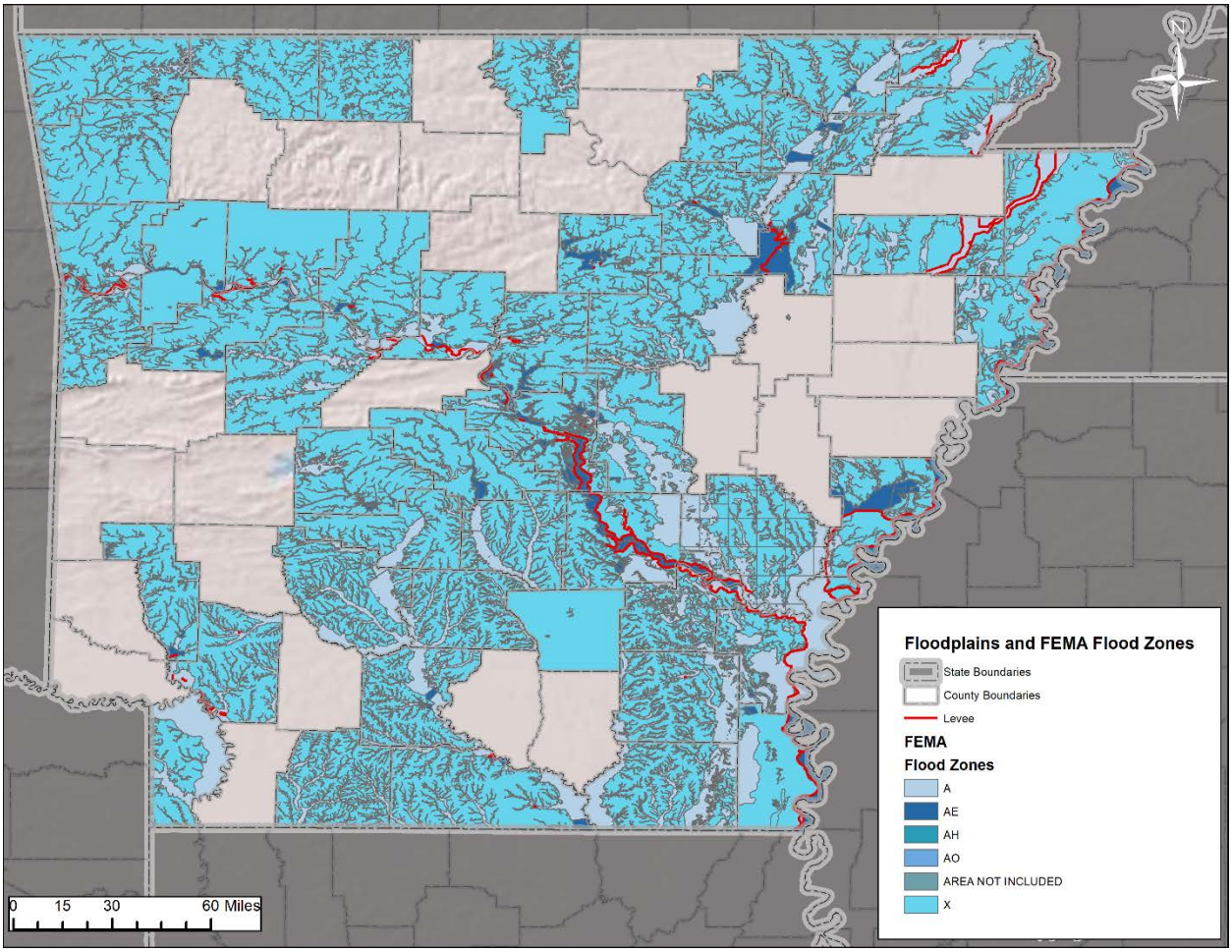
common FIRM classifications for the State of Arkansas. Although FEMA designates many more floodplain classifications, these represent most of the flood zoning in the state.

Primary State of Arkansas Flood Zone Classifications

Zone Class	Description
A	An area inundated by 1% annual chance flooding, for which no BFEs have been determined. (100 Year Floodplain)
AE	An area inundated by 1% annual chance flooding, for which BFEs have been determined. (100 Year Floodplain)
B	Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood. An area inundated by 0.2% annual chance flooding.
X (Shaded)	Between the limits of the 100-year and 500-year Floodplain, area with a 0.2% (or 1 in 500 chance) annual chance of flooding. This zone is also used to designate base floodplains of lesser hazards, such as areas protected by levees from 100-year flood, or shallow flooding areas with average depths of less than one foot or drainage areas less than 1 square mile
X (Unshaded)	500-year Floodplain, area of minimal flood hazard.

The following maps, from the FEMA Flood Map Service Center, shows flood mapped Arkansas counties and FEMA flood zones.





The NWS provides the following definitions of warnings for actual and potential flood conditions for riverine flooding:

- **Flood Potential Outlook:** In hydrologic terms, a NWS outlook that is issued to alert the public of potentially heavy rainfall that could send rivers and streams into flood or aggravate an existing flood.
- **Flood Watch:** Issued to inform the public and cooperating agencies that current and developing hydro meteorological conditions are such that there is a threat of flooding, but the occurrence is neither certain nor imminent.
- **Flood Warning:** In hydrologic terms, a release by the NWS to inform the public of flooding along larger streams in which there is a serious threat to life or property. A flood warning will usually contain river stage (level) forecasts.
- **Flood Statement:** In hydrologic terms, a statement issued by the NWS to inform the public of flooding along major streams in which there is not a serious threat to life or property. It may also follow a flood warning to give later information.

While there are approximately 87,617 miles of streams and rivers in Arkansas, riverine floods tend to be most prevalent along the major rivers including the Arkansas River, Mississippi River, Black River, Ouachita River, Red River, St. Francis River, and White River.

4.10.2 – Previous Occurrences

Since 2002, there have been 20 Presidential Disaster Declarations for the State of Arkansas for floods (along with other associates hazard events such as tornados or severe storms). The following 15-year information on past declared disasters is presented to provide a historical perspective on flood events that have impacted the State of Arkansas. Declaration numbers in bold indicate declared disaster that have occurred since the previous mitigation plan update in 2013.

FEMA Flood Disaster and Emergency Declarations, 2002 -2017

Declaration Number	Incident Period	Disaster Description	Regional Counties Involved	Dollars Obligated
1400	December 12, 2001 - January 30, 2002	Severe Storms and Flooding	Ashley, Clay, Cleburne, Columbia, Crittenden, Franklin, Jackson, Lincoln, Little River, Logan, Monroe, Poinsett, Prairie, Scott, Stone and Woodruff	$2,225,097
1472	May 2 - June 10, 2003	Severe Storms, Tornados, and Flooding	Benton, Chicot, Cleburne, Columbia, Conway, Craighead, Crittenden, Cross, Faulkner, Fulton, Jackson, Lonoke, Nevada, Perry, Poinsett, Phillips, St. Francis, White and Woodruff	$5,303,785
1516	April 19 - May 18, 2004	Severe Storms, Flooding and Landslides	Washington, Madison, Franklin, Johnson, Carroll, Newton, Boone, Marion, Searcy, Baxter, Stone, Independence, Jackson and Woodruff	$7,052,634
1528	May 30 - July 9, 2004	Severe Storms and Flooding	Bradley, Calhoun, Clark, Columbia, Hempstead, Howard, Lafayette, Little River, Nevada, Ouachita, Pike and Sevier	$3,303,678
1744	February 5-12, 2008	Severe Storms, Tornados, and Flooding	Baxter, Conway, Izard, Marion, Pope, Randolph, Sharp, Stone, Union and Van Buren	$5,020,005
1751	March 18 - April 28, 2008	Severe Storms, Tornados, and Flooding	Arkansas, Baxter, Benton, Boone, Carroll, Clay, Cleburne, Conway, Craighead, Crawford, Cross, Desha, Franklin, Fulton, Garland, Greene, Hempstead, Hot Spring, Independence, Izard, Jackson, Jefferson, Lawrence, Lee, Logan, Lonoke, Madison, Marion, Miller, Monroe, Newton, Perry, Phillips, Poinsett, Pope, Prairie, Pulaski, Randolph, Saline, Scott, Searcy, Sebastian, Sharp, St. Francis, Stone, Van Buren, Washington, White, Woodruff and Yell	$41,085,016
1758	May 02-12, 2008	Severe Storms, Flooding, and Tornados	Arkansas, Benton, Cleburne, Conway, Crittenden, Grant, Lonoke, Mississippi, Phillips, Pulaski, Saline and Van Buren	$2,676,958
1793	September 02-08, 2008	Severe Storms and Flooding associated with Hurricane Gustav	Ashley, Bradley, Calhoun, Chicot, Clark, Cleveland, Conway, Dallas, Drew, Garland, Grant, Hot Spring, Lincoln, Montgomery, Perry, Prairie, Saline and Van Buren	$3,895,660
1845	April 27 - May 23, 2009	Severe Storms, Tornados, and Flooding	Arkansas, Bradley, Calhoun, Chicot, Clark, Cleveland, Conway, Dallas, Drew, Fulton, Grant, Greene, Hempstead, Hot Spring, Howard, Jackson, Jefferson, Lafayette, Lee, Lincoln, Little	$9,425,734

FEMA Flood Disaster and Emergency Declarations, 2002 -2017

Declaration Number	Incident Period	Disaster Description	Regional Counties Involved	Dollars Obligated
			River, Marion, Miller, Monroe, Nevada, Ouachita, Perry, Phillips, Pike, Poinsett, Polk, Pope, Prairie, Saline, Searcy, St. Francis, Stone and Union	
1861	October 29 - November 08, 2009	Severe Storms, Tornados, and Flooding	Boone, Bradley, Calhoun, Carroll, Cleburne, Cleveland, Columbia, Conway, Cross, Dallas, Franklin, Fulton, Grant, Izard, Jackson, Johnson, Lafayette, Lawrence, Lincoln, Logan, Marion, Monroe, Nevada, Newton, Ouachita, Poinsett, Prairie, Pulaski, Randolph, Saint Francis, Scott, Sharp, Stone, Union, Van Buren, White and Woodruff	$15,536,008
1872	December 23, 2009 - January 02, 2010	Severe Storms and Flooding	Bradley, Calhoun, Clark, Clay, Cleveland, Craighead, Dallas, Drew, Grant, Greene, Hempstead, Jackson, Jefferson, Lafayette, Lincoln, Lonoke, Miller, Monroe, Nevada, Ouachita, Poinsett, Prairie, Pulaski, White and Woodruff	$9,792,672
1975	April 14 - June 03, 2011	Severe Storms, Tornados, and associated Flooding	Arkansas, Benton, Boone, Carroll, Chicot, Clark, Clay, Crawford, Crittenden, Cross, Dallas, Desha, Faulkner, Garland, Greene, Hot Spring, Independence, Jackson, Jefferson, Lawrence, Lee, Lincoln, Lonoke, Madison, Mississippi, Monroe, Montgomery, Phillips, Poinsett, Prairie, Pulaski, Randolph, Saline, St. Francis, Washington, White, Woodruff	$50,596,048
4000	May 24-26, 2011	Severe Storms, Tornados, and Flooding	Franklin, Johnson	$2,701,536
4124	May 30 - June 3, 2013	Severe Storms, Tornados, and Flooding	Cleburne, Cross, Garland, Independence, Montgomery, Poinsett, Polk, Scott, Searcy, Stone, Van Buren and Woodruff	$8,395,922
4143	August 08-14, 2013	Severe Storms and Flooding	Benton, Boone, Carroll, Madison Marion and Newton	$8,184,460
4174	April 27 -28, 2014	Severe Storms, Tornados, and Flooding	Faulkner, Pulaski, Randolph and White	$10,053,785
4226	May 7 - June 15, 2015	Severe Storms, Tornados, Straight-line Winds, and Flooding	Crawford, Garland, Howard, Jefferson, Little River, Miller, Perry, Sebastian and Sevier	$11,100,256
4254	December 26, 2015 - January 22, 2016	Severe Storms, Tornados, Straight-line Winds, and Flooding	Benton, Carroll, Crawford, Faulkner, Jackson, Jefferson, Lee, Little River, Perry, Sebastian and Sevier	$11,367,572

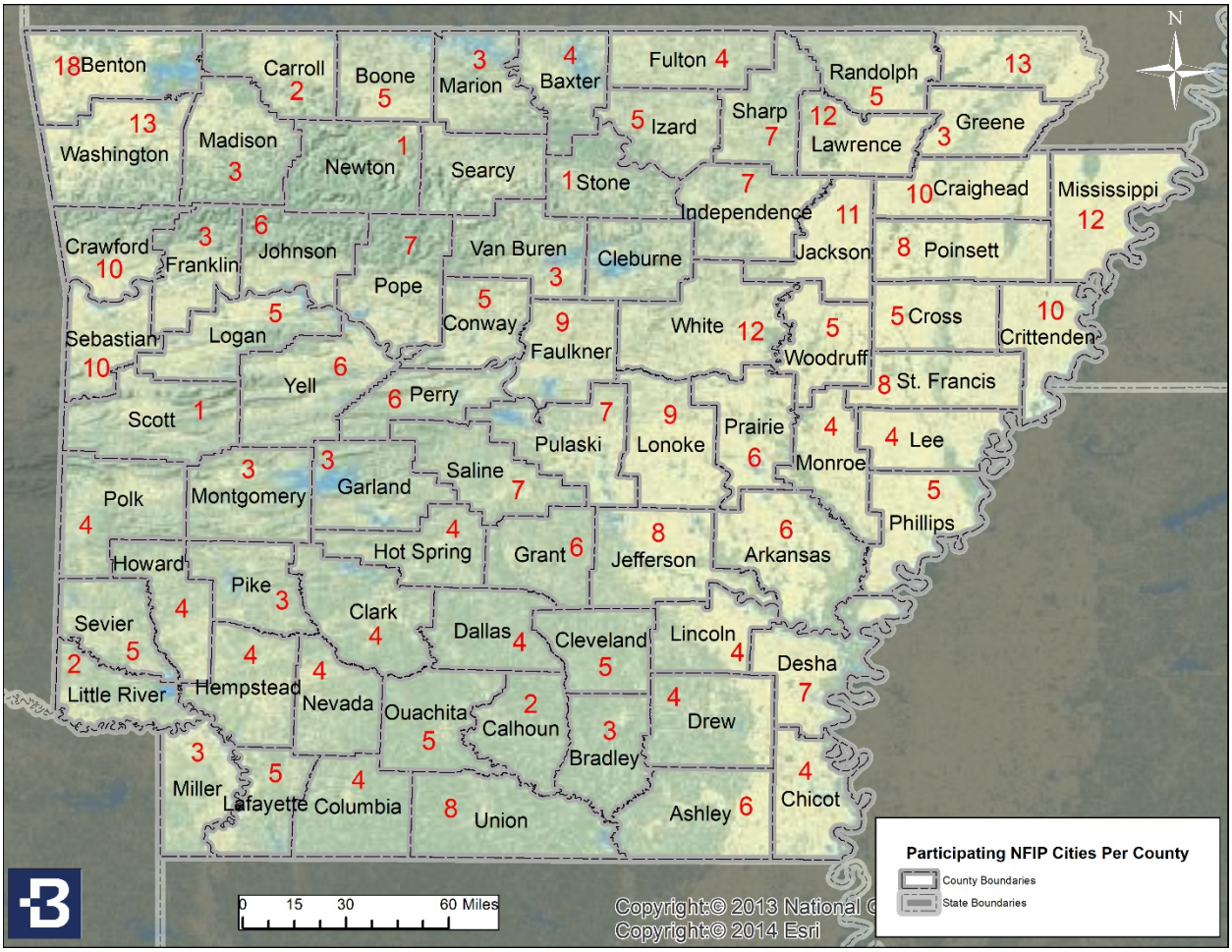
FEMA Flood Disaster and Emergency Declarations, 2002 -2017

Declaration Number	Incident Period	Disaster Description	Regional Counties Involved	Dollars Obligated
4270	March 8-13, 2016	Severe Storms, Tornados, Straight-line Winds, and Flooding	Columbia, Ouachita, Calhoun, Bradley, Ashley, Chicot, Cleveland, Lincoln, Desha, Arkansas, Philips and Prairie	$2,299,510
4318	April 26 - May 19, 2017	Arkansas Severe Storms, Tornados, Straight-line Winds, and Flooding	Benton, Boone, Carroll, Clay, Faulkner, Fulton, Jackson, Lawrence, Prairie, Pulaski, Randolph, Saline, Washington, White, Woodruff and Yell	$3,911,764

Source: FEMA
-: Data unavailable

4.10.3 – NFIP Communities

The NFIP is a federal program, managed by FEMA, that exists to provide flood insurance for property owners in participating communities, to improve floodplain management practices, and to develop maps of flood hazard areas. The following map presents the number of NFIP participating communities in each county.



4.10.4 – FEMA Flood Policy and Loss Data

Arkansas flood-loss information was pulled from FEMA's "Policy and Loss Data by Community with County and State Data," which documents losses from 1978 through December 21, 2017. There are several limitations to this data, including:

- Only losses to participating NFIP communities are represented
- Communities joined the NFIP at various times since 1978
- The number of flood insurance policies in effect may not include all structures at risk to flooding
- Some of the historical loss areas have been mitigated with property buyouts

Some properties are under-insured. The flood insurance purchase requirement is for flood insurance in the amount of federally-backed mortgages, not the entire value of the structure. Additionally, contents coverage is not required.

The following table shows the details of NFIP policy and loss statistics for each county in Arkansas. Loss statistics include losses through December 31, 2017.

Flood Insurance Policy Information, 2017

County Name	Policies in Force 2017	Insurance in Force 2017	Closed Losses 2017	Total Payments 2017
Arkansas	219	$26,981,500	44	$914,173
Ashley	87	$10,771,700	45	$765,554
Baxter	186	$27,182,100	85	$3,046,300
Benton	856	$204,025,500	189	$6,210,884
Boone	71	$17,091,200	35	$484,499
Bradley	46	$4,623,900	48	$764,459
Calhoun	5	$470,100	5	$120,430
Carroll	8	$1,755,800	1	$5,936
Chicot	318	$79,772,500	141	$3,704,165
Clark	103	$16,974,000	19	$441,658
Clay	218	$22,080,800	141	$3,234,180
Cleburne	176	$39,837,600	20	$1,226,638
Cleveland	0	$0	0	$0
Columbia	9	$1,938,000	4	$21,810
Conway	46	$7,247,700	16	$182,446
Craighead	1,153	$173,218,900	308	$7,124,698
Crawford	221	$43,443,000	37	$1,005,121
Crittenden	673	$136,916,800	677	$9,546,674
Cross	202	$21,150,000	51	$1,726,291
Dallas	3	$328,800	1	$7,084
Desha	283	$36,519,800	166	$2,326,596
Drew	40	$5,972,500	24	$240,795
Faulkner	703	$139,520,400	182	$3,974,278
Franklin	21	$4,248,300	36	$701,503
Fulton	31	$2,890,900	44	$1,142,261
Garland	1,069	$212,916,300	171	$3,842,865
Grant	38	$6,502,500	10	$104,401
Greene	624	$64,626,500	149	$860,284
Hempstead	13	$2,131,700	3	$47,332
Hot Spring	72	$15,279,700	11	$28,744
Howard	25	$2,225,000	16	$90,027
Independence	189	$30,596,800	141	$2,193,739
Izard	108	$17,139,000	65	$2,615,646
Jackson	272	$23,761,300	156	$2,982,748
Jefferson	459	$69,684,700	420	$8,021,056
Johnson	115	$11,696,000	2	$26,440
Lafayette	5	$192,000	1	$1,412
Lawrence	173	$19,323,900	47	$763,973
Lee	88	$9,489,000	27	$340,578
Lincoln	30	$3,612,800	13	$123,874
Little River	19	$1,103,600	3	$127,304
Logan	25	$2,027,300	5	$78,179
Lonoke	327	$66,444,000	53	$1,078,834
Madison	18	$1,507,700	5	$112,498

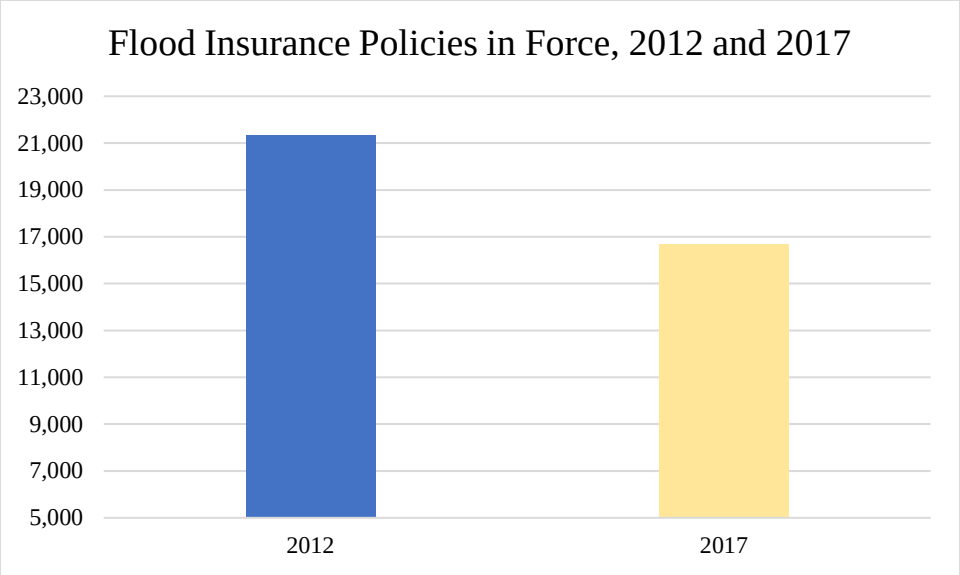
Flood Insurance Policy Information, 2017

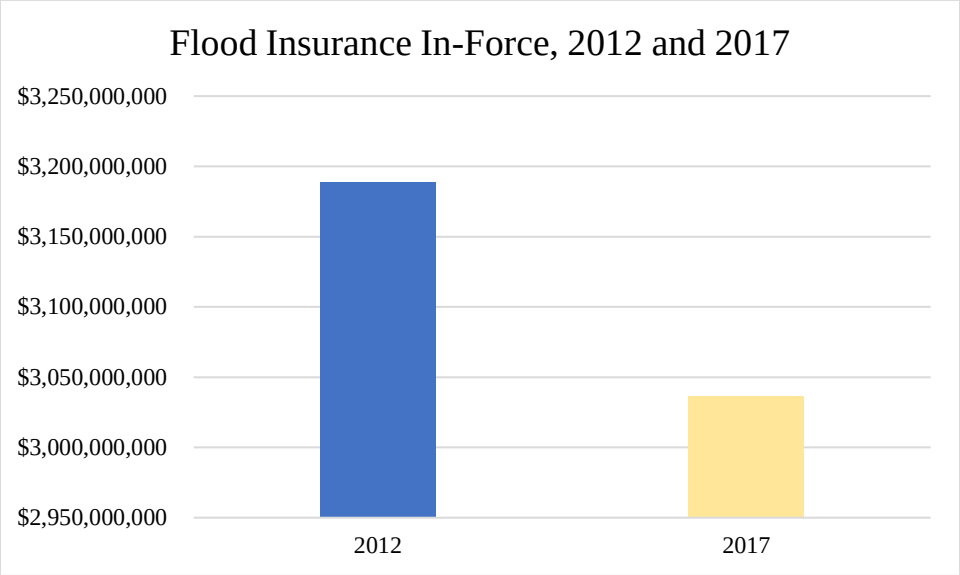
County Name	Policies in Force 2017	Insurance in Force 2017	Closed Losses 2017	Total Payments 2017
Marion	16	$2,231,100	2	$104,325
Miller	236	$36,555,200	76	$1,655,305
Mississippi	207	$37,102,900	48	$557,412
Monroe	185	$21,812,000	148	$4,416,500
Montgomery	75	$12,388,200	78	$2,019,722
Nevada	5	$726,500	1	$5,209
Newton	2	$1,088,100	6	$116,841
Ouachita	96	$14,253,700	62	$1,101,104
Perry	65	$6,918,500	13	$256,854
Phillips	222	$33,246,000	404	$3,440,997
Pike	18	$4,393,500	9	$230,064
Poinsett	223	$30,033,900	46	$1,316,994
Polk	40	$4,773,800	15	$184,343
Pope	210	$44,228,200	50	$857,175
Prairie	84	$9,529,700	77	$3,049,427
Pulaski	2,823	$604,083,500	1,152	$22,278,735
Randolph	174	$27,904,100	203	$8,995,646
Saline	377	$85,081,600	182	$3,723,452
Scott	5	$1,045,000	6	$520,225
Searcy	0	$0	0	$0
Sebastian	554	$119,985,500	216	$5,206,100
Sevier	26	$2,949,200	15	$748,308
Sharp	92	$17,523,300	72	$1,832,494
St. Francis	119	$18,538,200	14	$413,950
Stone	4	$733,800	2	$51,684
Union	131	$21,719,900	100	$1,315,255
Van Buren	32	$6,139,000	15	$519,244
Washington	855	$193,415,900	241	$9,223,515
White	330	$64,746,100	108	$3,012,634
Woodruff	70	$7,778,600	63	$1,571,463
Yell	54	$7,765,700	8	$64,538
Total	**16,677**	**$3,036,720,300**	**7,024**	**$151,459,849**

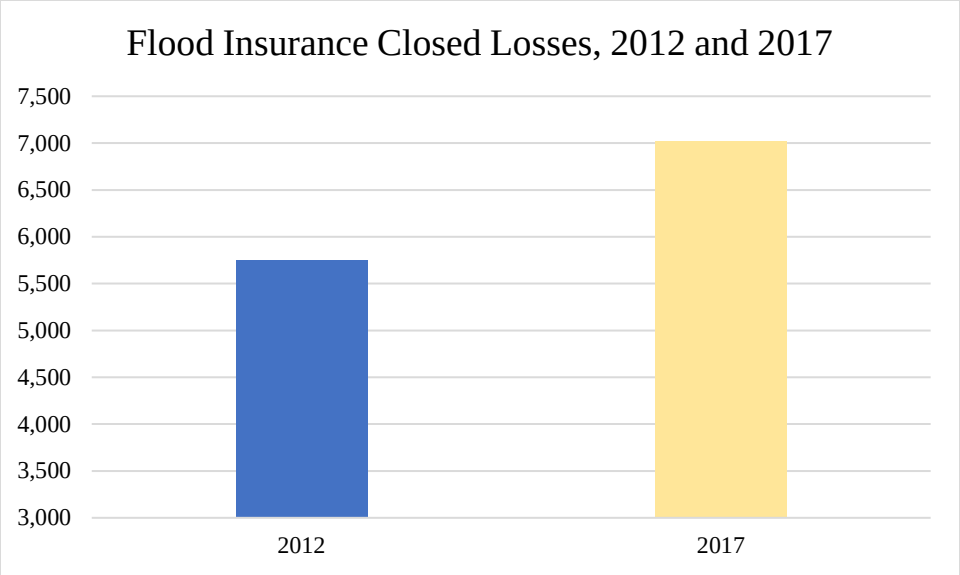
Source: FEMA

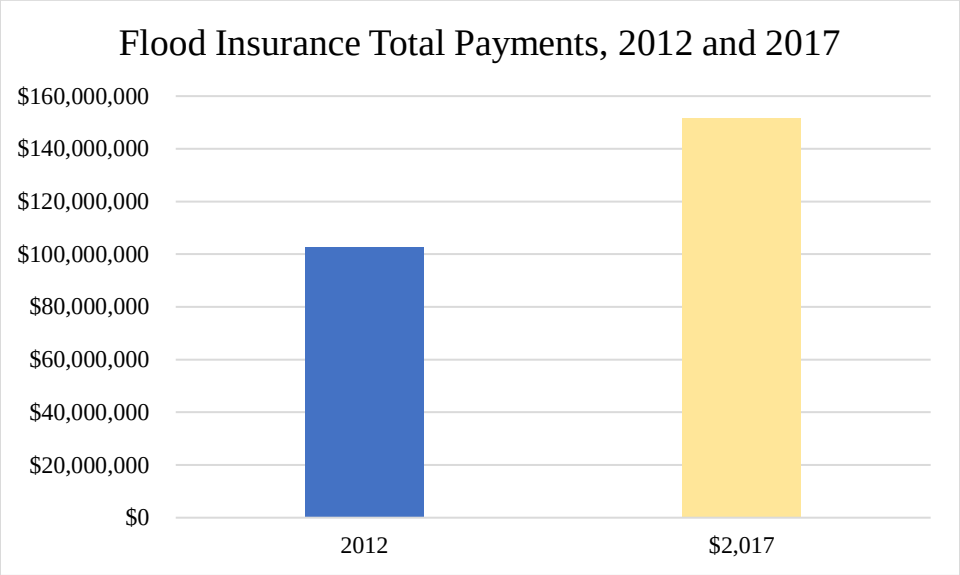
The following graphs summarize data from the above table for the State of Arkansas in comparison to 2012 data. Of note:

- The number of flood policies decreased from 2012 to 2017
- The amount of flood insurance in-force decreased from 2012 to 2017


Flood Insurance Policies in Force, 2012 and 2017
23,000
21,000
19,000
17,000
15,000
13,000
11,000
9,000
7,000
5,000
2012
2017


Flood Insurance In-Force, 2012 and 2017
$3,250,000,000
$3,200,000,000
$3,150,000,000
$3,100,000,000
$3,050,000,000
$3,000,000,000
$2,950,000,000
2012
2017





4.10.5 – Repetitive Loss Properties

A high priority to Arkansas is the reduction of losses to Repetitive Loss and Severe Repetitive Loss structures. A full discussion of these may be found in Section 6.9, Repetitive Flood Loss Strategy.

4.10.6 – Hazard Probability Analysis

In general, flood probability can be expressed by recurrence interval, the average period for a flood that equals or exceeds a given magnitude, expressed as a period of years. The probability of occurrence of a given flood can also be expressed as the odds of recurrence of one or more similar or bigger floods in a certain number of years. Large, catastrophic floods have a very low frequency or probability of occurrence, whereas smaller floods occur more often. The larger the number of years in a recurrence interval, the smaller the chances of experiencing that flood in a year. However, the odds are never zero, even very

large, uncommon floods always have a very small chance of recurring every year. When reviewing flood probability, it is important to note that once a flood occurs its chance of recurring the next year remains the same.

Flood Recurrence Interval Probability

Recurrence interval, in years	Probability of occurrence in any given year	Percent chance of occurrence in any given year
100	1 in 100	1
50	1 in 50	2
25	1 in 25	4
10	1 in 10	10
5	1 in 5	20
2	1 in 2	50

Source: FEMA

The following table summarizes flood event data for the State of Arkansas for the period 2013 through 2017, using available information from the National Climatic Data Center (NCDC).

State of Arkansas Flood Data Summary

Data	Recorded Impact
Number of Days with NCDC Reported Event (2013-2017)	163
Average Events per Year	33
Number of Days with Event and Death or Injury:	4
Number of Days with Event and Property Damage:	60
Total Reported NCDC Property Damage (2013-2017)	$29,858,000
Average Property Damage per Year	$5,971,600
Number of Days with Event and Crop Damage	16
Total Reported NCDC Crop Damage (2013-2017)	$63,960,000
Average Crop Damage per Year	$12,792,000

Source: NCDC

The following table summarizes flash flood event data for the State of Arkansas for the period 2013 through 2017.

State of Arkansas Flash Flood Data Summary

Data	Recorded Impact
Number of Days with NCDC Reported Event (2013-2017)	154
Average Events per Year	31
Number of Days with Event and Death or Injury:	6
Number of Days with Event and Property Damage	82
Total Reported NCDC Property Damage (2013-2017)	$50,254,000
Average Property Damage per Year	$10,050,800
Number of Days with Event and Crop Damage:	2
Total Reported NCDC Crop Damage (2013-2017)	$875,000
Average Crop Damage per Year	$175,000

Source: NCDC

According to the data from NCDC, Arkansas experiences an average of over 187 flood events, $16,022,400 in property losses, $12,967,000 in crop damages, two flood-related deaths or injuries each year.

In addition, Arkansas has had 20 Presidentially Declared Disasters relating to flooding (and other causes) resulting in $213,928,100 obligated dollars in the last 15 years. This represents an average of 1.3 declared flood disaster annually.

4.10.8 – Vulnerability Analysis

Counties with state owned facilities within a FEMA identified 100-year floodplain were identified. The following table indicates the number and valuation of state owned facilities and bridges within the 100-year floodplains. Assuming an amount of damage to each facility is not possible due to the tremendous number of variables involved in a potential failure event.

State Owned Facilities within FEMA Identified 100-Year Floodplain

County	State-Owned Facilities	Value	State Owned Critical Facilities	Value	State Owned Bridges
Arkansas	0	$0	0	$0	58
Ashley	0	$0	0	$0	60
Baxter	0	$0	0	$0	17
Benton	0	$0	0	$0	80
Boone	0	$0	0	$0	28
Carroll	0	$0	0	$0	30
Chicot	1	$3,450,150	1	$3,450,150	56
Clark	0	$0	0	$0	82
Cleburne	0	$0	0	$0	17
Columbia	0	$0	0	$0	66
Conway	0	$0	0	$0	41
Craighead	2	$985,547	2	$985,547	0
Crawford	0	$0	0	$0	83
Crittenden	0	$0	0	$0	50
Cross	1	$676,229	1	$676,229	0
Dallas	0	$0	0	$0	63
Desha	0	$0	0	$0	50
Drew	0	$0	0	$0	77
Faulkner	1	$2,754,000	1	$2,754,000	84
Franklin	0	$0	0	$0	12
Garland	0	$0	0	$0	64
Greene	0	$0	0	$0	64
Hempstead	0	$0	0	$0	95
Hot Spring	2	$8,195,629	2	$8,195,629	63
Howard	0	$0	0	$0	42
Independence	0	$0	0	$0	74
Jefferson	4	$4,795,386	4	$4,795,386	107

State Owned Facilities within FEMA Identified 100-Year Floodplain

County	State-Owned Facilities	Value	State Owned Critical Facilities	Value	State Owned Bridges
Johnson	0	$0	0	$0	50
Lawrence	0	$0	0	$0	71
Lee	1	$2,677,868	1	$2,677,868	0
Lincoln	2	$2,730,527	2	$2,730,527	50
Logan	0	$0	0	$0	58
Lonoke	0	$0	0	$0	78
Miller	0	$0	0	$0	96
Mississippi	0	$0	0	$0	58
Ouachita	0	$0	0	$0	60
Phillips	0	$0	0	$0	41
Poinsett	0	$0	0	$0	102
Pope	1	$287,513	1	$287,513	52
Pulaski	2	$12,580,167	2	$12,580,167	126
Randolph	0	$0	0	$0	70
Saline	0	$0	0	$0	41
Sebastian	0	$0	0	$0	94
Sharp	0	$0	0	$0	34
Union	1	$1,690,574	1	$1,690,574	73
Washington	0	$0	0	$0	85
White	0	$0	0	$0	146
Yell	0	$0	0	$0	68

Source: FEMA and Arkansas Insurance Department

To determine a county by county vulnerability to flooding, those counties with a significant or high hazard dam were analyzed. For each dam, a determination of the population and number of structures within a potential five-mile inundation zone were determined. Counties with a higher identified population and number of structures within this five-mile area, and those counties with a greater percentage of structure damage, are to be considered to have a potentially greater vulnerability. However, these assumed vulnerabilities should be viewed as theoretical due to the tremendous number of variables involved in a potential flood event.

County Vulnerability Data, FEMA Designated Floodplains

County	FEMA Flood Zone	Population in FEMA Floodplain	Number of Essential Structures FEMA Floodplain	Structure Valuation in FEMA Floodplain	NCDC Structure Damage, Flood 2012-2017	Number of Displaced People	Number of People Needing Short Term Shelter
Arkansas	X/A/AE	19,019	30	$2,245,118	$0	18	0
Ashley	X/A/AE/AH	21,853	30	$2,153,005	$316,000	55	21
Baxter	X/A/AH	41,513	35	$4,332,225	$0	85	10
Benton	X/A/AE	221,339	109	$23,138,113	$5,060,000	515	318
Boone	X/A/AE	36,903	42	$3,623,910	$675,000	127	8
Bradley	-	-	-	-	$20,000	14	4
Calhoun	-	5,368	6	$441,614	$50,000	113	26

County Vulnerability Data, FEMA Designated Floodplains

County	FEMA Flood Zone	Population in FEMA Floodplain	Number of Essential Structures FEMA Floodplain	Structure Valuation in FEMA Floodplain	NCDC Structure Damage, Flood 2012-2017	Number of Displaced People	Number of People Needing Short Term Shelter
Carroll	X/A/AE	-	-	-	$200,000	356	29
Chicot	X/A/AE	11,800	12	$960,945	$1,354,000	19	10
Clark	X/A/AE	22,995	27	$2,174,219	$20,000	793	513
Clay	-	-	-	-	$1,785,000	-	-
Cleburne	X/A/AE	25,970	27	$ 2,958,415	$285,000	739	442
Cleveland	X	8,689	12	$715,852	$5,000	173	32
Columbia	X/A/AE	24,552	28	$2,428,944	$50,000	821	631
Conway	X/A/AE	21,273	27	$1,772,070	$5,000	376	180
Craighead	X	96,443	62	$9,706,620	$3,165,000	2,910	1471
Crawford	X/A/AE	61,948	40	$5,637,326	$135,000	519	154
Crittenden	X/A/AE	50,902	47	$4,446,547	$500,000	3,297	1,369
Cross	X/A	17,870	17	$1,540,067	$914,000	226	176
Dallas	X/A/AE	8,116	13	$809,241	$100,000	20	1
Desha	X/A	13,008	18	$1,270,217	$200,000	22	8
Drew	X/A/AE	18,509	17	$1,772,431	$146,000	197	122
Faulkner	X/A/AE	113,237	61	$10,585,204	$140,000	877	552
Franklin	X	18,125	24	$1,580,874	$365,000	185	136
Fulton	X/A/AE	12,245	16	$1,140,556	$120,000	482	36
Garland	X/A/AE	96,024	50	$10,514,638	$371,000	4,839	3,207
Grant	X/A/AE	17,853	14	$1,638,303	$25,000	318	103
Greene	X/A/AE	42,090	28	$3,655,535	$40,000	-	-
Hempstead	X/A/AE	22,609	24	$2,046,291	$770,000	987	653
Hot Spring	X/A/AE	32,923	33	$2,678,074	$125,000	1,022	721
Howard	X/A/AE	13,789	24	$1,317,939	$0	233	51
Independence	X/A/AE	36,647	39	$3,539,724	$1,852,000	-	-
Izard	X/A	13,696	19	$1,278,217	$200,000	122	14
Jackson	X/A/AE/AO	17,997	26	$1,602,932	$360,000	116	49
Jefferson	X/A/AE	77,435	69	$7,229,943	$5,915,000	153	217
Johnson	X/A/AE	25,540	18	$2,067,446	$120,000	1,244	782
Lafayette	X	7,645	18	$628,441	$500,000	-	-
Lawrence	X/A/AE	17,415	28	$1,546,741	$8,593,000	-	-
Lee	-	10,424	11	$774,691	$0	48	10
Lincoln	X/A/AE	14,134	13	$829,167	$68,000	26	10
Little River	-	13,171	22	$1,205,775	$1,020,000	-	-
Logan	X/A/AE	22,353	36	$2,154,977	$5,000	640	184
Lonoke	X	68,356	40	$6,235,092	$127,000	564	1,096
Madison	X	15,717	17	$1,378,253	$450,000	302	28
Marion	X	16,653	21	$1,643,767	$645,000	327	186
Miller	X/A	43,462	27	$3,929,656	$191,000	-	-
Mississippi	A/AE	-	-	-	$111,000	-	-
Monroe	A	8,149	16	$849,898	$1,425,000	-	-

County Vulnerability Data, FEMA Designated Floodplains

County	FEMA Flood Zone	Population in FEMA Floodplain	Number of Essential Structures FEMA Floodplain	Structure Valuation in FEMA Floodplain	NCDC Structure Damage, Flood 2012-2017	Number of Displaced People	Number of People Needing Short Term Shelter
Montgomery	X/A	9,487	15	$906,505	$645,000	647	115
Nevada	X/A	8,997	14	$847,214	$0	-	-
Newton	A	-	-	-	$630,000	0	0
Ouachita	X/A	26,120	35	$2,417,782	$81,000	120	244
Perry	X/A	10,445	12	$855,949	$42,000	689	290
Phillips	X/A/AE/AO	21,757	29	$1,995,535	$0	573	136
Pike	X/A	11,291	21	$1,034,531	$0	425	116
Poinsett	X/A	24,583	28	$2,304,298	$474,000	-	-
Polk	A	20,662	30	$1,929,575	$2,775,000	509	98
Pope	X/A/AE	-	-	-	$355,000	827	353
Prairie	A	8,715	17	$823,342	$105,000	34	6
Pulaski	X/A/AE/AH	-	-	-	$2,431,000	1,653	1,402
Randolph	X/A/AE	17,969	23	$1,683,514	$19,770,000	121	18
St. Francis	X	28,258	26	$2,137,870	$500,000	137	171
Saline	X/AE	107,118	56	$10,250,451	$72,000	3,659	2,922
Scott	X	11,233	16	$1,025,120	$9,250,000	672	126
Searcy	X	-	-	-	$258,000	204	130
Sebastian	X/A/AE	125,744	83	$13,612,411	$320,000	996	525
Sevier	A/AE	17,058	19	$1,299,583	$5,000	136	87
Sharp	X/A/AE	17,264	25	$1,817,097	$1,602,000	421	83
Stone	X/A	12,394	15	$1,148,959	$740,000	175	46
Union	X/A	41,639	26	$4,563,530	$0	101	57
Van Buren	X/A	17,295	24	$1,676,374	$400,000	650	249
Washington	X/A/AE	-	-	-	$315,000	1,788	852
White	X/A/AE	77,076	61	$6,808,909	$290,000	744	432
Woodruff	A/AE	7,260	13	$706,982	$2,434,000	510	133
Yell	X/A/AE	22,185	31	$1,874,859	$190,000	532	190

Source: FEMA and HAZUS

The following table presents data from the 2012 USDA Census of Agriculture and the United States Department of Agriculture (USDA) Risk Management Agency's annualized insured crop insurance payments for flood-related crop damages for the six-year period from 2012 to 2017. Using these figures, a determination of percentage crop damage per county due to flooding can be compiled. In general, those counties with a higher percentage of crop damage can be considered ore vulnerable to flooding. This data assumes 100% insurance coverage for all crops. However, the USDA 2017 Arkansas Crop Insurance Report indicates an average crop insurance rate of 75%, with some crops such as oats only having 20% insurance coverage, other crops such as grapes having no reported insurance coverage, and grain sorghum having a greater than 100% insurance coverage.

USDA Crop Data for Flooding, 2012 - 2017

County	2012 USDA Estimated Crop Exposure	USDA Crop Loss, 2012-2017 Yearly Average	Percentage of Crop Exposure Lost to Flood
State of Arkansas	$9,775,758,000	$3,557,578	0.0364%
Arkansas	$298,173,000	$16,231	0.0054%
Ashley	$78,844,000	$15,036	0.0191%
Baxter	$20,367,000	$0	0.0000%
Benton	$529,128,000	$0	0.0000%
Boone	$124,065,000	$0	0.0000%
Bradley	$43,633,000	$0	0.0000%
Calhoun	$5,985,000	$0	0.0000%
Carroll	$307,006,000	$0	0.0000%
Chicot	$204,719,000	$29,421	0.0144%
Clark	$15,083,000	$0	0.0000%
Clay	$246,172,000	$74,100	0.0301%
Cleburne	$47,871,000	$0	0.0000%
Cleveland	$105,801,000	$0	0.0000%
Columbia	$41,709,000	$0	0.0000%
Conway	$161,648,000	$20,035	0.0124%
Craighead	$261,600,000	$12,767	0.0049%
Crawford	$67,408,000	$11,952	0.0177%
Crittenden	$215,016,000	$24,657	0.0115%
Cross	$188,778,000	$880,254	0.4663%
Dallas	$1,305,000	$0	0.0000%
Desha	$212,893,000	$4,716	0.0022%
Drew	$88,347,000	$570	0.0006%
Faulkner	$26,257,000	$31	0.0001%
Franklin	$158,178,000	$0	0.0000%
Fulton	$27,725,000	$0	0.0000%
Garland	$24,099,000	$0	0.0000%
Grant	$20,864,000	$0	0.0000%
Greene	$177,326,000	$31,864	0.0180%
Hempstead	$198,491,000	$0	0.0000%
Hot Spring	$23,946,000	$0	0.0000%
Howard	$179,081,000	$0	0.0000%
Independence	$131,867,000	$46,334	0.0351%
Izard	$49,402,000	$0	0.0000%
Jackson	$186,837,000	$100,052	0.0536%
Jefferson	$215,265,000	$20,636	0.0096%
Johnson	$141,042,000	$2,570	0.0018%
Lafayette	$127,886,000	$32,350	0.0253%
Lawrence	$149,140,000	$99,702	0.0669%
Lee	$171,870,000	$84,202	0.0490%
Lincoln	$219,452,000	$4,916	0.0022%
Little River	$76,510,000	$311,675	0.4074%
Logan	$187,983,000	$240	0.0001%

USDA Crop Data for Flooding, 2012 - 2017

County	2012 USDA Estimated Crop Exposure	USDA Crop Loss, 2012-2017 Yearly Average	Percentage of Crop Exposure Lost to Flood
Lonoke	$223,378,000	$961	0.0004%
Madison	$208,163,000	$0	0.0000%
Marion	$39,667,000	$0	0.0000%
Miller	$45,538,000	$531,621	1.1674%
Mississippi	$314,647,000	$89533	0.0285%
Monroe	$194,373,000	$150,982	0.0777%
Montgomery	$42,148,000	$0	0.0000%
Nevada	$47,918,000	$0	0.0000%
Newton	$28,655,000	$0	0.0000%
Ouachita	$16,465,000	$0	0.0000%
Perry	$33,082,000	$18,188	0.0550%
Phillips	$247,998,000	$94,129	0.0380%
Pike	$82,335,000	$0	0.0000%
Poinsett	$287,420,000	$104,518	0.0364%
Polk	$117,773,000	$0	0.0000%
Pope	$150,102,000	$188	0.0001%
Prairie	$165,065,000	$144,697	0.0877%
Pulaski	$39,970,000	$19,110	0.0478%
Randolph	$79,585,000	$210,922	0.2650%
St. Francis	$189,878,000	$0	0.0000%
Saline	$4,495,000	$0	0.0000%
Scott	$132,004,000	$0	0.0000%
Searcy	$12,038,000	$0	0.0000%
Sebastian	$97,410,000	$1,278	0.0013%
Sevier	$137,415,000	$10,360	0.0075%
Sharp	$75,561,000	$0	0.0000%
Stone	$53,664,000	$0	0.0000%
Union	$27,952,000	$0	0.0000%
Van Buren	$19,947,000	$0	0.0000%
Washington	$443,025,000	$0	0.0000%
White	$100,373,000	$145,369	0.1448%
Woodruff	$167,588,000	$211,411	0.1261%
Yell	$196,381,000	$0	0.0000%

Source: USDA

Flood risk can also change over time because of new building and development, weather patterns and other factors. Although the frequency or severity of impacts cannot be changed, FEMA is working with federal, state, tribal and local partners across the nation to identify flood risk and promote informed planning and development practices to help reduce that risk through the Risk Mapping, Assessment and Planning (Risk MAP) program. Risk MAP uses the watershed boundaries to conduct studies. This watershed approach allows communities to come together to develop partnerships, combine resources, share flood risk information with FEMA, and identify broader opportunities for mitigation action.

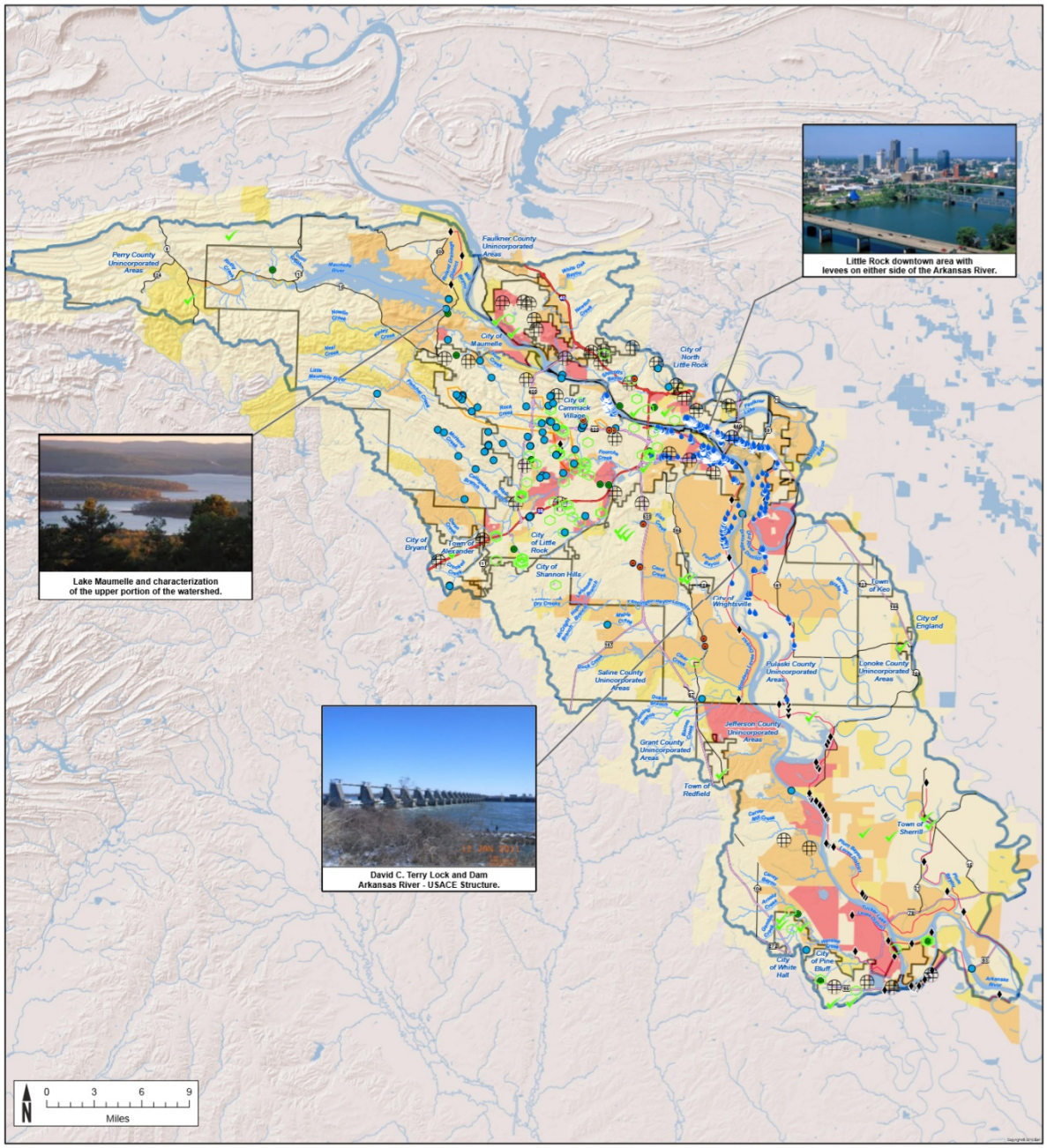
The Flood Risk Products and datasets present information that can enhance hazard mitigation planning activities, especially the risk and vulnerability assessment portion of a hazard mitigation plan, and the development of risk-based mitigation strategies. Risk MAP can also help guide land use and development decisions and help individuals take mitigation action by highlighting areas of highest risk, areas in need of mitigation, and areas of floodplain change.

The following Arkansas watersheds have had completed Risk MAP studies:

- Lower Arkansas Maumelle Watershed
- Illinois Watershed
- Lower Black Watershed
- Bayou Bartholomew Watershed
- Boeuf Watershed

The following are the available Risk MAPs for the State of Arkansas.

Flood Risk Map: Lower Arkansas Maumelle Watershed, 11110207



MAP SYMBOLOGY

Base Data
- Interstate
- US Highway
- State Highway
- County Boundary
- Corporate Limits
- Watershed Boundary

Flood Data
- Rivers and Streams
- Restudy Area

Flood Risk
- Very Low
- Low
- Medium
- High
- Very High

Areas of Mitigation Interest
- Accredited Levees
- Non-Accredited Levees
- Dams
- Stream Flow Constrictions
- Past Claims Hot Spot
- Key Emergency Routes Overtopped During Frequent Flooding Events
- At-Risk Essential Facilities
- Other
- Individual Assistance (IA) & Public Assistance (PA) Data
- Significant Land Use Changes (within the past 5 years and looking forward 5 years)
- Areas of Significant Riverine Erosion
- Non-Levee Embankments
- Other Flood Risk Areas
- Areas of Mitigation Success

WATERSHED LOCATOR

Risk Mapping, Assessment, and Planning (Risk MAP)

FRM FLOOD RISK MAP

LOWER ARKANSAS MAUMELLE WATERSHED, USA

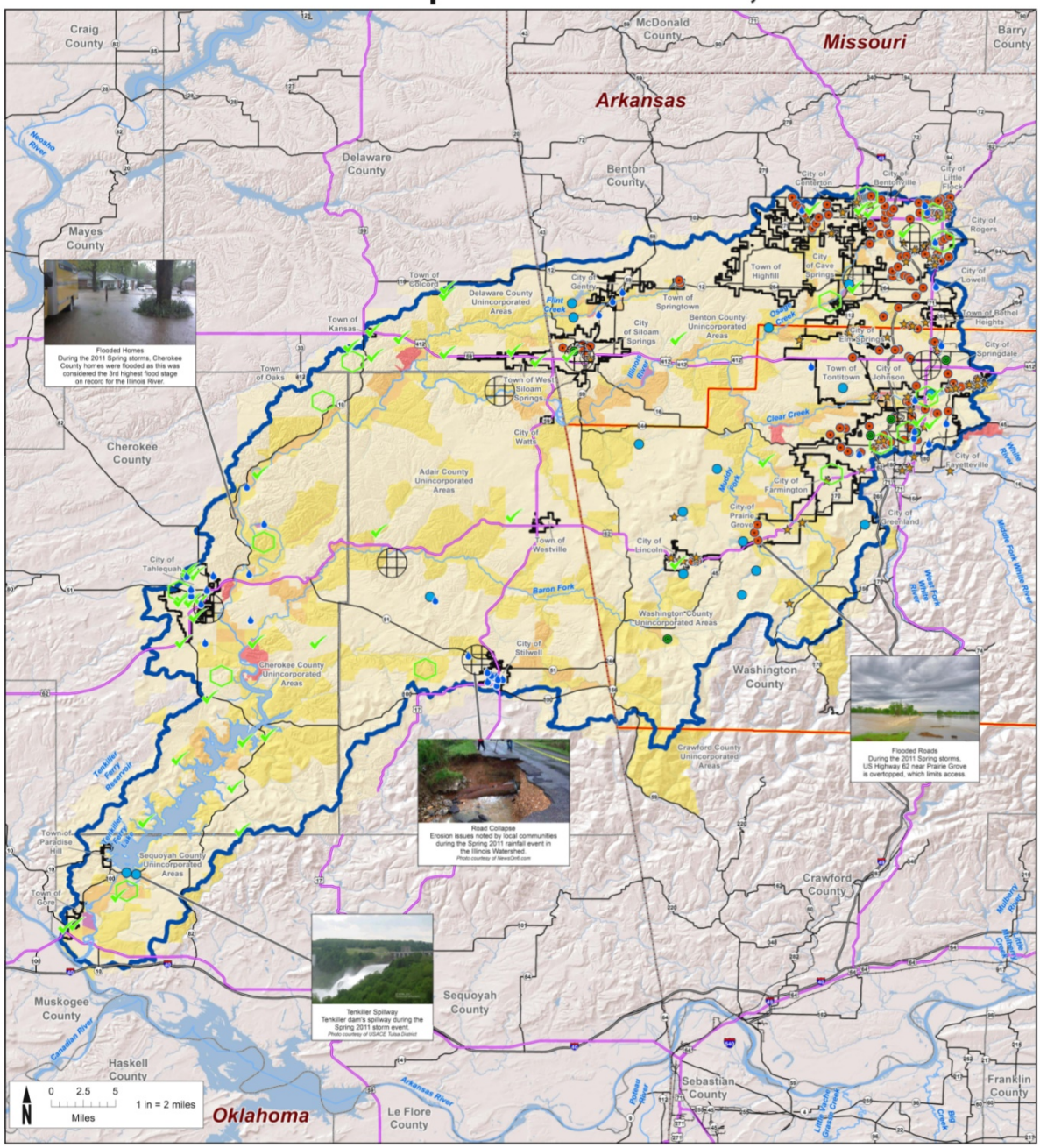
FEMA

For more information of data used for this non-regulatory map, please consult the Lower Arkansas Maumelle Watershed USA Flood Risk Database and Flood Risk Report.

HUC-8 Code 11110207

RELEASE DATE 12/21/2015

Flood Risk Map: Illinois Watershed, 11110103



MAP SYMBOLOGY

Base Data
- Interstates
- US Highways
- State Highways
- State Boundary
- Corporate Limits
- Watershed Boundary

Flood Data
- Rivers and Streams
- Restudy Area
- New SFHA

Flood Risk
- Very Low
- Low
- Medium
- High
- Very High

Areas of Mitigation Interest
- Accredited Levees
- Non-Accredited Levees
- Dams
- Stream Flow Constrictions
- Past Claims Hot Spot
- Key Emergency Routes Overtopped During Frequent Flooding Events
- At-Risk Essential Facilities
- Individual Assistance (IA) & Public Assistance (PA) Data
- Significant Land Use Changes (within the past 5 years and looking forward 5 years)
- Areas of Significant Riverine or Coastal Erosion
- Non-Levee Embankments
- Other Flood Risk Areas
- Areas of Mitigation Success
- Other

WATERSHED LOCATOR

Risk Mapping, Assessment, and Planning (Risk MAP)

FRM FLOOD RISK MAP

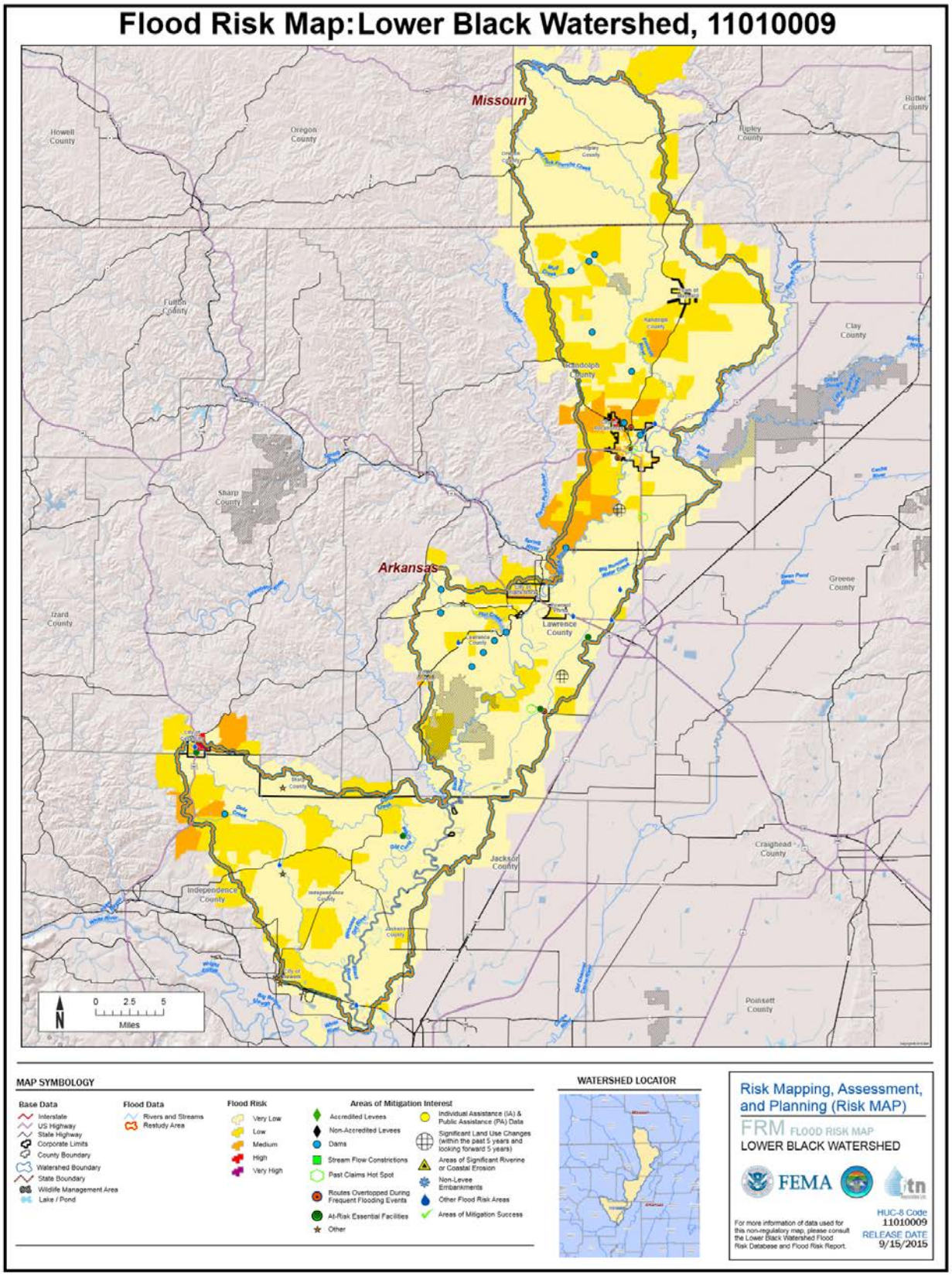
ILLINOIS WATERSHED

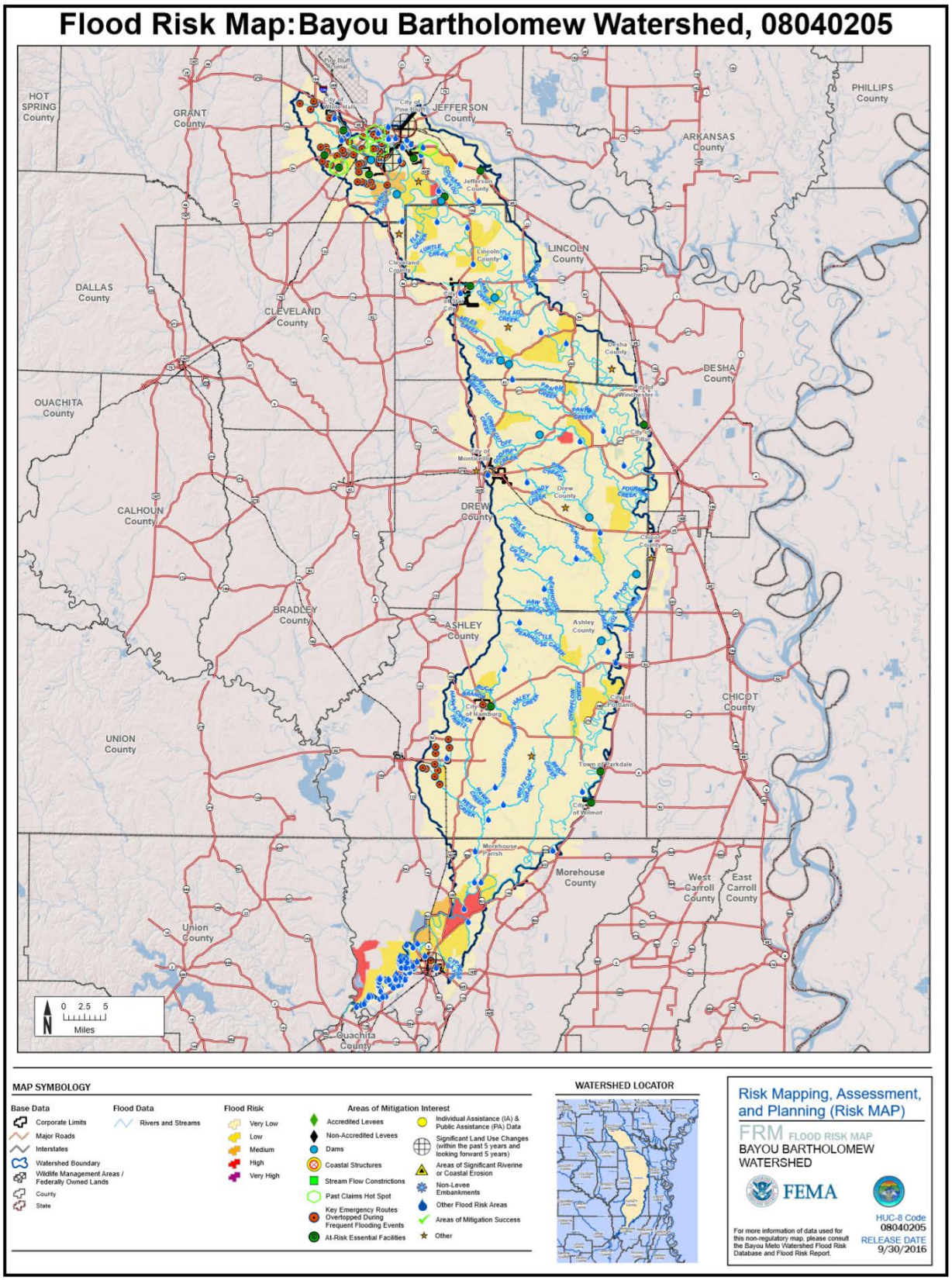
FEMA

HUC-8 Code 11110103

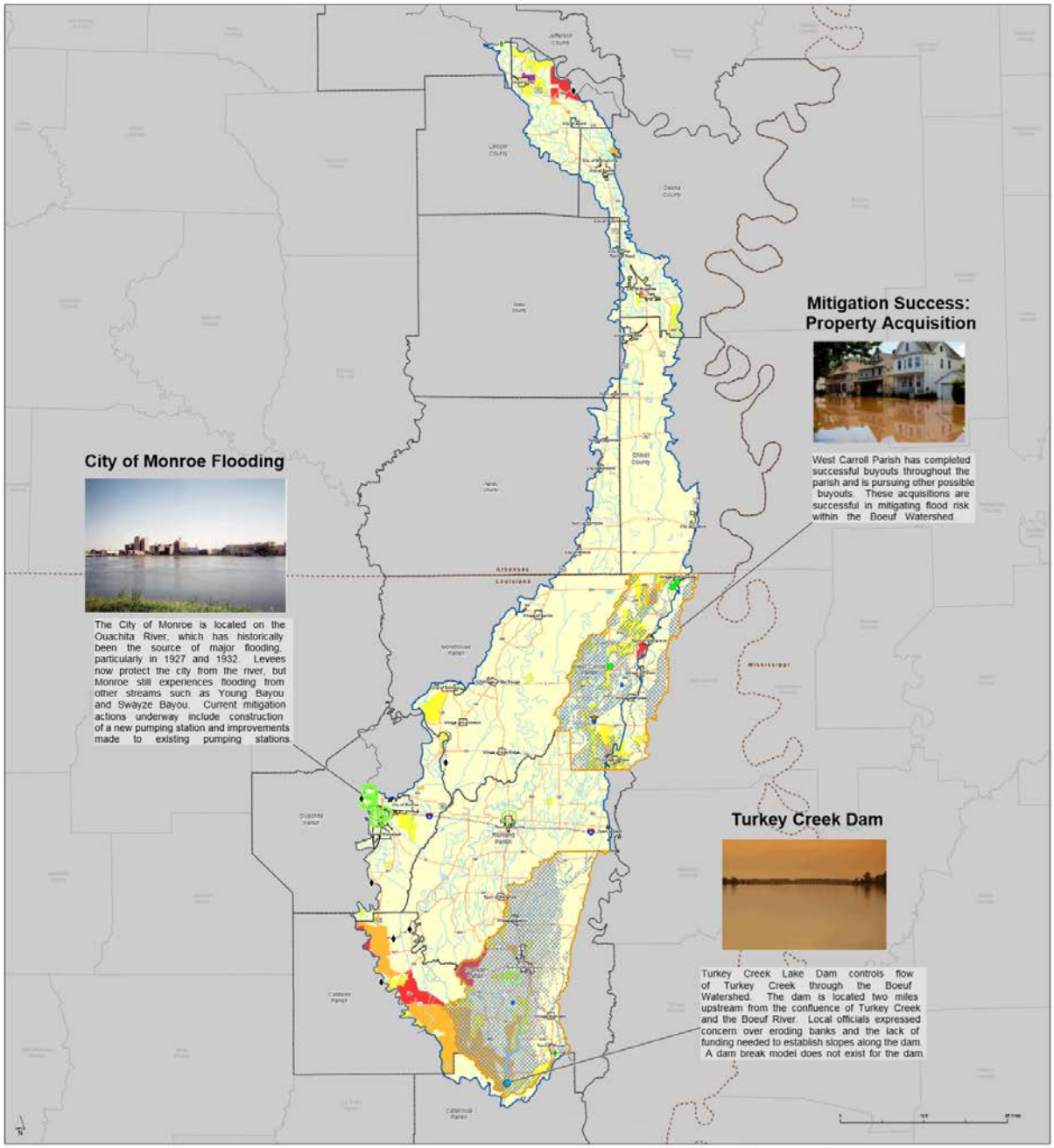
RELEASE DATE 12/8/2015

For more information of data used for this non-regulatory map, please consult the Illinois Watershed Flood Risk Database and Flood Risk Report.


Flood Risk Map: Lower Black Watershed, 11010009
Missouri
Arkansas
Howell County
Oregon County
Ripley County
Fulton County
Randolph County
Clay County
Sharp County
Izard County
Lawrence County
Greene County
Craighead County
Jackson County
Independence County
Poinsett County
0 2.5 5
Miles
MAP SYMBOLOGY
Base Data
Interstate
US Highway
State Highway
Corporate Limits
County Boundary
Watershed Boundary
State Boundary
Wildlife Management Area
Lake / Pond
Flood Data
Rivers and Streams
Restudy Area
Flood Risk
Very Low
Low
Medium
High
Very High
Areas of Mitigation Interest
Accredited Levees
Non-Accredited Levees
Dams
Stream Flow Constrictions
Past Claims Hot Spot
Routes Overtopped During Frequent Flooding Events
At-Risk Essential Facilities
Other
Individual Assistance (IA) & Public Assistance (PA) Data
Significant Land Use Changes (within the past 5 years and looking forward 5 years)
Areas of Significant Riverine or Coastal Erosion
Non-Levee Embankments
Other Flood Risk Areas
Areas of Mitigation Success
WATERSHED LOCATOR
Risk Mapping, Assessment, and Planning (Risk MAP)
FRM FLOOD RISK MAP
LOWER BLACK WATERSHED
FEMA
For more information of data used for this non-regulatory map, please consult the Lower Black Watershed Flood Risk Database and Flood Risk Report.
HUC-8 Code
11010009
RELEASE DATE
9/15/2015


Flood Risk Map: Bayou Bartholomew Watershed, 08040205
HOT SPRING County
GRANT County
JEFFERSON County
PHILLIPS County
ARKANSAS County
LINCOLN County
DALLAS County
CLEVELAND County
DESHA County
OUACHITA County
CALHOUN County
DREW County
BRADLEY County
ASHLEY County
CHICOT County
UNION County
Morehouse County
West Carroll County
East Carroll County
Union County
Ouachita County
0 2.5 5
Miles
MAP SYMBOLOGY
Base Data
Corporate Limits
Major Roads
Interstates
Watershed Boundary
Wildlife Management Areas / Federally Owned Lands
County
State
Flood Data
Rivers and Streams
Flood Risk
Very Low
Low
Medium
High
Very High
Areas of Mitigation Interest
Accredited Levees
Non-Accredited Levees
Dams
Coastal Structures
Stream Flow Constrictions
Past Claims Hot Spot
Key Emergency Routes Overtopped During Frequent Flooding Events
At-Risk Essential Facilities
Individual Assistance (IA) & Public Assistance (PA) Data
Significant Land Use Changes (within the past 5 years and looking forward 5 years)
Areas of Significant Riverine or Coastal Erosion
Non-Levee Embankments
Other Flood Risk Areas
Areas of Mitigation Success
Other
WATERSHED LOCATOR
Risk Mapping, Assessment, and Planning (Risk MAP)
FRM FLOOD RISK MAP
BAYOU BARTHOLOMEW WATERSHED
FEMA
HUC-8 Code
08040205
RELEASE DATE
9/30/2016
For more information of data used for this non-regulatory map, please consult the Bayou Meto Watershed Flood Risk Database and Flood Risk Report.

Flood Risk Map: *Boeuf Watershed, 08050001*



4.10.9 – Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Flood Consequence Analysis

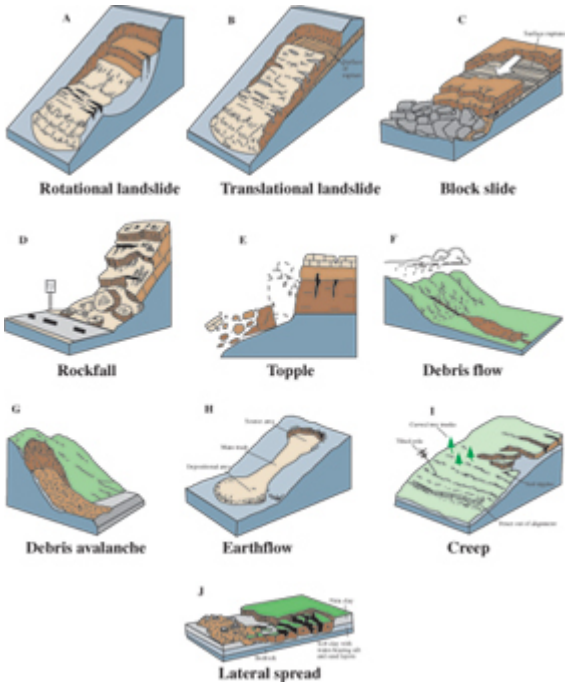
Subject	Impacts of Flood
Health and Safety of the Public	Impact dependent on the level of flood waters. Individuals further away from the incident area are at a lower risk. Casualties are dependent on warning time.
Health and Safety of Responders	Impact to responders is expected to be minimal unless responders live within the affected area.
Continuity of Operations	Temporary relocation may be necessary if inundation affects government facilities.
Property, Facilities, and Infrastructure	Localized impact could be severe in the inundation area of the incident to facilities and infrastructure. The further away from the incident area the damage lessens.
Environment	Impact will be severe for impacted area. Impact will lessen with distance.
Economic Conditions	Impacts to the economy depend on the area flooded, depth of water, and the amount of time it takes for the water to recede.
Public Confidence in the Jurisdiction's Governance	Perception of whether the flood could have been prevented, warning time, and response and recovery time will greatly impact the public's confidence.

4.11 – Landslides

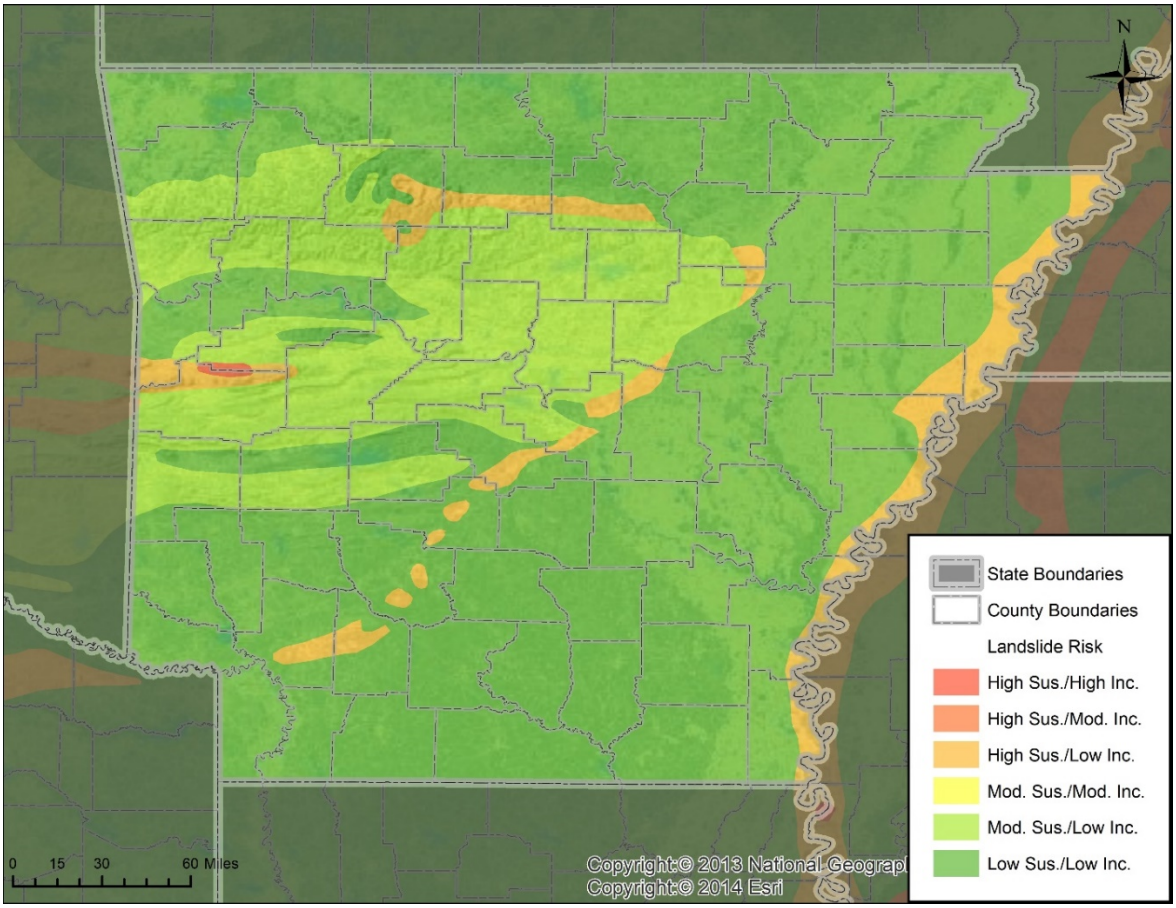
Landsliding is a gravity-driven process whereby earth materials move down a slope. The downslope movement may be triggered in Arkansas by a number of factors including earthquake shaking, blasting, wave or stream erosion, intense rainfall, freeze/thaw cycles, human (slope construction, adding weight, irrigation/pumping, timber harvest, steep slopes, lack of vegetation, or a combination of the above.) While the potential for a landslide generally increases with increasing slope angle, landslides are a complex function of multiple conditions. Landslides often occur naturally, but slope movement can be made worse by construction/development activities into hillsides. Increased, rerouting/concentrating runoff or the placement of fill material can all lead to an increase in landslides. Whether in natural or altered slopes, earth movement can be destructive when people or structures are involved.

4.11.1 – Location and Extent

Different types of landslides have different frequencies of movements, triggering conditions, and very different resulting hazards. All landslides can be classified into six types of movement: 1) falls, 2) topples, 3) slides, 4) spreads, 5) flows, and 6) complex. Most slope failures are complex combinations of these distinct types (modified from Highland, 2004 - see the diagram below).



Due to the geology as well as other factors listed above, certain regions (identified in red, orange and yellow colors) of the state are more susceptible to landslides (refer to the USGS map). “The Arkansas Geological Survey is currently developing a landslide inventory of the state.



The State of Arkansas has identified areas in the Ozark-Ouachita mountainous region, due to local soil conditions, to be particularly susceptible to landslides, especially during periods of heavy rains.

4.11.2 – Previous Occurrences

Since 2002, there has been one Presidential Disaster Declarations for the State of Arkansas for landslides (along with other associates hazard events such as flooding or severe storms). The following information is presented to provide a historical perspective on landslide events that have impacted the State of Arkansas.

FEMA Landslide Disaster and Emergency Declarations 2002 -2017

Declaration Number	Incident Period	Disaster Description	Regional Counties Involved	Dollars Obligated
1516	April 19 - May 18, 2004	Severe Storms, Flooding and Landslides	Washington, Madison, Franklin, Johnson, Carroll, Newton, Boone, Marion, Searcy, Baxter, Stone, Independence, Jackson and Woodruff	$7,052,634

Source: FEMA

At present there is no centralized and complete database containing historical records for landslides in Arkansas. The following landslides and/or landslide repair projects, occurring during the past 10 years, were researched from local news reports and available case studies provided by the Arkansas Geological Survey.

- **October 26, 2017:** Nearly three miles of Arkansas highway damaged from heavy rainfall in 2015 and 2016 are slated for repairs, according to a news release. The Arkansas State Highway Commission approved $5,000,000 in improvements to repair a .05-mile stretch of Arkansas 23 in Franklin and Madison counties, as well as 1.7 miles of Arkansas 59 in Crawford and Washington counties. Both roadways sustained landslide damage during severe storms in 2015 and 2016.
- **October 26, 2015:** A $1,880,000 project was conducted to repair landslide damage to two highways, Highway 7 and Highway 74, in Newton County.
- **May 10, 2015:** Heavy rains cause a landslide near Interstate 40 in Johnson County. One westbound lane of the interstate near Coal Hill is closed due to debris in the roadway.
- **June 11, 2010:** Excessive rains produced flash flooding in parts of western Arkansas, especially in southern Montgomery and northern Pike counties. This caused a landslide on Arkansas Highway 369 one-quarter mile southeast of Albert. Rocks and trees slid down onto the highway.
- **December 23-24, 2009**: in Boone and Conway Counties a strong but slow-moving storm resulted in 7-10 inches of rain. This resulted in a landslide on Gaither Mountain in Boone County. Water lines separated in the shifting ground and power outages occurred. Ridge Court developed a large crack and Blackjack Lane had large mounds develop. In Conway County this heavy rainfall led to a landslide on Petit Jean Mountain. Mud flowed down onto Arkansas Highway 154. Approximately 200 truckloads of mud, topsoil and fallen trees had to be removed.

4.11.3 – Hazard Probability Analysis

Landslides with the potential to affect the State of Arkansas are incredibly difficult to quantify at the present time and to forecast. Compounding the difficulty, landslides occur due to triggering events such as earthquake shaking, blasting, wave or stream erosion, intense rainfall, freeze/thaw cycles, human (slope construction, adding weight, irrigation/pumping, timber harvest, steep slopes, lack of vegetation, or a combination of the above. Based on limited available data, and that as compared to the geology of other regions of the US (Washington, California, Oregon), it is not likely that a major landslide will impact the state.

4.11.4 Vulnerability Analysis

Counties located within areas mapped by the United States Geological Survey, (based on the USGS map) as having high susceptibility and high incidence of landslides and of having high susceptibility and low incidence of landslides were determined to be most vulnerable. The following table indicates the number and valuation of state owned facilities and the number of bridges within those counties. This assumes an amount of damage to each facility is not possible due to the tremendous number of variables involved in a potential landslide event.

State-Owned Facilities in High Susceptibility Landslide Areas

County	State-Owned Facilities	Value	State-Owned Critical Facilities	Value	State Owned Bridges
Chicot	37	$8,001,372	0	$0	11
Clark	6	$5,102,027	0	$0	24
Crittenden	49	$82,600,711	0	$0	187
Desha	5	$563,723	0	$0	6
Hempstead	44	$19,806,985	0	$0	71
Hot Spring	62	$207,467,840	0	$0	96
Independence	0	$0	0	$0	15
Jackson	1	$93,359	0	$0	29
Lee	30	$117,187,425	0	$0	14
Johnson	0	$0	0	$0	3
Logan	0	$0	0	$0	18
Lonoke	3	$0	0	$0	32
Mississippi	33	$24,762,469	0	$0	77
Nevada	8	$571,557	0	$0	40
Newton	4	$193,961	0	$0	10
Phillips	20	$16,468,200	0	$0	22
Pope	0	$0	0	$0	0
Pulaski	385	$1,214,615,053	0	$0	254
St. Francis	2	$16,262,798	2	$16,262,798	19
Saline	136	$119,280,447	0	$0	104
Scott	0	$0	0	$0	29
Searcy	0	$0	0	$0	22
Sebastian	1	$795,120	0	$0	42
Scott	24	$11,554,467	0	$0	30
White	38	$81,877,516	0	$0	53

Source: ADEM and Arkansas Insurance Department

Counties located within areas mapped by the United States Geological Survey, (based on the USGS map) as having high susceptibility and high incidence of landslides and of having high susceptibility and low incidence of landslides were determined to be most vulnerable. Data was used to generate an approximate percentage of each county in landslide prone areas, and to develop an approximate count and valuation of structures within these areas using HAZUS data.

County Landslide Vulnerability

County	Percentage of County Within High Potential Slide Area	Number of Structures Within High Potential Slide Area	Building and Content Valuation
Benton	0.30%	76	$14,831,000
Boone	1.70%	105	$18,658,000
Carroll	1.70%	54	$9,224,000
Clark	0.30%	56	$9,619,000
Cleburne	13.50%	1,020	$209,200,000
Conway	3.20%	114	$29,747,000
Crawford	44.30%	4,223	$814,467,000

County Landslide Vulnerability

County	Percentage of County Within High Potential Slide Area	Number of Structures Within High Potential Slide Area	Building and Content Valuation
Faulkner	3.70%	965	$172,081,000
Franklin	15.90%	402	$72,714,000
Garland	14.20%	1,870	$480,317,000
Grant	5.40%	306	$58,231,000
Hot Spring	2.00%	64	$9,183,000
Independence	5.90%	712	$154,517,000
Jackson	0.70%	48	$8,317,000
Johnson	29.80%	571	$89,223,000
Lafayette	0.40%	4	$604,000
Logan	24.00%	1,025	$171,912,000
Lonoke	0.80%	467	$135,874,000
Madison	21.60%	1,129	$171,484,000
Miller	3.80%	262	$47,212,000
Montgomery	15.70%	254	$37,551,000
Nevada	4.70%	110	$13,194,000
Newton	27.90%	853	$112,330,000
Ouachita	1.10%	181	$46,504,000
Perry	4.90%	100	$13,767,000
Pike	2.60%	69	$10,221,000
Polk	17.30%	299	$37,440,000
Pope	23.50%	722	$153,154,000
Scott	13.40%	213	$41,557,000
Searcy	9.40%	252	$35,915,000
Sebastian	16.80%	4,706	$1,420,635,000
Sevier	0.30%	2	$447,000
Stone	17.80%	769	$106,950,000
Union	3.00%	165	$36,288,000
Van Buren	25.90%	2,047	$328,198,000
Washington	17.20%	3,205	$722,538,000
White	8.70%	1,492	$290,985,000
Yell	6.20%	301	$52,743,000

Source: ADEM and HAZUS

4.11.5 – Impact and Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Landslide Consequence Analysis

Subject	Impacts of Landslide
Health and Safety of the Public	Severity and location dependent. Impacts on persons in the path of the slide are expected to be severe.
Health and Safety of Responders	Impacts are expected to be minimal.

Continuity of Operations	Minimal expectation of execution of the COOP, unless a facility is impacted.
Property, Facilities, and Infrastructure	Impact to property, facilities, and infrastructure could be minimal to severe, depending on the location of the facility in relation to the slide. Loss of structural integrity of buildings and infrastructure could occur.
Environment	Impact to the area would be minimal other than the immediate area.
Economic Conditions	Impacts to the economy will be dependent severity of landslide and the impact on structures and infrastructure. Impacts could be severe if roads/utilities are affected. Otherwise impact would be non-existent to minimal.
Public Confidence in the Jurisdiction's Governance	Confidence could be an issue if local development policies are questioned.

4.12 – Severe Storms

A severe storm is a thunderstorm that produces a tornado, winds of at least 58 mph and/or hail at least 1 inch in diameter.

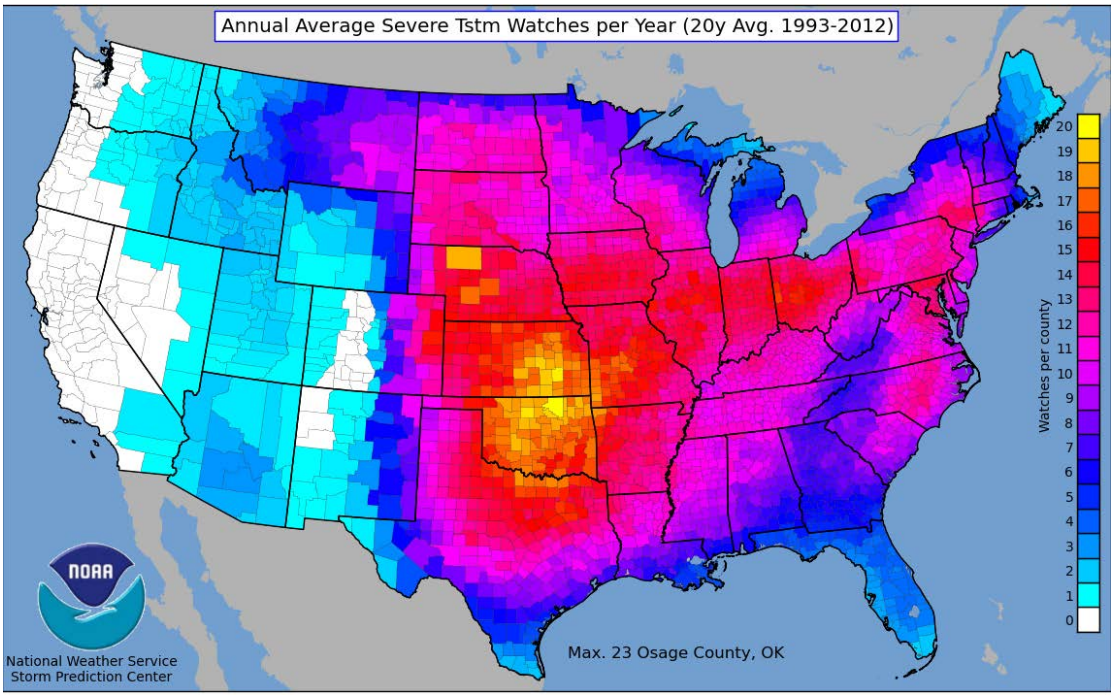
4.12.1 – Location and Extent

The entire state is susceptible to severe weather as Arkansas is in a temperate climate zone.

The NWS classifies thunderstorms using the following categories:

- **Marginal:** Isolated severe thunderstorms, limited in duration and/or coverage and/or intensity
- **Slight:** Scattered severe storms possible, Short-lived and/or not widespread, isolated intense storms possible
- **Enhanced:** Numerous severe storms possible, more persistent and/or widespread, a few intense
- **Moderate:** Widespread severe storms likely, long-lived, widespread and intense
- **High:** Widespread severe storms expected, long-lived, very widespread and particularly intense

The following map, generated by National Oceanic and Atmospheric Administration (NOAA), indicates the severe thunderstorm watches per year.



4.12.2 – Previous Occurrences

Since 2002, there have been 23 Presidential Disaster Declarations for the State of Arkansas for severe storms (along with other associates hazard events such as flooding or tornados) The following information is presented to provide a historical perspective on severe storm events that have impacted the State of Arkansas. Declaration numbers in bold indication declared disaster that have occurred since the previous mitigation plan update in 2013.

FEMA Disaster and Emergency Declarations 2002 -2017

Declaration Number	Incident Period	Disaster Description	Regional Counties Involved	Dollars Obligated
1400	December 12, 2001 - January 30, 2002	Severe Storms and Flooding	Ashley, Clay, Cleburne, Columbia, Crittenden, Franklin, Jackson, Lincoln, Little River, Logan, Monroe, Poinsett, Prairie, Scott, Stone and Woodruff	$2,225,097
1472	May 2 - June 10, 2003	Severe Storms, Tornados, and Flooding	Benton, Chicot, Cleburne, Columbia, Conway, Craighead, Crittenden, Cross, Faulkner, Fulton, Jackson, Lonoke, Nevada, Perry, Poinsett, Phillips, St. Francis, White and Woodruff	$5,303,785
1516	April 19 - May 18, 2004	Severe Storms, Flooding and Landslides	Washington, Madison, Franklin, Johnson, Carroll, Newton, Boone, Marion, Searcy, Baxter, Stone, Independence, Jackson and Woodruff	$7,052,634
1528	May 30 - July 9, 2004	Severe Storms and Flooding	Bradley, Calhoun, Clark, Columbia, Hempstead, Howard, Lafayette, Little River, Nevada, Ouachita, Pike and Sevier	$3,303,678
1636	April 1-3, 2006	Severe Storms and Tornados	Conway, Cross, Fulton, Greene, Lawrence, Randolph and White	$2,286,579
1744	February 5-12, 2008	Severe Storms, Tornados, and Flooding	Baxter, Conway, Izard, Marion, Pope, Randolph, Sharp, Stone, Union and Van Buren	$5,020,005
1751	March 18 - April 28, 2008	Severe Storms, Tornados, and Flooding	Arkansas, Baxter, Benton, Boone, Carroll, Clay, Cleburne, Conway, Craighead, Crawford, Cross, Desha, Franklin, Fulton, Garland, Greene, Hempstead, Hot Spring, Independence, Izard, Jackson, Jefferson, Lawrence, Lee, Logan, Lonoke, Madison, Marion, Miller, Monroe, Newton, Perry, Phillips, Poinsett, Pope, Prairie, Pulaski, Randolph, Saline, Scott, Searcy, Sebastian, Sharp, St. Francis, Stone, Van Buren, Washington, White, Woodruff and Yell	$41,085,016
1758	May 02-12, 2008	Severe Storms, Flooding, and Tornados	Arkansas, Benton, Cleburne, Conway, Crittenden, Grant, Lonoke, Mississippi, Phillips, Pulaski, Saline and Van Buren	$2,676,958
1793	September 02-08, 2008	Severe Storms and Flooding associated with Hurricane Gustav	Ashley, Bradley, Calhoun, Chicot, Clark, Cleveland, Conway, Dallas, Drew, Garland, Grant, Hot Spring, Lincoln, Montgomery, Perry, Prairie, Saline and Van Buren	$3,895,660
1804	September 13-23, 2008	Tropical Storm Ike	Carroll, Clark, Clay, Craighead, Greene, Hempstead, Howard, Izard, Lafayette, Lawrence, Little River, Madison, Miller, Montgomery,	$2,543,368

FEMA Disaster and Emergency Declarations 2002 -2017

Declaration Number	Incident Period	Disaster Description	Regional Counties Involved	Dollars Obligated
			Nevada, Newton, Pike, Randolph, Sharp and Van Buren	
1834	April 09, 2009	Severe Storms and Tornados	Ashley, Howard, Miller, Polk and Sevier	$4,894,361
1845	April 27 - May 23, 2009	Severe Storms, Tornados, and Flooding	Arkansas, Bradley, Calhoun, Chicot, Clark, Cleveland, Conway, Dallas, Drew, Fulton, Grant, Greene, Hempstead, Hot Spring, Howard, Jackson, Jefferson, Lafayette, Lee, Lincoln, Little River, Marion, Miller, Monroe, Nevada, Ouachita, Perry, Phillips, Pike, Poinsett, Polk, Pope, Prairie, Saline, Searcy, St. Francis, Stone and Union	$9,425,734
1861	October 29 - November 08, 2009	Severe Storms, Tornados, and Flooding	Boone, Bradley, Calhoun, Carroll, Cleburne, Cleveland, Columbia, Conway, Cross, Dallas, Franklin, Fulton, Grant, Izard, Jackson, Johnson, Lafayette, Lawrence, Lincoln, Logan, Marion, Monroe, Nevada, Newton, Ouachita, Poinsett, Prairie, Pulaski, Randolph, Saint Francis, Scott, Sharp, Stone, Union, Van Buren, White and Woodruff	$15,536,008
1872	December 23, 2009 - January 02, 2010	Severe Storms and Flooding	Bradley, Calhoun, Clark, Clay, Cleveland, Craighead, Dallas, Drew, Grant, Greene, Hempstead, Jackson, Jefferson, Lafayette, Lincoln, Lonoke, Miller, Monroe, Nevada, Ouachita, Poinsett, Prairie, Pulaski, White and Woodruff	$9,792,672
1975	April 14 - June 03, 2011	Severe Storms, Tornados, and associated Flooding	Arkansas, Benton, Boone, Carroll, Chicot, Clark, Clay, Crawford, Crittenden, Cross, Dallas, Desha, Faulkner, Garland, Greene, Hot Spring, Independence, Jackson, Jefferson, Lawrence, Lee, Lincoln, Lonoke, Madison, Mississippi, Monroe, Montgomery, Phillips, Poinsett, Prairie, Pulaski, Randolph, Saline, St. Francis, Washington, White, Woodruff	$50,596,048
4000	May 24-26, 2011	Severe Storms, Tornados, and Flooding	Franklin, Johnson	$2,701,536
4124	May 30 - June 3, 2013	Severe Storms, Tornados, and Flooding	Cleburne, Cross, Garland, Independence, Montgomery, Poinsett, Polk, Scott, Searcy, Stone, Van Buren and Woodruff	$8,395,922
4143	August 08-14, 2013	Severe Storms and Flooding	Benton, Boone, Carroll, Madison Marion and Newton	$8,184,460
4174	April 27 -28, 2014	Severe Storms, Tornados, and Flooding	Faulkner, Pulaski, Randolph and White	$10,053,785
4226	May 7 - June 15, 2015	Severe Storms, Tornados, Straight-	Crawford, Garland, Howard, Jefferson, Little River, Miller, Perry, Sebastian and Sevier	$11,100,256

FEMA Disaster and Emergency Declarations 2002 -2017

Declaration Number	Incident Period	Disaster Description	Regional Counties Involved	Dollars Obligated
		line Winds, and Flooding		
4254	December 26, 2015 - January 22, 2016	Severe Storms, Tornados, Straight-line Winds, and Flooding	Benton, Carroll, Crawford, Faulkner, Jackson, Jefferson, Lee, Little River, Perry, Sebastian and Sevier	$11,367,572
4270	March 8-13, 2016	Severe Storms, Tornados, Straight-line Winds, and Flooding	Columbia, Ouachita, Calhoun, Bradley, Ashley, Chicot, Cleveland, Lincoln, Desha, Arkansas, Philips and Prairie	$2,299,510
4318	April 26 - May 19, 2017	Severe Storms, Tornados, Straight-line Winds, and Flooding	Benton, Boone, Carroll, Clay, Faulkner, Fulton, Jackson, Lawrence, Prairie, Pulaski, Randolph, Saline, Washington, White, Woodruff and Yell	$3,911,764

Source: FEMA

4.12.3 – Hazard Probability Analysis

Severe storms that create hail, lightning, and high wind events are a common occurrence throughout Arkansas. For probability purposes, each component of severe storms, including hail, lightning and high winds, were examined separately.

The following table summarizes hail event data for the State of Arkansas for the period 2013 through 2017, using available information from the NCDC.

State of Arkansas Hail Data Summary

Data	Recorded Impact
Number of Days with NCDC Reported Event (2013-2017)	159
Average Events per Year	27
Number of Days with Event and Death or Injury:	0
Number of Days with Event and Property Damage	30
Total Reported NCDC Property Damage (2013-2017)	$1,167,000
Average Property Damage per Year	$233,400
Number of Days with Event and Crop Damage:	0
Total Reported NCDC Crop Damage (2013-2017)	$0
Average Crop Damage per Year	$0

Source: NCDC

The following table summarizes recorded NCDC lightning events for the State of Arkansas for the period 2013 through 2017.

State of Arkansas Lightning Data Summary

Data	Recorded Impact
Number of Days with NCDC Reported Event (2013-2017)	34
Average Events per Year	6
Number of Days with Event and Death or Injury:	11
Number of Days with Event and Property Damage	26
Total Reported NCDC Property Damage (2013-2017)	$3,093,000
Average Property Damage per Year	$618,600
Number of Days with Event and Crop Damage:	0
Total Reported NCDC Crop Damage (2013-2017)	$0
Average Crop Damage per Year	$0

Source: NCDC

The following table summarizes recorded NCDC wind events, including high, strong and thunderstorm winds, for the State of Arkansas for the period 2013 through 2017.

State of Arkansas Wind Data Summary

Data	Recorded Impact
Number of Days with NCDC Reported Event (2013-2017)	258
Average Events per Year	43
Number of Days with Event and Death or Injury:	18
Number of Days with Event and Property Damage	186
Total Reported NCDC Property Damage (2013-2017)	$29,778,000
Average Property Damage per Year	$5,995,600
Number of Days with Event and Crop Damage:	5
Total Reported NCDC Crop Damage (2013-2017)	$735,000
Average Crop Damage per Year	$0

Source: NCDC

As indicated in the tables above, on average the State of Arkansas can expect between 11 and 43 severe storm impact events (hail and/or lightning and/or high wind events) per year.

4.12.4 – Vulnerability Analysis

For purposes of this assessment, all state-owned facilities within the state were determined to be at equal risk to severe storm events. The following table indicates the number and valuation of state owned facilities and the number of bridges within all Arkansas counties. Assuming an amount of damage to each facility is not possible due to the tremendous number of variables involved in a potential severe storm event.

State-Owned Facilities Susceptible to Severe Storms

County	State-Owned Facilities	Total Valuation	Critical Facilities	Critical Facility Total Valuation	State-Owned Bridges
State of Arkansas	**5,730**	**$8,865,814,300**	**1,089**	**$2,194,373,128**	**7,303**
Arkansas	41	$416,319,788	5	$3,326,664	75

State-Owned Facilities Susceptible to Severe Storms

County	State-Owned Facilities	Total Valuation	Critical Facilities	Critical Facility Total Valuation	State-Owned Bridges
Ashley	12	$19,237,703	3	$1,608,294	69
Baxter	12	$40,906,210	2	$711,746	35
Benton	91	$63,237,979	11	$3,615,841	156
Boone	55	$29,546,068	24	$10,551,373	55
Bradley	63	$8,857,276	5	$2,359,090	50
Calhoun	22	$47,679,917	3	$944,746	66
Carroll	22	$32,328,304	1	$526,383	67
Chicot	86	$34,615,898	19	$38,351,802	57
Clark	150	$109,725,870	3	$1,957,006	113
Clay	35	$3,288,517	1	$353,957	85
Cleburne	18	$6,851,080	2	$1,283,923	28
Cleveland	8	$3,827,964	1	$300,599	61
Columbia	138	$78,843,077	1	$274,371	75
Conway	100	$15,569,386	4	$1,216,743	76
Craighead	290	$219,788,810	8	$4,135,316	175
Crawford	58	$210,139,702	5	$2,780,793	176
Crittenden	51	$119,025,900	7	$3,562,156	163
Cross	90	$185,863,362	10	$8,483,377	93
Dallas	10	$47,381,099	2	$940,742	81
Desha	22	$62,519,831	4	$1,649,509	50
Drew	26	$25,963,428	5	$1,607,565	85
Faulkner	375	$1,273,968,488	4	$2,126,375	124
Franklin	25	$178,318,097	1	$280,928	83
Fulton	40	$11,055,589	3	$921,378	65
Garland	210	$735,495,705	7	$4,579,645	152
Grant	12	$633,159	5	$3,039,299	96
Greene	75	$100,332,674	16	$9,525,474	93
Hempstead	114	$350,739,747	17	$12,560,915	132
Hot Spring	119	$175,934,326	28	$184,497,227	126
Howard	34	$3,519,004	7	$2,497,745	60
Independence	47	$8,598,781	34	$6,324,111	97
Izard	41	$19,836,647	15	$59,889,054	42
Jackson	101	$125,251,657	39	$136,959,919	111
Jefferson	257	$726,196,049	157	$245,560,270	151
Johnson	32	$26,246,860	7	$1,799,137	108
Lafayette	23	$45,878,467	2	$797,085	47
Lawrence	58	$166,300,006	2	$989,381	99
Lee	52	$48,542,001	28	$117,373,491	54
Lincoln	185	$297,637,208	155	$233,084,346	59
Little River	24	$6,171,349	3	$1,601,796	49
Logan	147	$416,558,262	10	$1,351,839	81
Lonoke	51	$100,216,710	9	$5,467,923	135
Madison	35	$732,445	3	$1,824,844	92
Marion	25	$3,075,978	6	$2,301,351	39

State-Owned Facilities Susceptible to Severe Storms

County	State-Owned Facilities	Total Valuation	Critical Facilities	Critical Facility Total Valuation	State-Owned Bridges
Miller	32	$90,913,252	9	$90,913,252	161
Mississippi	82	$130,425,929	23	$20,186,394	182
Monroe	9	$14,302,601	1	$195,737	78
Montgomery	18	$10,973,961	2	$992,636	88
Nevada	38	$68,617,083	3	$1,281,237	101
Newton	16	$3,578,748	2	$925,237	41
Ouachita	95	$112,171,397	34	$19,270,995	90
Perry	13	$376,164	1	$275,160	81
Phillips	35	$71,350,166	4	$1,181,081	59
Pike	56	$43,228,530	2	$999,433	63
Poinsett	47	$27,827,627	3	$2,374,509	127
Polk	36	$16,232,150	2	$1,142,085	102
Pope	210	$212,100,639	26	$10,638,797	101
Prairie	24	$9,301,979	2	$959,696	66
Pulaski	626	$854,340,146	198	$848,605,823	381
Randolph	58	$33,177,986	3	$2,091,080	84
St. Francis	83	$41,077,656	7	$2,537,948	100
Saline	137	$131,688,684	8	$13,257,880	123
Scott	43	$17,011,227	4	$1,308,417	44
Searcy	15	$4,691,087	3	$1,629,588	171
Sebastian	59	$37,148,001	31	$21,655,697	72
Sevier	10	$3,780,275	2	$786,683	54
Sharp	19	$7,696,032	2	$905,356	154
Stone	75	$32,981,771	3	$4,440,517	55
Union	75	$49,769,839	3	$2,300,866	124
Van Buren	17	$5,200,672	2	$1,026,183	50
Washington	158	$116,099,895	12	$11,335,741	171
White	94	$94,458,624	6	$1,556,212	205
Woodruff	8	$6,015,359	2	$712,151	62
Yell	60	$61,679,129	5	$2,991,207	128

Source: HAZUS, Arkansas Insurance Department and ADEM

Multiple factors can come into play when assessing vulnerability and loss analysis. However, for purposes of this plan, three major factors are being utilized to aid in the assessment:

- **Exposure Data:** The amount of agricultural crops and building stock at risk
- **Loss Data:** Historical losses from severe storm events
- **Percentage Loss:** Percent of agricultural crops and building stock lost over the given period

For vulnerability and loss estimation purposes all counties were considered at equal risk to severe storms and were evaluated. Counties with a higher identified population and number of structures are to be considered to have a potentially greater vulnerability. However, these assumed vulnerabilities should be viewed as theoretical due to the tremendous number of variables involved in a potential severe storm event.

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County Structural Vulnerability Data for Severe Storms

County	HAZUS Building Valuation	NCDC Structure Damage, Hail 2012-2017	Percentage of Building Valuation Damaged by Hail	NCDC Structure Damage, Lightning 2012-2017	Percentage of Building Valuation Damaged by Lightning	NCDC Structure Damage, Wind 2012-2017	Percentage of Building Valuation Damaged by Wind
State of Arkansas	**$12,168,205,000**	**$1,129,300**	**0.009%**	**$3,093,000**	**0.025%**	**$24,304,287**	**0.200%**
Arkansas	$2,245,000	$5,000	0.223%	$0	0.000%	$196,000	8.731%
Ashley	$2,153,000	$158,300	7.353%	$0	0.000%	$553,000	25.685%
Baxter	$4,332,000	$0	0.000%	$0	0.000%	$287,000	6.625%
Benton	$23,138,000	$225,000	0.972%	$200,000	0.864%	$192,000	0.830%
Boone	$3,624,000	$0	0.000%	$0	0.000%	$75,000	2.070%
Bradley	$1,108,000	$0	0.000%	$0	0.000%	$697,000	62.906%
Calhoun	$442,000,000	$0	0.000%	$0	0.000%	$105,000	0.024%
Carroll	$2,754,000	$30,000	1.089%	$0	0.000%	$77,000	2.796%
Chicot	$961,000,000	$46,000	0.005%	$0	0.000%	$1,059,000	0.110%
Clark	$2,174,000	$0	0.000%	$25,000	1.150%	$691,050	31.787%
Clay	$1,532,000	$0	0.000%	$0	0.000%	$420,000	27.415%
Cleburne	$2,958,000	$0	0.000%	$0	0.000%	$260,000	8.790%
Cleveland	$761,000,000	$0	0.000%	$0	0.000%	$570,000	0.075%
Columbia	$2,429,000	$0	0.000%	$0	0.000%	$100,000	4.117%
Conway	$1,772,000	$0	0.000%	$0	0.000%	$323,000	18.228%
Craighead	$9,707,000	$2,000	0.021%	$0	0.000%	$411,000	4.234%
Crawford	$5,637,000	$125,000	2.217%	$0	0.000%	$111,000	1.969%
Crittenden	$4,447,000	$0	0.000%	$150,000	3.373%	$399,000	8.972%
Cross	$1,540,000	$0	0.000%	$0	0.000%	$280,000	18.182%
Dallas	$809,000,000	$0	0.000%	$0	0.000%	$265,000	0.033%
Desha	$1,270,000	$0	0.000%	$0	0.000%	$72,000	5.669%
Drew	$1,772,000	$0	0.000%	$25,000	1.411%	$338,000	19.074%
Faulkner	$10,585,000	$0	0.000%	$15,000	0.142%	$298,000	2.815%
Franklin	$1,581,000	$30,000	1.898%	$0	0.000%	$161,000	10.183%
Fulton	$1,141,000	$0	0.000%	$0	0.000%	$627,000	54.952%
Garland	$10,515,000	$0	0.000%	$143,000	1.360%	$1,050,000	9.986%
Grant	$1,638,000	$0	0.000%	$0	0.000%	$455,000	27.778%
Greene	$3,656,000	$1,000	0.027%	$150,000	4.103%	$20,000	0.547%
Hempstead	$2,046,000	$0	0.000%	$0	0.000%	$350,000	17.107%
Hot Spring	$2,678,000	$0	0.000%	$0	0.000%	$616,000	23.002%
Howard	$1,381,000	$0	0.000%	$0	0.000%	$70,000	5.069%
Independence	$3,540,000	$0	0.000%	$0	0.000%	$166,000	4.689%
Izard	$1,278,000	$0	0.000%	$0	0.000%	$1,827,000	142.958%
Jackson	$1,603,000	$0	0.000%	$0	0.000%	$503,000	31.379%
Jefferson	$7,230,000	$0	0.000%	$50,000	0.692%	1,365,000	18.880%
Johnson	$2,067,000	$0	0.000%	$0	0.000%	$434,300	21.011%
Lafayette	$628,000,000	$0	0.000%	$0	0.000%	$175,000	0.028%
Lawrence	$1,547,000	$1,000	0.065%	$0	0.000%	$462,000	29.864%

County Structural Vulnerability Data for Severe Storms

County	HAZUS Building Valuation	NCDC Structure Damage, Hail 2012-2017	Percentage of Building Valuation Damaged by Hail	NCDC Structure Damage, Lightning 2012-2017	Percentage of Building Valuation Damaged by Lightning	NCDC Structure Damage, Wind 2012-2017	Percentage of Building Valuation Damaged by Wind
Lee	$775,000,000	$0	0.000%	$0	0.000%	$0	0.000%
Lincoln	$829,000,000	$0	0.000%	$0	0.000%	$20,000	0.002%
Little River	$1,206,000	$0	0.000%	$0	0.000%	$30,000	2.488%
Logan	$2,155,000	$0	0.000%	$0	0.000%	$301,200	13.977%
Lonoke	$6,235,000	$0	0.000%	$601,000	9.639%	$185,000	2.967%
Madison	$1,378,000	$0	0.000%	$0	0.000%	$5,000	0.363%
Marion	$1,644,000	$1,000	0.061%	$0	0.000%	$170,000	10.341%
Miller	$3,930,000	$0	0.000%	$10,000	0.254%	$120,000	3.053%
Mississippi	$4,421,000	$0	0.000%	$25,000	0.565%	$425,000	9.613%
Monroe	$850,000,000	$0	0.000%	$0	0.000%	$181,000	0.021%
Montgomery	$907,000,000	$0	0.000%	$0	0.000%	$325,000	0.036%
Nevada	$847,000,000	$0	0.000%	$0	0.000%	$50,000	0.006%
Newton	$842,000,000	$0	0.000%	$0	0.000%	$223,000	0.026%
Ouachita	$2,418,000	$0	0.000%	$0	0.000%	$3,687	0.152%
Perry	$856,000,000	$0	0.000%	$0	0.000%	$238,000	0.028%
Phillips	$1,996,000	$0	0.000%	$0	0.000%	$0	0.000%
Pike	$1,035,000	$0	0.000%	$0	0.000%	$353,000	34.106%
Poinsett	$2,304,000	$0	0.000%	$0	0.000%	$223,000	9.679%
Polk	$1,930,000	$0	0.000%	$132,000	6.839%	$465,000	24.093%
Pope	$5,743,000	$0	0.000%	$0	0.000%	$384,050	6.687%
Prairie	$823,000,000	$0	0.000%	$0	0.000%	$50,000	0.006%
Pulaski	$48,464,000	$25,000	0.052%	$887,000	1.830%	$1,000,000	2.063%
Randolph	$1,684,000	$0	0.000%	$0	0.000%	$132,000	7.838%
St. Francis	$2,138,000	$0	0.000%	$0	0.000%	$80,000	3.742%
Saline	$10,250,000	$0	0.000%	$0	0.000%	$535,000	5.220%
Scott	$1,025,000	$0	0.000%	$0	0.000%	$133,000	12.976%
Searcy	$852,000,000	$0	0.000%	$0	0.000%	$428,000	0.050%
Sebastian	$13,612,000	$385,000	2.828%	$0	0.000%	$331,000	2.432%
Sevier	$1,300,000	$0	0.000%	$0	0.000%	$205,000	15.769%
Sharp	$1,817,000	$0	0.000%	$0	0.000%	$561,000	30.875%
Stone	$1,149,000	$0	0.000%	$0	0.000%	401,000	34.900%
Union	$4,564,000	$0	0.000%	$290,000	6.354%	$292,000	6.398%
Van Buren	$1,676,000	$0	0.000%	$0	0.000%	$203,000	12.112%
Washington	$19,369,000	$95,000	0.490%	$130,000	0.671%	$144,000	0.743%
White	$6,809,000	$0	0.000%	$110,000	1.616%	$946,000	13.893%
Woodruff	$707,000,000	$0	0.000%	$150,000	0.021%	$145,000	0.021%
Yell	$1,875,000	$0	0.000%	$0	0.000%	$722,000	38.507%

Source: NCDC and HAZUS

At potentially increased risk to severe storm events may be mobile homes. It is worth highlighting the following counties may have increased vulnerability to severe storm events due to the percentage of mobile homes:

- **Counties with 20%-25% of housing stock as mobile homes:** Ashley, Clark, Cleburne, Fulton, Hempstead, Independence, Izard, Lafayette, Madison, Nevada, Polk, Prairie, Saline, Searcy, Union and White
- **Counties with greater than 25% of housing stock as mobile homes:** Calhoun, Cleveland, Drew, Grant, Hot Spring, Lincoln, Perry, Pike, Sevier, Stone and Van Buren
-

Population vulnerability for each county is a function of the following component parts:

- Population changes over time
- Vulnerable populations
- Population density

In general:

- Counties with a high population are at increased risk
- Counties with growing populations are at increased risk
- Counties with a high population of children under 5 or adults over the age of 65 may be at increased risk.

It is worth highlighting the following counties may have increased vulnerability to severe storm events due to population factors:

- **Counties with a large population increase:** Benton, Craighead, Faulkner, Lonoke, Pulaski, Sebastian, Washington and White
- **Counties with a population gain of over 1,000 children under the age of 5:** Benton, Craighead Faulkner, Lonoke, Pulaski, Saline and Washington
- **Counties with a population gain of over 1,000 adults over the age of 65:** Baxter, Benton, Boone, Cleburne, Craighead, Crawford, Faulkner, Garland, Greene, Independence, Lonoke, Marion, Miller, Pope, Randolph, Saline, Sebastian, Washington and White

The USDA 2012 Census of Agriculture (the latest available data) provides data on the crop exposure value, the total dollar value of all crops, for each Arkansas county. USDA Risk Management Agency crop loss data allows us to quantify the monetary impact of severe storm conditions of the agricultural sector. In general, the higher the percentage loss, the higher the vulnerability of the county to severe storm event components.

County Agricultural Vulnerability Data for Severe Storms

County	USDA Estimated Crop Exposure	USDA Crop Loss, Hail 2012-2017 Yearly Average	Percentage of Crop Exposure Lost to Hail	USDA Crop Loss, Lightning 2012-2017 Yearly Average	Percentage of Crop Exposure Lost to Lightning	USDA Crop Loss, Wind 2012-2017 Yearly Average	Percentage of Crop Exposure Lost to Wind
State of Arkansas	**$9,775,758,000**	**$467,483**	**0.00478%**	**$148,162**	**0.0015%**	**$2,553,835**	**0.0261%**
Arkansas	$298,173,000	$3,059	0.00103%	$0	0.0000%	$18,330	0.0061%
Ashley	$78,844,000	$15,036	0.01907%	$27,996	0.0355%	$51,981	0.0659%
Baxter	$20,367,000	$0	0.00000%	$0	0.0000%	$0	0.0000%
Benton	$529,128,000	$0	0.00000%	$0	0.0000%	$0	0.0000%
Boone	$124,065,000	$21,531	0.01735%	$0	0.0000%	$0	0.0000%
Bradley	$43,633,000	$12,389	0.02839%	$3,419	0.0078%	$0	0.0000%
Calhoun	$5,985,000	$0	0.00000%	$0	0.0000%	$0	0.0000%
Carroll	$307,006,000	$0	0.00000%	$0	0.0000%	$0	0.0000%
Chicot	$204,719,000	$11,429	0.00558%	$11,151	0.0054%	$92,615	0.0452%
Clark	$15,083,000	$0	0.00000%	$0	0.0000%	$4,300	0.0285%
Clay	$246,172,000	$27,244	0.01107%	$2,085	0.0008%	$110,576	0.0449%
Cleburne	$47,871,000	$0	0.00000%	$0	0.0000%	$0	0.0000%
Cleveland	$105,801,000	$0	0.00000%	$0	0.0000%	$0	0.0000%
Columbia	$41,709,000	$0	0.00000%	$0	0.0000%	$0	0.0000%
Conway	$161,648,000	$3,781	0.00234%	$0	0.0000%	$1,959	0.0012%
Craighead	$261,600,000	$80,370	0.03072%	$0	0.0000%	$59,321	0.0227%
Crawford	$67,408,000	$0	0.00000%	$0	0.0000%	$328	0.0005%
Crittenden	$215,016,000	$15,676	0.00729%	$895	0.0004%	$111,126	0.0517%
Cross	$188,778,000	$55,180	0.02923%	$6,206	0.0033%	$148,031	0.0784%
Dallas	$1,305,000	$0	0.00000%	$0	0.0000%	$0	0.0000%
Desha	$212,893,000	$312	0.00015%	$294	0.0001%	$103,539	0.0486%
Drew	$88,347,000	$12,469	0.01411%	$17,437	0.0197%	$106,864	0.1210%
Faulkner	$26,257,000	$0	0.00000%	$0	0.0000%	$915	0.0035%
Franklin	$158,178,000	$0	0.00000%	$0	0.0000%	$0	0.0000%
Fulton	$27,725,000	$0	0.00000%	$0	0.0000%	$0	0.0000%
Garland	$24,099,000	$0	0.00000%	$0	0.0000%	$0	0.0000%
Grant	$20,864,000	$0	0.00000%	$0	0.0000%	$0	0.0000%
Greene	$177,326,000	$21,117	0.01191%	$966	0.0005%	$181,398	0.1023%
Hempstead	$198,491,000	$0	0.00000%	$0	0.0000%	$0	0.0000%
Hot Spring	$23,946,000	$0	0.00000%	$0	0.0000%	$3,122	0.0130%
Howard	$179,081,000	$0	0.00000%	$0	0.0000%	$0	0.0000%
Independence	$131,867,000	$0	0.00000%	$0	0.0000%	$2,609	0.0020%
Izard	$49,402,000	$0	0.00000%	$0	0.0000%	$0	0.0000%
Jackson	$186,837,000	$4,448	0.00238%	$11,049	0.0059%	$182,341	0.0976%
Jefferson	$215,265,000	$221	0.00010%	$0	0.0000%	$42,235	0.0196%
Johnson	$141,042,000	$2,570	0.00182%	$0	0.0000%	$413	0.0003%

County Agricultural Vulnerability Data for Severe Storms

County	USDA Estimated Crop Exposure	USDA Crop Loss, Hail 2012-2017 Yearly Average	Percentage of Crop Exposure Lost to Hail	USDA Crop Loss, Lightning 2012-2017 Yearly Average	Percentage of Crop Exposure Lost to Lightning	USDA Crop Loss, Wind 2012-2017 Yearly Average	Percentage of Crop Exposure Lost to Wind
Lafayette	$127,886,000	$0	0.00000%	$918	0.0007%	$120,154	0.0940%
Lawrence	$149,140,000	$36,270	0.02432%	$0	0.0000%	$88,867	0.0596%
Lee	$171,870,000	$14,342	0.00834%	$10,909	0.0063%	$65,013	0.0378%
Lincoln	$219,452,000	$4,209	0.00192%	$0	0.0000%	$24,609	0.0112%
Little River	$76,510,000	$11,960	0.01563%	$1,279	0.0017%	$0	0.0000%
Logan	$187,983,000	$20,163	0.01073%	$0	0.0000%	$4,080	0.0022%
Lonoke	$223,378,000	$961	0.00043%	$0	0.0000%	$62,918	0.0282%
Madison	$208,163,000	$0	0.00000%	$0	0.0000%	$0	0.0000%
Marion	$39,667,000	$0	0.00000%	$0	0.0000%	$0	0.0000%
Miller	$45,538,000	$2,308	0.00507%	$0	0.0000%	$63,966	0.1405%
Mississippi	$314,647,000	$28,403	0.00903%	$5,277	0.0017%	$133,157	0.0423%
Monroe	$194,373,000	$139	0.00007%	$2,375	0.0012%	$79,213	0.0408%
Montgomery	$42,148,000	$0	0.00000%	$0	0.0000%	$0	0.0000%
Nevada	$47,918,000	$0	0.00000%	$0	0.0000%	$0	0.0000%
Newton	$28,655,000	$0	0.00000%	$0	0.0000%	$0	0.0000%
Ouachita	$16,465,000	$0	0.00000%	$0	0.0000%	$0	0.0000%
Perry	$33,082,000	$0	0.00000%	$291	0.0009%	$7,967	0.0241%
Phillips	$247,998,000	$17,785	0.00717%	$38,870	0.0157%	$218,383	0.0881%
Pike	$82,335,000	$0	0.00000%	$0	0.0000%	$0	0.0000%
Poinsett	$287,420,000	$20,425	0.00711%	$3,285	0.0011%	$233,347	0.0812%
Polk	$117,773,000	$0	0.00000%	$0	0.0000%	$0	0.0000%
Pope	$150,102,000	$17,355	0.01156%	$675	0.0004%	$28,881	0.0192%
Prairie	$165,065,000	$0	0.00000%	$1,891	0.0011%	$12,972	0.0079%
Pulaski	$39,970,000	$0	0.00000%	$0	0.0000%	$12,422	0.0311%
Randolph	$79,585,000	$456	0.00057%	$0	0.0000%	$29,704	0.0373%
St. Francis	$189,878,000	$859	0.00045%	$424	0.0002%	$85,306	0.0449%
Saline	$4,495,000	$0	0.00000%	$0	0.0000%	$0	0.0000%
Scott	$132,004,000	$0	0.00000%	$0	0.0000%	$0	0.0000%
Searcy	$12,038,000	$0	0.00000%	$0	0.0000%	$0	0.0000%
Sebastian	$97,410,000	$0	0.00000%	$181	0.0002%	$0	0.0000%
Sevier	$137,415,000	$0	0.00000%	$0	0.0000%	$0	0.0000%
Sharp	$75,561,000	$0	0.00000%	$0	0.0000%	$0	0.0000%
Stone	$53,664,000	$0	0.00000%	$0	0.0000%	$0	0.0000%
Union	$27,952,000	$0	0.00000%	$0	0.0000%	$0	0.0000%
Van Buren	$19,947,000	$0	0.00000%	$0	0.0000%	$0	0.0000%
Washington	$443,025,000	$0	0.00000%	$0	0.0000%	$0	0.0000%
White	$100,373,000	$0	0.00000%	$0	0.0000%	$2,672	0.0027%
Woodruff	$167,588,000	$4,449	0.00265%	$291	0.0002%	$47,302	0.0282%
Yell	$196,381,000	$571	0.00029%	$0	0.0000%	$10,902	0.0056%

Source: USDA

4.12.5 – Impact and Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Severe Storm Consequence Analysis

Subject	Impacts of Severe Storm
Health and Safety of the Public	Severity and location dependent. Impacts on persons in the areas of hail, lightning and severe winds are expected to be severe if caught without proper shelter.
Health and Safety of Responders	Impacts will be predicated on the severity of the event. Damaged infrastructure will likely result in hazards such as downed utility lines, pipeline breaks and debris on roadways. .
Continuity of Operations	Temporary relocation may be necessary if government facilities experience damage. Services may be limited to essential tasks if utilities are impacted.
Property, Facilities, and Infrastructure	Impact to property, facilities, and infrastructure could be minimal to severe, depending on the location and structural capacity of the facility. Loss of structural integrity of buildings and infrastructure could occur. Utility lines, roads, residential and business properties will be affected.
Environment	Impact could be severe for the immediate impacted area, depending on the size of the event. Impact will lessen as distance increases from the immediate incident area
Economic Conditions	Impacts to the economy will depend on the severity of the event and the impact on structures and infrastructure. Impacts could be severe if roads/utilities are affected.
Public Confidence in the Jurisdiction's Governance	Public confidence could be eroded if response and recovery are not timely and effective. Warning systems in place and the timeliness of those warnings could affect confidence in government.

4.13 – Severe Winter Storms

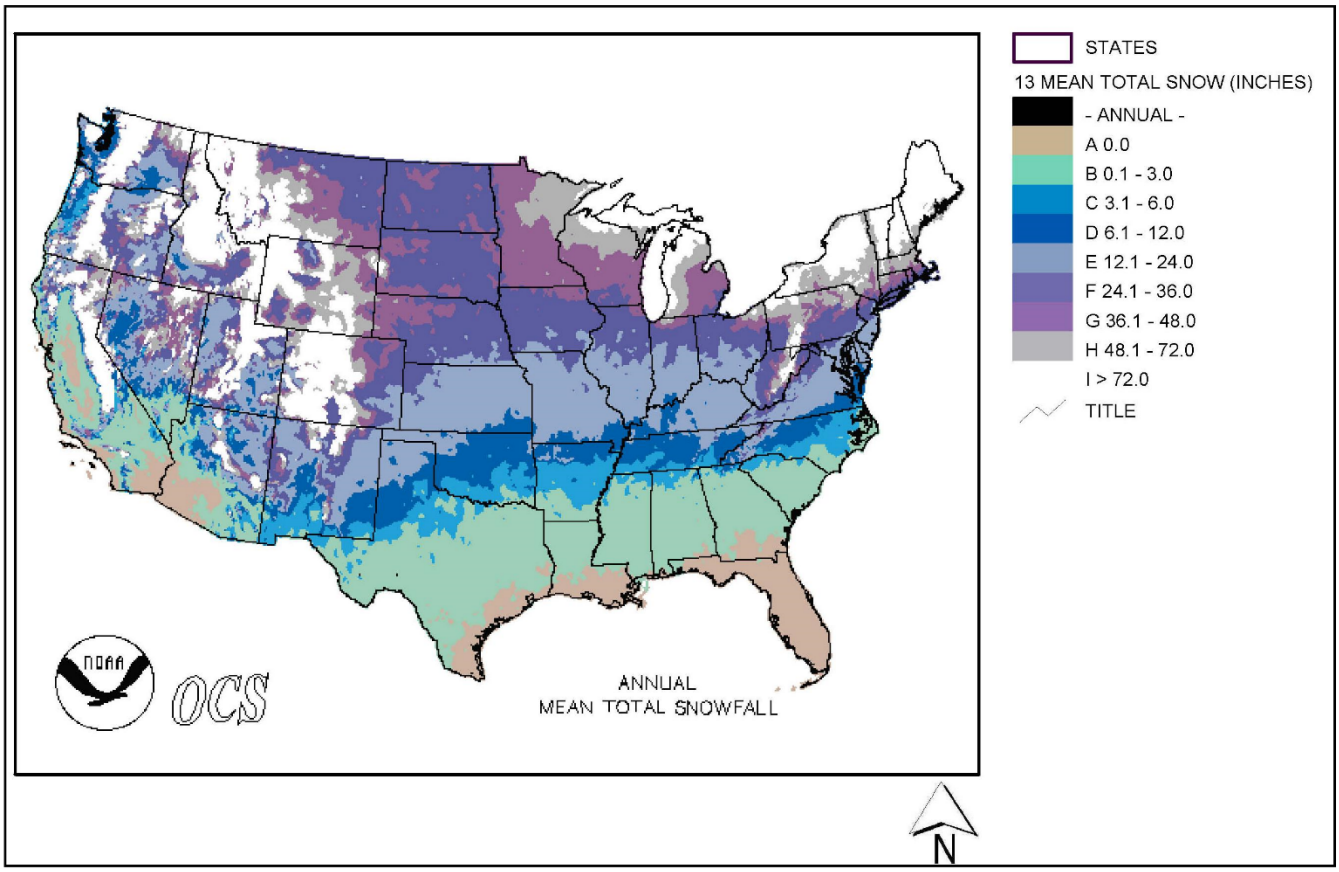
Winter weather in Arkansas usually comes in the form of light snow or freezing rain. A major winter storm can last for several days and be accompanied by high winds, freezing rain or sleet, heavy snowfall, and cold temperatures. Heavy accumulations of ice, often the result of freezing rain, can bring down trees, utility poles, and communications towers and disrupt communications and power for days.

4.13.1 – Location and Extent

The entire state is susceptible to severe winter weather. The NWS describes the different types of events as follows:

- **Blizzard:** Winds of 35 mph or more with snow and blowing snow reducing visibility to less than 1/4 mile for at least three hours.
- **Blowing Snow:** Wind-driven snow that reduces visibility. Blowing snow may be falling snow and/or snow on the ground picked up by the wind.
- **Snow Squalls:** Brief, intense snow showers accompanied by strong, gusty winds. Accumulation may be significant.
- **Snow Showers:** Snow falling at varying intensities for brief periods of time. Some accumulation is possible.
- **Freezing Rain:** Rain that falls onto a surface with a temperature below freezing. This causes it to freeze to surfaces forming a coating or glaze of ice. Most freezing-rain events are short lived and occur near sunrise between the months of December and March.
- **Sleet:** Rain drops that freeze into ice pellets before reaching the ground. Sleet usually bounces when hitting a surface and does not stick to objects.

The following map, generated by NOAA, indicates the mean average snowfall for Arkansas for a given year.



4.13.2 – Previous Occurrences

Since 2002, there have been four Presidential Disaster Declarations for the State of Arkansas for severe winter storms. The following information is presented to provide a historical perspective on severe winter storm events that have impacted the State of Arkansas. Declaration numbers in bold indicate declared disasters that have occurred since the previous mitigation plan update in 2013.

FEMA Severe Winter Storms Disaster and Emergency Declarations 2002 -2017

Declaration Number	Incident Period	Disaster Description	Regional Counties Involved	Dollars Obligated
1450	December 3-4, 2002	Severe Ice Storm	Baxter, Clay, Cleburne, Craighead, Fulton, Greene, Independence, Izard, Jackson, Lawrence, Newton, Poinsett, Randolph, Searcy, Sharp, Stone, Van Buren and White	$9,548,872
3301 (Emergency)	January 26-30, 2009	Severe Winter Storm	-	-
1819	January 26-30, 2009	Severe Winter Storm	Baxter, Benton, Boone, Carroll, Clay, Craighead, Franklin, Fulton, Greene, Independence, Izard, Jackson, Johnson, Lawrence, Madison, Marion, Mississippi, Newton, Searcy, Sharp, Stone, Van Buren and Washington	$227,131,473
4100	December 25 - 26, 2012	Severe Winter Storm	Clark, Garland, Grant, Hot Spring, Perry, Pulaski, Lonoke and Saline,	$8,549,244

Declaration Number	Incident Period	Disaster Description	Regional Counties Involved	Dollars Obligated
4160	December 05-07, 2013	Severe Winter Storm	Crawford, Franklin, Fulton, Johnson, Logan, Madison, Marion, Newton, Polk, Scott, Searcy, Sebastian, Sharp and Van Buren	$5,586,404

Source: FEMA
-: Data unavailable

4.13.3 – Hazard Probability Analysis

Severe winter storms (including blizzard, ice storm and winter storm events) occur sporadically throughout Arkansas. For probability purposes, each component of severe winter storms, were examined and combined. The following table summarizes recorded NCDC winter storm events for the State of Arkansas for the period 2013 through 2017.

State of Arkansas Severe Winter Storm Data Summary

Data	Recorded Impact
Number of NCDC Reported Events (2013-2017)	320
Number of Days with NCDC Reported Event (2013-2017)	31
Average Events per Year	5
Number of Days with Event and Death or Injury:	2
Number of Days with Event and Property Damage	13
Total Reported NCDC Property Damage (2013-2017)	$41,215,000
Average Property Damage per Year	$8,243,000
Number of Days with Event and Crop Damage:	0
Total Reported NCDC Crop Damage (2013-2017)	$0
Average Crop Damage per Year	$0

Source: NCDC

As indicated in the tables above, on average the State of Arkansas can expect five severe winter storm impact events (blizzard, ice storm, or winter storm events) per year.

4.13.4 – Vulnerability Analysis

For purposes of this assessment, all state-owned facilities within the state were determined to be at equal risk to severe winter storm events. The following table indicates the number and valuation of state owned facilities and the number of bridges within all Arkansas counties. Assuming an amount of damage to each facility is not possible due to the tremendous number of variables involved in a potential severe storm event.

State-Owned Facilities Susceptible to Severe Winter Storms

County	State-Owned Facilities	Total Valuation	Critical Facilities	Critical Facility Total Valuation	State-Owned Bridges
State of Arkansas	5,730	$8,865,814,300	1,089	$2,194,373,128	7,303
Arkansas	41	$416,319,788	5	$3,326,664	75

State-Owned Facilities Susceptible to Severe Winter Storms

County	State-Owned Facilities	Total Valuation	Critical Facilities	Critical Facility Total Valuation	State-Owned Bridges
Ashley	12	$19,237,703	3	$1,608,294	69
Baxter	12	$40,906,210	2	$711,746	35
Benton	91	$63,237,979	11	$3,615,841	156
Boone	55	$29,546,068	24	$10,551,373	55
Bradley	63	$8,857,276	5	$2,359,090	50
Calhoun	22	$47,679,917	3	$944,746	66
Carroll	22	$32,328,304	1	$526,383	67
Chicot	86	$34,615,898	19	$38,351,802	57
Clark	150	$109,725,870	3	$1,957,006	113
Clay	35	$3,288,517	1	$353,957	85
Cleburne	18	$6,851,080	2	$1,283,923	28
Cleveland	8	$3,827,964	1	$300,599	61
Columbia	138	$78,843,077	1	$274,371	75
Conway	100	$15,569,386	4	$1,216,743	76
Craighead	290	$219,788,810	8	$4,135,316	175
Crawford	58	$210,139,702	5	$2,780,793	176
Crittenden	51	$119,025,900	7	$3,562,156	163
Cross	90	$185,863,362	10	$8,483,377	93
Dallas	10	$47,381,099	2	$940,742	81
Desha	22	$62,519,831	4	$1,649,509	50
Drew	26	$25,963,428	5	$1,607,565	85
Faulkner	375	$1,273,968,488	4	$2,126,375	124
Franklin	25	$178,318,097	1	$280,928	83
Fulton	40	$11,055,589	3	$921,378	65
Garland	210	$735,495,705	7	$4,579,645	152
Grant	12	$633,159	5	$3,039,299	96
Greene	75	$100,332,674	16	$9,525,474	93
Hempstead	114	$350,739,747	17	$12,560,915	132
Hot Spring	119	$175,934,326	28	$184,497,227	126
Howard	34	$3,519,004	7	$2,497,745	60
Independence	47	$8,598,781	34	$6,324,111	97
Izard	41	$19,836,647	15	$59,889,054	42
Jackson	101	$125,251,657	39	$136,959,919	111
Jefferson	257	$726,196,049	157	$245,560,270	151
Johnson	32	$26,246,860	7	$1,799,137	108
Lafayette	23	$45,878,467	2	$797,085	47
Lawrence	58	$166,300,006	2	$989,381	99
Lee	52	$48,542,001	28	$117,373,491	54
Lincoln	185	$297,637,208	155	$233,084,346	59
Little River	24	$6,171,349	3	$1,601,796	49
Logan	147	$416,558,262	10	$1,351,839	81
Lonoke	51	$100,216,710	9	$5,467,923	135
Madison	35	$732,445	3	$1,824,844	92
Marion	25	$3,075,978	6	$2,301,351	39

State-Owned Facilities Susceptible to Severe Winter Storms

County	State-Owned Facilities	Total Valuation	Critical Facilities	Critical Facility Total Valuation	State-Owned Bridges
Miller	32	$90,913,252	9	$90,913,252	161
Mississippi	82	$130,425,929	23	$20,186,394	182
Monroe	9	$14,302,601	1	$195,737	78
Montgomery	18	$10,973,961	2	$992,636	88
Nevada	38	$68,617,083	3	$1,281,237	101
Newton	16	$3,578,748	2	$925,237	41
Ouachita	95	$112,171,397	34	$19,270,995	90
Perry	13	$376,164	1	$275,160	81
Phillips	35	$71,350,166	4	$1,181,081	59
Pike	56	$43,228,530	2	$999,433	63
Poinsett	47	$27,827,627	3	$2,374,509	127
Polk	36	$16,232,150	2	$1,142,085	102
Pope	210	$212,100,639	26	$10,638,797	101
Prairie	24	$9,301,979	2	$959,696	66
Pulaski	626	$854,340,146	198	$848,605,823	381
Randolph	58	$33,177,986	3	$2,091,080	84
St. Francis	83	$41,077,656	7	$2,537,948	100
Saline	137	$131,688,684	8	$13,257,880	123
Scott	43	$17,011,227	4	$1,308,417	44
Searcy	15	$4,691,087	3	$1,629,588	171
Sebastian	59	$37,148,001	31	$21,655,697	72
Sevier	10	$3,780,275	2	$786,683	54
Sharp	19	$7,696,032	2	$905,356	154
Stone	75	$32,981,771	3	$4,440,517	55
Union	75	$49,769,839	3	$2,300,866	124
Van Buren	17	$5,200,672	2	$1,026,183	50
Washington	158	$116,099,895	12	$11,335,741	171
White	94	$94,458,624	6	$1,556,212	205
Woodruff	8	$6,015,359	2	$712,151	62
Yell	60	$61,679,129	5	$2,991,207	128

Source: HAZUS, Arkansas Insurance Department and ADEM

Multiple factors can come into play when assessing vulnerability and loss analysis. However, for purposes of this plan, three major factors are being utilized to aid in the assessment:

- **Exposure Data:** The amount of agricultural crops and building stock at risk
- **Loss Data:** Historical losses from winter storm events
- **Percentage Loss:** Percent of agricultural crops and building stock lost over the given period

For vulnerability and loss estimation purposes all counties were considered at equal risk of severe winter storms. Counties with a higher identified population and number of structures have a potentially greater vulnerability. However, these vulnerabilities should be viewed as theoretical due to the tremendous number of variables involved in a severe winter storm event. Note, only counties with recorded NCDC damages are listed in the table below.

County Structure Vulnerability Data for Severe Winter Storms

County	HAZUS Building Valuation	NCDC Structure Damage, Winter Storm 2013-2017	Percentage of Building Valuation Damaged by Winter Storm
State of Arkansas	**$12,168,205,000**	**$30,560,000**	**0.251%**
Ashley	$2,153,000	$3,590,000	166.744%
Benton	$23,138,000	$175,000	0.756%
Chicot	$961,000,000	$50,000	0.005%
Clay	$1,532,000	$170,000	11.097%
Cleburne	$2,958,000	$10,000	0.338%
Columbia	$2,429,000	$170,000	6.999%
Cross	$1,540,000	$10,000	0.649%
Drew	$1,772,000	$230,000	12.980%
Franklin	$1,581,000	$880,000	55.661%
Fulton	$1,141,000	$55,000	4.820%
Garland	$10,515,000	$55,000	0.523%
Hempstead	$2,046,000	$45,000	2.199%
Howard	$1,381,000	$370,000	26.792%
Independence	$3,540,000	$255,000	7.203%
Izard	$1,278,000	$720,000	56.338%
Jackson	$1,603,000	$70,000	4.367%
Jefferson	$7,230,000	$1,350,000	18.672%
Little River	$1,206,000	$2,025,000	167.910%
Logan	$2,155,000	$245,000	11.369%
Lonoke	$6,235,000	$70,000	1.123%
Madison	$1,378,000	$10,100,000	732.946%
Mississippi	$4,421,000	$280,000	6.333%
Monroe	$850,000,000	$125,000	0.015%
Nevada	$847,000,000	$330,000	0.039%
Newton	$842,000,000	$10,000	0.001%
Ouachita	$2,418,000	$145,000	5.997%
Poinsett	$2,304,000	$1,525,000	66.189%
Polk	$1,930,000	$350,000	18.135%
Pope	$5,743,000	$150,000	2.612%
Prairie	$823,000,000	$260,000	0.032%
St. Francis	$2,138,000	$160,000	7.484%
Saline	$10,250,000	$3,025,000	29.512%
Scott	$1,025,000	$380,000	37.073%
Sevier	$1,300,000	$1,430,000	110.000%
Sharp	$1,817,000	$230,000	12.658%
Union	$4,564,000	$195,000	4.273%
Washington	$19,369,000	$330,000	1.704%
White	$6,809,000	$630,000	9.252%
Woodruff	$707,000,000	$250,000	0.035%
Yell	$1,875,000	$110,000	5.867%

Source: NCDC and HAZUS

Population vulnerability for each county is a function of the following component parts:

- Population change over time
- Vulnerable populations
- Population density

In general:

- Counties with a high population are at increased risk
- Counties with growing populations are at increasing risk
- Counties with a high population of children under 5 or adults over the age of 65 may be at increased risk.

The following counties may have increased vulnerability to severe storm events due to population factors:

- **Counties with a large population increase:** Benton, Craighead, Faulkner, Lonoke, Pulaski, Sebastian, Washington and White
- **Counties with a population gain of over 1,000 children under the age of 5:** Benton, Craighead Faulkner, Lonoke, Pulaski, Saline and Washington
- **Counties with a population gain of over 1,000 adults over the age of 65:** Baxter, Benton, Boone, Cleburne, Craighead, Crawford, Faulkner, Garland, Greene, Independence, Lonoke, Marion, Miller, Pope, Randolph, Saline, Sebastian, Washington and White

The USDA 2012 Census of Agriculture (the latest available data) provides data on the crop exposure value, the total dollar value of all crops, for each Arkansas county. USDA Risk Management Agency crop loss data allows us to quantify the monetary impact of severe winter storm conditions of the agricultural sector. In general, the higher the percentage loss, the higher the vulnerability of the county to severe storm event components Please note that only counties that had crop loss data reported to the USDA are detailed below.

County Agricultural Vulnerability Data for Severe Winter Storms

County	USDA Estimated Crop Exposure	USDA Crop Loss, Winter Storm 2012-2017 Yearly Average	Percentage of Crop Exposure Lost to Winter Storm
State of Arkansas	**$9,775,758,000**	**$3,157,749**	**0.0323%**
Arkansas	$298,173,000	$4,810	0.0016%
Ashley	$78,844,000	$7,247	0.0092%
Benton	$529,128,000	$6,530	0.0012%
Bradley	$43,633,000	$326,859	0.7491%
Chicot	$204,719,000	$13,421	0.0066%
Clark	$15,083,000	$1,883	0.0125%
Clay	$246,172,000	$387,911	0.1576%
Conway	$161,648,000	$631	0.0004%
Craighead	$261,600,000	$20,599	0.0079%

County Agricultural Vulnerability Data for Severe Winter Storms

County	USDA Estimated Crop Exposure	USDA Crop Loss, Winter Storm 2012-2017 Yearly Average	Percentage of Crop Exposure Lost to Winter Storm
Crawford	$67,408,000	$16,131	0.0239%
Crittenden	$215,016,000	$67,419	0.0314%
Cross	$188,778,000	$130,908	0.0693%
Desha	$212,893,000	$14,714	0.0069%
Drew	$88,347,000	$39,050	0.0442%
Franklin	$158,178,000	$479	0.0003%
Greene	$177,326,000	$1,070,527	0.6037%
Independence	$131,867,000	$25,475	0.0193%
Jackson	$186,837,000	$63,681	0.0341%
Jefferson	$215,265,000	$11,675	0.0054%
Johnson	$141,042,000	$2,208	0.0016%
Lawrence	$149,140,000	$162,498	0.1090%
Lee	$171,870,000	$38,190	0.0222%
Lincoln	$219,452,000	$3,507	0.0016%
Little River	$76,510,000	$1,960	0.0026%
Lonoke	$223,378,000	$93,891	0.0420%
Miller	$45,538,000	$29,558	0.0649%
Mississippi	$314,647,000	$51,513	0.0164%
Monroe	$194,373,000	$54,873	0.0282%
Phillips	$247,998,000	$96,514	0.0389%
Poinsett	$287,420,000	$75,550	0.0263%
Pope	$150,102,000	$3,030	0.0020%
Prairie	$165,065,000	$50,313	0.0305%
Randolph	$79,585,000	$113,365	0.1424%
St. Francis	$189,878,000	$15,677	0.0083%
White	$100,373,000	$63,106	0.0629%
Woodruff	$167,588,000	$91,581	0.0546%
Yell	$196,381,000	$468	0.0002%

Source: USDA

4.13.5 – Impact and Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Severe Winter Storm Consequence Analysis

Subject	Impacts of Severe Winter Storm
Health and Safety of the Public	Severity and location dependent. Impacts on persons in the areas of snow and ice are expected to be severe if they are without proper shelter.
Health and Safety of Responders	Impacts will be predicated on the severity of the event. Damaged infrastructure will likely result in hazards such as downed utility lines, main breakages and debris on roadways. .
Continuity of Operations	Temporary relocation may be necessary if government facilities experience damage. Services may be limited to essential tasks if utilities are impacted.
Property, Facilities, and Infrastructure	Impact to property, facilities, and infrastructure could be minimal to severe, depending on the location and structural capacity of the facility. Loss of structural integrity of buildings and infrastructure could occur. Utility lines, roads, residential and business properties will be affected.
Environment	Impact could be severe for the immediate impacted area, depending on the size of the event. Impact will lessen as distance increases from the immediate incident area
Economic Conditions	Impacts to the economy will depend on the severity of the event and the impact on structures and infrastructure. Impacts could be severe if roads/utilities are affected.
Public Confidence in the Jurisdiction's Governance	Public confidence could be eroded if response and recovery are not timely and effective. Warning systems in place and the timeliness of those warnings could affect confidence in government.

4.14 – Tornado

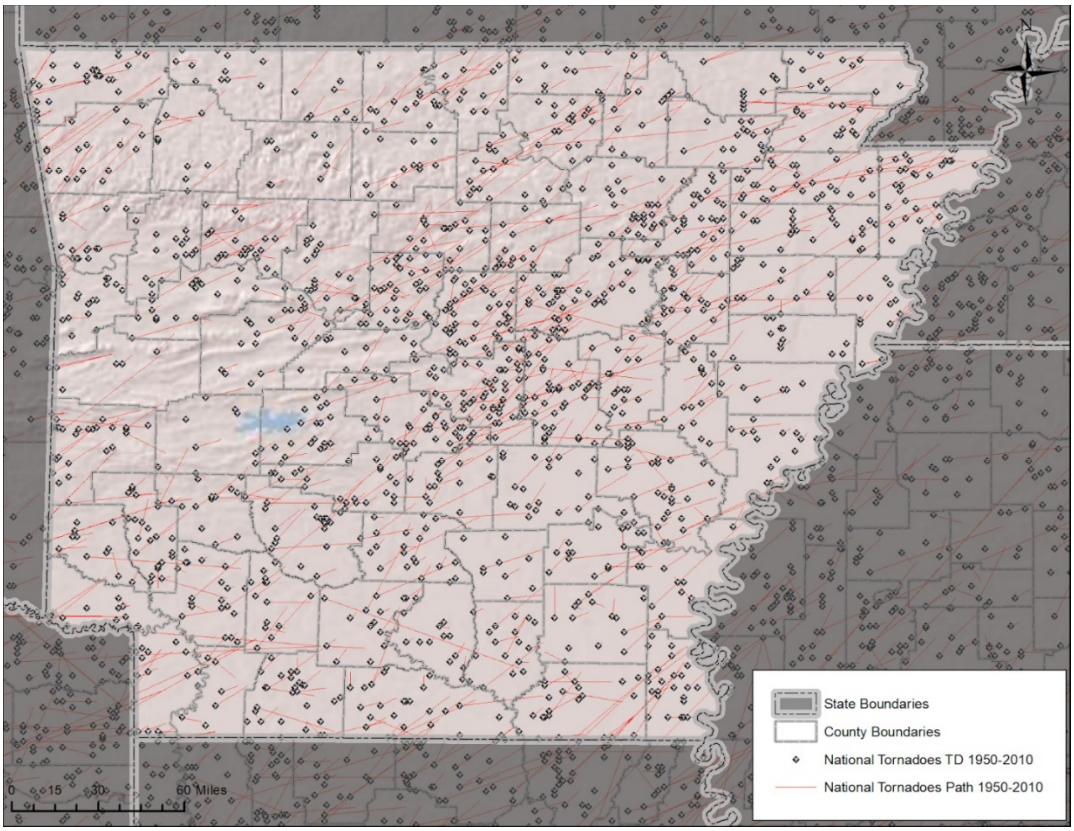
A tornado is a violently rotating column of air in contact with the ground. Often referred to as a twister or a cyclone, they can strike anywhere and with little warning. Tornados come in many shapes and sizes but are typically in the form of a visible condensation funnel, whose narrow end touches the earth and is often encircled by a cloud of debris and dust.

4.14.1 – Location and Extent

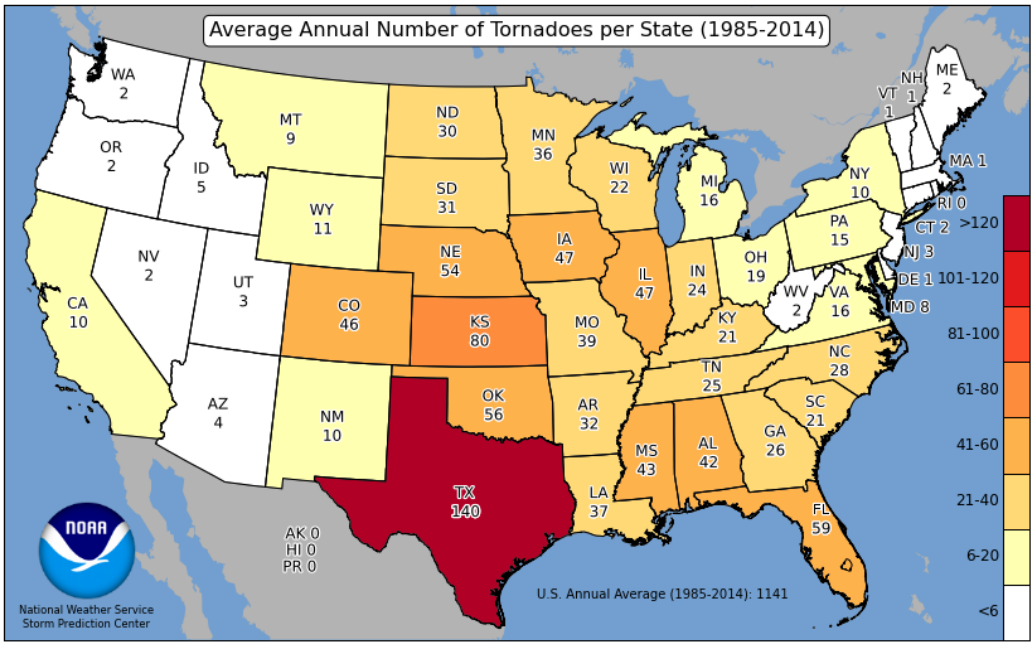
Tornados can strike anywhere in the State of Arkansas, placing the entire planning area at risk. Additionally, the state lies within the bullseye of what is known as Dixie Alley. Dixie Alley produces some of the most destructive and deadly tornados within the United States due to the following factors:

- Longer tornado tracks, with more time on the ground
- A high number of manufactured homes
- Frequent nighttime occurrences
- Longer tornado season
- Varied terrain features, including more and larger trees

The following map details tornados, and paths, for the State of Arkansas for the period 1950 to 2010.



The following maps from NOAA indicate that over the period of 1985 to 2014, Arkansas had an average of 32 tornados per year.



4.14.2 – Previous Occurrences

Since 2002, there have been 16 Presidential Disaster Declarations for the State of Arkansas for tornados (along with other associates hazard events such as flooding or severe storms) The following information is presented to provide a historical perspective on tornado events that have impacted the State of Arkansas. Declaration numbers in bold indicate declared disaster that have occurred since the previous mitigation plan update in 2013.

FEMA Tornado Disaster and Emergency Declarations 2002 -2017

Declaration Number	Incident Period	Disaster Description	Regional Counties Involved	Dollars Obligated
1472	May 2 - June 10, 2003	Severe Storms, Tornados, and Flooding	Benton, Chicot, Cleburne, Columbia, Conway, Craighead, Crittenden, Cross, Faulkner, Fulton, Jackson, Lonoke, Nevada, Perry, Poinsett, Phillips, St. Francis, White and Woodruff	$5,303,785
1636	April 1-3, 2006	Severe Storms and Tornados	Conway, Cross, Fulton, Greene, Lawrence, Randolph and White	$2,286,579
1744	February 5-12, 2008	Severe Storms, Tornados, and Flooding	Baxter, Conway, Izard, Marion, Pope, Randolph, Sharp, Stone, Union and Van Buren	$5,020,005
1751	March 18 - April 28, 2008	Severe Storms, Tornados, and Flooding	Arkansas, Baxter, Benton, Boone, Carroll, Clay, Cleburne, Conway, Craighead, Crawford, Cross, Desha, Franklin, Fulton, Garland, Greene, Hempstead, Hot Spring, Independence, Izard, Jackson, Jefferson, Lawrence, Lee, Logan, Lonoke, Madison, Marion, Miller, Monroe,	$41,085,016

FEMA Tornado Disaster and Emergency Declarations 2002 -2017

Declaration Number	Incident Period	Disaster Description	Regional Counties Involved	Dollars Obligated
			Newton, Perry, Phillips, Poinsett, Pope, Prairie, Pulaski, Randolph, Saline, Scott, Searcy, Sebastian, Sharp, St. Francis, Stone, Van Buren, Washington, White, Woodruff and Yell	
1758	May 02-12, 2008	Severe Storms, Flooding, and Tornados	Arkansas, Benton, Cleburne, Conway, Crittenden, Grant, Lonoke, Mississippi, Phillips, Pulaski, Saline and Van Buren	$2,676,958
1834	April 09, 2009	Severe Storms and Tornados	Ashley, Howard, Miller, Polk and Sevier	$4,894,361
1845	April 27 - May 23, 2009	Severe Storms, Tornados, and Flooding	Arkansas, Bradley, Calhoun, Chicot, Clark, Cleveland, Conway, Dallas, Drew, Fulton, Grant, Greene, Hempstead, Hot Spring, Howard, Jackson, Jefferson, Lafayette, Lee, Lincoln, Little River, Marion, Miller, Monroe, Nevada, Ouachita, Perry, Phillips, Pike, Poinsett, Polk, Pope, Prairie, Saline, Searcy, St. Francis, Stone and Union	$9,425,734
1861	October 29 - November 08, 2009	Severe Storms, Tornados, and Flooding	Boone, Bradley, Calhoun, Carroll, Cleburne, Cleveland, Columbia, Conway, Cross, Dallas, Franklin, Fulton, Grant, Izard, Jackson, Johnson, Lafayette, Lawrence, Lincoln, Logan, Marion, Monroe, Nevada, Newton, Ouachita, Poinsett, Prairie, Pulaski, Randolph, Saint Francis, Scott, Sharp, Stone, Union, Van Buren, White and Woodruff	$15,536,008
1975	April 14 - June 03, 2011	Severe Storms, Tornados, and associated Flooding	Arkansas, Benton, Boone, Carroll, Chicot, Clark, Clay, Crawford, Crittenden, Cross, Dallas, Desha, Faulkner, Garland, Greene, Hot Spring, Independence, Jackson, Jefferson, Lawrence, Lee, Lincoln, Lonoke, Madison, Mississippi, Monroe, Montgomery, Phillips, Poinsett, Prairie, Pulaski, Randolph, Saline, St. Francis, Washington, White, Woodruff	$50,596,048
4000	May 24-26, 2011	Severe Storms, Tornados, and Flooding	Franklin, Johnson	$2,701,536
4124	May 30 - June 3, 2013	Severe Storms, Tornados, and Flooding	Cleburne, Cross, Garland, Independence, Montgomery, Poinsett, Polk, Scott, Searcy, Stone, Van Buren and Woodruff	$8,395,922
4174	April 27 -28, 2014	Severe Storms, Tornados, and Flooding	Faulkner, Pulaski, Randolph and White	$10,053,785
4226	May 7 - June 15, 2015	Severe Storms, Tornados, Straight-line Winds, and Flooding	Crawford, Garland, Howard, Jefferson, Little River, Miller, Perry, Sebastian and Sevier	$11,100,256

FEMA Tornado Disaster and Emergency Declarations 2002 -2017

Declaration Number	Incident Period	Disaster Description	Regional Counties Involved	Dollars Obligated
4254	December 26, 2015 - January 22, 2016	Severe Storms, Tornados, Straight-line Winds, and Flooding	Benton, Carroll, Crawford, Faulkner, Jackson, Jefferson, Lee, Little River, Perry, Sebastian and Sevier	$11,367,572
4270	March 8-13, 2016	Severe Storms, Tornados, Straight-line Winds, and Flooding	Columbia, Ouachita, Calhoun, Bradley, Ashley, Chicot, Cleveland, Lincoln, Desha, Arkansas, Philips and Prairie	$2,299,510
4318	April 26 - May 19, 2017	Arkansas Severe Storms, Tornados, Straight-line Winds, and Flooding	Benton, Boone, Carroll, Clay, Faulkner, Fulton, Jackson, Lawrence, Prairie, Pulaski, Randolph, Saline, Washington, White, Woodruff and Yell	$3,911,764

Source: FEMA

4.14.3 – Hazard Probability Analysis

The following table summarizes recorded NCDC tornado events for the State of Arkansas for the period 2013 through 2017.

State of Arkansas Tornado Storm Data Summary

Data	Recorded Impact
Number of NCDC Reported Events (2013-2017)	154
Number of Days with NCDC Reported Event (2013-2017)	55
Average Event Days per Year	11
Number of Days with Event and Death or Injury:	14
Number of Days with Event and Property Damage	49
Total Reported NCDC Property Damage (2013-2017)	$248,294,000
Average Property Damage per Year	$49,658,800
Number of Days with Event and Crop Damage:	1
Total Reported NCDC Crop Damage (2013-2017)	$15,000
Average Crop Damage per Year	$3,000

Source: NCDC

Based on the number of NCDC reported events we derive the following probability for event occurrence:

- **Tornado Probability:** Approximately 31 impactful events per year

However, if events are normalized for tornados rated above an EF2, we derive the following probability for event occurrence:

- **Probability of a EF2 or greater tornado:** Approximately 4 impactful events per year

4.14.4 – Vulnerability Analysis

For purposes of this assessment, all state-owned facilities within the state were determined to be at equal risk to tornados. The following table indicates the number and valuation of state owned facilities and the number of bridges within all Arkansas counties. Assuming an amount of damage to each facility is not possible due to the tremendous number of variables involved in a potential severe storm event.

State-Owned Facilities Susceptible to Tornados

County	State-Owned Facilities	Total Valuation	Critical Facilities	Critical Facility Total Valuation	State-Owned Bridges
State of Arkansas	**5,730**	**$8,865,814,300**	**1,089**	**$2,194,373,128**	**7,303**
Arkansas	41	$416,319,788	5	$3,326,664	75
Ashley	12	$19,237,703	3	$1,608,294	69
Baxter	12	$40,906,210	2	$711,746	35
Benton	91	$63,237,979	11	$3,615,841	156
Boone	55	$29,546,068	24	$10,551,373	55
Bradley	63	$8,857,276	5	$2,359,090	50
Calhoun	22	$47,679,917	3	$944,746	66
Carroll	22	$32,328,304	1	$526,383	67
Chicot	86	$34,615,898	19	$38,351,802	57
Clark	150	$109,725,870	3	$1,957,006	113
Clay	35	$3,288,517	1	$353,957	85
Cleburne	18	$6,851,080	2	$1,283,923	28
Cleveland	8	$3,827,964	1	$300,599	61
Columbia	138	$78,843,077	1	$274,371	75
Conway	100	$15,569,386	4	$1,216,743	76
Craighead	290	$219,788,810	8	$4,135,316	175
Crawford	58	$210,139,702	5	$2,780,793	176
Crittenden	51	$119,025,900	7	$3,562,156	163
Cross	90	$185,863,362	10	$8,483,377	93
Dallas	10	$47,381,099	2	$940,742	81
Desha	22	$62,519,831	4	$1,649,509	50
Drew	26	$25,963,428	5	$1,607,565	85
Faulkner	375	$1,273,968,488	4	$2,126,375	124
Franklin	25	$178,318,097	1	$280,928	83
Fulton	40	$11,055,589	3	$921,378	65
Garland	210	$735,495,705	7	$4,579,645	152
Grant	12	$633,159	5	$3,039,299	96
Greene	75	$100,332,674	16	$9,525,474	93
Hempstead	114	$350,739,747	17	$12,560,915	132
Hot Spring	119	$175,934,326	28	$184,497,227	126
Howard	34	$3,519,004	7	$2,497,745	60
Independence	47	$8,598,781	34	$6,324,111	97
Izard	41	$19,836,647	15	$59,889,054	42
Jackson	101	$125,251,657	39	$136,959,919	111

State-Owned Facilities Susceptible to Tornados

County	State-Owned Facilities	Total Valuation	Critical Facilities	Critical Facility Total Valuation	State-Owned Bridges
Jefferson	257	$726,196,049	157	$245,560,270	151
Johnson	32	$26,246,860	7	$1,799,137	108
Lafayette	23	$45,878,467	2	$797,085	47
Lawrence	58	$166,300,006	2	$989,381	99
Lee	52	$48,542,001	28	$117,373,491	54
Lincoln	185	$297,637,208	155	$233,084,346	59
Little River	24	$6,171,349	3	$1,601,796	49
Logan	147	$416,558,262	10	$1,351,839	81
Lonoke	51	$100,216,710	9	$5,467,923	135
Madison	35	$732,445	3	$1,824,844	92
Marion	25	$3,075,978	6	$2,301,351	39
Miller	32	$90,913,252	9	$90,913,252	161
Mississippi	82	$130,425,929	23	$20,186,394	182
Monroe	9	$14,302,601	1	$195,737	78
Montgomery	18	$10,973,961	2	$992,636	88
Nevada	38	$68,617,083	3	$1,281,237	101
Newton	16	$3,578,748	2	$925,237	41
Ouachita	95	$112,171,397	34	$19,270,995	90
Perry	13	$376,164	1	$275,160	81
Phillips	35	$71,350,166	4	$1,181,081	59
Pike	56	$43,228,530	2	$999,433	63
Poinsett	47	$27,827,627	3	$2,374,509	127
Polk	36	$16,232,150	2	$1,142,085	102
Pope	210	$212,100,639	26	$10,638,797	101
Prairie	24	$9,301,979	2	$959,696	66
Pulaski	626	$854,340,146	198	$848,605,823	381
Randolph	58	$33,177,986	3	$2,091,080	84
St. Francis	83	$41,077,656	7	$2,537,948	100
Saline	137	$131,688,684	8	$13,257,880	123
Scott	43	$17,011,227	4	$1,308,417	44
Searcy	15	$4,691,087	3	$1,629,588	171
Sebastian	59	$37,148,001	31	$21,655,697	72
Sevier	10	$3,780,275	2	$786,683	54
Sharp	19	$7,696,032	2	$905,356	154
Stone	75	$32,981,771	3	$4,440,517	55
Union	75	$49,769,839	3	$2,300,866	124
Van Buren	17	$5,200,672	2	$1,026,183	50
Washington	158	$116,099,895	12	$11,335,741	171
White	94	$94,458,624	6	$1,556,212	205
Woodruff	8	$6,015,359	2	$712,151	62
Yell	60	$61,679,129	5	$2,991,207	128

Source: HAZUS, Arkansas Insurance Department and ADEM

Multiple factors can come into play when assessing vulnerability and loss analysis. However, for purposes of this plan, three major factors are being utilized to aid in the assessment:

- **Exposure Data:** The amount of agricultural crops and building stock at risk
- **Loss Data:** Historical losses from severe storm events
- **Percentage Loss:** Percent of agricultural crops and building stock lost to drought over the given period

For vulnerability and loss estimation purposes all counties were considered at equal risk to tornados and were evaluated. Counties with a higher identified population and number of structures are to be considered to have a potentially greater vulnerability. However, these vulnerabilities should be viewed as theoretical due to the tremendous number of variables involved in a tornado event.

County Structural Vulnerability Data for Tornados

County	HAZUS Building Valuation	NCDC Structure Damage, Tornados, 2013-2017	Percentage of Building Valuation Damaged by Tornados
State of Arkansas	**$12,168,205,000**	**$248,269,000**	**2.040%**
Arkansas	$2,245,000	$8,000	0.356%
Ashley	$2,153,000	$23,000	1.068%
Baxter	$4,332,000	$0	0.000%
Benton	$23,138,000	$405,000	1.750%
Boone	$3,624,000	$980,000	27.042%
Bradley	$1,108,000	$75,000	6.769%
Calhoun	$442,000,000	$150,000	0.034%
Carroll	$2,754,000	$100,000	3.631%
Chicot	$961,000,000	$2,960,000	0.308%
Clark	$2,174,000	$275,000	12.649%
Clay	$1,532,000	$170,000	11.097%
Cleburne	$2,958,000	$20,000	0.676%
Cleveland	$761,000,000	$0	0.000%
Columbia	$2,429,000	$25,000	1.029%
Conway	$1,772,000	$120,000	6.772%
Craighead	$9,707,000	$1,250,000	12.877%
Crawford	$5,637,000	$225,000	3.991%
Crittenden	$4,447,000	$0	0.000%
Cross	$1,540,000	$25,000	1.623%
Dallas	$809,000,000	$0	0.000%
Desha	$1,270,000	$105,000	8.268%
Drew	$1,772,000	$120,000	6.772%
Faulkner	$10,585,000	$210,000,000	1983.940%
Franklin	$1,581,000	$310,000	19.608%
Fulton	$1,141,000	$0	0.000%
Garland	$10,515,000	$600,000	5.706%
Grant	$1,638,000	$125,000	7.631%
Greene	$3,656,000	$250,000	6.838%
Hempstead	$2,046,000	$15,000	0.733%

County Structural Vulnerability Data for Tornados

County	HAZUS Building Valuation	NCDC Structure Damage, Tornados, 2013-2017	Percentage of Building Valuation Damaged by Tornados
Hot Spring	$2,678,000	$5,000	0.187%
Howard	$1,381,000	$1,500,000	108.617%
Independence	$3,540,000	$270,000	7.627%
Izard	$1,278,000	$350,000	27.387%
Jackson	$1,603,000	$240,000	14.972%
Jefferson	$7,230,000	$108,000	1.494%
Johnson	$2,067,000	$20,000	0.968%
Lafayette	$628,000,000	$0	0.000%
Lawrence	$1,547,000	$60,000	3.878%
Lee	$775,000,000	$150,000	0.019%
Lincoln	$829,000,000	$500,000	0.060%
Little River	$1,206,000	$210,000	17.413%
Logan	$2,155,000	$0	0.000%
Lonoke	$6,235,000	$185,000	2.967%
Madison	$1,378,000	$1,040,000	75.472%
Marion	$1,644,000	$0	0.000%
Miller	$3,930,000	$0	0.000%
Mississippi	$4,421,000	$320,000	7.238%
Monroe	$850,000,000	$125,000	0.015%
Montgomery	$907,000,000	$475,000	0.052%
Nevada	$847,000,000	$100,000	0.012%
Newton	$842,000,000	$225,000	0.027%
Ouachita	$2,418,000	$50,000	2.068%
Perry	$856,000,000	$5,000	0.001%
Phillips	$1,996,000	$60,000	3.006%
Pike	$1,035,000	$15,000	1.449%
Poinsett	$2,304,000	$0	0.000%
Polk	$1,930,000	$445,000	23.057%
Pope	$5,743,000	$250,000	4.353%
Prairie	$823,000,000	$20,000	0.002%
Pulaski	$48,464,000	$13,655,000	28.176%
Randolph	$1,684,000	$0	0.000%
St. Francis	$2,138,000	$550,000	25.725%
Saline	$10,250,000	$1,225,000	11.951%
Scott	$1,025,000	$150,000	14.634%
Searcy	$852,000,000	$210,000	0.025%
Sebastian	$13,612,000	$0	0.000%
Sevier	$1,300,000	$0	0.000%
Sharp	$1,817,000	$0	0.000%
Stone	$1,149,000	$200,000	17.406%
Union	$4,564,000	$35,000	0.767%
Van Buren	$1,676,000	$3,580,000	213.604%
Washington	$19,369,000	$900,000	4.647%
White	$6,809,000	$2,190,000	32.163%

County Structural Vulnerability Data for Tornados

County	HAZUS Building Valuation	NCDC Structure Damage, Tornados, 2013-2017	Percentage of Building Valuation Damaged by Tornados
Woodruff	$707,000,000	$5,000	0.001%
Yell	$1,875,000	$505,000	26.933%

Source: NCDC and HAZUS

Between 2001 and 2010 51% of those killed by tornados were living in mobile homes, according to the NOAA. A 2012 "Kansas Severe Weather Awareness Week" report indicates that people living in mobile homes are killed by tornados at a rate 20 times higher than people living in permanent homes. Additionally, a new study from Michigan State University reported that the two biggest factors related to tornado fatalities were housing quality (measured by mobile homes as a proportion of housing units) and income level. When a tornado strikes, a county with double the number of mobile homes as a proportion of all homes will experience 62 percent more fatalities than a county with fewer mobile homes, according to the study data.

The following counties may have increased vulnerability to tornado events due to the percentage of mobile homes:

- **Counties with 20%-25% of housing stock as mobile homes:** Ashley, Clark, Cleburne, Fulton, Hempstead, Independence, Izzard, Lafayette, Madison, Nevada, Polk, Prairie, Saline, Searcy, Union and White
- **Counties with greater than 25% of housing stock as mobile homes:** Calhoun, Cleveland, Drew, Grant, Hot Spring, Lincoln, Perry, Pike, Sevier, Stone and Van Buren

Population vulnerability for each county is a function of the following component parts:

- Population change over time
- Vulnerable populations
- Population density

In general:

- Counties with a high population are at increased risk
- Counties with growing populations are at increasing risk
- Counties with a high population of children under 5 or adults over the age of 65 may be at increased risk.

Additionally, according to the Michigan State University study, "The annual impact of tornados is expected to increase threefold over the next few decades due to the twin forces of increased climate variability and growth in the human-built environment."

The USDA 2012 Census of Agriculture (the latest available data) provides data on the crop exposure value, the total dollar value of all crops, for each Arkansas county. USDA Risk Management Agency crop loss data allows us to quantify the monetary impact of tornado events on the agricultural sector. In general, the higher the percentage loss, the higher the vulnerability the county has to tornado events. Please

note that only three counties, detailed below, had crop loss data reported to the USDA during the 2012-2017 period.

County Agricultural Vulnerability Data for Tornados

County	USDA Estimated Crop Exposure	USDA Crop Loss, Tornados 2012-2017 Yearly Average	Percentage of Crop Exposure Lost to Tornadoes
State of Arkansas	$9,775,758,000	$28,894	**0.0003%**
Clay	$246,172,000	$4,484	0.002%
St. Francis	$189,878,000	$23	0.00%
Woodruff	$167,588,000	$24,386	0.015%

Source: USDA

4.14.5 – Impact and Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Tornado Consequence Analysis

Subject	Impacts of Tornado
Health and Safety of the Public	Impact of the immediate area could be severe depending on whether individuals were able to seek shelter and get out of the trajectory of the tornado. Casualties are dependent on warning systems and warning times.
Health and Safety of Responders	Impact to responders is expected to be minimal unless responders live within the affected area.
Continuity of Operations	Temporary to permanent relocation may be necessary if government facilities experience damage.
Property, Facilities, and Infrastructure	Localized impact could be severe in the trajectory path. Roads, buildings, and communications could be adversely affected. Damage could be severe.
Environment	Impact will be severe for the immediate impacted area. Impact will lessen as distance increases from the immediate incident area.
Economic Conditions	Impacts to the economy will greatly depend on the trajectory of the tornado. If a jurisdiction takes a direct hit then the economic conditions will be severe. With an indirect hit the impact could be low to severe.
Public Confidence in the Jurisdiction's Governance	Public confidence could be eroded if response and recovery are not timely and effective. Warning systems in place and the timeliness of those warnings could affect confidence in government.

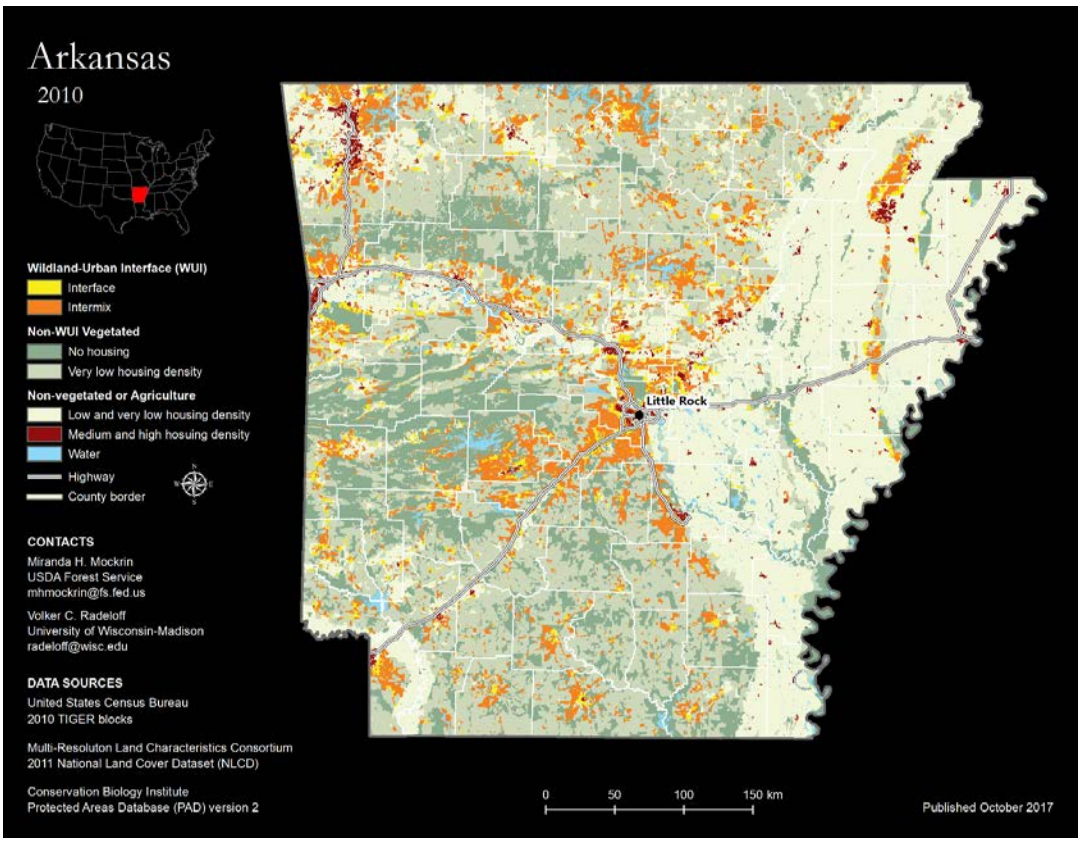
4.15 – Wildfire

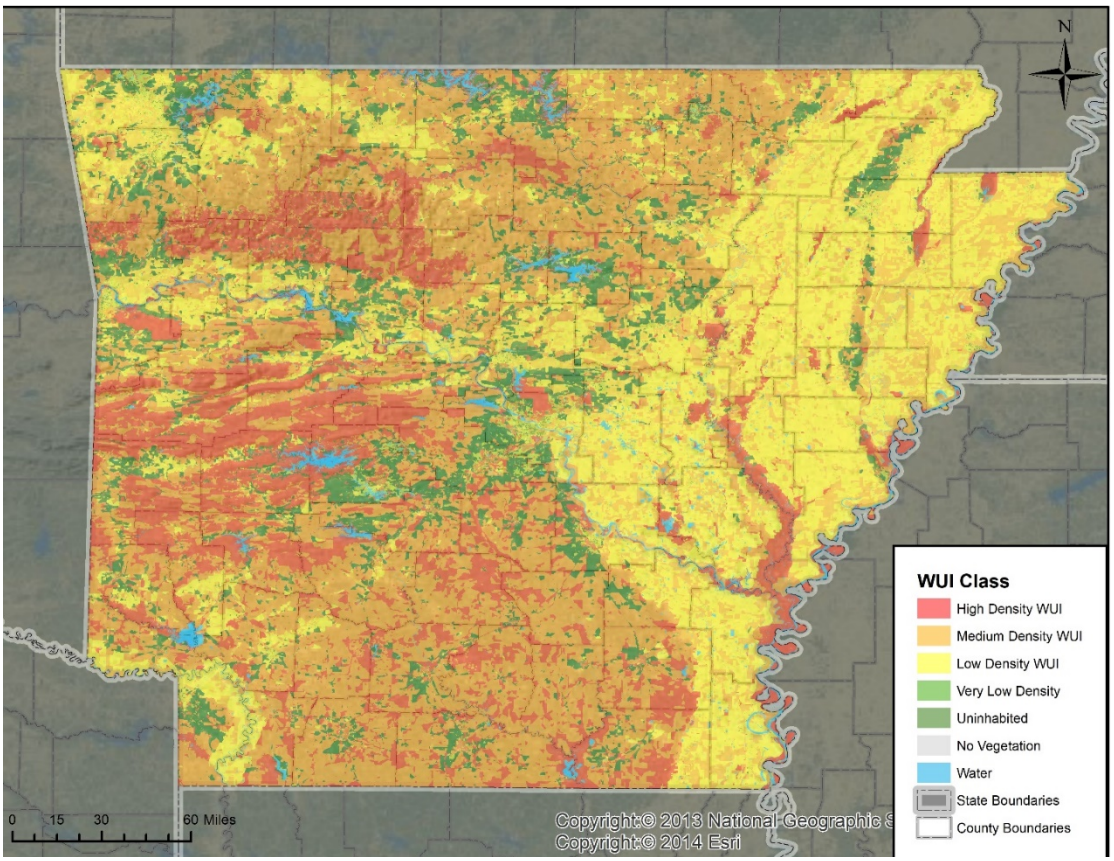
The NWS defines a wildfire as any free burning uncontainable wildland fire not prescribed for the area which consumes the natural fuels and spreads in response to its environment. They can occur naturally, by human accident, and on rare occasions by human action. Population de-concentration in the U.S. has resulted in rapid development in the outlying fringe of metropolitan areas and in rural areas with attractive recreational and aesthetic amenities, especially forests. This expansion has increased the likelihood that wildfires will threaten life and property.

4.15.1 – Location and Extent

The expansion of the WUI in recent decades has significant implications for wildfire management and its impact. The WUI creates an environment in which fire can move readily between structural and vegetation fuels. Two types of WUI are mapped: intermixed and interface. Intermix WUI are areas where housing and vegetation intermingle; interface WUI are areas with housing in the vicinity of dense, contiguous wildland vegetation.

The following maps detail WUI areas and information within the State.





4.15.2 – Previous Occurrences

The Arkansas Forestry Commission completes a fire report on each fire its Rangers and Foresters suppress. This information is presented in the following table.

Arkansas Forestry Commission Fire Reports, 2012 - 2016

	2012		2013		2014		2015		2016		5 Year Average	
County	**Fires**	**Acres Burned**	**Fires**	**Acres Burned**	**Fires**	**Acres Burned**	**Fires**	**Acres Burned**	**Fires**	**Acres Burned**	**Fires**	**Acres Burned**
State of Arkansas	**2,148**	**34,434**	**787**	**11,261**	**1,240**	**16,687**	**1,178**	**14,653**	**1,248**	**19,045**	**1,320**	**19,216**
Arkansas	1	2	0	0	2	18	1	10	3	36	**1.4**	**13.2**
Ashley	25	370	9	873	19	49	15	89	31	425	**19.8**	**361.2**
Baxter	24	410	9	284	12	398	15	450	20	480	**16**	**404.4**
Benton	57	1,235	14	230	19	273	19	422	20	522	**25.8**	**536.4**
Boone	18	324	5	35	9	81	8	111	10	175	**10**	**145.2**
Bradley	26	281	12	1,665	11	103	16	85	22	71	**17.4**	**441**
Calhoun	27	136	21	74	10	26	29	662	43	343	**26**	**248.2**
Carroll	34	501	9	42	22	251	6	16	15	116	**17.2**	**185.2**
Chicot	1	9	0	0	0	0	1	3	0	0	**0.4**	**2.4**
Clark	64	2,879	26	140	48	329	39	339	23	482	**40**	**833.8**
Clay	0	0	0	0	0	0	0	0	0	0	**0**	**0**
Cleburne	50	605	7	51	18	341	15	190	12	84	**20.4**	**254.2**
Cleveland	25	175	20	140	6	36	11	41	9	55	**14.2**	**89.4**

Arkansas Forestry Commission Fire Reports, 2012 - 2016

County	2012		2013		2014		2015		2016		5 Year Average	
	Fires	Acres Burned	Fires	Acres Burned	Fires	Acres Burned	Fires	Acres Burned	Fires	Acres Burned	Fires	Acres Burned
Columbia	18	114	25	432	17	66	25	132	15	67	**20**	**162.2**
Conway	43	639	9	67	32	544	26	538	32	448	**28.4**	**447.2**
Craighead	13	68	3	23	7	42	2	53	11	132	**7.2**	**63.6**
Crawford	30	91	3	4	36	134	14	52	41	402	**24.8**	**136.6**
Crittenden	1	3	0	0	0	0	1	3	0	0	**0.4**	**1.2**
Cross	4	15	2	26	1	3	1	13	1	6	**1.8**	**12.6**
Dallas	34	346	17	147	16	296	14	46	21	127	**20.4**	**192.4**
Desha	0	0	0	0	0	0	0	0	1	163	**0.2**	**32.6**
Drew	35	1,866	21	637	15	116	26	168	17	649	**22.8**	**687.2**
Faulkner	45	695	13	138	27	495	22	313	17	220	**24.8**	**372.2**
Franklin	25	558	6	17	22	262	6	119	24	1,458	**16.6**	**482.8**
Fulton	76	932	23	429	37	636	27	392	32	973	**39**	**672.4**
Garland	63	617	29	246	29	132	34	197	29	181	**36.8**	**274.6**
Grant	58	282	22	128	31	88	61	232	37	264	**41.8**	**198.8**
Greene	11	152	0	0	3	37	4	79	2	24	**4**	**58.4**
Hempstead	28	473	16	154	12	149	16	149	7	26	**15.8**	**190.2**
Hot Spring	68	1,059	42	447	62	336	51	133	31	178	**50.8**	**430.6**
Howard	22	152	8	58	7	38	12	33	6	20	**11**	**60.2**
Independence	44	1,476	15	418	42	977	19	255	27	653	**29.4**	**755.8**
Izard	54	642	17	496	42	485	24	508	57	1,383	**38.8**	**702.8**
Jackson	9	467	0	0	9	231	5	169	2	5	**5**	**174.4**
Jefferson	17	77	10	24	14	37	19	79	23	176	**16.6**	**78.6**
Johnson	42	369	10	51	11	49	16	153	21	140	**20**	**152.4**
Lafayette	26	280	12	36	3	3	13	28	7	20	**12.2**	**73.4**
Lawrence	11	131	6	15	12	556	11	167	9	109	**9.8**	**195.6**
Lee	0	0	1	31	0	0	0	0	0	0	**0.2**	**6.2**
Lincoln	8	27	7	35	8	147	17	213	4	51	**8.8**	**94.6**
Little River	19	175	7	118	13	221	13	197	6	192	**11.6**	**180.6**
Logan	50	609	8	44	18	212	4	19	34	240	**22.8**	**224.8**
Lonoke	10	38	1	5	5	56	16	435	4	299	**7.2**	**166.6**
Madison	11	198	1	15	4	125	3	46	19	459	**7.6**	**168.6**
Marion	29	286	13	181	21	138	8	196	21	258	**18.4**	**211.8**
Miller	52	1,003	38	274	34	324	46	249	42	243	**42.4**	**418.6**
Mississippi	0	0	0	0	0	0	0	0	0	0	**0**	**0**
Monroe	4	145	1	1	2	172	5	454	1	3	**2.6**	**155**
Montgomery	15	46	5	25	5	55	8	44	7	107	**8**	**55.4**
Nevada	40	257	22	321	18	75	15	42	19	634	**22.8**	**265.8**
Newton	27	272	3	57	18	1,163	9	143	15	187	**14.4**	**364.4**
Ouachita	64	300	29	142	37	233	40	172	29	161	**39.8**	**201.6**
Perry	33	1,287	13	60	18	602	8	12	19	231	**18.2**	**438.4**
Phillips	0	0	0	0	0	0	2	12	0	0	**0.4**	**2.4**
Pike	28	210	7	101	17	181	29	77	9	41	**18**	**122**
Poinsett	1	7	1	24	1	12	3	146	0	0	**1.2**	**37.8**
Polk	14	133	5	12	8	22	17	55	8	124	**10.4**	**69.2**
Pope	43	690	10	43	10	107	7	18	17	54	**17.4**	**182.4**

Arkansas Forestry Commission Fire Reports, 2012 - 2016

County	2012		2013		2014		2015		2016		5 Year Average	
	Fires	Acres Burned	Fires	Acres Burned	Fires	Acres Burned	Fires	Acres Burned	Fires	Acres Burned	Fires	Acres Burned
Prairie	3	50	2	28	3	185	3	12	1	3	**2.4**	**55.6**
Pulaski	38	539	18	146	20	320	21	343	25	395	**24.4**	**348.6**
Randolph	28	516	6	71	17	414	7	92	10	172	**13.6**	**253**
St. Francis	7	187	1	10	7	84	8	161	1	65	**4.8**	**101.4**
Saline	81	856	33	215	51	432	76	765	30	177	**54.2**	**489**
Scott	29	108	5	37	14	165	17	335	21	138	**17.2**	**156.6**
Searcy	60	3,245	16	176	29	848	26	1,875	34	1,761	**33**	**1581**
Sebastian	23	155	6	21	15	182	13	53	21	222	**15.6**	**126.6**
Sevier	27	228	9	89	7	22	11	116	10	73	**12.8**	**105.6**
Sharp	39	912	16	545	35	845	12	369	30	429	**26.4**	**620**
Stone	30	462	3	126	11	103	19	431	18	189	**16.2**	**262.2**
Union	52	334	30	357	36	290	41	263	26	350	**37**	**318.8**
Van Buren	41	637	8	93	28	425	10	107	31	432	**23.6**	**338.8**
Washington	29	147	5	11	13	83	11	152	13	189	**14.2**	**116.4**
White	48	759	12	291	43	699	22	385	22	354	**29.4**	**497.6**
Woodruff	1	3	0	0	1	44	1	18	2	22	**1**	**17.4**
Yell	35	1,182	4	29	10	84	6	217	21	177	**15.2**	**337.8**

Source:

4.15.3 – Hazard Probability Analysis

For purposes of determining a probability of occurrence the following table presents the number of wildfires recorded by the Arkansas Forestry Commission from the period 2012 to 2016.

State of Arkansas Forestry Commission Wildfire Event Data Summary 2012 - 2016

Year	Wildfire Events	Acres Burned
2012	2,148	34,434
2013	787	11,261
2014	1,240	16,687
2015	1,178	14,653
2016	1,248	19,045

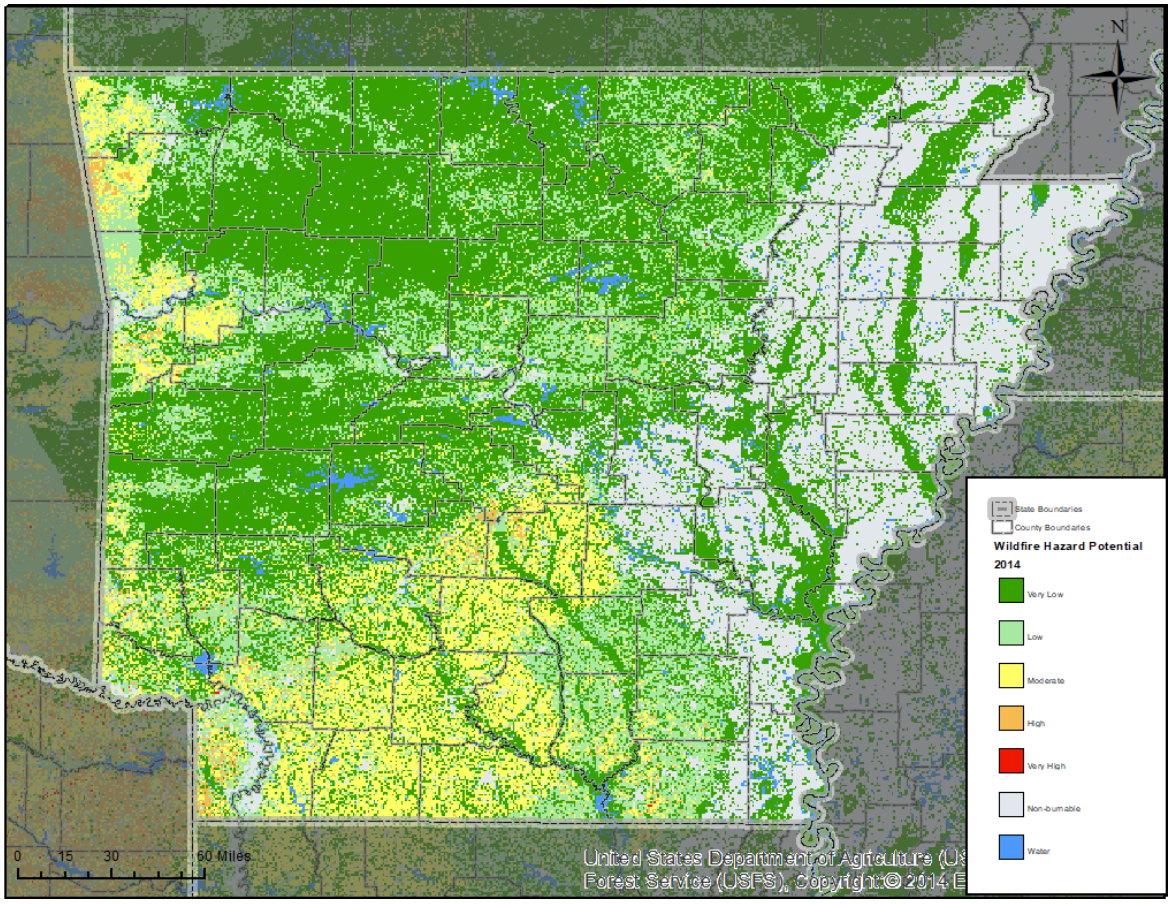
Based on the number of Arkansas Forestry Commission reported events we derive the following probability for event occurrence:

- **Probability of a wildfire of any size:** 1,320 events per year

However, if events are normalized for acreage burned over 1,000 acres, we derive the following probability for event occurrence:

- **Probability of a wildfire impacting over 1,000 acres:** 280 events per year

Mapping created by the USDA in 2014 indicates the Wildfire Hazard Potential for the State of Arkansas. In general, the map indicates that most of the state is the low or not-burnable class. Some areas of the state, notably the southern third and the northwest corner are rated as moderate on the scale, with small pockets rated as high.



4.15.4 – Vulnerability Analysis

For purposes of this assessment, all state-owned facilities within the state were determined to be at equal risk to wildfire events. However, in determining the vulnerability of state-owned and operated critical facilities data concerning WUI areas was used to identify critical facilities at a potentially greater risk. Assuming an amount of damage to each facility is not possible due to the tremendous number of variables involved in a potential wildfire event.

State of Arkansas Owned and Operated Facilities in Wildfire Areas

County	State-Owned Facilities	Total Valuation	Critical Facilities	Critical Facility Total Valuation	State-Owned Bridges
Arkansas	41	$416,319,788	0	$0	6
Ashley	12	$19,237,703	0	$0	20

State of Arkansas Owned and Operated Facilities in Wildfire Areas

County	State-Owned Facilities	Total Valuation	Critical Facilities	Critical Facility Total Valuation	State-Owned Bridges
Baxter	12	$40,906,210	5	$45,123,160	14
Benton	91	$63,237,979	0	$0	26
Boone	55	$29,546,068	0	$0	12
Bradley	63	$8,857,276	0	$0	2
Calhoun	22	$47,679,917	0	$0	5
Carroll	22	$32,328,304	0	$0	15
Chicot	86	$34,615,898	0	$0	11
Clark	150	$109,725,870	5	$45,371,070	21
Clay	35	$3,288,517	0	$0	11
Cleburne	18	$6,851,080	2	$23,781,633	10
Cleveland	8	$3,827,964	0	$0	7
Columbia	138	$78,843,077	0	$0	11
Conway	100	$15,569,386	0	$0	21
Craighead	290	$219,788,810	2	$14,622,293	15
Crawford	58	$210,139,702	0	$0	33
Crittenden	51	$119,025,900	0	$0	8
Cross	90	$185,863,362	0	$0	6
Dallas	10	$47,381,099	0	$0	8
Desha	22	$62,519,831	0	$0	10
Drew	26	$25,963,428	0	$0	10
Faulkner	375	$1,273,968,488	0	$0	27
Franklin	25	$178,318,097	1	$7,361,419	10
Fulton	40	$11,055,589	0	$0	63
Garland	210	$735,495,705	0	$0	63
Grant	12	$633,159	0	$0	21
Greene	75	$100,332,674	0	$0	12
Hempstead	114	$350,739,747	0	$0	18
Hot Spring	119	$175,934,326	1	$7,720,312	52
Howard	34	$3,519,004	0	$0	13
Independence	47	$8,598,781	0	$0	27
Izard	41	$19,836,647	2	$17,811,298	16
Jackson	101	$125,251,657	0	$0	5
Jefferson	257	$726,196,049	3	$22,500,017	36
Johnson	32	$26,246,860	0	$0	5
Lafayette	23	$45,878,467	2	$0	4
Lawrence	58	$166,300,006	0	$0	7
Lee	52	$48,542,001	0	$0	5
Lincoln	185	$297,637,208	0	$0	7
Little River	24	$6,171,349	0	$0	5
Logan	147	$416,558,262	2	$13,831,014	27
Lonoke	51	$100,216,710	0	$0	24
Madison	35	$732,445	0	$0	11
Marion	25	$3,075,978	0	$0	10
Miller	32	$90,913,252	0	$0	36

State of Arkansas Owned and Operated Facilities in Wildfire Areas

County	State-Owned Facilities	Total Valuation	Critical Facilities	Critical Facility Total Valuation	State-Owned Bridges
Mississippi	82	$130,425,929	0	$0	6
Monroe	9	$14,302,601	0	$0	4
Montgomery	18	$10,973,961	0	$0	38
Nevada	38	$68,617,083	0	$0	6
Newton	16	$3,578,748	0	$0	7
Ouachita	95	$112,171,397	1	$10,864,530	22
Perry	13	$376,164	0	$0	30
Phillips	35	$71,350,166	0	$0	5
Pike	56	$43,228,530	0	$0	20
Poinsett	47	$27,827,627	0	$0	45
Polk	36	$16,232,150	0	$0	45
Pope	210	$212,100,639	2	$15,353,836	40
Prairie	24	$9,301,979	0	$0	6
Pulaski	626	$854,340,146	5	$156,301,635	77
Randolph	58	$33,177,986	0	$0	8
St. Francis	83	$41,077,656	1	$6,009,728	19
Saline	137	$131,688,684	1	$5,237,331	43
Scott	43	$17,011,227	0	$0	38
Searcy	15	$4,691,087	0	$0	8
Sebastian	59	$37,148,001	0	$0	41
Sevier	10	$3,780,275	0	$0	21
Sharp	19	$7,696,032	0	$0	15
Stone	75	$32,981,771	0	$0	13
Union	75	$49,769,839	2	$16,284,609	23
Van Buren	17	$5,200,672	0	$0	20
Washington	158	$116,099,895	0	$0	33
White	94	$94,458,624	0	$0	32
Woodruff	8	$6,015,359	0	$0	14
Yell	60	$61,679,129	0	$0	36

Source: HAZUS, Arkansas Insurance Department and ADEM

For vulnerability and loss estimation purposes all counties were considered at equal risk to wildfires. Counties with a higher identified population and number of structures are to be considered to have a potentially greater vulnerability. However, these vulnerabilities should be viewed as theoretical due to the number of variables involved in a wildfire event.

County Structural and Population Vulnerability Data for Wildfires

County	NCDC Reported Wildfires 2013-2017	HAZUS Building Valuation	NCDC Structure Damage, Wildfires 2013-2017	2015 Population	NCDC Reported Wildfire Deaths 2013-2017
State of Arkansas	**$1,129,300**	**$12,168,205,000**	**$0**	**2,988,248**	**0**
Arkansas	0	$2,245,000	$0	18,214	0
Ashley	0	$2,153,000	$0	20,492	0

County Structural and Population Vulnerability Data for Wildfires

County	NCDC Reported Wildfires 2013-2017	HAZUS Building Valuation	NCDC Structure Damage, Wildfires 2013-2017	2015 Population	NCDC Reported Wildfire Deaths 2013-2017
Baxter	1	$4,332,000	$0	41,062	0
Benton	0	$23,138,000	$0	258,291	0
Boone	0	$3,624,000	$0	37,304	0
Bradley	1	$1,108,000	$0	10,996	0
Calhoun	0	$442,000,000	$0	5,144	0
Carroll	1	$2,754,000	$0	27,646	0
Chicot	0	$961,000,000	$0	10,945	0
Clark	0	$2,174,000	$0	22,657	0
Clay	0	$1,532,000	$0	14,920	0
Cleburne	0	$2,958,000	$0	25,264	0
Cleveland	0	$761,000,000	$0	8,241	0
Columbia	0	$2,429,000	$0	23,901	0
Conway	0	$1,772,000	$0	20,937	0
Craighead	0	$9,707,000	$0	105,835	0
Crawford	2	$5,637,000	$0	62,267	0
Crittenden	0	$4,447,000	$0	49,235	0
Cross	0	$1,540,000	$0	17,037	0
Dallas	1	$809,000,000	$0	7,469	0
Desha	0	$1,270,000	$0	11,876	0
Drew	1	$1,772,000	$0	18,651	0
Faulkner	1	$10,585,000	$0	122,227	0
Franklin	1	$1,581,000	$0	17,626	0
Fulton	1	$1,141,000	$0	12,123	0
Garland	2	$10,515,000	$0	97,477	0
Grant	0	$1,638,000	$0	18,082	0
Greene	0	$3,656,000	$0	44,598	0
Hempstead	0	$2,046,000	$0	21,974	0
Hot Spring	1	$2,678,000	$0	33,374	0
Howard	0	$1,381,000	$0	13,377	0
Independence	0	$3,540,000	$0	37,168	0
Izard	0	$1,278,000	$0	13,433	0
Jackson	0	$1,603,000	$0	17,221	0
Jefferson	0	$7,230,000	$0	70,016	0
Johnson	0	$2,067,000	$0	26,176	0
Lafayette	0	$628,000,000	$0	6,847	0
Lawrence	0	$1,547,000	$0	16,735	0
Lee	0	$775,000,000	$0	9,310	0
Lincoln	0	$829,000,000	$0	13,705	0
Little River	0	$1,206,000	$0	12,451	0
Logan	0	$2,155,000	$0	21,792	0
Lonoke	0	$6,235,000	$0	72,228	0
Madison	0	$1,378,000	$0	16,072	0
Marion	0	$1,644,000	$0	16,325	0

County Structural and Population Vulnerability Data for Wildfires

County	NCDC Reported Wildfires 2013-2017	HAZUS Building Valuation	NCDC Structure Damage, Wildfires 2013-2017	2015 Population	NCDC Reported Wildfire Deaths 2013-2017
Miller	0	$3,930,000	$0	43,787	0
Mississippi	0	$4,421,000	$0	42,835	0
Monroe	0	$850,000,000	$0	7,169	0
Montgomery	0	$907,000,000	$0	8,879	0
Nevada	0	$847,000,000	$0	8,398	0
Newton	2	$842,000,000	$0	7,936	0
Ouachita	0	$2,418,000	$0	24,098	0
Perry	0	$856,000,000	$0	10,132	0
Phillips	0	$1,996,000	$0	18,975	0
Pike	1	$1,035,000	$0	10,832	0
Poinsett	0	$2,304,000	$0	24,023	0
Polk	0	$1,930,000	$0	20,173	0
Pope	0	$5,743,000	$0	63,779	0
Prairie	0	$823,000,000	$0	8,251	0
Pulaski	1	$48,464,000	$0	393,250	0
Randolph	0	$1,684,000	$0	17,448	0
St. Francis	0	$2,138,000	$0	26,196	0
Saline	0	$10,250,000	$0	118,703	0
Scott	0	$1,025,000	$0	10,277	0
Searcy	2	$852,000,000	$0	7,967	0
Sebastian	0	$13,612,000	$0	127,793	0
Sevier	0	$1,300,000	$0	16,910	0
Sharp	2	$1,817,000	$0	17,157	0
Stone	1	$1,149,000	$0	12,539	0
Union	0	$4,564,000	$0	39,887	0
Van Buren	0	$1,676,000	$0	16,628	0
Washington	1	$19,369,000	$0	228,049	0
White	1	$6,809,000	$0	79,263	0
Woodruff	1	$707,000,000	$0	6,641	0
Yell	1	$1,875,000	$0	21,552	0

Source: NCDC and HAZUS

Population vulnerability for each county is a function of the following component parts:

- Population change over time
- Vulnerable populations
- Population density

In general:

- Counties with a high population are at increased risk
- Counties with growing populations are at increasing risk

- Counties with a high population of children under 5 or adults over the age of 65 may be at increased risk.

The following counties may have increased vulnerability to wildfire events due to population factors:

- **Counties with a large population increase:** Benton, Craighead, Faulkner, Lonoke, Pulaski, Sebastian, Washington and White
- **Counties with a population gain of over 1,000 children under the age of 5:** Benton, Craighead Faulkner, Lonoke, Pulaski, Saline and Washington
- **Counties with a population gain of over 1,000 adults over the age of 65:** Baxter, Benton, Boone, Cleburne, Craighead, Crawford, Faulkner, Garland, Greene, Independence, Lonoke, Marion, Miller, Pope, Randolph, Saline, Sebastian, Washington and White

The USDA 2012 Census of Agriculture (the latest available data) provides data on the crop exposure value, the total dollar value of all crops, for each Arkansas county. USDA Risk Management Agency crop loss data allows us to quantify the monetary impact of wildfire events on the agricultural sector. In general, the higher the percentage loss, the higher the vulnerability the county has to wildfire events. Please note that only counties that a had a recorded impact, either crops lost or building damaged, are show in the following table.

County Agricultural Vulnerability Data for Wildfires

County	USDA Estimated Crop Exposure	USDA Crop Loss, Wildfires 2012-2017 Yearly Average	Percentage of Crop Exposure Lost to Wildfires	Total Acres Burned
State of Arkansas	$9,775,758,000	$18,946,497	**0.1938%**	**96,080**
Arkansas	$298,173,000	$28,859	0.0097%	254
Ashley	$78,844,000	$43,484	0.0552%	618
Benton	$529,128,000	$39,178	0.0074%	461
Bradley	$43,633,000	$1,961,154	4.4947%	392
Chicot	$204,719,000	$80,524	0.0393%	1,355
Clark	$15,083,000	$11,300	0.0749%	300
Clay	$246,172,000	$2,327,465	0.9455%	11,694
Conway	$161,648,000	$3,786	0.0023%	62
Craighead	$261,600,000	$123,596	0.0472%	234
Crawford	$67,408,000	$96,783	0.1436%	844
Crittenden	$215,016,000	$404,515	0.1881%	4,791
Cross	$188,778,000	$785,446	0.4161%	5,312
Dallas	$1,305,000	$0	0.0000%	0
Desha	$212,893,000	$88,285	0.0415%	2,104
Drew	$88,347,000	$234,302	0.2652%	2,219
Franklin	$158,178,000	$2,872	0.0018%	87
Greene	$177,326,000	$6,423,163	3.6222%	26,614
Independence	$131,867,000	$152,852	0.1159%	1,855
Jackson	$186,837,000	$382,087	0.2045%	4,345
Jefferson	$215,265,000	$70,050	0.0325%	479
Johnson	$141,042,000	$13,245	0.0094%	401

County Agricultural Vulnerability Data for Wildfires

County	USDA Estimated Crop Exposure	USDA Crop Loss, Wildfires 2012-2017 Yearly Average	Percentage of Crop Exposure Lost to Wildfires	Total Acres Burned
Lawrence	$149,140,000	$974,987	0.6537%	2,982
Lee	$171,870,000	$229,138	0.1333%	1,910
Lincoln	$219,452,000	$21,041	0.0096%	287
Little River	$76,510,000	$11,760	0.0154%	280
Lonoke	$223,378,000	$563,349	0.2522%	3,950
Miller	$45,538,000	$177,347	0.3894%	918
Mississippi	$314,647,000	$309,077	0.0982%	4,294
Monroe	$194,373,000	$329,239	0.1694%	3,172
Phillips	$247,998,000	$579,081	0.2335%	6,239
Poinsett	$287,420,000	$453,301	0.1577%	5,387
Pope	$150,102,000	$18,180	0.0121%	169
Prairie	$165,065,000	$301,875	0.1829%	2,254
Randolph	$79,585,000	$680,187	0.8547%	3,176
St. Francis	$189,878,000	$94,064	0.0495%	1,487
White	$100,373,000	$378,634	0.3772%	2,388
Woodruff	$167,588,000	$549,484	0.3279%	2,122
Yell	$196,381,000	$2,807	0.0014%	20

Source: USDA

4.15.5 – Impact and Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Wildfire Consequence Analysis

Subject	Impacts of Wildfire
Health and Safety of the Public	Impact could be severe for people living and working in the immediate area. Surrounding communities may also be impacted by evacuees.
Health and Safety of Responders	Impact to responders could be severe depending on the size and scope of the fire, especially for firefighters. Impact will be low to moderate for support responders with the main threat as smoke inhalation.
Continuity of Operations	Temporary relocation may be necessary if government facilities experience damage.
Property, Facilities, and Infrastructure	Delivery of services could be affected if there is any disruption to the roads and/or utilities due to damages sustained.
Environment	Impact will be severe for the immediate area with regards to trees, bushes, animals, and crops. Impact will lessen as distance increases.
Economic Conditions	Impacts to the economy could be moderate in the immediate area.
Public Confidence in the Jurisdiction's Governance	Response and recovery will be in question if not timely and effective. Evacuation orders and shelter availability could be called in to question.

4.16 – Hazardous Materials

Hazardous materials (HazMat) are any substances that pose a risk to health, life, or property when released or improperly handled. Generally, the term refers to materials with hazardous chemical or physical properties, though sometimes biological agents can fall under this category. The basic types of hazardous materials may be categorized according to more than six different systems; but the categories of U.S. Emergency Planning and Community Right-to-Know Act (42 U.S.C. 11002) provide a general guide to hazardous materials:

- ***Extremely Hazardous Substances:*** Materials that have acutely toxic chemical or physical properties and may cause irreversible damage or death to people, or harm the environment if released or used outside their intended use.
- ***Hazardous Substances:*** Materials posing a threat to human health and/or the environment, or any substance designated by the EPA to be reported if a designated quantity of the substance is spilled into waterways, aquifers, or water supplies or is otherwise released into the environment.

4.16.1 – Location and Extent

In Arkansas, HazMat incidents are generally classified as:

- **Fixed Facility Incidents:** Commercial Facilities, Superfund Sites, and Meth Labs
- **Transportation Incidents:** Highway, Railway, Pipeline, Air, and Water

Fixed Facilities

When facilities have hazardous materials in quantities at or above the threshold planning quantity, they must submit Tier II information to appropriate federal and state agencies to facilitate emergency planning in accordance with the Community Right to Know Act. The forms are known as Tier II reports and the facilities included are referred to as Tier II facilities. According to data previously provided by ADEM, there 4,417 Tier II Facilities housing hazardous chemicals in Arkansas. The following table details the number of Tier II facilities by county.

Tier II Facilities by County

County	Tier II Facilities		County	Tier II Facilities
State of Arkansas	4,417		Lawrence	20
Arkansas	38		Lee	9
Ashley	31		Lincoln	17
Baxter	30		Little River	15
Benton	150		Logan	490
Boone	36		Lonoke	28
Bradley	10		Madison	8
Calhoun	19		Marion	6

Tier II Facilities by County

County	Tier II Facilities	County	Tier II Facilities
Carroll	25	Miller	46
Chicot	6	Mississippi	85
Clark	19	Monroe	16
Clay	30	Montgomery	8
Cleburne	74	Nevada	9
Cleveland	6	Newton	2
Columbia	238	Ouachita	66
Conway	78	Perry	7
Craighead	97	Phillips	46
Crawford	171	Pike	9
Crittenden	66	Poinsett	28
Cross	17	Polk	21
Dallas	10	Pope	91
Desha	27	Prairie	14
Drew	17	Pulaski	320
Faulkner	100	Randolph	12
Franklin	174	St. Francis	25
Fulton	7	Saline	48
Garland	43	Scott	10
Grant	9	Searcy	4
Greene	47	Sebastian	654
Hempstead	44	Sevier	16
Hot Spring	0	Sharp	2
Howard	25	Stone	4
Independence	43	Union	157
Izard	8	Van Buren	67
Jackson	24	Washington	138
Jefferson	73	White	0
Johnson	64	Woodruff	13
Lafayette	38	Yell	12

Source: ADEM

The National Priorities List (NPL) is a published list of hazardous waste sites in the country that are eligible for extensive, long-term cleanup under the Superfund program. A Superfund site is an uncontrolled or abandoned location where hazardous waste is located which may affect local ecosystems and/or people. The EPA has indicated that the following Superfund sites are within the State of Arkansas.

Arkansas NPL Facilities

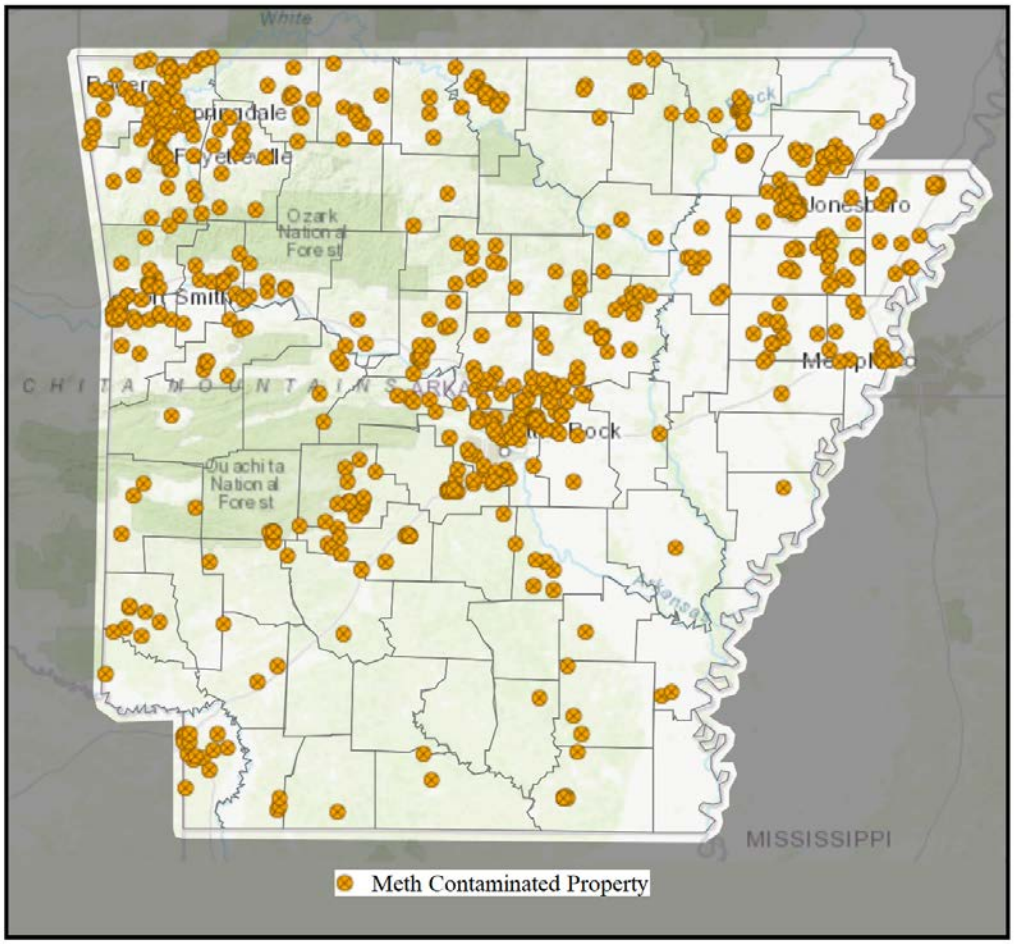
Facility Name	Location	County
Arkwood, Inc	Omaha	Boone
Cedar Chemical Corporation	West Helena	Phillips
Jacksonville Municipal Landfill	Jacksonville	Pulaski
Midland Products	Ola	Yell
Mid-South Wood Products	Mena	Polk
Ouachita Nevada Wood Treater	Reader	Ouachita

Arkansas NPL Facilities

Facility Name	Location	County
Popile, Inc.	El Dorado	Union
Rogers Road Municipal Landfill	Jacksonville	Pulaski
Vertac, Inc/.	Jacksonville	Pulaski

Source: EPA

Illegal methamphetamine (meth) labs are a potential source of exposure to hazardous materials, and Arkansas is one of the leading states in methamphetamine production. The following map, from the Arkansas Department of Environmental Quality (ADEQ), presents contaminated properties throughout the state using the latest 2017 data.



Transportation

The following table, with date from Arkansas Department of Transportation (ArDOT) presents both state and county highway mileage by county.

Interstate and Highway Mileage by County

County	Interstates (Miles)	US Highways (Miles)	State Highways (miles)
State of Arkansas	**749**	**3,666**	**12,034**
Arkansas	0	79	209
Ashley	0	98	122
Baxter	0	33	167
Benton	17	64	290
Boone		54	128
Bradley	0	68	68
Calhoun	0	70	85
Carroll	0	63	149
Chicot	0	69	127
Clark	27	32	186
Clay	0	67	111
Cleburne	0	0	199
Cleveland	0	55	107
Columbia	0	100	104
Conway	21	22	184
Craighead	14	56	221
Crawford	49	44	123
Crittenden	50	54	155
Cross	0	54	193
Dallas	0	22	159
Desha	0	42	141
Drew	0	71	134
Faulkner	18	57	184
Franklin	19	21	185
Fulton	0	53	108
Garland	0	78	133
Grant	2	63	118
Greene	0	60	153
Hempstead	23	84	162
Hot Spring	25	54	139
Howard	0	71	91
Independence	0	32	200
Izard	0	0	147
Jackson	0	37	229
Jefferson	29	109	161
Johnson	28	29	150
Lafayette	0	17	119
Lawrence	0	73	148
Lee	0	37	148
Lincoln	0	37	149
Little River	0	19	126
Logan	0	1	206
Lonoke	22	65	225
Madison	0	32	182

Interstate and Highway Mileage by County

County	Interstates (Miles)	US Highways (Miles)	State Highways (miles)
Marion	0	26	125
Miller	58	78	111
Mississippi	44	47	335
Monroe	13	71	138
Montgomery	0	40	126
Nevada	13	72	139
Newton	0	5	196
Ouachita	0	75	132
Perry	0	0	165
Phillips	0	38	178
Pike	0	30	144
Poinsett	27	22	229
Polk	0	68	130
Pope	27	28	243
Prairie	20	45	156
Pulaski	87	45	219
Randolph	0	37	153
St. Francis	24	23	106
Saline	0	59	119
Scott	0	36	126
Searcy	11	36	198
Sebastian	0	63	71
Sevier	0	52	106
Sharp	46	56	160
Stone	0	0	165
Union	0	111	142
Van Buren	0	35	169
Washington	34	92	207
White	0	89	312
Woodruff	0	44	157
Yell	0	0	254

Source: Arkansas Department of Transportation

Arkansas is served by over 25 railroad companies. Railroads are generally defined by three classes, predicated on revenue and size, with Class I being the largest. There are three Class I railroads providing service with long-haul deliveries to national market areas and intermodal rail/truck service providers:

- Burlington Northern and Santa Fe Railway,
- Kansas City Southern Railway, and
- Union Pacific Railroad (most track mileage in Arkansas)

The following table provides brief information on rail systems within the state.

Arkansas Railroads

Type of railroad	Miles, Including Trackage Rights
Class I	2,714
Regional	182
Local	669
Switching and terminal	109
Total	3,674

Source: ADEM

Pipelines

The following data, provided by ADEM and the United States Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA), indicates the total number of gas and liquid pipeline mileage per county.

PHMSA Pipeline Mileage by County

County	Gas (miles)	Liquid (miles)	County	Gas (miles)	Liquid (miles)
State of Arkansas	8,178	1,804	Lawrence	141	46
Arkansas	117	0	Lee	90	0
Ashley	199	0	Lincoln	112	0
Baxter	43	0	Little River	45	18
Benton	150	11	Logan	145	0
Boone	42	0	Lonoke	114	80
Bradley	95	0	Madison	128	0
Calhoun	53	139	Marion	21	0
Carroll	42	0	Miller	207	0
Chicot	365	20	Mississippi	128	0
Clark	242	0	Monroe	22	0
Clay	110	67	Montgomery	6	6
Cleburne	45	3	Nevada	201	0
Cleveland	39	58	Newton	129	0
Columbia	168	80	Ouachita	12	1
Conway	129	0	Perry	162	0
Craighead	82	29	Phillips	42	26
Crawford	19	0	Pike	55	0
Crittenden	87	14	Poinsett	50	0
Cross	7	0	Polk	141	0
Dallas	24	20	Pope	19	0
Desha	27	0	Prairie	197	143
Drew	129	0	Pulaski	99	27
Faulkner	180	51	Randolph	69	35
Franklin	269	0	St. Francis	107	16
Fulton	0	18	Saline	10	0
Garland	77	36	Scott	209	2
Grant	142	113	Searcy	40	14

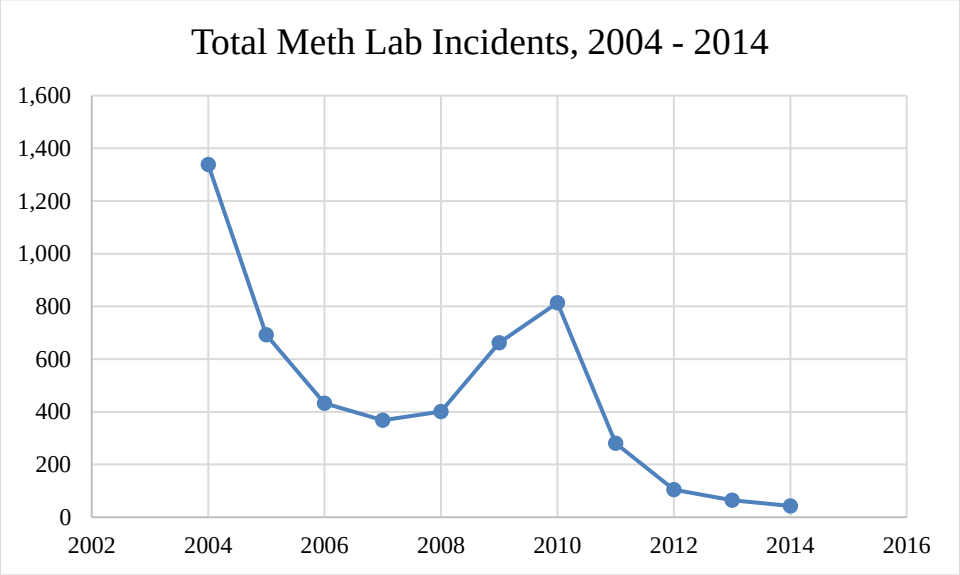
PHMSA Pipeline Mileage by County

County	Gas (miles)	Liquid (miles)	County	Gas (miles)	Liquid (miles)
Greene	60	80	Sebastian	18	0
Hempstead	142	0	Sevier	24	0
Hot Spring	292	0	Sharp	316	210
Howard	71	17	Stone	49	0
Independence	26	63	Union	206	0
Izard	61	23	Van Buren	476	206
Jackson	277	93	Washington	105	22
Jefferson	225	16	White	80	0
Johnson	109	0	Woodruff	141	46
Lafayette	58	1	Yell	90	0

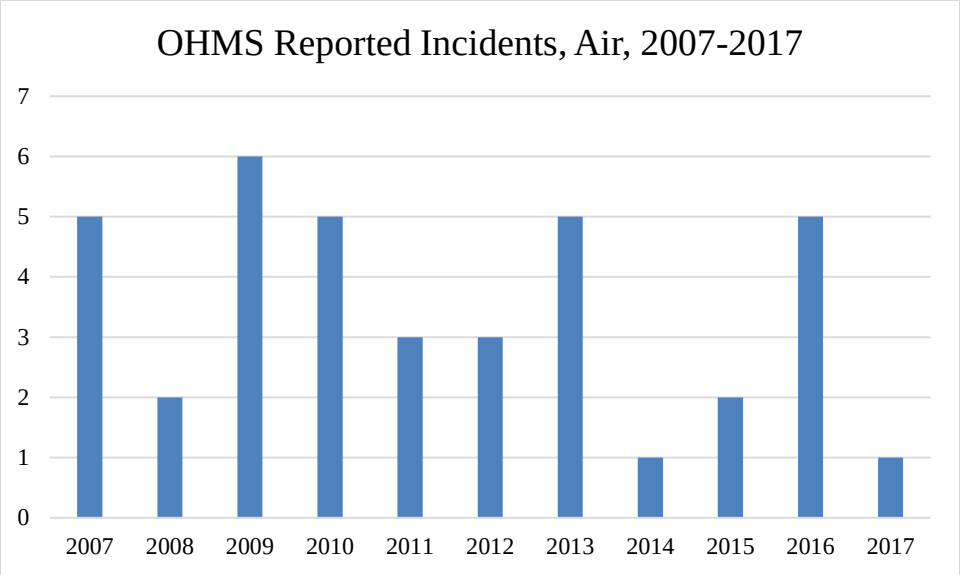
Source: ADEM and PHMSA

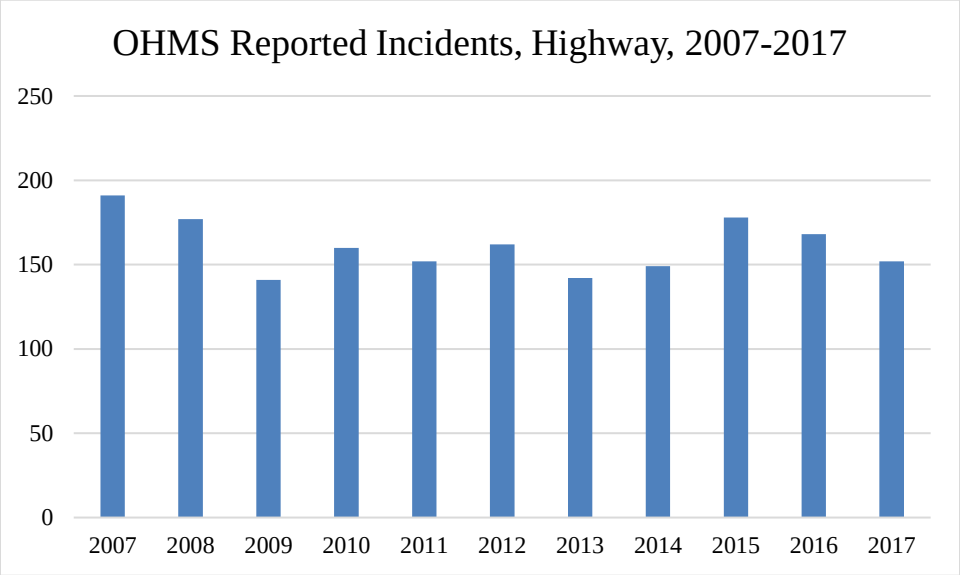
4.16.2 – Previous Occurrences

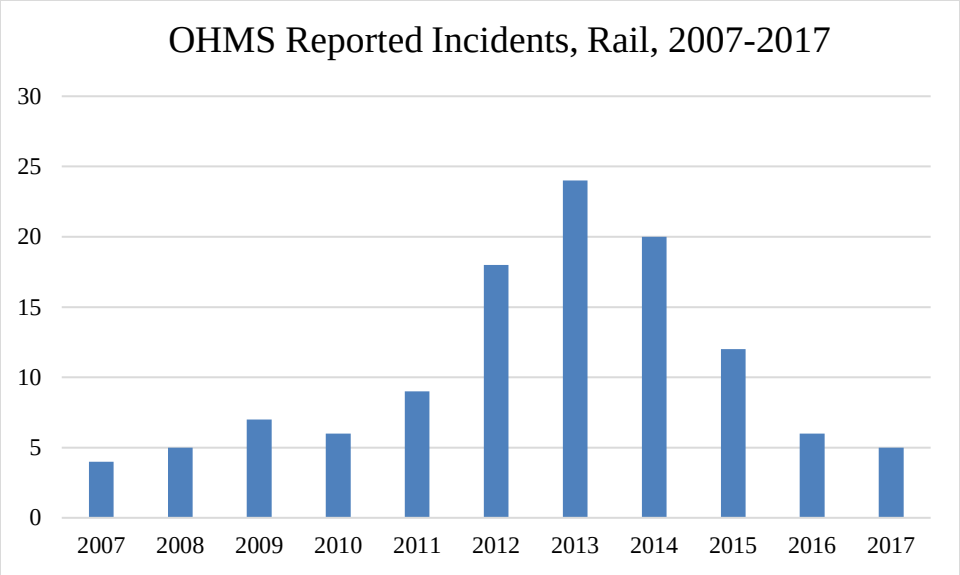
According to the U.S. Drug Enforcement Administration, from 2004 to 2014 (the latest available data), there have been 5,201 documented methamphetamine lab incidents in the State of Arkansas. However, data indicates the number of meth lab incidents has been steadily declining in the state. The following graph tracks meth lab incident data from 2004 to 2014.

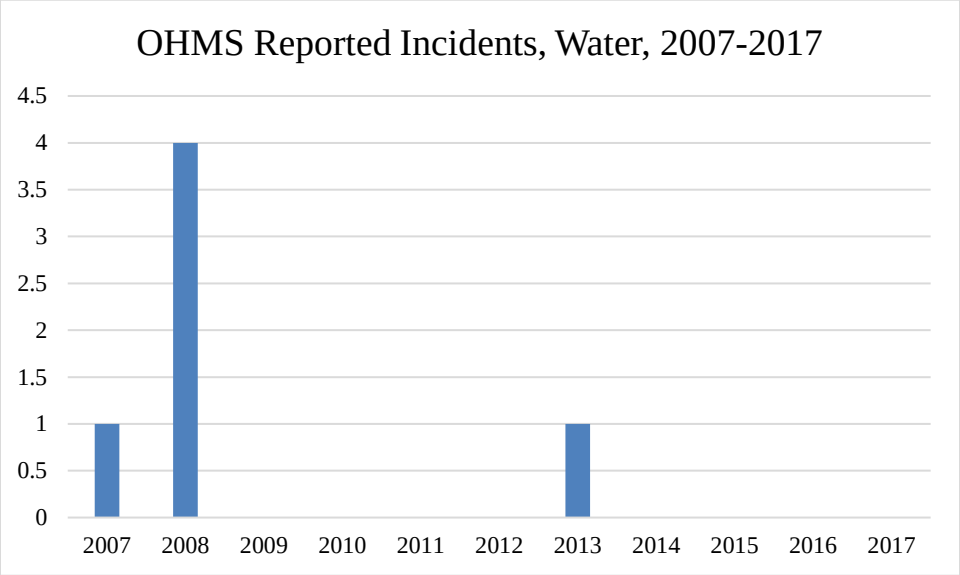


Hazardous Materials Regulations (49 CFR Parts 171-180) require certain types of HazMat incidents be reported, with data tracked by PHMSA's Office of Hazardous Materials Safety (OHMS) by transportation category type (Air, Highway, Rail and Water). The OHMS Incident Report Database from 2007 to 2017 indicated 1,907 reported incidents within the state of Arkansas for the period 2007 through 2017. The following charts detail the number of events per year per transportation category.

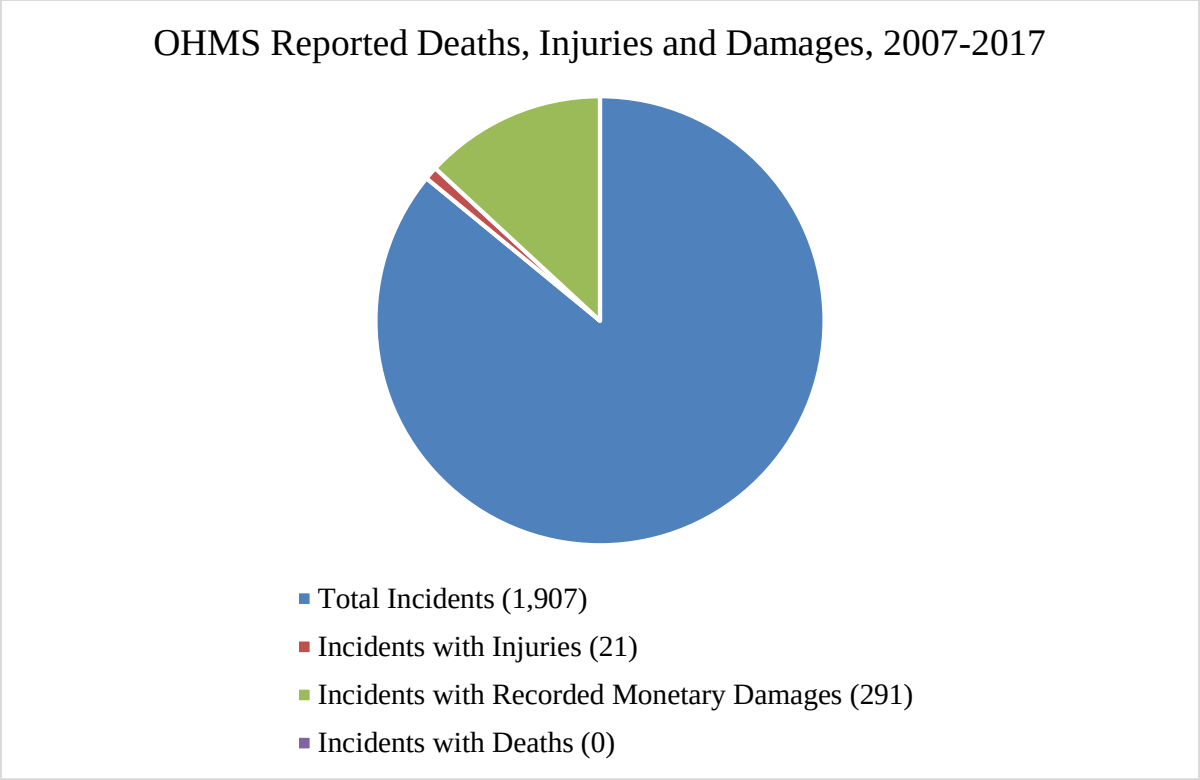

OHMS Reported Incidents, Air, 2007-2017
7
6
5
4
3
2
1
0
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017


OHMS Reported Incidents, Highway, 2007-2017
250
200
150
100
50
0
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017





The following chart summarizes all reported OHMS incidents, including number of deaths and injuries.



The following table breaks down the OHMS Incident Report Database, for all categories of HazMat transportation, from 2007 to 2017 by county, including reported monetary damages. It is worth noting that the database appears to duplicate some events, and as such the amount of injuries and damages may be slightly inflated.

OHMS Transportation Incident Report Database by County, 2007 to 2017

County	Total HazMat Transportation Incidents	Total HazMat Deaths	Total HazMat Injuries	Total Amount of Damages
Arkansas	1	0	0	$0
Ashley	3	0	0	$0
Baxter	1	0	0	$0
Benton	136	0	2	$840,035
Boone	42	0	0	$0
Bradley	0	0	0	$0
Calhoun	0	0	0	$0
Carroll	0	0	0	$0
Chicot	4	0	0	$6,455
Clark	4	0	0	$11,600
Clay	1	0	0	$500
Cleburne	1	0	0	$145,751
Cleveland	1	0	0	$0
Columbia	5	0	0	$3,000
Conway	18	0	2	$150,851

OHMS Transportation Incident Report Database by County, 2007 to 2017

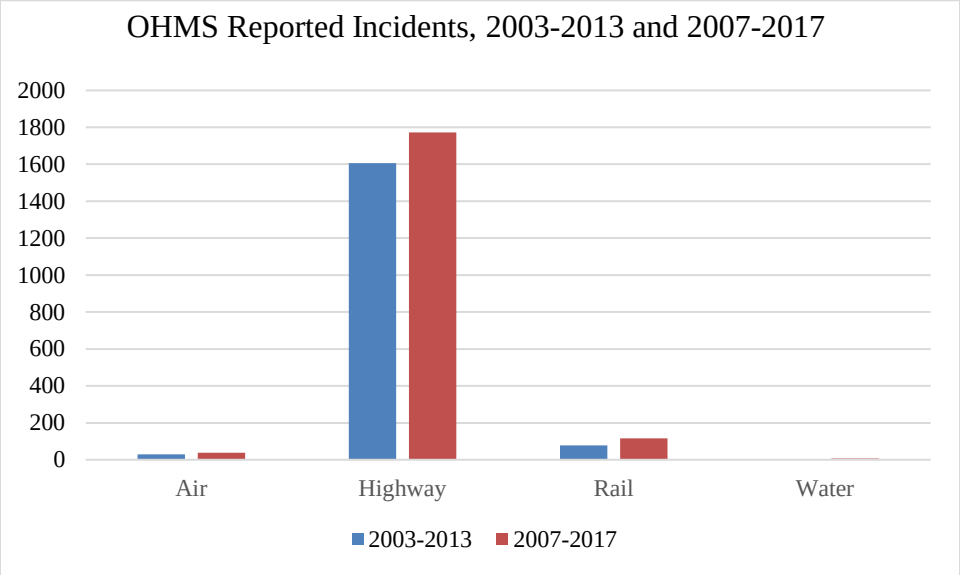
County	Total HazMat Transportation Incidents	Total HazMat Deaths	Total HazMat Injuries	Total Amount of Damages
Craighead	72	0	1	$219,041
Crawford	1	0	0	$8,000
Crittenden *	187	0	0	$180,102
Cross	1	0	0	$0
Dallas	2	0	0	$2,500
Desha	2	0	0	$11,000
Drew	3	0	0	$0
Faulkner	2	0	0	$6,000
Franklin	1	0	0	$3,000
Fulton	3	0	0	$307,855
Garland	1	0	0	$150,000
Grant	1	0	0	$35,000
Greene	1	0	0	$2,900
Hempstead	4	0	0	$3,300
Hot Spring	34	0	1	$336,272
Howard	0	0	0	$0
Independence	4	0	0	$114,000
Izard	0	0	0	$0
Jackson *	9	0	1	$606,514
Jefferson	50	0	1	$84,730
Johnson	3	0	1	$21,500
Lafayette	2	0	0	$145,000
Lawrence	3	0	0	$350,205
Lee	5	0	0	$0
Lincoln	0	0	0	$13,100
Little River	4	0	0	$5,000
Logan	1	0	0	$0
Lonoke	8	0	0	$92,500
Madison	0	0	0	$0
Marion	9	0	0	$47,382
Miller	68	0	0	$111,691
Mississippi	15	0	0	$143,400
Monroe	3	0	0	$60,073
Montgomery	1	0	1	$41,548
Nevada	7	0	0	$104,530
Newton	0	0	0	$0
Ouachita	8	0	0	$221,983
Perry *	3	0	0	$318,516
Phillips	4	0	0	$8,699
Pike	0	0	0	$0
Poinsett *	8	0	0	$97,010
Polk *	6	0	0	$361,888
Pope *	8	0	2	$416,511

OHMS Transportation Incident Report Database by County, 2007 to 2017

County	Total HazMat Transportation Incidents	Total HazMat Deaths	Total HazMat Injuries	Total Amount of Damages
Prairie	1	0	0	$3,000
Pulaski *	891	0	4	$2,515,751
Randolph *	5	0	0	$1,913,000
St. Francis	7	0	0	$11,500
Saline	3	0	0	$2,000
Scott	0	0	0	$0
Searcy	2	0	0	$3,000
Sebastian	89	0	1	$52,583
Sevier	0	0	0	$0
Sharp *	4	0	1	$213,401
Stone	2	0	0	$194,536
Union	106	0	1	$363,185
Van Buren	20	0	2	$84,212
Washington	8	0	0	$0
White	5	0	0	$18,850
Woodruff	1	0	0	$0
Yell	1	0	0	$28,000

Source: OHMS
Note: * indicates possible duplicate data

Additionally, data was reviewed from PHMSA OHMS for the period 2003 to 2013 to offer a comparison to the years 2007 to 2017. The data indicates there has been a slight increase of incidents across the board for all identified modes of HazMat transportation. The following table shows that increase.



Data from PHMSA provides significant incident reports for the pipeline systems in the State of Arkansas. Data from the period 2003 to 2014 indicate that there were 33 pipeline incidents that caused three fatalities,

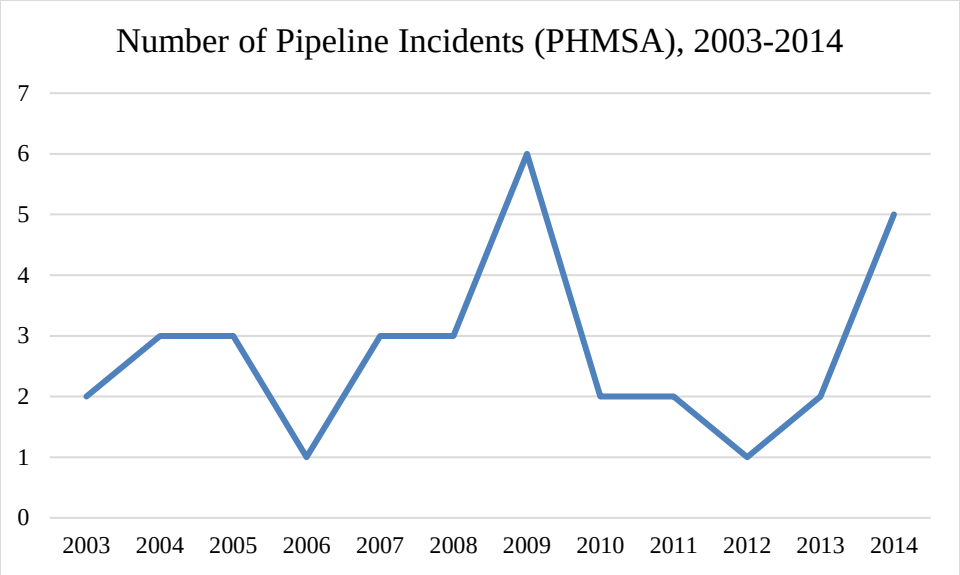
three injuries and $95,852,893 in damages. The following table details reported pipeline incident details for each county with a reported event (counties with no reported events are not presented).

PHMSA Reported Pipeline Incidents by County, 2003 to 2014

County	Number of Incidents	Fatalities	Injuries	Property Damage	Gross Barrels Spilled	Net Barrels Lost
Chicot	1	0	0	$408,295	N/A	N/A
Columbia	1	0	0	$3,384,814	5,600	300
Conway	2	0	0	$317,743	N/A	N/A
Crawford	1	0	0	$365,503	N/A	N/A
Dallas	1	0	0	$120,810	500	247
Faulkner	3	0	0	$82,653,058	5,000	3,000
Grant	1	0	0	$237,110	N/A	N/A
Hot Springs	2	0	1	$156,747	N/A	N/A
Howard	1	0	0	$122,524	N/A	N/A
Jackson	1	0	0	$207,820	N/A	N/A
Jefferson	1	0	0	$128,183	N/A	N/A
Lawrence	2	0	1	$409,554	5,800	5,800
Logan	1	0	0	$242,718	N/A	N/A
Miller	1	0	0	$270,008	N/A	N/A
Pike	1	0	0	$188,857	N/A	N/A
Pulaski	4	0	1	$380,216	195	1
Randolph	1	0	0	$124,392	N/A	N/A
Searcy	1	3	0	$4,015,550	0	0
St. Francis	1	0	0	$140,383	N/A	N/A
Union	2	0	0	$472,637	74	1
Washington	1	0	0	$432,071	N/A	N/A
White	1	0	0	$923,876	250	0
Woodruff	1	0	0	$125,024	0	0

Source: PHMSA

The following graph details the reported pipeline incident trends for the State of Arkansas for the period 2003 through 2014.



4.16.3 – Hazard Probability Analysis

HazMat incidents are not predictable. However, probabilities can be estimated using past occurrence data as a guide.

Historic data from the 2013 Hazard Mitigation Plan, used in lieu of unavailable current information, was used in generating probability. The following table summarizes U.S. Drug Enforcement Administration reported meth incidents for the State of Arkansas for the period 2004 through 2014.

State of Arkansas Fixed Facility HazMat Incident Data Summary

Data	Recorded Impact
Number of Reported Events (2011-2012)	265
Average Events per Year (2011-2012)	133
Number of Deaths	6
Average Deaths per Year (2011-2012)	3

Source: ADEM

Data indicates that the State of Arkansas can expect, on average:

- **Fixed Facility Events:** 133 fixed facility HazMat events and three related deaths per year

The following table summarizes U.S. Drug Enforcement Administration reported meth incidents for the State of Arkansas for the period 2004 through 2014.

State of Arkansas Meth Incident Data Summary, 2004 - 2014

Data	Recorded Impact
Number of Reported Events	5,201
Average Events per Year	473

Source: U.S. Drug Enforcement Administration

Data indicates that the State of Arkansas can expect, on average:

- **Meth Incidents:** 473 events, and required decontamination, per year.

However, it is worth noting that the number of meth lab incidents has been steadily declining in the state, from a high of 1,339 in 2004 to a low of 43 in 2014 for the data period.

While NPL (Superfund) sites have been identified by the EPA as requiring cleanup, in general, the probability of an incident endangering the public from these sites is low due to active identification and remediation measures.

The following table summarizes PHMSA's OHMS data for transportation related HazMat events for the State of Arkansas for the period 2007 through 2017.

State of Arkansas Air Related HazMat Incident Data Summary, 2007 - 2017

Data	Recorded Impact
Number of Reported Events	38
Average Events per Year	3
Total Injuries	0
Average Injuries per Year	0
Number of Events with Property Damage	0
Average Events with Property Damage per Year	0
Average Monetary Property Damage per Year	$0

Source: PHMSA OHMS

State of Arkansas Highway Related HazMat Incident Data Summary, 2007 -2017

Data	Recorded Impact
Number of Reported Events	1,772
Average Events per Year	161
Total Injuries	18
Average Injuries per Year	1
Number of Events with Property Damage	224
Average Events with Property Damage per Year	20
Average Monetary Property Damage per Year	$896,313

Source: PHMSA OHMS

State of Arkansas Rail Related HazMat Incident Data Summary, 2007 -2017

Data	Recorded Impact
Number of Reported Events	116
Average Events per Year	11
Total Injuries	3
Average Injuries per Year	<1
Number of Events with Property Damage	67
Average Events with Property Damage per Year	6
Average Monetary Property Damage per Year	$120,110

Source: PHMSA OHMS

State of Arkansas Water Related HazMat Incident Data Summary, 2007 -2017

Data	Recorded Impact
Number of Reported Events	6
Average Events per Year	<1
Total Injuries	0
Average Injuries per Year	0
Number of Events with Property Damage	0
Average Events with Property Damage per Year	0
Average Monetary Property Damage per Year	$0

Source: PHMSA OHMS

Data indicates that the State of Arkansas can expect on average:

- **Air Transportation:** Three events and $0 in damages per year
- **Highway Transportation:** 161 events and $896,313 in damages per year
- **Rail Transportation:** 11 events and $120,110 in damages per year
- **Water Transportation:** <1 event and $0 in damages per year

The following table summarizes PHMSA's OHMS data for transportation related HazMat events for the State of Arkansas for the period 2007 through 2017.

State of Arkansas Pipeline Related HazMat Incident Data Summary, 2003 - 2014

Data	Recorded Impact
Number of Reported Events	33
Average Events per Year	3
Total Deaths	3
Average Deaths per Year	<1
Total Injuries	3
Average Injuries Events per Year	<1
Number of Events with Property Damage	32
Average Events with Property Damage per Year	3
Average Monetary Property Damage per Year	$15,971,315

Source: PHMSA OHMS

Data indicates that the State of Arkansas can expect on average:

- **Pipeline Incidents:** Three events, less than one death, less than one injury, and $15,971,315 in damages per year.

4.16.4 – Vulnerability Analysis

The following table indicates the number of state owned critical facilities and bridges within 0.5 miles of a classified Tier II facility, using previously available data as new data was unavailable.

State Owned Facilities and Bridges Within 0.5 Miles of a Tier II Facility

County	State-Owned Facilities	Value	State-Owned Critical Facilities	Value	State Owned Bridges
Arkansas	0	$0	0	$0	0
Ashley	0	$0	0	$0	3
Baxter	6	$52,004,086	6	$52,004,086	3
Benton	1	$9,664,855	1	$9,664,855	31
Boone	2	$42,433,716	2	$42,433,716	7
Bradley	0	$0	0	$0	0
Calhoun	0	$0	0	$0	1
Carroll	0	$0	0	$0	2
Chicot	0	$0	0	$0	0
Clark	1	$7,989,493	1	$7,989,493	7
Clay	0	$0	0	$0	3
Cleburne	0	$0	0	$0	2
Cleveland	0	$0	0	$0	0
Columbia	19	$211,753,893	19	$211,753,893	7
Conway	0	$0	0	$0	13
Craighead	6	$125,339,254	6	$125,339,254	29
Crawford	0	$0	0	$0	21
Crittenden	1	$8,548,559	1	$8,548,559	18
Cross	0	$0	0	$0	2
Dallas	0	$0	0	$0	0
Desha	0	$0	0	$0	0
Drew	0	$0	0	$0	10
Faulkner	0	$0	0	$0	8
Franklin	0	$0	0	$0	0
Fulton	1	$8,521,270	1	$8,521,270	21
Garland	0	$0	0	$0	2
Grant	0	$0	0	$0	7
Greene	1	$7,932,152	1	$7,932,152	4
Hempstead	1	$7,720,312	1	$7,720,312	10
Hot Spring	0	$0	0	$0	6
Howard	0	$0	0	$0	3
Independence	0	$0	0	$0	0
Izard	0	$0	0	$0	4
Jackson	3	$49,557,016	3	$49,557,016	14
Jefferson	0	$0	0	$0	12
Johnson	0	$0	0	$0	0
Lafayette	0	$0	0	$0	3
Lawrence	0	$0	0	$0	3
Lee	0	$0	0	$0	0
Lincoln	0	$0	0	$0	1
Little River	0	$0	0	$0	0
Logan	0	$0	0	$0	9
Lonoke	0	$0	0	$0	5
Madison	0	$0	0	$0	1

State Owned Facilities and Bridges Within 0.5 Miles of a Tier II Facility

County	State-Owned Facilities	Value	State-Owned Critical Facilities	Value	State Owned Bridges
Marion	0	$0	0	$0	0
Miller	0	$0	0	$0	12
Mississippi	5	$44,730,865	5	$44,730,865	5
Monroe	0	$0	0	$0	1
Montgomery	0	$0	0	$0	1
Nevada	0	$0	0	$0	1
Newton	0	$0	0	$0	0
Ouachita	2	$15,239,343	2	$15,239,343	7
Perry	0	$0	0	$0	1
Phillips	0	$0	0	$0	1
Pike	0	$0	0	$0	0
Poinsett	0	$0	0	$0	5
Polk	0	$0	0	$0	3
Pope	8	$113,967,063	8	$113,967,063	12
Prairie	0	$0	0	$0	1
Pulaski	59	$1,621,381,084	59	$1,621,381,084	126
Randolph	3	$26,176,489	3	$26,176,489	1
St. Francis	3	$22,272,436	3	$22,272,436	9
Saline	0	$0	0	$0	9
Scott	0	$0	0	$0	1
Searcy	0	$0	0	$0	0
Sebastian	1	$12,704,241	1	$12,704,241	32
Sevier	0	$0	0	$0	3
Sharp	0	$0	0	$0	2
Stone	0	$0	0	$0	2
Union	5	$48,844,433	5	$48,844,433	10
Van Buren	0	$0	0	$0	5
Washington	1	$7,032,389	1	$7,032,389	22
White	1	$7,232,966	1	$7,232,966	25
Woodruff	0	$0	0	$0	0
Yell	0	$0	0	$0	6

Source: ADEM, 2013 State of Arkansas Hazard Mitigation Plan

Counties with a higher identified population near Tier II facilities and major and interstate highways, using previously available data, are to be considered to have a potentially greater vulnerability. However, these assumed vulnerabilities should be viewed as theoretical due to the tremendous number of variables involved in a potential HazMat release event.

Population Within 0.5 Miles of a Tier II Facility or Interstate Highway

County	Population in 0.5 Mile of a Major Highway or Interstate Highway	Population in 0.5 Mile of a Tier II Facility
Arkansas County	17,235	4,325
Ashley County	17,368	3,395
Baxter County	25,727	1,885

Population Within 0.5 Miles of a Tier II Facility or Interstate Highway

County	Population in 0.5 Mile of a Major Highway or Interstate Highway	Population in 0.5 Mile of a Tier II Facility
Benton County	92,605	31,387
Boone County	20,920	3,666
Bradley County	8,275	2,411
Calhoun County	3,877	16
Carroll County	14,662	5,153
Chicot County	10,148	2,759
Clark County	16,776	3,807
Clay County	12,345	4,733
Cleburne County	14,813	2,362
Cleveland County	4,345	97
Columbia County	17,716	6,884
Conway County	13,425	3,381
Craighead County	58,804	12,927
Crawford County	32,816	5,850
Crittenden County	42,543	8,317
Cross County	15,148	3,688
Dallas County	7,324	4
Desha County	13,304	3,016
Drew County	12,292	3,160
Faulkner County	43,021	4,878
Franklin County	12,395	2,126
Fulton County	6,054	136
Garland County	50,927	7,577
Grant County	10,102	526
Greene County	24,583	6,029
Hempstead County	17,725	4,770
Hot Spring County	17,585	4,241
Howard County	9,814	2,976
Independence County	20,248	3,545
Izard County	5,063	615
Jackson County	8,101	3,769
Jefferson County	57,245	13,681
Johnson County	15,578	2,333
Lafayette County	5,741	529
Lawrence County	12,419	3,366
Lee County	4,035	2,627
Lincoln County	5,697	1,143
Little River County	5,133	2,102
Logan County	14,898	3,078
Lonoke County	16,818	2,882
Madison County	6,515	1,003
Marion County	9,078	319
Miller County	20,199	2,613
Mississippi County	42,424	12,844

Population Within 0.5 Miles of a Tier II Facility or Interstate Highway

County	Population in 0.5 Mile of a Major Highway or Interstate Highway	Population in 0.5 Mile of a Tier II Facility
Monroe County	7,434	2,368
Montgomery County	4,798	226
Nevada County	6,731	197
Newton County	3,755	25
Ouachita County	14,673	3,534
Perry County	3,753	588
Phillips County	17,443	6,078
Pike County	7,762	8
Poinsett County	6,975	4,916
Polk County	12,465	3,876
Pope County	24,949	7,024
Prairie County	5,377	1,179
Pulaski County	210,563	90,028
Randolph County	9,341	513
St. Francis County	16,910	5,492
Saline County	33,955	8,262
Scott County	7,364	278
Searcy County	3,838	818
Sebastian County	75,827	33,394
Sevier County	10,361	3,000
Sharp County	6,305	724
Stone County	3,623	196
Union County	23,323	8,897
Van Buren County	7,988	741
Washington County	109,803	34,000
White County	26,302	15,397
Woodruff County	5,701	447
Yell County	11,135	1,530

Source: ADEM, 2013 State of Arkansas Hazard Mitigation Plan

The following data related to potentially At-Risk population structures, as defined above, within 0.5 miles of a fixed Tier II facility.

Potentially At-Risk Populations Structures Within 0.5 Miles of a Tier II Facility

County	Hospitals	Education Facilities	Eldercare Facilities	Correctional Facilities
Arkansas	1	3	2	1
Ashley	0	3	2	0
Baxter	0	3	1	0
Benton	0	20	4	0
Boone	0	0	2	0
Bradley	1	1	0	0
Calhoun	0	0	0	0
Carroll	2	7	1	0

Potentially At-Risk Populations Structures Within 0.5 Miles of a Tier II Facility

County	Hospitals	Education Facilities	Eldercare Facilities	Correctional Facilities
Chicot	0	2	0	0
Clark	0	2	0	0
Clay	0	6	0	0
Cleburne	0	1	0	0
Cleveland	0	0	0	0
Columbia	1	3	0	0
Conway	1	5	4	0
Craighead	3	9	4	0
Crawford	0	16	0	0
Crittenden	1	5	4	0
Cross	1	4	1	0
Dallas	0	0	0	0
Desha	1	2	4	0
Drew	0	4	1	1
Faulkner	1	6	2	1
Franklin	0	1	0	0
Fulton	0	2	0	0
Garland	3	5	5	0
Grant	0	0	0	0
Greene	0	4	2	0
Hempstead	0	6	1	0
Hot Spring	0	3	1	0
Howard	0	0	2	0
Independence	1	3	0	1
Izard	0	2	0	0
Jackson	1	0	0	0
Jefferson	0	11	3	0
Johnson	0	3	1	0
Lafayette	0	1	0	0
Lawrence	0	0	0	0
Lee	0	1	0	0
Lincoln	0	3	1	0
Little River	1	2	0	0
Logan	1	3	1	0
Lonoke	0	2	0	0
Madison	0	1	0	0
Marion	0	0	0	0
Miller	0	1	0	0
Mississippi	1	7	0	0
Monroe	0	0	1	0
Montgomery	0	1	0	0
Nevada	0	0	1	0
Newton	0	0	0	0
Ouachita	0	1	0	0

Potentially At-Risk Populations Structures Within 0.5 Miles of a Tier II Facility

County	Hospitals	Education Facilities	Eldercare Facilities	Correctional Facilities
Perry	0	1	0	0
Phillips	0	2	1	0
Pike	0	0	0	0
Poinsett	0	4	1	0
Polk	0	3	3	0
Pope	0	7	1	0
Prairie	0	1	0	0
Pulaski	11	62	13	1
Randolph	0	0	0	0
St. Francis	0	4	0	0
Saline	1	3	2	0
Scott	0	1	0	0
Searcy	0	2	1	0
Sebastian	2	16	5	1
Sevier	1	0	2	0
Sharp	0	1	0	0
Stone	0	0	0	0
Union	1	7	5	1
Van Buren	0	0	1	0
Washington	2	14	5	2
White	2	11	4	0
Woodruff	0	0	0	0
Yell	1	0	1	0

Source: ADEM, 2013 State of Arkansas Hazard Mitigation Plan

Population vulnerability for each county is a function of the following component parts:

- Population change over time
- Vulnerable populations
- Population density

In general:

- Counties with a high population are at increased risk
- Counties with growing populations are at increasing risk
- Counties with a high population of At-Risk facilities may be at increased risk.

Population data may be found in previous sections. The following counties may have increased vulnerability to HazMat events due to population factors:

- **Counties with a large population increase:** Benton, Craighead, Faulkner, Lonoke, Pulaski, Sebastian, Washington and White

- **Counties with a population gain of over 1,000 children under the age of 5:** Benton, Craighead Faulkner, Lonoke, Pulaski, Saline and Washington
- **Counties with a population gain of over 1,000 adults over the age of 65:** Baxter, Benton, Boone, Cleburne, Craighead, Crawford, Faulkner, Garland, Greene, Independence, Lonoke, Marion, Miller, Pope, Randolph, Saline, Sebastian, Washington and White

4.16.5 – Impact and Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Hazardous Materials Incident Consequence Analysis

Subject	Impacts of Hazardous Materials Incident
Health and Safety of Persons in the Area of the Incident	Impact in the immediate area could be severe and long lasting.
Responders	Impact to responders is expected to be moderate to severe, potentially even with required safety equipment.
Continuity of Operations	Long term relocation may be necessary if government facilities experience contamination or damage.
Property, Facilities, and Infrastructure	Localized impact could be severe in the incident area. Facilities may need to be abandoned and razed. Large areas may become inaccessible.
Environment	Impact could be severe for the immediate area. Impact will lessen with distance. The proximity of open bodies of water could compound the impact.
Economic Conditions	Local economy and finances may be adversely affected, depending on the nature, extent and duration of the event.
Public Confidence in Governance	Response and recovery will be in question if not timely and effective. Warning systems and the timeliness of those warnings could be questioned.

4.17 – Major Disease

For this plan, major disease is classified as infectious diseases caused by microscopic agents, including viruses, bacteria, parasites, and fungi or by their toxins, that may impact humans or animals. They may be spread by direct contact with an infected person or animal, ingesting contaminated food or water, vectors such as mosquitoes or ticks, contact with contaminated surroundings such as animal droppings, infected droplets, or by aerosolization.

4.17.1 – Location and Extent

While there are many biological diseases/agents that are of concern to Arkansas, the following categories of disease are being addressed in this plan, human transmissible disease and animal transmissible disease.

Human Transmissible Diseases

Human transmissible disease and infectious diseases are human and animal illnesses caused by microscopic agents, including viruses, bacteria, parasites, and fungi or by their toxins. They may be spread by direct contact with an infected person or animal, ingesting contaminated food or water, vectors such as mosquitoes or ticks, contact with contaminated surroundings such as animal droppings, infected droplets, or by aerosolization.

The entire planning area is susceptible to a transmissible disease outbreak. However, more densely populated areas may be more susceptible.

Animal Transmissible Diseases

Because livestock animals are both raised locally and imported into the state the potential for highly contagious animal disease poses a threat to the state economy. Of particular concern are two economically devastating animal diseases, foot and mouth disease and bovine spongiform encephalopathy. Infection with these could result in a decline in milk production, spontaneous abortion, and animal death. It would not only affect farmer and ranchers, but support and related industries as well.

The entire planning area is susceptible to an animal disease outbreak. However, counties with a higher number of cattle and swine may be more susceptible to animal disease. The following table, with data from the United States Department of Agriculture National Agricultural Statistics Service, details the top ten Arkansas counties for cattle and swine.

Top Ten Arkansas Counties for Cattle and Swine, 2012

County	Number of Cattle	Number of Swine
State of Arkansas	**1,615,774**	**109,316**
Benton	115,546	-
Boone	64,627	-
Carroll	78,328	-
Conway	-	-
Franklin	-	12,512
Hempstead	42,557	-
Howard	55,935	4,045
Logan	41,662	21,240
Madison	60,998	-
Montgomery	53,688	-
Newton	-	6,215
Pike	-	2,013
Polk	-	5,631
Pope	-	2,925
Pike	-	9,380
Sevier	-	4,746
Washington	84,498	-
White	41,951	-
Yell	-	9,505

Source: United States Department of Agriculture National Agricultural Statistics Service
-: County not in top ten

4.17.2 – Previous Occurrences

The state of Arkansas Department of Health (ADH) was contacted concerning the epidemiological tracking of contagious and/or human transmissible diseases. The following table provides information concerning select diseases of concern.

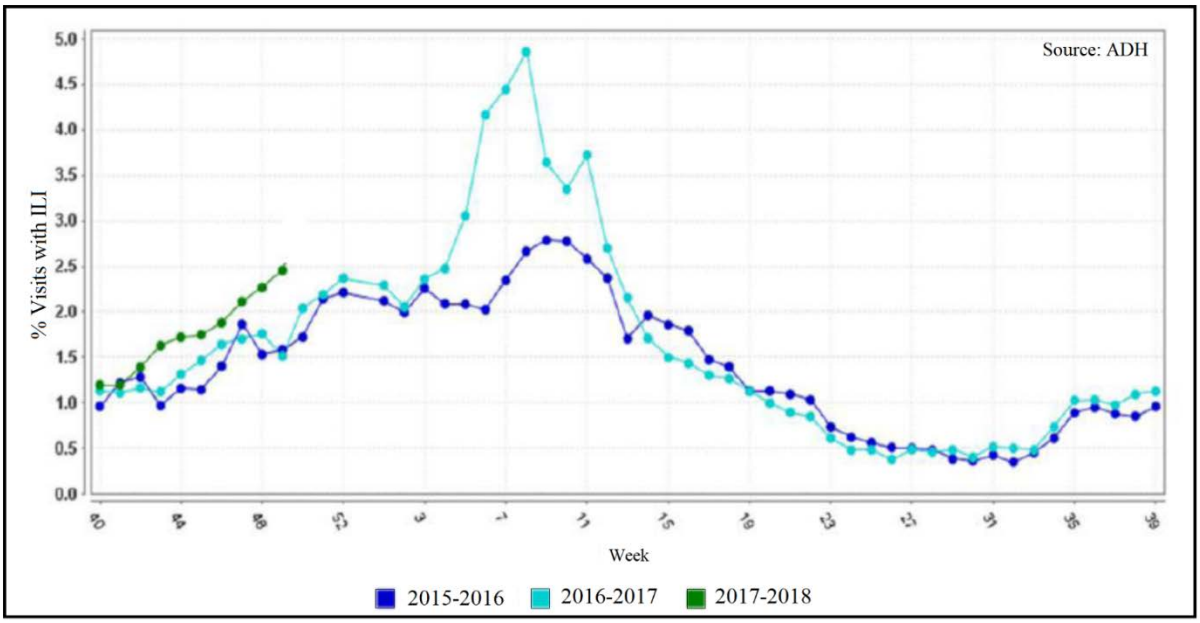
State of Arkansas Department of Health Epidemiological Tracking, 2007 -2016

Disease	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Haemophilus Influenzae Invasive Disease	12	16	24	22	35	30	25	50	56	58
Measles (Rubeola)	0	2	0	0	0	4	0	0	0	0
Meningococcal Infections	9	16	9	6	12	8	7	1	2	2
Mumps	4	5	4	5	4	1	3	1	7	2,411
Pertussis	175	197	369	246	80	248	466	286	59	69
Streptococcus pneumoniae, Invasive	148	152	221	194	230	188	252	291	324	290
West Nile Virus: Total/Encephalitis	20/13	9/7'	6/6'	7/6'	1/1'	64/44	18/16	11/9'	18/16	9/7'
Zika Virus Disease	0	0	8	0	0	0	0	0	3	16

Source: Arkansas Department of Health

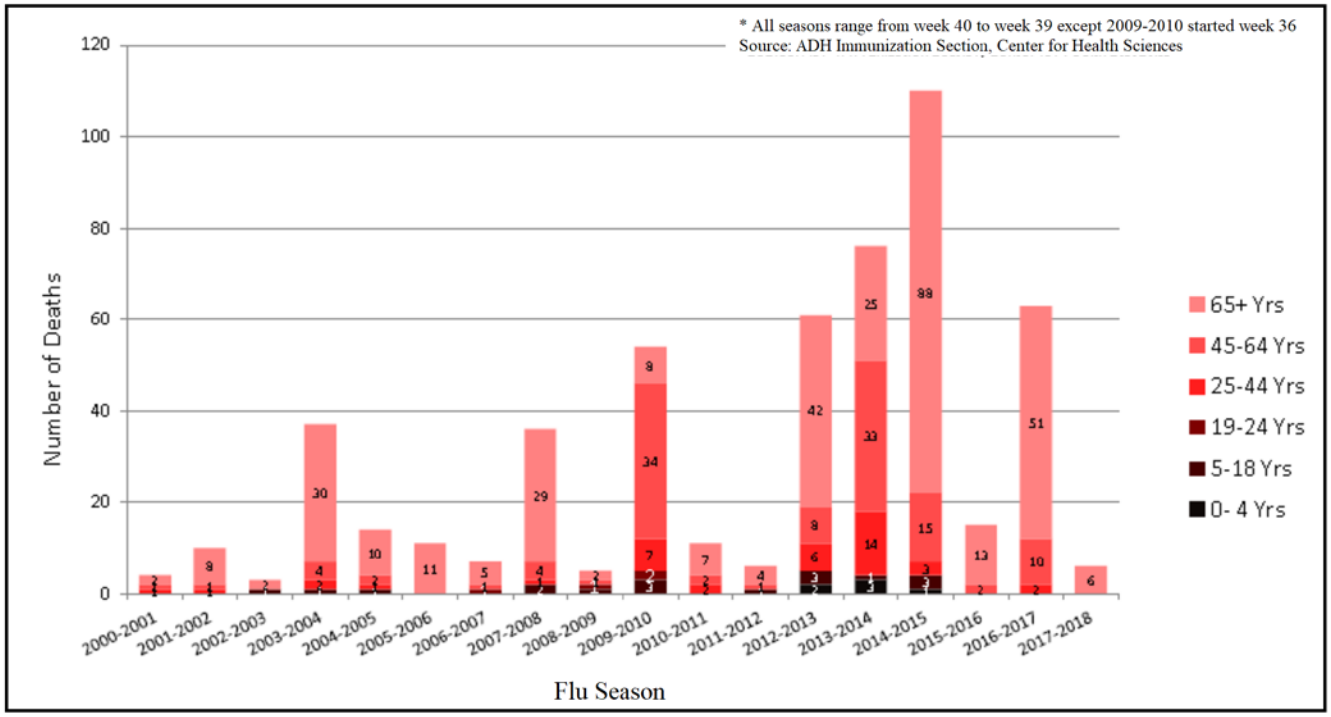
The following graph, provided by the ADH, details the percentage of emergency room visits for Influenza like illness for the period 2015 to 2017.

Percent Emergency Room Visits with Influenza Like Illness, Arkansas 2015-2017



Additionally, the graph below provided by ADH illustrates the mortality rate of Influenza for the State of Arkansas.

Influenza Mortality by Age Group, Arkansas 2000-2017 (Provisional)



4.17.3 – Hazard Probability Analysis

Each year the Centers for Disease Control (CDC) produces a report detailing the legally "reportable diseases" in States. While over time this report can serve as a predictor of the likelihood of future disease, it is impossible to predict outbreaks. Based on the relatively limited/controlled outbreak history in the state, the possibility of a large-scale major disease outbreak to be limited.

4.17.4 – Vulnerability Analysis

For purposes of this assessment, no state-owned and operated facilities are considered vulnerable to the major disease hazard.

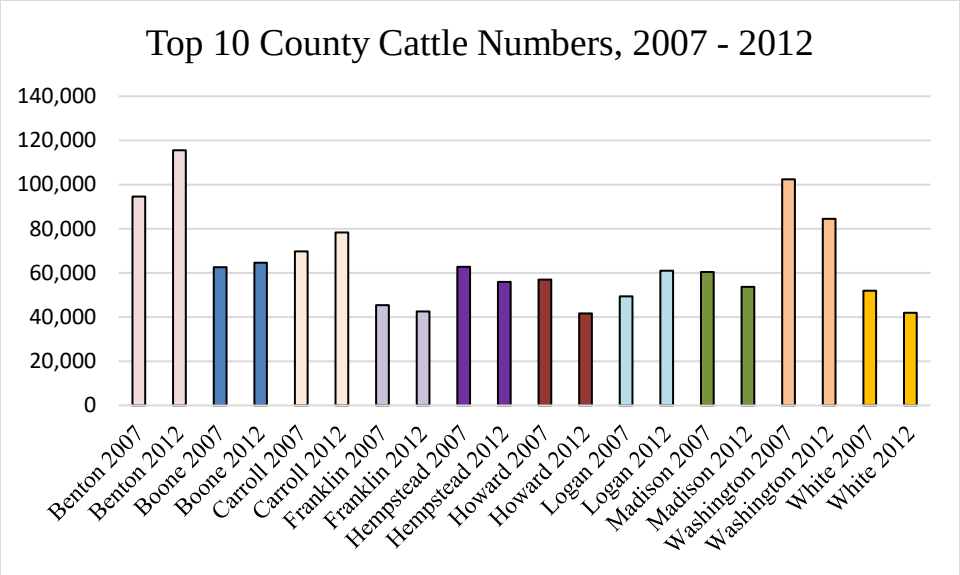
Due to the person to person transmission of many diseases of concern, and the increased likelihood of mortality for very young and very old populations, in general:

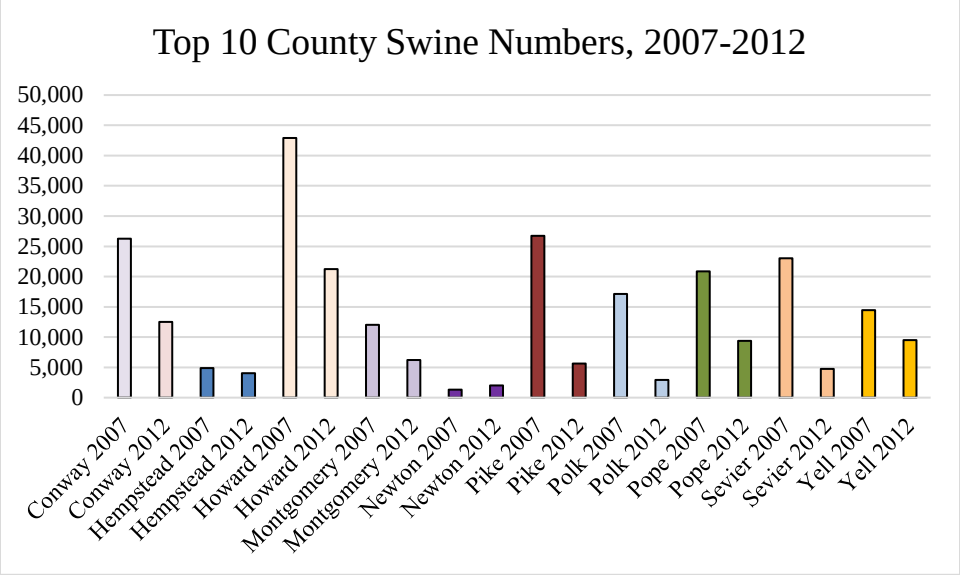
- Counties with a high population are at increased risk
- Counties with growing populations are at increasing risk
- Counties with a high population of children under 5 or adults over the age of 65 may be at increased risk.

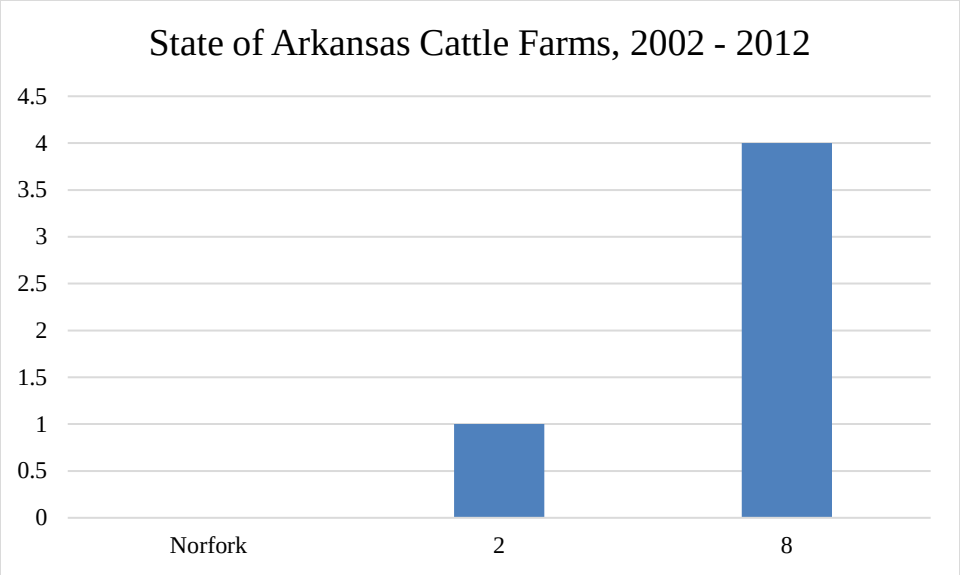
Population data may be found in previous sections. However, it is worth highlighting the following counties may have increased vulnerability to disease events due to population factors:

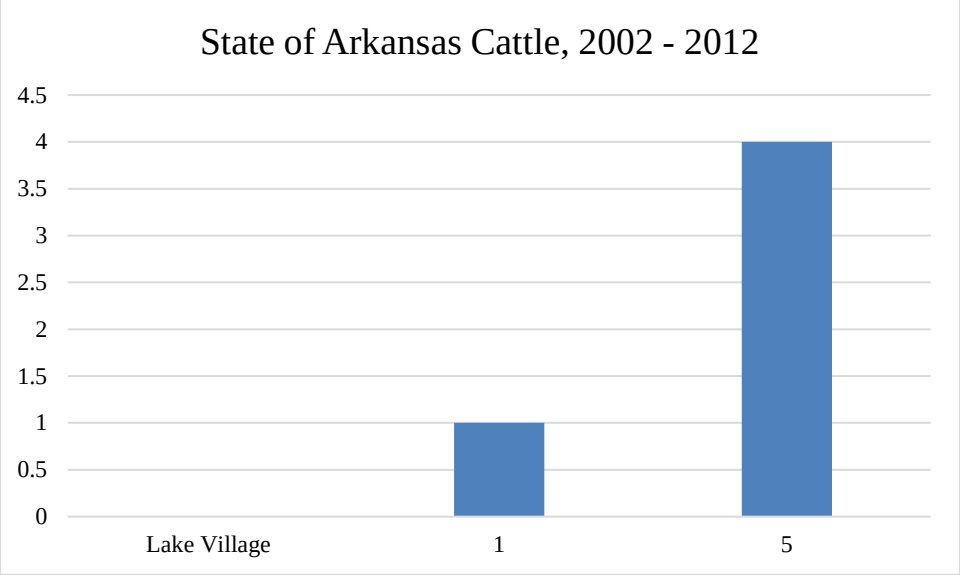
- **Counties with a large population increase:** Benton, Craighead, Faulkner, Lonoke, Pulaski, Sebastian, Washington and White
- **Counties with a population gain of over 1,000 children under the age of 5:** Benton, Craighead Faulkner, Lonoke, Pulaski, Saline and Washington
- **Counties with a population gain of over 1,000 adults over the age of 65:** Baxter, Benton, Boone, Cleburne, Craighead, Crawford, Faulkner, Garland, Greene, Independence, Lonoke, Marion, Miller, Pope, Randolph, Saline, Sebastian, Washington and White

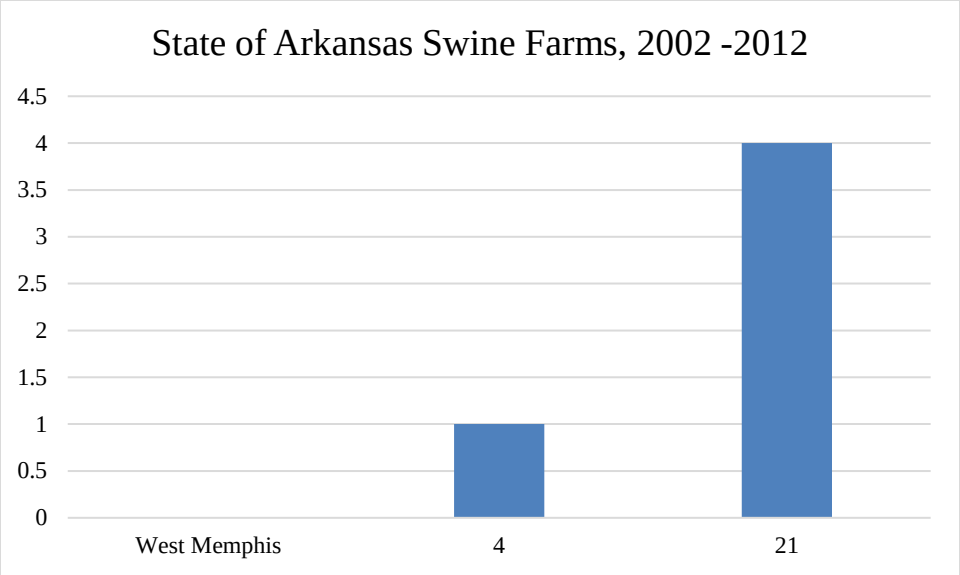
Additionally, counties with a high number of livestock can be considered at increased risk to animal disease. The following charts detail animal numbers and animal change data for the ten most vulnerable counties within the state.

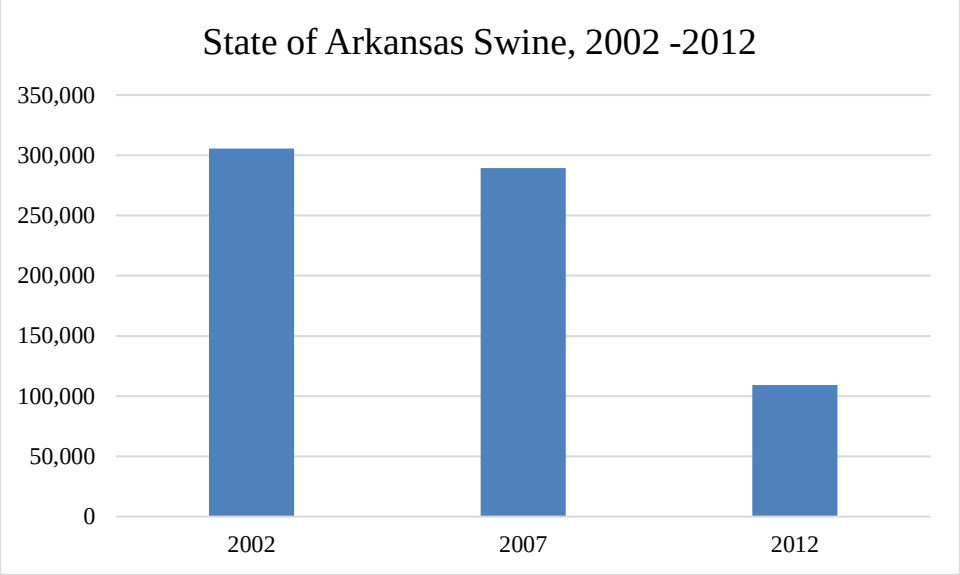

Top 10 County Cattle Numbers, 2007 - 2012
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
Benton 2007
Benton 2012
Boone 2007
Boone 2012
Carroll 2007
Carroll 2012
Franklin 2007
Franklin 2012
Hempstead 2007
Hempstead 2012
Howard 2007
Howard 2012
Logan 2007
Logan 2012
Madison 2007
Madison 2012
Washington 2007
Washington 2012
White 2007
White 2012


Top 10 County Swine Numbers, 2007-2012
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
Conway 2007
Conway 2012
Hempstead 2007
Hempstead 2012
Howard 2007
Howard 2012
Montgomery 2007
Montgomery 2012
Newton 2007
Newton 2012
Pike 2007
Pike 2012
Polk 2007
Polk 2012
Pope 2007
Pope 2012
Sevier 2007
Sevier 2012
Yell 2007
Yell 2012


State of Arkansas Cattle Farms, 2002 - 2012
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
Norfork
2
8


State of Arkansas Cattle, 2002 - 2012
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
Lake Village
1
5





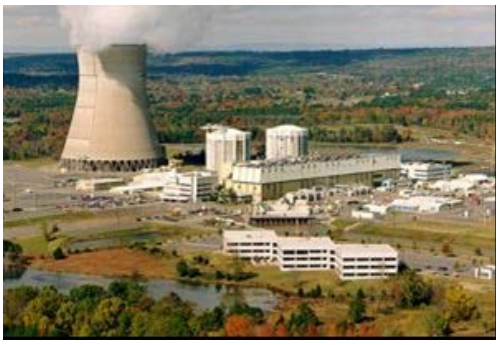
4.17.5 – Impact and Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Major Disease Consequence Analysis

Subject	Impacts of Major Disease Outbreak
Health and Safety of Persons in the Area of the Incident	Impact over a widespread area could be severe depending on type of outbreak and whether it is a communicable disease. Casualties are dependent on warning systems, warning times and the availability of vaccines, antidotes, and medical services
Responders	Impact to responders could be severe, especially if they reside in the affected area and/or depending on their type of exposure during response. With proper precautions and safety nets in place the impact is lessened.
Continuity of Operations	Continuity of Operations will be greatly dependent on availability of healthy individuals. COOP is not expected to be exercised.
Property, Facilities, and Infrastructure	Access to facilities and infrastructure could be affected until decontamination is completed
Environment	Impact could be severe for the immediate impacted area depending on the source of the outbreak. Impact could have far-reaching implications if disease is transferable between humans and animals or to wildlife.
Economic Conditions	Impacts to the economy could be severe if the disease is communicable. Loss of tourism, revenue, and business as usual will greatly affect the local economy and the state.
Public Confidence in Governance	Response and recovery will be in question if not timely and effective. Availability of medical supplies, vaccines, and treatments will come into question.

4.18 – Nuclear Incident



For purposes of this plan, a nuclear incident is considered an accident involving a release of radioactive materials from a nuclear reactor. Radiological accidents could cause injury or death, contaminate property and valuable environmental resources, as well as disrupt the functioning of communities and their economies. Since 1980, each utility that owns a commercial nuclear power plant in the United States has been required to have both an onsite and offsite emergency response plan as a condition of obtaining and maintaining a license to operate that plant. Onsite emergency response plans are approved by the U.S. Nuclear Regulatory Commission.

4.18.1 – Location and Extent

The only active nuclear reactor within the state is Arkansas Nuclear One (ANO). ANO is a two-unit pressurized water reactor nuclear power plant located in London in Pope County. The following map, provided by the Arkansas Department of Health in their 2016 publication "Emergency Instructions Arkansas Nuclear One," details the 10-mile emergency planning zone (EPZ) around ANO.

As indicated by the map, Johnson, Logan, Pope and Yell Counties all fall within the EPZ.

4.18.2 – Previous Occurrences

There have been no previous nuclear events in the State of Arkansas.

4.18.3 – Hazard Probability Analysis

Historically there has been no nuclear failure and/or release events in the State of Arkansas. The firm regulations imposed by the U.S. Nuclear Regulatory Commission on ANO ensure its safe operation. The amount of radioactivity released by a nuclear power plant is monitored continuously to be sure it does not go above allowed levels. The same sophisticated monitoring equipment provides exact information about any accidental release. The risk to the public from radioactivity released from nuclear power plants is much smaller than the exposure received naturally every day.

4.18.4 – Vulnerability Assessment

The following table indicates the number of state-owned facilities and bridges within 10 miles of ANO. For vulnerability purposes, only the four counties within the 10-mile EPZ were considered. Assuming an amount of damage to each facility is not possible due to the tremendous number of variables involved in a potential nuclear release event.

State Owned Facilities and Bridges Within 10 Miles EPZ of ANO

County	State-Owned Facilities	Value	State-Owned Critical Facilities	Value	State Owned Bridges
Johnson County	0	$0	0	$0	4
Logan County	0	$0	0	$0	4
Pope County	21	$283,229,787	21	$283,229,787	34
Yell County	0	$0	0	$0	25

Source: ADEM and HAZUS

Multiple factors can come into play when assessing vulnerability and loss analysis. However, for purposes of this plan, two major factors are being utilized to aid in the assessment:

- **Population Data:** Population within 10-mile EPZ
- **Structure Data:** Value of structures within 10-mile EPZ

For vulnerability purposes, only the four counties within the 10-mile EPZ were considered. Counties with a higher identified population and number of structures have a potentially greater vulnerability. However, these assumed vulnerabilities should be viewed as theoretical due to the tremendous number of variables involved in a potential nuclear release event.

County Vulnerability Data for Nuclear Event

County	HAZUS Building Valuation within 10 mile EPZ of ANO	2015 County Population
Johnson County	$26,176	26,141
Logan County	$21,792	21,714
Pope County	$63,779	63,390
Yell County	$21,552	21,713

Source: HAZUS and U.S. Census

4.18.5 – Impact and Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Nuclear Incident Consequence Analysis

Subject	Impacts of Nuclear Incident
Health and Safety of Persons in the Area of the Incident	Impact in the immediate area could be severe and long lasting.
Responders	Impact to responders is expected to be severe, potentially even with required safety equipment.
Continuity of Operations	Long term relocation may be necessary if government facilities experience contamination.
Property, Facilities, and Infrastructure	Localized impact could be severe in the incident area. Facilities may need to be abandoned and razed. Large areas may become inaccessible.
Environment	Impact could be severe for the immediate area. Impact will lessen with distance.
Economic Conditions	Local economy and finances may be adversely affected, depending on the nature, extent and duration of the event.
Public Confidence in Governance	Response and recovery will be in question if not timely and effective. Warning systems and the timeliness of those warnings could be questioned.

4.19 – Terrorism

The United States does not have a standardized definition of terrorism that is agreed upon by all agencies. The Federal Bureau of Investigation generally defines terrorism as:

> "the unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives."

4.19.1 – Location and Extent

Arkansas is home to a wide variety of extremist and hate groups. The Southern Poverty Law Center reported that in 2017 there were twelve active hate groups in Arkansas. Other groups, such as the Animal Liberation Front, Earth Liberation Front, and People for the Ethical Treatment of Animals may have sympathizers in the region. Although no major terrorist acts have been attributed to any of these groups, their involvement in violent acts meant to disrupt governmental functions cannot be discounted.

4.19.2 – Previous Occurrences

Arkansas has been fortunate to escape a major terrorist incident. A incident on June 1, 2009 involving a lone gunman who killed one, and injured another, at a U.S. military recruiting office in Little Rock was initially categorized as a potential terrorist event, but was prosecuted as capital murder and related charges, not terrorism.

4.19.3 – Hazard Probability Analysis

By nature, acts of terrorism are difficult to foresee. However, the probability of a major terrorist event in the State of Arkansas is considered very low due the lack of any documented historical events. Again, it is worth noting that no previous occurrences in no way guarantees no future occurrences.

4.19.4 – Vulnerability Analysis

For purposes of this assessment, data is not available to quantify vulnerability or estimated losses because of terrorism incidents that might impact state-owned facilities.

For this assessment, it is not possible to calculate a specific vulnerability for each county. However, because of the desire for publicity following attacks, it is more likely that counties with greater population densities would be the target of attacks. Sparsely populated rural counties are less desirable targets for publicity-seeking terrorists. It is expected that the likelihood of attack is directly related to population density or, more likely, to an event or location of importance to the attacker. For example, a large venue event, such as a sporting event attended by tens of thousands of people might be considered a desirable target. Most large public events occur in densely populated areas since those areas can provide the infrastructure support (hotels, eateries, etc) for large numbers of people.

In general, it is difficult to quantify potential losses from terrorism due to the many variables, human elements and lack of historical precedents. Therefore, for the purposes of this plan, the loss estimates will consider three hypothetical scenarios. The estimated impact of each event was calculated using the Electronic Mass Casualty Assessment and Planning Scenarios developed by Johns Hopkins University.

Please note that the hypothetical scenarios are included for illustrative purposes only.

Scenario #1: Mustard Gas Release

Event: Mustard gas is released from a light aircraft onto the stadium during a home football game. The agent directly contaminates the stadium and the immediate surrounding area. This attack would cause harm to humans and could render portions of the stadium unusable for a short time period to allow for a costly clean-up. There might also be a fear by the public of long-term contamination of the stadium and subsequent low attendance at games resulting in a loss of revenue and tourism dollars.

Event Assumptions: For this scenario the number of people in the stadium is 50,000 with an additional 5,000 persons outside the stadium in the adjacent parking areas. The agent used, mustard gas, is extremely toxic and may damage eyes, skin and respiratory tracts with death sometimes resulting from secondary respiratory infections. The death rate from exposure is estimated to be 3%. The estimated decontamination cost is $12 person. For this scenario it is assumed that all persons with skin injuries will require decontamination.

Results: The following table presents the estimated human and economic impacts of the scenario.

Estimated Impact of Scenario #1, Mustard Gas Release

Impact	Post Exposure Onset Time	Effect
Severe Eye Injuries	1 -2 Hours	41,250 persons
Severe Airway Injuries	1 - 2 Hours	41,250 persons
Severe Skin Injuries	2 Hours to Days	49,500 persons
Deaths	Immediate to Days	1,100 persons
Cost of Decontamination	N/A	$594,000

Source: Electronic Mass Casualty Assessment and Planning Scenarios by Johns Hopkins University

Scenario #2: Pneumonic Plague

Event: Four Canisters containing aerosolized pneumonic plague bacteria are opened in public bathrooms of heavily populated buildings (airports, stadiums, etc.). Each release location will directly infect 110 people; hence, the number of release locations dictates the initial infected population. The secondary infection rate is used to calculate the total infected population. This attack method would not cause damages to buildings or other infrastructure, only to human populations.

Event Assumptions: Each canister contains 650 milliliters of pneumonic plague bacteria. The type of infectious agent used is identified on Day 4. After identification, the fatality rate is 10% for

new cases. Pneumonic plague has a 1-15 percent mortality rate in treated cases and a 40-60 percent mortality rate in untreated cases.

Results: The following table presents the estimated human impacts of the scenario.

Estimated Impact of Scenario #2, Pneumonic Plague Release

Impact	Effect
Initial Infected Population	440 persons
Secondary Infected Population	883 persons
Deaths (7% of Infected)	62

Source: Electronic Mass Casualty Assessment and Planning Scenarios by Johns Hopkins University

Scenario #3: Improvised Explosive Device

Event: An improvised explosive device utilizing an ammonium nitrate/fuel oil mixture is carried in a panel van to a parking area and detonated during a time when stadium patrons are leaving their cars and entering the stadium. Potential losses with this type of scenario include both human and structural assets.

Event Assumptions: The quantity of ammonium nitrate/fuel oil mixture used is 4,000 pounds. The population density of the lot is assumed to be 1 person per every 25 square feet for a pre-game crowd. The Lethal Air Blast Range for such a vehicle is estimated to be 50 feet according to the Bureau of Alcohol, Tobacco, Firearms and Explosives Standards. The Falling Glass Hazard distance is estimated at 600 feet according to Bureau of Alcohol, Tobacco, Firearms and Explosives Explosive Standards. In this event, damage would occur to vehicles, and depending on the proximity of other structures, damages would occur to the stadium complex itself. The exact amount of these damages is difficult to predict because of the large numbers of factors, including the type of structures nearby and the amount of insurance held by vehicle owners. It is estimated that the average replacement cost for a vehicle is $20,000 and the average repair cost for damaged vehicles would be $4,000.

Results: The following table presents the estimated human impacts of the scenario.

Estimated Impact of Scenario #3, Improvised Explosive Device

Impact	Effect
Deaths	1,391 persons
Trauma Injuries	2,438 persons
Urgent Care Injuries	11,935
Injuries not Requiring Hospitalization	4,467
Repair Costs for 100 Vehicles	$400,000
Replacement Costs for 50 Vehicles	$1,000,000

Source: Electronic Mass Casualty Assessment and Planning Scenarios by Johns Hopkins University

4.19.5 – Impact and Consequence Analysis

There is no consensus on estimates of potential fatalities and injuries for terrorism events. Injury and death tolls would be dependent on the type, size and weapon used. Areas with higher population densities would likely result in a greater number of casualties.

As per EMAP requirements, the following table provides the Consequence Analysis.

Terrorism Consequence Analysis

Subject	Impacts of Terrorism
Health and Safety of Persons in the Area of the Incident	Impact could be severe for persons in the incident area.
Responders	Impact to responders could be severe if not trained and properly equipped. Responders that are properly trained and equipped will have a low to moderate impact.
Continuity of Operations	Depending on damage to facilities/personnel in the incident area, relocation may be necessary and lines of succession execution.
Property, Facilities, and Infrastructure	Impact within the incident area could be severe for explosion, moderate to low for Hazmat.
Environment	Localized impact within the incident area could be severe depending on the type of incident.
Economic Conditions	Economic conditions could be adversely affected and dependent upon time and length of clean up and investigation.
Public Confidence in Governance	Impact dependent on if the incident could have been avoided by government entities, clean-up, investigation times and outcomes.

5.0 Capabilities Assessment

5.1 – State of Arkansas Emergency Management Codes

44 CFR 201.4(c)(3)(ii) A discussion of the State's pre- and post-disaster hazard management policies, programs, and capabilities to mitigate the hazards in the area, including: an evaluation of State laws, regulations, policies, and programs related to hazard mitigation as well as to development in hazard-prone areas; a discussion of State funding capabilities for hazard mitigation projects; and a general description and analysis of the effectiveness of local mitigation policies, programs, and capabilities.

Emergency Management legislation for Arkansas is detailed in the 2016 A.C.A.. ADEM is mandated by Act 511 of 1973, which is codified A.C.A. §12-75-101 et al, to establish and maintain a management system that, to the extent possible, effectively provides mitigation of and recovery from the effects of natural and man-made disasters. In addition, under the 2016 A.C.A., the following relate specifically to emergency management:

- Title 12 - Law Enforcement, Emergency Management, and Military Affairs
  - Subtitle 5 - Emergency Management
    - Chapter 75 - Arkansas Emergency Services Act of 1973
    - Chapter 76 - Interstate Compacts
    - Chapter 77 - Arkansas Earthquake Preparedness Act of 1989
    - Chapter 78 - Emergency Communications Act of 1991
    - Chapter 79 - Arkansas Hazardous and Toxic Materials Emergency Notification Act
    - Chapter 80 - Earthquake Resistant Design for Public Structures
    - Chapter 81 - Commission to Assist Persons Who Have Suffered Catastrophic Financial Loss [repealed.]
    - Chapter 82 - Arkansas Serc/lepc Act
    - Chapter 83 - Emergency Volunteer Reserve Act of 1985
    - Chapter 84 - Arkansas Hazmat Emergency Management Act
    - Chapter 85 - Disaster Service Volunteer Leave Act
    - Chapter 86 - Emergency Preparedness
    - Chapter 87 - Uniform Emergency Volunteer Health Practitioners Act
    - Chapter 88 - Business Rapid Response to State Disasters Facilitation Act

In addition, the following acts and executive orders relate to emergency management and mitigation planning:

- **Executive Order EO-04-02:** As directed by Section 322 of the Federal Disaster Mitigation Act of 2000, all state offices, agencies, departments, and commissions must integrate sound mitigation measures into all future planning initiatives. This order also authorizes $3,000,000 in mitigation funding annually.
- **Act 629 of 1969**: As Amended, authorizes cities, towns, counties, and the Arkansas Natural Resources Commission, where necessary, to enact and enforce land use measures which will prevent and alleviate flood hazards and losses in flood-prone areas of the State; and for other purposes.

- **Subchapter 2 of Chapter 22 of Title 15 of the Arkansas Code of 1987, as amended:** Authorizes the Arkansas Natural Resources Commission to develop and enforce rules and regulations governing the design and operation of dams in the State.
- **Act 247 of 1989:** An act to establish a state earthquake preparedness program within the Arkansas Office of Emergency Services.
- **Act 833 of 1991:** An act to provide for additional funding of Arkansas Fire Departments through additional insurance premium tax in order to reduce homeowner insurance rates.
- **Act #36 of 1979:** Establishing within the Arkansas State Forestry Commission, a Rural Fire Protection Division. The purpose of this division was to establish a program to encourage and assist in the establishment, development, and the operation of fire protection districts and associations in rural areas which had little or no fire protection available.
- **Act 833 of 1991, as amended during subsequent legislative sessions:** Enacted the Fire Protection Services Program Act of Arkansas which increased fire insurance premiums for revenues that may be used to defray training expenses of firefighters and to purchase, improve, or buy firefighting equipment in compliance with the National Fire Protection Association standards.

5.2 – State of Arkansas Departmental Capabilities

44 CFR 201.4(c)(3)(ii) A discussion of the State's pre- and post-disaster hazard management policies, programs, and capabilities to mitigate the hazards in the area, including: an evaluation of State laws, regulations, policies, and programs related to hazard mitigation as well as to development in hazard-prone areas; a discussion of State funding capabilities for hazard mitigation projects; and a general description and analysis of the effectiveness of local mitigation policies, programs, and capabilities.

The roles and responsibilities of state departments and agencies involved mitigation activities are briefly detailed below.

Arkansas Department of Emergency Management

ADEM is Arkansas' Homeland Security and Preparedness Agency. ADEM serves as the state's coordination center for the capabilities necessary to prevent, protect against, mitigate the effects of, respond to, and recover from those threats that pose the greatest risk to the security of the Nation.

The Mitigation Branch and the SHMO are generally charged with all mitigation related activities, including:

- Preventing future loss of lives and property through mitigation measures and programs
- Overseeing the development, revision and implementation of all state hazard mitigation plans
- Assisting with the implementation and completion of identified mitigation actions and programs
- Providing direction and oversight on all hazard mitigation related funding and grants

The following are programs that ADEM operates and oversees related to hazard mitigation planning and mitigation initiatives.

Federal Hazard Mitigation Grant Program (HMGP)

The HMGP provides grants to states and local jurisdictions to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. The State of Arkansas, through ADEM, administers the HMGP. The FEMA cost share for this program will not be more than 75 percent. Local jurisdictions are responsible for the remaining cost share. This program is managed under the policies of Section 404 of Public Law 93-288, as amended, the Robert T. Stafford Disaster Relief and Emergency Assistance Act.

Federal Pre-Disaster Mitigation Program (PDM)

The PDM program provides funds on a competitive basis to states, territories, Indian tribal governments, local jurisdictions, and universities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations. The FEMA cost share will not exceed 75 percent and the local jurisdiction is responsible for the remaining 25 percent.

Arkansas Hazard Mitigation Grant Program (State)

In 1993, the Arkansas Legislature approved Amendment 1049 to Act 511, establishing Arkansas as the first state in the nation to develop a state hazard mitigation disaster fund. The goal of the program is to assist local governments that have suffered repetitive disaster losses. This is accomplished by funding projects that permanently solve these repetitive problems. The Arkansas Hazard Mitigation Grant Program is available for all jurisdictions to use. This program has a 50 percent local and 50 percent state cost share up to $150,000.

Federal Public Assistance Program

ADEM (Grantee) administers the Federal Public Assistance (PA) Grant Program. Federal assistance will be granted when the situation is clearly beyond the capability of both local and state governments. A team of Local, State and Federal personnel will complete preliminary damage assessments which will help with determining eligibility for a Presidential Declaration. Federal determination is based on a number of factors: which include population (implied tax base), impact upon jurisdiction's infrastructure and recent disaster history. The PA Program is available to assist with reimbursement of repairs to damaged eligible facilities. It is made available to eligible applicants (Local Governments, State Governments and certain Private Non-Profit organizations) that are located in a designated damage area. The Federal cost share for this program will not be less than 75% of eligible expenses for emergency measures and permanent restoration.

State Public Assistance Program

The State Public Assistance Program is authorized under Arkansas Code Annotated 12-75-101 et.al and administered under State PA Standard Operating Procedures. The Arkansas Department of Emergency Management administers the State PA Program. The State PA program is designed to fill the gap between local recovery efforts and federal disaster assistance following a disaster situation. The program provides

assistance to eligible applicants and facilities for debris removal, emergency protective measures, and permanent restoration of infrastructure. It is made available to eligible applicants (Local Governments and State Governments) that are located in a designated damage area. The State share of these expenses cannot be more than 35 percent (35%) of eligible costs. The State cannot provide assistance until the situation has clearly exceeded the capability of local government. The Arkansas Department of Emergency Management has established the State PA Grant Program Guidelines to be used in the implementation of the State PA Program. Please refer to the State PA Grant Program Guidelines for specific information on the program.

State Individual Assistance Program

The State Individual Assistance Program is authorized under Arkansas Code Annotated 12-75-101 et.al. The Arkansas Department of Emergency Management administers the State Individual Assistance Program. Through the development of a disaster declaration and damage assessments individuals may be eligible to receive disaster assistance from the State of Arkansas. The assistance is for qualified homeowners/renters whose primary residence was damaged or destroyed in a declared designated area. If the damage exceeds the capabilities of local government, a state declaration will be requested through the Governor's Office. The State of Arkansas disaster assistance covers basic needs and will not compensate for the entire loss.

Federal Individual Assistance Program

If both local and state governments are overwhelmed the Governor of Arkansas will submit a Presidential request for assistance. If approved, federal assistance will be available for qualified individuals, families, and businesses whose damaged property is in a designated area. FEMA along with the State of Arkansas will jointly administer the Individuals and Households Program and make available other needed assistance.

Governor's Earthquake Advisory Council

The Governor's Earthquake Advisory Council was created by then Governor Clinton in 1984. Members are representatives from state agencies, utilities, universities, hospitals, engineering, geology, local government, and state and federal legislative bodies. It serves as a forum for sharing ideas and information, networking of professionals, lobbying for legislative changes, searching for programs and funds, and planning. Past activities include promotion of seismic safety for the state, retrofitting projects in schools and hospitals, school safe rooms, promotion of disaster resistant communities, and the formation of the Pre-Disaster Mitigation Advisory Council.

Arkansas Earthquake Program

ADEM, under the authority granted by A.C.A. § 12-77-103, coordinates an earthquake program designed to protect the lives and property of persons of this state from the direct and secondary effects of earthquake. The program includes all activities involved in mitigation of and preparedness for seismic events. The program includes seismic risk assessment, training, education, and planning. Arkansas coordinates activities with the federal government and other states and promotes awareness and preparedness to the citizens of the state, particularly those living near the New Madrid Seismic Zone.

Preparedness Planning

ADEM has developed and updated the ARCEMP to define the structure of emergency operations at the state level, to describe the relationships between the state and its partners at the household, local and federal levels, and to identify the various agencies and departments with functional responsibilities. The State of Arkansas has adopted the National Incident Management System and this is reflected in the ARCEMP. The ARCEMP addresses all hazards as identified in this Mitigation Plan. This program supports loss reduction by providing both emergency management and continuity of operations planning resources to the counties, other state agencies, and other organizations.

ADEM Five-Year Strategic Plan

This strategic plan is designed to guide the department over a five-year period as a blueprint for improving services and capabilities. This plan relates to goals, objectives, and action items for preparedness, response, recovery, and mitigation. This plan is constantly monitored and updated to meet the changing state and federal initiatives and any current high priority disaster-related issues.

Emergency Management Performance Grant (EMPG)

The EMPG program provides resources to assist state, local, tribal and territorial governments in preparing for all hazards, as authorized by Section 662 of the Post Katrina Emergency Management Reform Act (6 U.S.C § 762) and the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended (42 U.S.C. §§ 5121 et seq.). Title VI of the Stafford Act authorizes FEMA to make grants for the purpose of providing a system of emergency preparedness for the protection of life and property in the United States from hazards and to vest responsibility for emergency preparedness jointly in the federal government and the states and their political subdivisions. EMPG reimburses certain eligible expenses, under program guidelines, to support state and local emergency management costs.

Fire Protection Services Fund (Act 833)

Fire Services has a vital role in the State of Arkansas. The Fire Services Office provides administration and distribution of the Act 833 grant program for Arkansas fire departments and reviews and certifies that departments are in accordance with Act 833 of 1991. Additionally, the Fire Services Office provides technical assistance and grant information, carries out administrative functions and directives from the Arkansas Fire Protection Services Board and provides support for developing new fire departments. This Pre- Disaster program supports loss reduction by providing funding for equipment, apparatus and facilities directly related to improve the department Fire Protection Classification rating (ISO Rating).

Homeland Security Grant Program

The objective of this program is to enhance the capacity of state and local emergency responders to prevent, respond to, and recover from a weapon of mass destruction terrorism incidents. These incidents may include events involving chemical, biological, radiological, nuclear and explosive devices, cyber-attacks, and major disasters. Funds are provided to enhance homeland security and preparedness planning, training, and exercises, and to purchase specialized equipment to enhance the capability of state and local

agencies to prevent, respond to, and mitigate incidents. The most recent posted Homeland Security Grant Program funding priorities include:

- Enhancement and maintenance of specialized terrorism response capabilities in the areas of weapon of mass destruction bomb/Improvised Explosive Device detection and deterrence
- Urban search and rescue,
- SWAT/Terrorism response.

Also supported is the State's Fusion Center, cyber security, community preparedness/public awareness, and tactical emergency casualty care. Funding is provided to the State through the Homeland Security Grant Program (Department of Homeland Security (DHS)/FEMA).

Hazardous Materials Program

Provides pre-disaster hazardous materials training to groups and organizations throughout the state. Updates and maintains a database and file of all Tier II and TRI reports. The information is used in the event of emergencies to provide data analysis for Local Emergency Planning Committees (LEPC) emergency planning, and to support the Freedom of Information Act. Fees collected from Tier II reporting are used to facilitate safety training for HAZMAT trainers as well as first responders. This pre-disaster program supports loss reduction by training first responders.

Arkansas Hazardous Materials Emergency Response Commission

The commission's priorities are to supervise and coordinate the activities of the LEPC in each of the emergency planning districts making sure that plans in each district are adequately developed, maintained, and exercised to ensure an effective response to accidents and incidents involving hazardous materials. Additionally, the commission ensures the emergency response plans, along with the pertinent information, are accessible for review by the general public.

In addition to ADEM, a number State of Arkansas departments and agencies provide services related to hazard mitigation through a variety of programs and initiatives. Differing from previous planning efforts, no contact information has been provided for these departments as it was determined that staff turnover often rendered listed contacts obsolete. Contacts for these departments may easily be found on the State of Arkansas Website.

Arkansas Building Authority

The Arkansas Building Authority is the state government's leasing agent, construction overseer, and examiner of architectural/engineering plans, and sets policies, guidelines, standards and procedures.

Arkansas Department of Economic Development

This department oversees Community Development Block Grant (CDBG) Loan and Grant Programs fund projects in eligible communities that improve, repair or rehabilitate housing or infrastructure systems to meet urgent needs or to deal with an imminent threat to public health and safety. The CDBG has been used in conjunction with other federal mitigation grants to build community saferooms.

Arkansas Department of Environmental Quality

ADEQ manages many programs to assist businesses, educators and the public with regulatory and other issues, and offers loans and tax credits for environmental improvement projects. This program supports loss reduction by providing funding for mitigation initiatives.

Arkansas Department of Health

The ADH operates and oversees numerous programs related to hazard mitigation planning and mitigation initiatives.

- Preparedness & Emergency Response Program works with internal and external partners in planning, City Readiness Initiative, Strategic National Stockpile, surveillance, epidemiology, public health labs, crisis communication, the health alert network, training, exercises and drills.
- Bioterrorism Preparedness Program is focused on potential terrorism agents, but these efforts are also mitigating the potential effects of naturally occurring diseases. This program supports the development and funding of regional plans to purchase training, equipment, and supplies that enhance preparedness to respond to disease outbreaks.
- Strategic National Stockpile is a national repository of medical drugs and equipment. The State of Arkansas is a full participant in this federal program. Potential funding is available through this program for pre-event mitigation initiatives.
- Health Alert Network includes planning and funding for improving local technical capabilities for public health including high speed internet connectivity and statewide databases for health care providers.
- The Hospital Preparedness Program, which is jointly operated by the Arkansas Department of Public Health and the Arkansas Hospital Association, works with hospitals throughout the state to ensure that they prepared to meet the medical needs of their patients and communities. The program works closely with the hospitals on communication, drills and exercises, mass fatality plans, evacuation and alternate care sites.

Arkansas Forestry Commission

The Arkansas Forestry Commission operates and oversees numerous programs related to hazard mitigation planning and mitigation initiatives.

- The National Fire Plan Hazard Mitigation program provides funding for providing training and technical assistance to rural communities and volunteer fire departments in conducting community wildfire hazard risk assessments, development of mitigation projects to reduce the risk from wildfire fires and the development of Community Wildfire Protection Plans. Potential funding is available through this program for pre-event mitigation initiatives.

- FireWise is a cooperative effort among federal, state, and private agencies and organizations to promote fire safety in the wild land/urban interface.
- Arkansas Fire Prevention Code, as updated by the Fire Marshal's Office of the State Police, references best practices for building disaster resistant structures.
- The Rural Fire Protection division was established to encourage and assist in the establishment, development, and operation of fire protection districts and associations in rural areas that previously had little to no fire protection capabilities.
- The Landowner Assistance program offers a variety of free technical assistance services in forest management, and includes written forest management plans, and information and site recommendations for protection, restoration, and improvement of water and wetland resources. Fire lane construction and prescribed burning can be conducted for a fee.

Arkansas Geographic Information Office

This office coordinates statewide GIS data creation standards, administers the data repository, and serves as liaison between local, state, and federal GIS programs. Under this office reside the following programs:

- The Arkansas Centerline File Program was developed to support state legislative initiatives to establish spatial data infrastructure benefits the GIS user communities in areas such as E-911 applications, location-based services, homeland security, and various government entities. Free services to cities and counties include agency coordination, training and guidance and technical support. Potential funding is available through this program for pre-event mitigation initiatives.
- The Arkansas County Assessor Mapping Program provides technical and GIS input and support for county assessors for the development of cadastral (showing the extent, vaule, and ownership of land, especially for taxation) mapping with a goal of giving the public, including mitigation planners, easier access to assessment data. Potential funding is available through this program for pre-event mitigation initiatives.

Arkansas Geological Survey

The AGS identifies, studies, monitors, and advises the public and officials about active or potentially active hazardous geologic processes (earthquakes and associated hazards, landslides, expansive soils and ground subsidence) in Arkansas. The AGS monitors statewide earthquake activity in Arkansas with the nine broadband seismometers comprising the Arkansas Seismic Network (AG). They provide real-time earthquake monitoring 24/7/365, provide seismic data and information to the public and officials. Geohazard study findings may be used to support analysis, decision making and risk reduction including: 1) Improve understanding of geohazard/seismic risk in Arkansas (New Madrid Seismic Zone and other areas), 2) Promote geohazard risk awareness and mitigation of high-risk communities, 3) Support awareness of seismic building code provisions, 4) Support disaster response and recovery planning.

Arkansas Department of Transportation

Under this department, the Technology Transfer Program is responsible for assisting cities and counties in implementation of transportation related technology. ArDOT also has funding mechanisms to provide infrastructure projects to state roads and bridges.

Arkansas Livestock and Poultry Commission

The Commission has full authority for the control, suppression, and eradication of livestock and poultry diseases and pests, and supervision of livestock and poultry sanitary work in this state. In addition, the Commission also maintains the Animal Disease Emergency Response Plan, conducts inspections, and operates the Veterinary Diagnostic Lab.

Arkansas Natural Resources Commission

The ANRC operates and oversees numerous programs related to hazard mitigation planning and mitigation initiatives.

- The FMA Grant Program was created as part of the National Flood Insurance Reform Act of 1994 with the goal of reducing or eliminating claims under the NFIP. Consistent with Biggert-Waters Flood Insurance Reform Act of 2012 (Public Law 112-141), the FMA program for fiscal year 2013 and beyond includes provisions to mitigate SRL and RL properties. Only NFIP-participating communities with FEMA approved flood/hazard mitigation Plans can apply for FMA project grants. The FMA program provides funds on an annual basis so that measures can be taken to reduce or eliminate the risk of flood damage to buildings, manufactured homes, and other structures insurable under the NFIP.
- The Floodplain Management Program, under Act 629 of 1969, authorizes relevant jurisdictions and the ANRC, where necessary, to enact and enforce land use measures which will prevent and alleviate flood hazards and losses in flood-prone areas. The purpose of this is to promote the public health, safety, and general welfare of the state and to minimize public and private losses due to flood conditions.
- Act 754 of 2003, as amended, authorizes the ANRC to require that local communities with floodplain management ordinances appoint a floodplain manager to administer local floodplain management laws, and obtain accreditation of the floodplain administrator through the ANRC. The purpose of the legislation was to make sure that local floodplain management regulations were properly administered, thereby reducing the likelihood of future flood damages to property owners in Arkansas.
- The Dam Safety Program provides for the comprehensive regulation and supervision of dams for the protection of the health, safety, and welfare of the citizens, and assures proper planning, design, construction, maintenance, monitoring, and supervision of dams, including such preventive measures necessary to provide an adequate margin of safety.
- The Conservation District Grant Program helps enhance the capability of conservation districts to carry out conservation projects, including resource enhancement, restoration or protection. Projects must be new, or augment projects in which a district is currently involved. Potential funding is available through this program for pre-event mitigation initiatives.
- The CRS is a voluntary incentive program that recognizes and encourages community floodplain management activities which exceed the minimum NFIP requirements. Flood insurance premium rates are discounted to reflect the reduced flood risk resulting from community actions meeting the three goals of the CRS, the reduction of flood losses, the facilitation of accurate insurance rating, and the promotion the awareness of flood insurance.

Department of Arkansas Heritage

This department maintains a number of databases, including the Historic Places and Landmarks Database, with over 20,000 historical locations throughout the state.

University of Arkansas

The University of Arkansas operates and oversees numerous programs related to hazard mitigation planning and mitigation initiatives.

- The Arkansas Archeological Survey includes a database that contains more than 44,000 entries for prehistoric and historic sites located throughout the state.
- The Arkansas Earthquake Center is a collaborative program in hazard mitigation emphasizes public education, hazard mitigation, earthquake monitoring, and scientific research. Potential funding is available through this program for pre-event mitigation initiatives.
- The University of Arkansas for Medical Sciences Bioterrorism Steering Committee assists other organizations in the state and region in their bioterrorism planning efforts.
- The Center of Excellence for Poultry Science educates future workers and provides subject matter expertise to businesses and government.

5.3 – Related Mitigation Planning Efforts

Animal and Plant Health Inspection Services

The agency improves agricultural productivity and competitiveness and contributes to the national economy and the public health. Arkansas is a full participant in the various programs from the Animal and Plant Health Inspection Services, especially related to potential biological hazards that could impact the poultry and cattle industry of the state.

Arkansas Animal Disease Emergency Response Plan

The committee in charge of this plan is primarily composed of members of the Arkansas Livestock and Poultry Commission and the Veterinarian Services. These would be the lead agencies for any events involving animal disease. This existing planning effort is being incorporated into the state's mitigation strategies for biological hazards.

Arkansas Manufactured Home Commission

Responsibilities include enforcing construction and safety standards for manufactured housing, dealer lot inspections and monitoring of consumer complaints. The Arkansas Manufactured Home Commission sets, administers, and enforces standards for the proper installation of manufactured homes in the State of Arkansas.

Arkansas Regulatory Partnership Program

The Arkansas Regulatory Partnership Program is a cooperative effort among 19 Arkansas pipeline and gas companies and the Arkansas One-Call Center. Its role is to address the first responder, public official, and excavator audiences.

Arkansas State Disaster Insurance Coalition Plan

This plan, which works to ensure that citizens of Arkansas will receive the best possible services when disasters occur in the state, is a comprehensive contingency plan that facilitates a timely and comprehensive response from the insurance industry. ADEM is a lead partner in this coordinated planning effort.

Central Arkansas Veterans Healthcare System – Bioterrorism Readiness Plan

This plan contains operations information for this organization for responding to potential outbreaks.

Center for Disease Control Emergency Planning

As part of the federal government's bioterrorism planning efforts, the CDC has developed detailed emergency plans a variety of pandemic hazards. These federal plans are implemented through state and local government public health agencies. The CDC provides significant grant funding to the state's Department of Health and Human Services for bioterrorism planning and response. The state has also considered the Model State Emergency Health Powers Act that was distributed by the CDC for discussion at the state and local levels.

Central United States Earthquake Consortium (CUSEC) / USDOT - Earthquake Vulnerability of Transportation Systems in the Central United States

The U.S. Department of Transportation collaborated with the CUSEC on several projects and training activities to address the vulnerability of transportation systems in the New Madrid earthquake zone, and measures that can be taken to advance mitigation, response and recovery planning. This plan is available on the CUSEC website.

CUSEC Earthquake Awareness Week

Each year several CUSEC states participate in joint efforts to raise the level of earthquake awareness in the central United States. Activities include press conferences, proclamations, meetings, exhibits, and earthquake related training.

CUSEC/FEMA/American Red Cross - The New Madrid Housing Recovery Initiative Plan

A New Madrid Housing Recovery Working Group was organized under the auspices of CUSEC in 1998 to develop a multi-year plan for developing a strategy which could be useful to decision makers and

service providers in addressing the basic shelter and housing needs of disaster victims displaced from their residences because of a major earthquake. This plan is available on the CUSEC website.

CUSEC - New Madrid Catastrophic Planning Initiative

This project was enacted to increase national readiness for a catastrophic earthquake in the NMSZ. CUSEC, the MAEC, the USGS, and FEMA have completed planning scenarios of potential impacts of an earthquake in the NMSZ.

Emergency Poultry Disease Committee

This committee is made up of private sector veterinarians and industry experts committed to protecting the poultry flocks within the State of Arkansas. They focus on disaster planning, disease identification and surveillance and response/containment issues.

Federal Animal Disease Risk Assessment, Prevention and Control Act of 2001 – Final Report

This report was issued in 2003 and is a primary element of the state's emergency planning for animal pandemics. This is a coordinated effort with the USDA and the Animal and Plant Health Inspection Services program.

FEMA - National Mitigation Strategy

In response to the unacceptable loss of life and property from recent disasters, and the prospect of even greater catastrophic loss in the future, the National Mitigation Strategy has been developed to provide a conceptual framework to reduce these losses. The long-term goal of the strategy is to substantially increase public awareness of natural hazard risk and to significantly reduce the risk of loss of life, injuries, economic costs, and the disruption of families and communities caused by natural hazards.

National Animal Health Monitoring System

The National Animal Health Monitoring System was initiated in 1983 for collecting, analyzing, and disseminating data on animal health, management, and productivity and in conducting disease surveillance across the United States

National Fire Protection Association

The goal of the National Fire Protection Association is to reduce the burden of fire and other hazards on the quality of life by providing research, training, and education, and advocating consensus on codes and standards worldwide.

National Incident Management System (NIMS)

The Federal Department of Homeland Security has developed the NIMS system as the integrated standard for emergency planning. The State of Arkansas has officially adopted the NIMS system and is continually implementing this program within state agencies and with local jurisdictions.

NOAA StormReady Program

The StormReady Program is a voluntary program to help communities better prepare for and mitigate effects of extreme weather-related events. StormReady also helps establish a commitment to creating an infrastructure and systems that will save lives and protect property. For each community, preparedness criteria are outlined by a partnership between the NWS and state and local emergency managers. At a minimum, communities must establish a 24-hour warning point and emergency operations center, have more than one method of receiving severe weather forecasts and warnings and alerting the public, create a system that monitors local weather conditions, promote the significance of public readiness through community seminars, and develop a formal hazardous weather plan.

NOAA Weather Radio All Hazards

NOAA Weather Radios are tone alert radios that provide continuous weather coverage and can be programmed to sound when severe weather watches, warnings, or other critical information is broadcast by the NWS. Due to the joint efforts of many electric cooperatives, private businesses, the NWS, FEMA, and ADEM, every county in the State is covered by a NOAA Weather Radio transmitter providing over 95% coverage

National Strategy for Pandemic Influenza

The State of Arkansas has considered this planning effort and incorporated it into the statewide public health emergency planning. This coordination between the federal and the state government is part of an on-going effort to protect the population from a variety of health risks.

Transportation Community Awareness Emergency Response

Transportation Community Awareness Emergency Response is a voluntary national outreach effort that focuses on assisting communities to prepare for and respond to a possible hazardous material transportation incident. The mission for Arkansas Transportation Community Awareness Emergency Response program is to promote safe transportation and handling of hazardous materials by river, rail and highway, educate our communities to safely handle hazardous materials, and help provide education and training for our emergency responders regarding the safe handling of hazardous materials.

USGS National Landslide Mitigation Strategy

This plan outlines key elements of a comprehensive and effective national strategy for reducing losses from landslides nationwide, including activities at the national, state, and local levels, in both the public and private sectors. Methodologies include the use of scientific information, maps, methodology, and land-use planning.

5.4 – State Obstacles and Challenges

The increased interest in mitigation activities at the local level can be considered a challenge by the state. Local jurisdictions rely heavily on grant funding to support their mitigation efforts. In most circumstances, there is not enough funding to allocate to each jurisdiction interested, so those projects not selected often go unfunded.

Currently there are only four staff in the mitigation section at the ADEM. The increased interest at the local level makes for a heavier workload at the state with limited capabilities. Time and resources are often spent on jurisdictions that are already invested in mitigation activities instead of outreach to those who have not expressed an interest.

Another obstacle is that the primary mitigation programs are housed at different state agencies. The Arkansas Department of Emergency Management is responsible for managing the HMGP, PDM, and the State Hazard Mitigation Grant Program while the Arkansas Natural Resources Commission manages the FMA. ADEM and the ANRC enjoy a great working relationship which has minimized the effects of this obstacle.

5.5 – Local Jurisdiction Capabilities Assessment

44 CFR 201.4(c)(3)(ii) ….a general description and analysis of the effectiveness of local mitigation policies, programs, and capabilities.

The local jurisdiction capabilities assessment includes a description of local jurisdictional mitigation capabilities, a discussion of policies and programs, and a general discussion of their effectiveness. For this hazard mitigation plan, each available FEMA-approved local hazard mitigation plans were reviewed.

Personnel

Currently, all Arkansas counties have an Emergency Manager and associated emergency management program. However, the capabilities of each county program vary based largely on the size and financial capabilities the county. Many, but not all, counties have the capability needed to conduct mitigation planning, apply for grant funding, and oversee mitigation projects. Augmenting local emergency management capabilities, Area Coordinators act as ADEM's liaisons to the counties for state and federal mitigation and emergency management initiatives and available funding opportunities.

Other local personnel capabilities vary widely, and again are often tied to county size and financial capabilities. In general, more urban or larger counties have a greater range of full time personnel dedicated to planning, engineering, mapping, and response, while smaller counties lack these capabilities.

Technical

Technical capabilities for each county vary widely and are generally based largely on the size and financial capabilities the county. As with personnel, and in general, more urban or populated counties have a greater range of technical capabilities related to planning, engineering, mapping, and response, while less populated counties lack these capabilities. It should be noted that ADEM offers a variety of programs to provide local jurisdictions with technical expertise, including mapping and planning.

Fiscal

A review of local level hazard mitigation plans indicates that most local jurisdictions have limited to no funding sources for mitigation initiatives and rely on available state or federal grant programs. However,

tax generated funding (often generated from property and/or sales tax) can be allocated to infrastructure improvements for schools, public works, and other government functions. In addition, some larger jurisdictions have dedicated transportation or capital improvements sales or use taxes that can be obligated to fund mitigation projects.

On a yearly basis, most jurisdictions throughout the State of Arkansas fully allocated their tax revenue on basic services and programs. As a result, funding for mitigation projects is often unavailable or severely limited. While the capability to assess special taxes or issue bonds does exist, historically it has been shown that passing these measures is extremely difficult. As a result, many needed mitigation projects throughout the state are not completed due to lack of funding.

It should be noted that ADEM offers a variety of programs to provide local jurisdictions with financial expertise, including grant application and determining potential funding streams.

Building Codes

Building codes set a reference point for the design and construction of all structures, providing minimum safe building practices to ensure occupant safety and structure resiliency. Enforced building codes are one of the most effective hazard mitigation tools available against a wide variety of hazards.

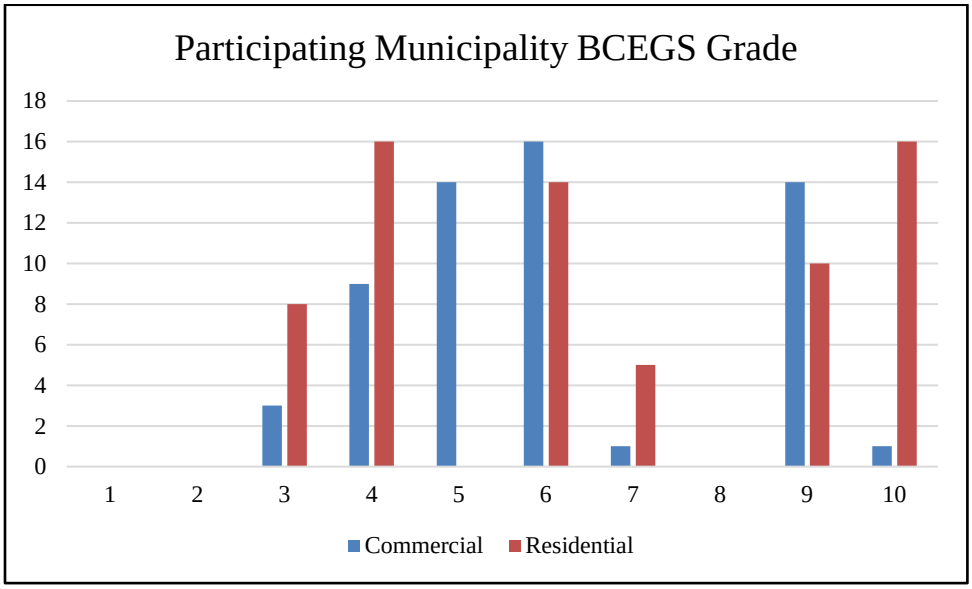
The Arkansas Building Code is adopted by the State Fire Marshal's office as part of the Fire Prevention Code and is applied statewide. While many jurisdictions adopt the Fire Prevention Code, and thus the Arkansas Building Code, through ordinance, Code enforcement does not require local ordinance.

The following are all relevant building codes for the state:

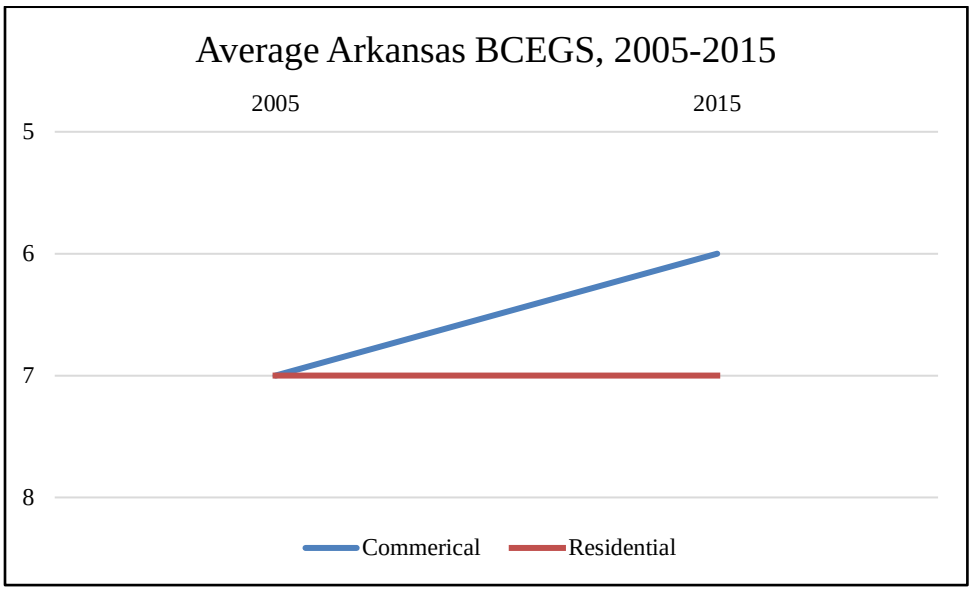
- Fire: 2012 Arkansas Fire Prevention Code, Volume I (2012 IFC with Arkansas Amendments)
- Building: 2012 Arkansas Fire Prevention Code, Volume II (2012 IBC with Arkansas Amendments)
- Residential: 2012 Arkansas Fire Prevention Code, Volume III (2012 IRC with Arkansas Amendments)
- Electrical: 2014 National Electrical Code (2011 Arkansas Electrical Code)
- Plumbing: 2006 Arkansas State Plumbing Code, 9th Edition
- Gas: 2006 Arkansas State Gas Code
- Liquefied Gas: 2008 State Code Liquefied Petroleum Gas Containers & Equipment, AR
- Mechanical: 2010 Arkansas Mechanical Code (2009 IMC)
- Energy: 2014 Arkansas Energy Code
- Accessibility: State: ANSI A117.3 Federal: ADAAG, 2010
- Seismic: 2016 Arkansas Code § 12-80-104, and as amended by 2016 House Bill 1014, provides for earthquake resistant design for public structures.

All building codes revisions are managed by the Fire Code Revision Committee. This committee consists of municipal fire marshals, building officials, architects, engineers, Arkansas Home Builders Association representatives, Arkansas Oil Marketers Association representatives, Manufactured Housing Association representatives, and officials from other state agencies and private sectors interests.

The Building Code Effectiveness Grading Schedule (BCEGS®) assesses the building codes in effect in a particular community and how the community enforces its building codes, with special emphasis on mitigation of losses from natural hazards. The BCEGS program assigns each participating municipality a BCEGS grade of 1 (exemplary commitment to building code enforcement) to 10. The following graph illustrates the rating for each State of Arkansas participating municipality.



In assessing building code effectiveness, the following graph indicates that the BCEGS average for the state has been relatively static for the period 2005-2015, with a slight improvement for the average commercial grading.



Zoning, Land Use Planning, and Subdivision Regulations

Zoning is the traditional, and most common, tool available to local jurisdictions to control the use of land. Zoning is used to promote health, safety, and the general welfare of the community. Zoning is used to dictate the type of land use and to set minimum specifications for use such as lot size, building height and setbacks, and density of population.

State laws enable local governments to adopt and enforce zoning based upon locally developed and adopted land use plans. Adoption of land use regulations is a local government decision as there are no state-prepared comprehensive land use plans or provisions. Local governments are authorized to divide their jurisdiction into districts, and to regulate and restrict the erection, construction, reconstruction, alteration, repair or use of buildings, structures, or land within those districts. Districts may include general use districts, overlay districts, special use districts or conditional use districts. In addition, numerous cities in the state are enabled through state legislation to extend zoning into extraterritorial areas, or areas outside of their defined boundaries.

Zoning restriction and land use planning are some of the most effective hazard mitigation tools available against a wide variety of hazards. However, a review of local hazard mitigation plans indicated that fewer than half of the reviewed jurisdictions had zoning ordinances or land use planning.

Floodplain Development

Pursuant to Arkansas Code Ann. §14-268-104 and the political subdivision's Flood Damage Prevention Ordinance or Flood Damage Prevention Code, NFIP participating communities shall follow the floodplain management criteria in 44 CFR 60.3 for areas designated special flood hazard areas by the Federal Insurance Administrator.

Local floodplain ordinances are often used to prevent inappropriate development in floodplains and to reduce flood hazards. In general, they allow the jurisdiction to:

- Minimize the extent of floods by preventing obstructions that inhibit water flow and increase flood height and damage.
- Prevent and minimize loss of life, injuries, and property damage in flood hazard areas.
- Promote the public health, safety and welfare of citizens in flood hazard areas.
- Manage planned growth
- Grant permits for use in development within special flood hazard areas that are consistent with the community ordinance and the NFIP under 44 CFR 60.3

Local floodplain ordinances also make certain that the jurisdiction meets the minimum requirements of participation in the NFIP. The incentive for local governments adopting such ordinances is that they will afford their residents the ability to purchase flood insurance through the NFIP. In addition, communities with such ordinances in place may be given priority in the consideration of applications for loans and grants.

While there is no state or federal funding available for local governments for floodplain management, floodplain ordinances and management are one of the most effective hazard mitigation tools available against flooding. Largely due to its requirement for participation in the NFIP, floodplain management regulations are one of the most common hazard-related land use regulations for local jurisdictions.

Partnerships

The most common hazard mitigation and emergency management coordination between local jurisdictions are LEPCs. LEPCs are required by the Emergency Planning and Community Right-to-Know Act of 1986, which was passed to encourage the coordination of planning efforts and information sharing at all levels of government, private industry, and the public. LEPCs include representatives from both public and private organizations as well as representatives from every facility in the jurisdiction subject to the emergency planning requirements of the act.

Arkansas counties also have County Health Units, which are jointly sponsored by the county and by the state to provide for health-related planning and services. As part of this program, within the state there are five geographic Public Health Regions, overseen by a regional Health Office. These two entities are, in general, responsible for local disaster planning and any related hazard mitigation activities. These programs can be very effective in both local and regional information sharing.

Planning Integration

All local jurisdictions with an active hazard mitigation plan have committed to integrating all planning efforts with hazard mitigation planning. Effective plan integration can allow for a more comprehensive approach to hazard mitigation, and for the institutionalization of hazard mitigation principals into daily governmental activities.

Education and Awareness

Hazard awareness programs, designed to inform citizens as to the nature and extent potential hazards, is an effective way to inform citizens on mitigation related topics. As citizens are made more aware of potential hazards and the local and regional process to mitigation against their impacts, it was believed that they would take a stronger role in making their homes, neighborhoods, schools, and businesses safer from the potential effects of natural hazards. Public outreach efforts were conducted as part of all local hazard mitigation planning programs.

5.6 – Opportunities for Capability Improvement

As part of this plan update, the MPC identified the following opportunities for improvement across the state concerning current capabilities:

- **Local Funding**
  - Integration of mitigation plans with other local plans and programs, such as capital improvement plans
  - Adoption of cost-effective mitigation measures when developing capital improvement projects

- **Public Education and Outreach**
  - Regular deployment of hazard awareness campaigns to enhance public awareness

- **Technical Support**
  - Continued, and augmented provision of GIS and other technical assistance from the State
  - Advertise continued access to on-line GIS GeoStor data clearinghouse

- **Local Plan Updates**
  - Notification and provision of FEMA local plan guidance updates
  - Encouraging existing intergovernmental local emergency management committees to take a larger role in mitigation
  - Encouraging better integration with community comprehensive plans, capital improvement plans, and other long-term community goals

- **Land Use Planning and Regulations**
  - Continued encouragement of using land use planning to identify areas at risk to natural hazards
  - Stormwater retention/detention projects to reduce flooding
  - Locally funded buyouts of hazard prone properties

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- **Floodplain Management**
  - Encourage and support new participation in the NFIP and in the CRS
  - Continue the promotion and enforcement of NFIP and CRS floodplain management programs

6.0 Mitigation Strategy

6.1 – Introduction

44 CFR 201.4(c)(3) [To be effective the plan must include a] Mitigation Strategy that provides the State's blueprint for reducing the losses identified in the risk assessment.

As part of this planning effort, the State of Arkansas worked to minimize the risk of future impacts from identified hazards to all citizens of the state. To shape future regulations, ordinances and policy decisions on both a state and local basis, the MPC reviewed and developed a hazard mitigation strategy. This comprehensive strategy includes:

- Goals to guide the selection of activities to mitigate and reduce potential loss
- Objectives to be pursued in order to reach the goals
- A discussion of state funding capabilities for hazard mitigation projects
- Identification, evaluation and prioritization of mitigation actions along with potential funding sources

6.2 – Goals and Objectives

44 CFR 201.4(c)(3)(i) [The state mitigation strategy shall include a] description of state goals to guide the selection of activities to mitigate and reduce potential losses. 44 CFR 201.4(c)(3)(v) [...the plan must describe the strategy the State has to ensure that local jurisdictions with severe repetitive loss properties take actions to reduce the number of these properties.

MPC members and stakeholders agreed that the previous listing of goals in the 2013 hazard mitigation plan remained valid with the addition of a new goal. In compliance with EMAP Standards, objectives for each goal are also listed.

Goal 1: Reduce the vulnerability to jurisdictions and state-owned facilities in Arkansas to all hazards.

- **Objective 1.1:** Participate in all appropriate federal programs related to disaster planning and mitigation including FEMA, DHS, CDC, and others.
- **Objective 1.2:** Educate and assist the Governor's Office and the Arkansas General Assembly in developing policies and state legislation that will further enhance hazard mitigation.
- **Objective 1.3:** Expand mitigation project opportunities throughout Arkansas.

Goal 2: Promote sustainable and disaster resilient development within Arkansas and its communities.

- **Objective 2.1:** Promote NFIP participation and compliance for all communities throughout the state
- **Objective 2.2:** Promote sustainable development and "smart growth" initiatives through coordination with state agencies and non-profit organizations.
- **Objective 2.3:** Identify mitigation opportunities to protect, upgrade and strengthen existing structures through acquisition, elevation, relocation and retrofit.

Goal 3: Support mitigation grant opportunities for local governments, their sub-jurisdictions and the general public.

- **Objective 3.1:** Provide mitigation grant program technical assistance and funding to local jurisdictions for eligible planning and project activities.
- **Objective 3.2:** Provide floodplain management technical assistance and resources to all communities.

Goal 4: Offer hazard mitigation training, education, and technical assistance to local jurisdictions in the development of hazard mitigation plans and implementation of projects.

- **Objective 4.1:** Provide training, education and technical assistance to local jurisdictions in the development of local mitigation plans.
- **Objective 4.2:** Provide training, education and technical assistance to local jurisdictions in the implementation of local mitigation plans.
- **Objective 4.3:** Provide training, education and technical assistance to local jurisdictions in the use of FEMA's Benefit-Cost Analysis software.
- **Objective 4.4:** Increase awareness and knowledge of hazard mitigation principles and practices among local public officials.

Goal 5: Utilize the latest technology to improve vulnerability assessments of all identified hazards.

- **Objective 5.1:** Coordinate with partners at all government levels to identify and promote best technology practices in the development and implementation of hazard mitigation plans and projects.
- **Objective 5.2:** Develop and implement a methodology for identifying and prioritizing new mitigation projects based upon on loss reduction criteria.
- **Objective 5.3:** Develop and monitor any mitigation data deficiencies referenced in the current state mitigation plan.

Goal 6: Reduce the total number of repetitive loss and severe repetitive loss properties.

- **Objective 6.1:** Develop and implement a repetitive loss strategy to prevent future losses.
- **Objective 6.2:** Utilize HMGP, PDM, and FMA grant funds to perform acquisitions and elevations of severe repetitive loss and repetitive loss properties.
- **Objective 6.3:** Enhance education efforts that increase the public's, and home or business owners' knowledge and awareness of NFIP insurance, its benefits, and mitigation grants by conducting various outreach activities.
- **Objective 6.4:** Analysis of the repetitive loss communities and SRL properties with the greatest financial losses will be utilized to identify and prioritize areas for cost-effective mitigation projects.
- **Objective 6.5:** Work with jurisdictions to ensure grant eligibility by keeping mitigation plans current.
- **Objective 6.6:** Provide assistance in the implementation of flood mitigation plans and projects in flood-prone areas, in accordance with federal and state regulatory, funding, and technical assistance programs.

6.3 – Prioritization of Mitigation Actions

44 CFR 201.4(c)(3)(iii) An identification, evaluation, and prioritization of cost-effective, environmentally sound, and technically feasible mitigation actions and activities the State is considering and an explanation of how each activity contributes to the overall mitigation strategy...linked to local plans where specific local actions and projects are identified. [44 CFR 201.4 (c)(3)(v)...the plan must describe the strategy the State has to ensure that local jurisdictions with severe repetitive loss properties take actions to reduce the number of these properties...]

The MPC selected and prioritized actions based upon the updated risk assessment. Determining factors included the potential effects on the overall risk to life and property, ease of implementation, community and agency support, consistency with local mitigation plans and the availability of funding. The MPC only considered projects that are technically feasible, environmentally sound, and cost effective. Unlike previous State of Arkansas Hazard Mitigation Plans, the Social, Technical, Administrative, Political, Legal, Economic and Environmental Method was not used to prioritize actions.

Based on this review, previously identified and new action items were prioritized as follows:

High priority:
- Actions deemed most critical by the MPC to achieve identified goals and objectives

Medium priority:
- Actions deemed important by the MPC to meet identified goals and objectives
- Resources and capabilities may not be available

Low priority
- Actions identified by the MPC that have lowest impact toward achieving goals and objectives
- Resources and capabilities may not be available; not feasible

6.4 – Emergency Management Accreditation Program Integration

In identifying and reviewing mitigation actions, the following activities recommended by the EMAP were considered:

- The use of applicable building construction standards
- Hazard avoidance through appropriate land-use practices
- Relocation, retrofitting, or removal of structures at risk
- Removal or elimination of the hazard
- Reduction or limitation of the amount or size of the hazard
- Segregation of the hazard from that which is to be protected
- Modification of the basic characteristics of the hazard
- Control of the rate of release of the hazard
- Provision of protective systems or equipment for both cyber or physical risks
- Establishment of hazard warning and communication procedures

- Redundancy or duplication of essential personnel, critical systems, equipment, and information materials.

6.5 –Mitigation Actions

During this plan update, the MPC assessed existing actions and developed new actions for consideration based on:

- Updated state risk assessment and information from local risk assessments
- Goals and objectives
- Existing state actions
- State and local capabilities
- Actions identified in local plans

The following tables present identified, reviewed and retained mitigation actions for the State of Arkansas.

Mitigation Actions

Action Number	Action Description	Potential Funding Source	Priority	Identified in Local Plans	Contribution to Mitigation Strategy (Goals)	Evaluation
1	Perform acquisition and/or relocation of properties vulnerable to flooding including repetitive and severe repetitive loss properties.	HMGP, PDM, FMA	High	Yes	1, 2,3,6	On-going
2	Provide federal HMGP, PDM, and FMA planning grants to local jurisdictions	HMGP, PDM, FMA	High		3,4,5	On-going
3	Provide funding to jurisdictions to build community and school saferooms.	PDM, HMGP, CDBG, Facilities Partnership Program	High	Yes	1,2,3	On-going
4	Allocate CDC grant funding to local health units to improve their emergency planning for bioterrorism and naturally occurring biological outbreaks and mass care situations resulting from natural hazards.	ADH	High		1,3	On-going
5	Erosion control and bank stabilization	HMGP, PDM, FMA, ARHMGP	Low	Yes	1,3	On-going
6	Construction /Rehabilitation of dams and levees	HMGP, PDM, local funding, USACoE	Medium	Yes	1,3	On-going
7	Increase the number of homeowner insurance policies	No cost	High		1,2,6	On-going
8	Increase utilization of mass notification systems for hazard alerts and warnings	HMGP, local funding	High	Yes	1,3,4	On-going
9	Implement fuel reduction activities such as prescribed burns and underbrush removal	HMGP, local funding, AR Forestry Commission funds	Medium	Yes	1,2,3	On-going

Mitigation Actions

Action Number	Action Description	Potential Funding Source	Priority	Identified in Local Plans	Contribution to Mitigation Strategy (Goals)	Evaluation
10	Install Detention and Retention Ponds to reduce/eliminate flooding	HMGP, PDM, FMA, local funds, ARHMGP	High	Yes	1,2,3,6	On-going
11	Include sustainable development policies and pre-disaster mitigation opportunities in public policies.	Local funding, no cost	High	Yes	2,4	On-going
12	Implement laws and regulations related to the subject of quarantine in times of disease outbreak.	No cost	High		2	On-going
13	Educate and assist the Governor's Earthquake Advisory Council on various mitigation topics.	No cost	High		1,2,4	On-going
14	Elevate low water crossings with bridges to prevent flooding	HMGP, ARHMGP	High	Yes	1,2,3,6	On-going
15	Increase community participation in NFIP, Firewise and CRS Programs.	No cost	Medium	Yes	1,2	On-going
16	Use green mitigation techniques such as bio swales, rain gardens, and permeable pavers	HMGP, PDM, FMA, ARHMGP, local funding	Medium		1,2,3,6	On-going
17	fund drainage projects in areas susceptible to flooding	HMGP, PDM, FMA, ARHMGP, local funding	High	Yes	1,2,3,6	On-going
18	Provide training to local floodplain administrators to increase knowledge of good floodplain management practices.	No cost	Medium		4,6	On-going
19	Provide public education to include mitigation ideas in school curriculums.	No cost	Medium	Yes	4	On-going
20	Conduct mitigation outreach activities and education presentations for local public officials.	No cost	Medium	Yes	4	On-going
21	Update repetitive loss strategy to prevent future losses.	No cost	High		6	On-going
22	Update building codes in hazard prone areas	No cost	High	Yes	1,2,4,6	On-going
23	Utilize 406 Mitigation after a disaster declaration	HMGP, PA, local funding	High	Yes	1,2,3	On-going
24	Elevate properties that are located in areas vulnerable to flooding.	HMGP, PDM, FMA, local funding	High	Yes	1,2,3,6	On-going
25	Structural retrofits for structures that are vulnerable to wind and earthquake events.	HMGP, PDM, local funding	High	Yes	1,2,3,4,5	On-going
26	Install netting to catch falling debris during landslides	HMGP, PDM, local funding, ARHMGP	Low	Yes	1,3,4	On-going

Mitigation Actions

Action Number	Action Description	Potential Funding Source	Priority	Identified in Local Plans	Contribution to Mitigation Strategy (Goals)	Evaluation
27	Non-structural retrofits such as bracing for structures that are vulnerable to wind and earthquakes	HMGP, PDM, local funding, ARHMGP	Low	Yes	1,2,3	On-going
28	Bury electric and other utility lines to prevent disruption during ice, wind, and snow hazards.	HMGP, PDM, local funding	Low	Yes	1,3,5	On-going
29	Implement projects that provide early warning notification to hazard events.	Local funding	High	Yes	1,3,4	On-going
30	Educate locals on the importance of adopting ordinance that limit development in flood zones.	No cost	High	Yes	1,2,4	On-going
31	Continue participation with CDC and DHS in the establishment and the distribution of pharmaceuticals under the federal Strategic National Stockpile (SNS) program.	ADH	High		1,3	On-going
32	Work with the USDA APHIS Veterinary Services to continue participating in the Domestic Detection and Surveillance Program including on-going programs from the National Surveillance Unit and the National Animal Health Monitoring System	APHIS grants, existing state resources	High		1,3	On-going
33	Include the public health agencies throughout the state in the mitigation planning process for expert input on biological hazard	ADH	Medium		1,3	On-going
34	Publish and disseminate the USDA APHIS information about bio-security for poultry	USDA, APHIS, CDC	Medium		1,3,4	On-going
35	Conduct hazmat and terrorism training for local emergency planners and responder to improve their capabilities	No cost	High		1,4	On-going
36	Continue ADEM and Arkansas Livestock and Poultry Commission partnership to conduct animal disease related exercises in the state.	No cost	Medium		1	On-going
37	Conduct studies to determine previous occurrences, damages, and future probability of expansive soils. Currently a data deficiency for this hazard	HMGP, no cost	Low	Yes	1,2,5	New

Actions that were not completed in the five years since the 2013 Hazard Mitigation Plan were either determined a low priority or did not have adequate funding sources to implement. Those actions remain in this plan update.

As part of this process, the MPC determined that a majority of the actions identified in the 2013 were not related to mitigation or considered mitigation projects. As such, those actions have been removed from this update.

6.6 –Progress of Mitigation Actions

Hazard mitigation actions completed since the 2013 Hazard Mitigation Plan are detailed in the following tables.

HMGP Grant Award Summary, 2013-2018

Year	Disaster	County	Jurisdiction	Project Type	Total Cost	Federal Share	Local Share
2013	4100	Statewide	State Management Costs	Management	-	-	-
2013	4100	Clark	Clark County Hazard Mitigation Plan Update	Plan	$35,000.00	$26,250.00	$8,750.00
2013	4100	Hot Spring	Hot Spring County Hazard Mitigation Plan Update	Plan	$30,000.00	$22,500.00	$7,500.00
2013	4100	Saline	Bauxite Middle School Safe Room	Safe Room	$969,750.00	$727,313.00	$242,437.00
2013	4100	Lonoke	Cabot Community Center Safe Room	Safe Room	$300,000.00	$225,000.00	$75,000.00
2013	4100	Saline	Civitan Services Safe Room	Safe Room	$400,000.00	$300,000.00	$100,000.00
2013	4100	Garland	Garland County Hazard Mitigation Plan Update	Plan	$35,000.00	$19,000.00	$16,000.00
2013	4100	Saline	Saline County Mitigation Plan Update	Plan	$35,000.00	$26,250.00	$8,750.00
2013	4124	Statewide	State Management Costs	Management	-	-	-
2013	4124	Montgomery	Montgomery County Hazard Mitigation Plan Update	Plan	$35,000.00	$26,250.00	$8,750.00
2013	4124	Independence	Independence County Hazard Mitigation Plan Update	Plan	$50,000.00	$37,500.00	$12,500.00
2013	4124	Scott	Waldron Early Childhood Safe Room	Safe Room	$600,000.00	$450,000.00	$150,000.00
2013	4124	Woodruff	McCrory School District Safe Room	Safe Room	$575,000.00	$431,250.00	$143,750.00
2013	4124	Franklin	Franklin County Hazard Mitigation Plan Update	Plan	$30,000.00	$21,467.00	$8,533.00
2013	4124	Faulkner	Mayflower Community Safe Room	Safe Room	$247,540.00	$185,655.00	$61,885.00

HMGP Grant Award Summary, 2013-2018

Year	Disaster	County	Jurisdiction	Project Type	Total Cost	Federal Share	Local Share
2013	4143	Statewide	State Management Costs	Management	-	-	-
2013	4143	Benton	Benton County Hazard Mitigation Plan	Plan	$45,000.00	$33,750.00	$11,250.00
2013	4143	Marion	Flippin School District Safe Room	Safe Room	$1,442,571.00	$1,081,928.00	$360,643.00
2013	4143	Cross	Cross County Hazard Mitigation Plan Update	Plan	$10,000.00	$7,500.00	$2,500.00
2013	4143	Greene	Greene County Hazard Mitigation Plan	Plan	$8,000.00	$6,000.00	$2,000.00
2013	4143	Randolph	Randolph County Mitigation Plan	Plan	$10,000.00	$7,500.00	$2,500.00
2013	4143	St. Francis	St. Francis County Hazard Mitigation Plan Update	Plan	$10,000.00	$7,500.00	$2,500.00
2014	4160	Statewide	State Management Costs	Management	-	-	-
2014	4160	Sharp	Sharp County Mitigation Plan Update	Plan	$40,000.00	$30,000.00	$10,000.00
2014	4160	Sebastian	Lavaca Elementary School Safe Room	Safe Room	$1,073,778.00	$742,021.00	$331,757.00
2014	4160	Johnson	Johnson County Mitigation Plan Update	Plan	$34,601.00	$25,851.00	$8,750.00
2014	4174	Chicot	Chicot County Mitigation Plan Update	Plan	$35,000.00	$26,250.00	$8,750.00
2014	4174	Faulkner	Vilonia School Dist Intermediate School Safe Room	Safe Room	$1,399,250.00	$1,049,438.00	$349,812.00
2014	4174	Lawrence	Lawrence County Mitigation Plan Update	Plan	$50,000.00	$37,500.00	$12,500.00
2014	4174	Columbia	Columbia County Mitigation Plan Update	Plan	$30,000.00	$22,500.00	$7,500.00
2014	4174	Dallas	Dallas County Mitigation Plan Update	Plan	$30,000.00	$22,500.00	$7,500.00
2014	4174	Statewide	State Management Costs	Management	-	-	-
2014	4174	Stone	Mountain View Mitigation Plan Update	Plan	$10,000.00	$7,500.00	$2,500.00
2014	4174	Faulkner	Mayflower Elementary School Safe Room	Safe Room	$1,133,738.00	$559,924.00	$573,814.00
2015	4226	Yell	Dardnelle High School Safe Room	Safe Room	-	-	-
2015	4226	Crawford	Mountainburg High and Middle School Safe Room	Safe Room	$1,316,392.00	$987,294.00	$329,098.00
2015	4226	Statewide	State Mitigation Plan Update 2018	Plan	$177,000.00	$132,750.00	$44,250.00
2015	4226	Statewide	State Management Costs	Management	-	-	-

HMGP Grant Award Summary, 2013-2018

Year	Disaster	County	Jurisdiction	Project Type	Total Cost	Federal Share	Local Share
2015	4226	Pulaski	City of Little Rock Community Safe Room(s) Stormbox	Safe Room	$112,468.00	$84,058.00	$28,019.18
2015	4226	Washington	Washington Co Storm Box Safe Room	Safe Room	-	-	-
2016	4254	Statewide	ANRC Plan	Plan	$50,000.00	$37,500.00	$12,500.00
2016	4254	Fulton	Mammoth Spring Mit Plan	Plan	-	-	-
2016	4254	Clay	Clay County Plan Update	Plan	-	-	-
2016	4254	White	Searcy School Dist Safe Room	Safe Room	-	-	-
2016	4254	Clay	Piggott School Safe Room	Safe Room	-	-	-
2016	4254	Logan	Scranton School Safe Room	Safe Room	$1,090,652.00	$665,487.00	$425,165.00
2016	4270	Statewide	State Management Costs	Management	-	-	-
2016	4270	Pulaski	City of Sherwood Acquisition Project	Acquisition	-	-	-
2016	4270	Pulaski	North Litle Rock Stormbox (Christopher Homes)	Safe Room	-		-
2016	4270	Independence	Southside Safe Room	Safe Room	-	-	-

Source: ADEM

PDM Grant Award Summary, 2013-2018

Year/ Grant	County	Jurisdiction	Project Type	Project Total	Federal Share	Local Share	Status
PDMC 2013	Boone	Boone Co Educational Coop Mit Plan	Plan	$55,000.00	$41,250.00	$13,750.00	Project Closed
PDMC 2013	Statewide	State Management Costs	Management	-	-	-	Project Closed
PDMC 2013	Jackson	Jackson County Mit Plan Update	Plan	$50,000.00	$37,500.00	$12,500.00	Project Closed
PDMC 2013	Franklin	Ozark School District Middle School	Safe Room	$872,094.75	$654,070.79	$218,023.96	Project Closed
PDMC 2013	Jefferson	Jefferson County Mit Plan Update	Plan	$55,744.00	$41,808.00	$13,936.00	Project Closed
PDMC 2014	Pike	Pike County Mit Plan Update	Plan	$35,000.00	$26,250.00	$8,750.00	Project Closed
PDMC 2014	Lonoke	Lonoke County Mit Plan Update	Plan	$35,000.00	$26,250.00	$8,750.00	Project Ongoing
PDMC 2014	Woodruff	Woodruff County Mit Plan Update	Plan	$40,000.00	$30,000.00	$10,000.00	Project Ongoing

PDM Grant Award Summary, 2013-2018

Year/ Grant	County	Jurisdiction	Project Type	Project Total	Federal Share	Local Share	Status
PDMC 2014	Polk	Ouachita River School District - Acorn Campus	Safe Room	$870,702.28	$653,026.71	$217,675.57	Project Closed
PDMC 2014	Monroe/ Prairie	Monroe/Prairie County Mit Plan	Plan	$70,000.00	$52,500.00	$17,500.00	Project Ongoing
PDMC 2014	Scott	Scott County Mit Plan Update	Plan	$40,000.00	$30,000.00	$10,000.00	Project Ongoing
PDMC 2014	Cleburne	Cleburne County Mit Plan	Plan	$40,000.00	$30,000.00	$10,000.00	Project Ongoing
PDMC 2014	White	Riverview School District - Judsonia Elem School	Safe Room	$750,000.00	$562,500.00	$187,500.00	Project Ongoing
PDMC 2014	Poinsett	Poinsett County Mit Plan	Plan	$50,000.00	$37,500.00	$12,500.00	Project Ongoing
PDMC 2014	Craighead	Craighead County Mit Plan	Plan	$45,000.00	$33,750.00	$11,250.00	Pending Closeout
PDMC 2014	Statewide	State Management Costs	Management	-	-	-	Project Ongoing
PDMC 2015	Ashley	Ashley County Mitigation Plan Update	Plan	$35,000.00	$26,250.00	$8,750.00	Pending Closeout
PDMC 2015	Lafayette	Lafayette County Mit Plan Update	Plan	$30,000.00	$22,500.00	$7,500.00	Project Ongoing
PDMC 2015	Searcy	Searcy County Co-Op Mitigation Plan	Plan	$35,000.00	$26,250.00	$8,750.00	Project Ongoing
PDMC 2015	Crittenden	Crittenden County Mitigation Plan Update	Plan	$40,000.00	$30,000.00	$10,000.00	Project Ongoing
PDMC 2015	Lincoln/ Cleveland	Lincoln and Cleveland Counties Mitigation Plan Update	Plan	$35,000.00	$26,250.00	$8,750.00	Project Ongoing
PDMC 2015	Madison/ Newton	Madison/Newton County Mit Plan Update	Plan	$40,000.00	$30,000.00	$10,000.00	Project Ongoing
PDMC 2015	Calhoun	Calhoun County Mit Plan Update	Plan	$30,000.00	$22,500.00	$7,500.00	Project Ongoing
PDMC 2015	Phillips	Phillips County Mit Plan Update	Plan	$50,000.00	$37,500.00	$12,500.00	Project Ongoing
PDMC 2015	Statewide	State Management Costs	Management	$29,500.00	$22,125.00	$7,375.00	Project Ongoing
PDMC 2016	Howard	Howard County Hazard Mitigation Plan	Plan	$25,000.00	$18,750.00	$6,250.00	Project Ongoing

PDM Grant Award Summary, 2013-2018

Year/ Grant	County	Jurisdiction	Project Type	Project Total	Federal Share	Local Share	Status
PDMC 2016	Sevier	Sevier County Hazard Mitigation Plan	Plan	$25,000.00	$18,750.00	$6,250.00	Project Ongoing
PDMC 2016	Yell	Two Rivers Safe Room	Safe Room	$500,000.00	$375,000.00	$125,000.00	Project Ongoing
PDMC 2016	Marion	Marion County Mit Plan Update	Plan	$25,000.00	$18,750.00	$6,250.00	Project Ongoing
PDMC 2016	Searcy	Searcy County Hazard Mitigation Plan	Plan	$40,000.00	$30,000.00	$10,000.00	Project Ongoing
PDMC 2016	Boone	Boone County Hazard Mitigation Plan	Plan	$40,000.00	$30,000.00	$10,000.00	Project Ongoing
PDMC 2016	Statewide	State Management Costs	Management	$189,281.36	$141,961.02	$47,320.34	Project Ongoing
PDMC 2016	Washington	Elkins SD Safe Room	Safe Room	$1,237,813.66	$928,360.24	$309,453.42	Project Ongoing

Source: ADEM

State of Arkansas HMGP Grant Award Summary, 2013-2018

Year	Jurisdiction	Project	State Award Amount
2013	Bradley County	CR #18 West Bridge #1	$59,500.00
2013	Bradley County	CR #65 Bridge	$73,750.00
2013	Calhoun County	CR# 44/Champognelle Crk Bridge	$27,825.00
2013	Cleveland County	Crossroads Road Culverts	$45,000.00
2013	Fulton County	Gum Springs Road Bridge	$15,500.00
2013	Greene County	CR #315 Culverts	$70,210.50
2013	Greene County	CR #315 Culverts Site #5	$15,514.50
2013	City of Helena-West Helena	Quarles Lane Bridge	$45,000.00
2013	Howard County	Parson Road Culverts Site #1	$68,329.00
2013	Howard County	Parson Road Culverts Site #2	$68,329.00
2013	Lawrence County	CR #545 Culvert	$15,140.50
2013	Marion County	CR #6064 Road Bridge	$75,000.00
2010	Clark County	Central Road Bridge	$75,000.00
2013	Pike County	Shawmut Road Bridge	$68,900.00
2013	Prairie County	Simmons Road Bridge	$15,000.00
2013	Saline County	Vimy Ridge Road Site #1 Box Culverts	$48,040.00
2013	Saline County	Vimy Ridge Road Site #2 Culverts	$62,528.50
2013	Sharp County	County Line Road Bridge	$45,000.00
2013	Sharp County	Mill Creek Bridge	$58,397.30
2013	Van Buren County	Oak Tree Road Bridge	$39,545.00
2013	White County	White Oak Creek Bridge	$50,000.00
2013	Woodruff County	CR #165 Culverts	$5,275.00
2014	Bradley County	CR #65 Bridge, #20156	$74,678.00
2014	Cabot, City of	Water Detention Pond at Cent Elem Sch	$75,000.00

State of Arkansas HMGP Grant Award Summary, 2013-2018

Year	Jurisdiction	Project	State Award Amount
2014	Greene County	CR #513 Culverts	$75,000.00
2014	Greene County	CR #520 Culverts	$36,032.88
2014	Lincoln County	Armstead Road Culverts	$75,000.00
2014	Pike County	Cantrell Road Bridge	$75,000.00
2014	Sebastian County	Chocoville Road Bridge	$75,000.00
2014	Sharp County	South Big Creek Bridge	$27,516.20
2014	Sharp County	Sullivan Creek Bridge	$30,383.66
2014	Sharp County	Whaley Creek Bridge	$39,500.00
2014	Van Buren County	Rockhouse Rd/N Cadron Creek Bridge	$67,487.00
2014	White County	Arthur Kirk Rd/White Oak Crk Bridge	$75,000.00
2015	Arkansas County	Tindall Drier Road Bridge	$53,392.50
2015	Bradley County	CR #18 West Bridge #2	$43,855.00
2015	Clark County	Beech Creek Road Bridge	$45,000.00
2015	Cross County	CR #511 Bridge	$30,000.00
2015	City of Eureka Springs	Courthouse Underground Drainage Tunnel	$69,413.50
2015	Greene County	CR #111 Bridge	$75,000.00
2015	Izard County	Newburg Road Bridge	$75,000.00
2015	Lafayette County	CR #18 Culverts	$12,546.87
2015	Lawrence County	CR #267 Culvert	$18,454.38
2015	Lawrence County	CR #203 Culvert	$31,283.10
2015	Polk County	CR #6 Road Bridge	$60,000.00
2015	Sebastian County	Waters Road Bridge	$75,000.00
2015	Sharp County	Aetna Road Bridge	$42,303.50
2015	Sharp County	Grange Rd/Reeds Creek Bridge	$41,786.51
2015	Sharp County	Grange Rd/Mill Creek Bridge	$37,199.65
2015	Sharp County	Ridge Road Bridge	$45,000.00
2015	Union County	Shuler Road Bridge #1	$66,000.00
2015	Union County	Shuler Road Bridge #2	$37,500.00
2015	Van Buren County	Clella Circle/Bailey Hollow Crk Bridge	$25,000.00
2015	White County	Bristal Road Bridge #17429	$50,000.00
2015	White County	Foster Road Bridge #17443	$75,000.00
2016	Arkansas County	Doughboy Road Bridge	$74,944.31
2016	Bradley County	CR #4 Bridge at Felsenthal Refuge	$45,000.00
2016	Cabot, City of	Highlands Subdiv Culverts	$75,000.00
2016	Calhoun County	CR #20 Bridge	$47,000.00
2016	Clay County	CR# 420/Post Oak Creek Bridge	$39,278.65
2016	Cleveland County	Mount Elba Road Bridge #20765	$15,000.00
2016	Crawford County	Old Uniontown Rd/Foster Branch Bridge	$75,000.00
2016	Cross County	CR #230 Bridge	$60,000.00
2016	Fulton County	Byron Rd/Strawberry River Bridge	$65,000.00
2016	Hempstead County	CR #161/CR #7/Flat Bois d' Arc Creek Bridge	$75,000.00
2016	Izard County	Campground Road Bridge	$75,000.00
2016	Lafayette County	CR #25 Culverts Site #1	$27,516.20
2016	Logan County	Mt Carmel Rd/Cane Creek Bridge	$30,383.66
2016	Polk County	CR #4 Rd/Rolling Fork Creek Bridge	$39,500.00
2016	White County	County Line Rd/Jones Creek Bridge	$67,487.00

State of Arkansas HMGP Grant Award Summary, 2013-2018

Year	Jurisdiction	Project	State Award Amount
2017	Arkansas County	Pin Oak Road Bridge	$75,000.00
2017	Benton County	Box Culverts at 5 Different Locations	$53,392.50
2017	Cabot, City of	Kerr/Candlewood Drainage Project	$43,855.00
2017	Cedarville, City of	Neal Road Bridge	$45,000.00
2017	Clay County	CR# 319 Bridge #21294	$30,000.00
2017	Crawford County	Fine Way Street Bridge	$69,413.50
2017	Cross County	CR #661 Culverts	$75,000.00
2017	Cross County	CR #646 and CR #634 Culverts	$75,000.00
2017	Cross County	CR #744 and CR #7415 Culverts	$12,546.87
2017	Elm Springs, City of	Lake Road Culverts	$18,454.38
2017	Fulton County	Glade Hill Road Culverts	$31,283.10
2017	Hempstead County	Little Bodcau/Caney Creek Culverts	$60,000.00
2017	Hot Spring County	Possum Trot Rd/Morrison Sprg Creek Culverts	$75,000.00
2017	Izard County	Hightower Road Culverts	$42,303.50
2017	Izard County	Tree Farm Road Culverts	$41,786.51
2017	Izard County	Shaw Cemetery Road Bridge	$37,199.65
2017	Lafayette County	CR #25 Culverts Site #2	$45,000.00
2017	Logan County	Tate Rd/Petit Jean River Bridge	$66,000.00
2017	Montgomery	Southside CR/Shirley Creek Bridge	$37,500.00
2017	Prairie County	Walnut/Claiborne Road Drainage Project	$25,000.00
2017	Saline County	Detonti Rd/Mud Creek Crossing Bridge	$50,000.00
2017	Saline County	Mars Hill Rd/Mud Creek Crossing Bridge	$75,000.00
2017	Sebastian County	West Lake Dr/N River Road Bridge	$74,944.31
2017	Sharp County	Gin Hill Rd/County Line Rd/Dairy Bar Rd Culverts	$45,000.00
2017	Sharp County	Rock Creek Road Culverts	$75,000.00
2017	Sharp County	Mill Creek Road Culverts	$47,000.00
2017	Union County	Shuler Road Bridge #3	$39,278.65
2017	White County	Fischer Smith Road Bridge	$15,000.00

Source: ADEM

FMA Grant Award Summary, 2013-2018

FY Year/Grant	County	Jurisdiction	Project Type	Project Total	Local Share	Federal Share	Status
2013 FMA, EMT-2014-FM-E002	Saline	City of Benton	Acquisition & Demolition	$236,439.66	$0.00	$236,439.66	Pending closeout
2013 FMA, EMT-2014-FM-E002	Statewide	State Management Costs	Management	$23,634.79	$0.00	$23,634.79	Pending closeout
2014 FMA, EMT-2015-FM-E001	Statewide	State Management Costs	Management	$13,330.51	$3,332.63	$9,997.88	Project Ongoing
2014 FMA, EMT-2015-FM-E001	Perry	Perry County	Plan	$33,333.00	$8,333.25	$24,999.75	Project Ongoing

FMA Grant Award Summary, 2013-2018

FY Year/Grant	County	Jurisdiction	Project Type	Project Total	Local Share	Federal Share	Status
2014 FMA, EMT-2015-FM-E001	Bradley	Bradley County	Plan	$33,333.00	$8,333.35	$24,999.65	Project Ongoing
2014 FMA, EMT-2015-FM-E001	Drew	Drew County	Plan	$33,333.33	$8,333.33	$25,000.00	Project Ongoing
2014 FMA, EMT-2015-FM-E001	Desha	Desha County	Plan	$33,333.00	$8,333.25	$24,999.75	Project Ongoing
2015 FMA, EMT-2016-FM-E002	Pulaski	City of Sherwood	Acquisition & Demolition	$139,130.00	$13,913.00	$125,217.00	Project Ongoing
2015 FMA, EMT-2016-FM-E002	Crawford	Crawford County	Plan	$33,333.33	$8,333.33	$25,000.00	Project Ongoing
2015 FMA, EMT-2016-FM-E002	Sebastian	Sebastian County	Plan	$33,333.33	$8,333.33	$25,000.00	Project Ongoing
2015 FMA, EMT-2016-FM-E002	Statewide	State Management Costs	Management	$20,579.67	$1,852.17	$18,727.50	Project Ongoing
2016 FMA, EMT-2016-FM-E004	Statewide	State Management Costs	Management	$40,597.84	$0.00	$40,597.84	Project Ongoing
2016 FMA, EMT-2016-FM-E004	Boone	City of Little Rock	Acquisition & Demolition	$249,563.75	$0.00	$249,563.75	Project Ongoing
2016 FMA, EMT-2016-FM-E004	Statewide	Garland County	Acquisition & Demolition	$156,550.00	$0.00	$156,550.00	Project Ongoing
RFC 2012, EMT-2012-RC-0001	Statewide	State Management Costs	Management	$57,097.12	$0.00	$57,097.12	Grant Closed

Source: ADEM

6.7 – Primary Hazard Mitigation Funding Mechanisms

44 CFR 201.4(c)(3)(iv) Identification of current and potential sources of Federal, State, local, or private funding to implement mitigation activities

The following table represents potential major mitigation grant programs. The recipients evaluate and recommend projects to FEMA for funding and pass federal grant funds through to sub-recipients. Differing from previous planning efforts, no contact information has been provided for these programs as it was determined that staff turnover often rendered listed contacts obsolete. Contacts for these programs may easily be found on applicable websites.

Primary Hazard Mitigation Funding Mechanisms

Program	Funding Agency	Funding Recipient	Sub-Recipient	Funding Match Requirement	Award Range
Arkansas Hazard Mitigation Grant Program	Arkansas	ADEM	State and Local Jurisdictions	50%	50% local 50% state match, up to $150,000 state share; $3 million appropriated annually
Flood Mitigation Assistance	FEMA	ANRC	NFIP Participating Community	Varied	Program is subject to the availability of appropriation funding, as well as any program specific directive or restrictions. Individual planning grants shall not exceed $50,000 to any applicant or $25,000 to any sub-applicant.
Hazard Mitigation Grant Program (404)	FEMA	ADEM	State and Local Jurisdictions	25%	Federal funding is available following a major disaster declaration if requested by the Governor. Grant will depend on the costs associated with each disaster. State is eligible for up to 15% for amounts not more than $2 billion, 10 percent for amounts of more than $2 billion, and not more than $10 billion, and 7.5 percent on amounts more than $10 billion, not more than $35.3 billion.
Pre-Disaster Mitigation Program	FEMA	ADEM	State and Local Jurisdictions	25%	Up to $800,000 federal share may be requested for a planning grant to develop a new hazard mitigation plan, up to $300,000 for a planning grant to update a hazard mitigation plan, and up to $3 million in a sub-application to implement a mitigation project.
Public Assistance Mitigation Program (406)	FEMA	ADEM	State and Local Jurisdictions	Varied	Funding is used to restore the parts of a structure that was damaged during a disaster, and the restoration must provide protection from subsequent events.

6.8 – Additional Hazard Mitigation Funding Mechanisms

44 CFR 201.4(c)(3)(iv) Identification of current and potential sources of Federal, State, local, or private funding to implement mitigation activities

While ADEM is the lead agency for emergency planning and hazard mitigation in the state, many other state agencies play an important role in supporting and funding mitigation. Each of these state agencies was contacted individually to develop a complete picture of the overall funding sources available throughout the state. All identified funding sources are listed below with brief program descriptions. The combination of the ADEM funding along with these programs from other agencies provides a complete assessment of the mitigation related funding sources for the State of Arkansas.

Additional Hazard Mitigation Funding Mechanisms

Department	Program	Funding	Program Description
Arkansas Department of Economic Development	Community Development Block Grant Program	Varied	Make grants to communities and loans to businesses for community and economic development Has been used to fund community saferooms.
Arkansas Department of Emergency Management	Emergency Management Performance Grant	Varied	EMPG reimburses certain eligible expenses, under program guidelines, to support state and local emergency management costs.
Arkansas Department of Emergency Management	Fire Protection Services Fund (Act 833)	Varied	Provides funding for equipment, apparatus and facilities directly related to improve the department Fire Protection Classification rating (ISO Rating).
Arkansas Department of Emergency Management	Homeland Security Grant Program	Varied	Funds are provided to enhance homeland security and preparedness planning, training, exercise, and to purchase specialized equipment to enhance the capability of state and local agencies to prevent, respond to, and mitigate incidents of terrorism and major disasters.
Arkansas Department of Emergency Management	Federal Public Assistance Program	Varied	The PA Program is available to assist with reimbursement of repairs to damaged eligible facilities. It is made available to eligible applicants (Local Governments, State Governments and certain Private Non-Profit organizations) that are located in a designated damage area.
Arkansas Department of Emergency Management	State Public Assistance Program	Varied	The program provides assistance to eligible applicants and facilities for debris removal, emergency protective measures, and permanent restoration of infrastructure. It is made available to eligible applicants (Local Governments and State Governments) that are in a designated damage area.
Arkansas Department of Emergency Management	Federal Individual Assistance Program	Varied	The assistance is for qualified homeowners/renters whose primary residence was damaged or destroyed in a declared designated area.
Arkansas Department of Emergency Management	State Individual Assistance Program	Varied	Available for qualified individuals, families, and businesses whose damaged property is in a designated area.
Arkansas Department of Health	Bioterrorism Preparedness Program	Up to $260k	This program manages the state's public health planning for potential bioterrorism events.
Arkansas Department of Rural Services	Rural Services Block Grant	Up to $75,000	Fire departments have received funding for new fire stations, additional bays for existing stations, turn-out gear, communications equipment, fire trucks, SCBA's, extrication equipment and brush trucks
Arkansas Department of Rural Services	Rural Community Grant Program	Up to $15,000	Funds new construction or renovation of community centers, fire stations, or multi-purpose buildings, and the purchase of fire

Additional Hazard Mitigation Funding Mechanisms

Department	Program	Funding	Program Description
			trucks (pumper, tanker, brush or certain service trucks). Incorporated towns of less than 3,000 in population and unincorporated rural areas are eligible for matching funds. 50/50 match.
Arkansas Department of Transportation	Bridge Replacement and Rehabilitation Program	Up to $1 million in federal aid and $350k for signal/intersection projects	Provides assistance for eligible bridges on any public road. For a bridge structure to qualify for replacement, it must be at least 20' in length, have a sufficiency rating of 50.0 or less, and be classified as functionally obsolete or structurally deficient.
Arkansas Department of Transportation	Surface Transportation Program	Up to $1,000,000 in federal aid, $350,000 for signal/intersection projects	Provides roadway project funds for projects in unincorporated areas and cities with fewer than 200,000 in population.
Arkansas Department of Transportation	Safe Route to Schools Program	Up to $1 million in federal grants	Funds for a safer education infrastructure.
Arkansas Division of Public School Academic Facilities and Transportation	Academic Facilities Partnership Program	Varied	Provides state financial participation based upon a school district's academic wealth index for eligible new construction projects. Program has been used to build school saferooms.
Arkansas Forestry Commission	Community Forestry Grants	Varied	50/50 matching grants to communities for community forestry planning, tree planting, and tree maintenance.
Arkansas Forestry Commission	Volunteer Fire Assistance	Varied	50/50 matching grants to volunteer fire departments, with funds used to buy tools, small equipment, and safety gear.
Arkansas Forestry Commission	Community Forestry Grants	Varied	50/50 matching grants to communities for community forestry planning, tree planting, and tree maintenance.
Arkansas Forestry Commission	Federal Excess Property Program	Varied	The acquisition and distribution (permanent or semi-permanent basis) of firefighting equipment and apparatus to volunteer fire departments.
Arkansas Livestock and Poultry Commission	Livestock Inspection and Disease Control Program	Varied	Used for the suppression and eradication of animal diseases.
Arkansas Natural Resources Commission	Conservation District Beaver Control Program	$15.00 per tail	This grant is used to help control Arkansas' beaver population.
Arkansas Natural Resources Commission	Clean Water Revolving Loan Fund	Low interest loans	Eligible jurisdiction can use loans for new collection systems, rehabilitation of existing systems, new treatment systems, and rehabilitation of existing treatment systems.
Arkansas Natural Resources Commission	Drinking Water State Revolving Fund	Low interest loans	Eligible jurisdiction can use loans for compliance, public health, water supply, treatment, distribution storage, planning and design, consolidation, restructuring projects.
Arkansas Natural Resources Commission	Grants to Districts	Up to $25,000	This grant is used by conservation districts to fund additional positions and programs.

Additional Hazard Mitigation Funding Mechanisms

Department	Program	Funding	Program Description
Arkansas Natural Resources Commission	Non-Point Source Pollution Management Grant	Up to $1,000,000	Potential funding for Non-Point Source Pollution reduction and/or abatement and educational projects within prioritized watersheds. Any non-federal government agency, educational institution, or nonprofit corporation is eligible.
Arkansas Natural Resources Commission	Water Development Fund	Varied loans	Eligible jurisdiction can use loans for public water supply, irrigation, flood control and/or drainage, erosion and sediment control, stream bank stabilization, recreation and/or fish & wildlife, hydroelectric power, and navigation projects.
Arkansas Natural Resources Commission	Water Resources Cost Share Revolving Fund	Varied loans	Eligible jurisdiction can use loans for construction, replacement, acquisition and ownership of facilities, land and easement procurement, improvements for developing and utilization of water resources, projects to supply quality water to residents, provide water for navigation - provide recreational access to lakes and streams, reclaim, preserve and protect the state's land resources, protect the wealth of the state from disastrous floods.
Arkansas Natural Resources Commission	Water, Sewer, and Solid Waste Fund	Varied loans	Eligible jurisdiction can use loans for public water supply, sewer systems, and solid waste collection/disposal projects.
Arkansas Natural Resources Commission	Water, Waste Disposal and Pollution Abatement Facilities General Obligation	Varied bonds	Eligible jurisdiction can use loans for water (supply, storage, distribution and irrigation), solid waste landfills, solid waste recycling facilities, wastewater collection systems, wastewater treatment facilities, and non-point source reduction projects.
Arkansas Natural Resources Commission	Tax Credit Incentive Program	Tax credits	The purpose of this program is to encourage water users to invest in the construction of impoundments to use available surface water, the conversion from ground water use to surface water use, and land leveling to reduce agricultural irrigation water use.

6.9 – Repetitive Flood Loss Strategy

44 CFR 201.4(c)(3)(v) A State may request the reduced cost share authorized under § 79.4(c)(2)of this chapter for the FMA and SRL programs, if it has an approved State Mitigation Plan meeting the requirements of this section that also identifies specific actions the State has taken to reduce the number of repetitive loss properties (which must include severe repetitive loss properties), and specifies how the State intends to reduce the number of such repetitive loss properties. In addition, the plan must describe the strategy the State has to ensure that local

jurisdictions with severe repetitive loss properties take actions to reduce the number of these properties, including the development of local mitigation plans.

Background on the NFIP and Repetitive Loss

Since the last plan was adopted, the Biggert-Waters Flood Insurance Reform Act of 2012 eliminated the RFC program, and integrated three grant programs, including the Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation (PDM) Program and Flood Mitigation Assistance (FMA) Program under the Unified Hazard Mitigation Assistance (HMA) Program.

Property acquisitions are an effective mitigation measure to address repetitive flood claims, because they are a permanent form of mitigation. This type of project allows State and local jurisdictions to remove people and property from floodplains, and reducing future costs associated with a community's disaster response, recovery, and repair. FEMA funds are available to states to purchase property in flood-prone areas and dedicate that property as green space. In order to be eligible for an increased Federal cost share in the FMA grant program the FEMA- approved State or Tribal Standard Mitigation Plan must also meet all of the requirements described *44 CFR 201.4(c)(3)(v)* Repetitive Loss Strategy**.** Arkansas has constructed this RL strategy in part to receive this share reduction.

Part 201.4(c)(2) Risk assessments that provide the factual basis for activities proposed in the strategy portion of the mitigation plan. Statewide risk assessments must characterize and analyze natural hazards and risks to provide a statewide overview. This overview will allow the State to compare potential losses throughout the State and to determine their priorities for implementing mitigation measures under the strategy, and to prioritize jurisdictions for receiving technical and financial support in developing more detailed local risk and vulnerability assessments.

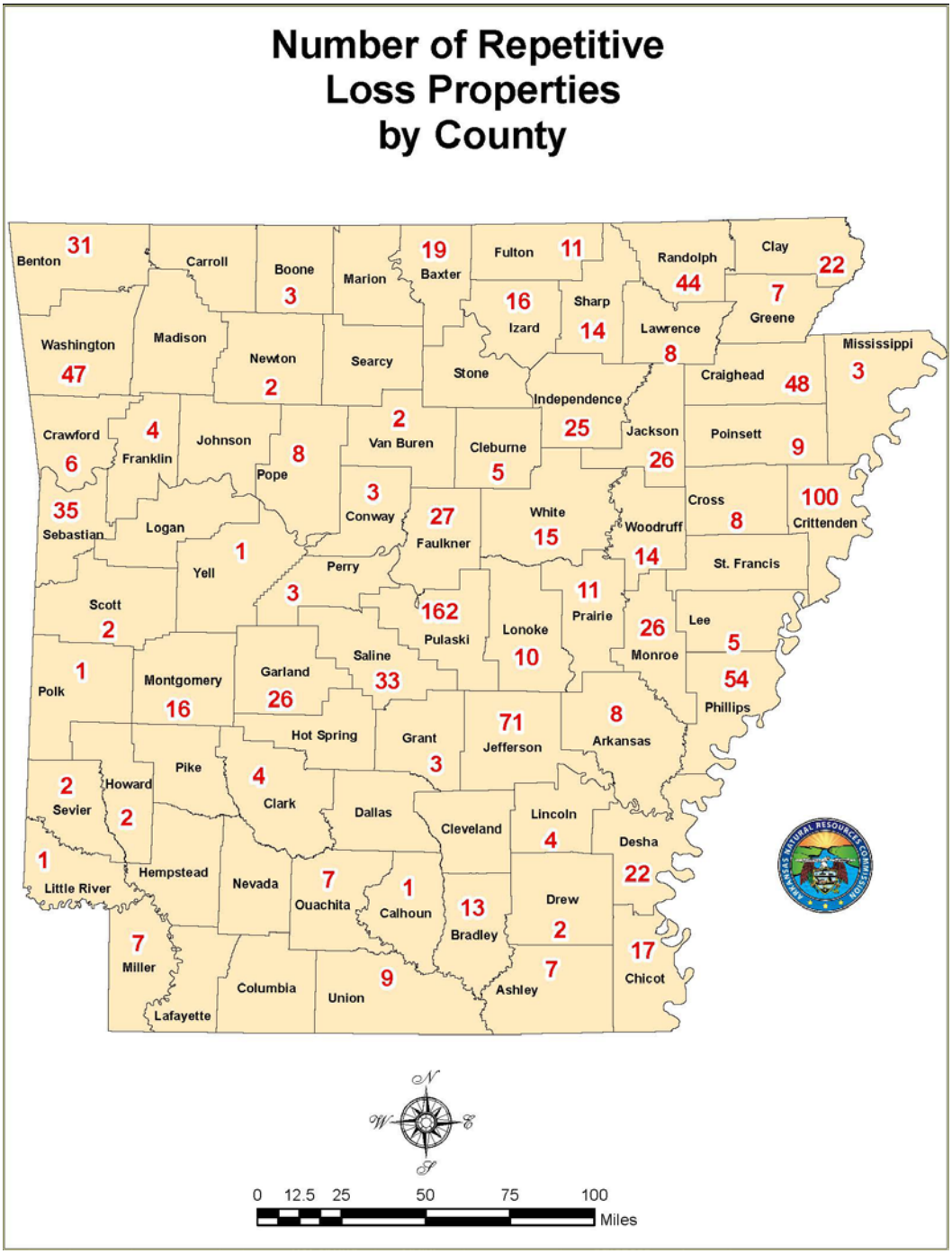
Repetitive Loss Property Assessment

Since the last plan update there have been eight (8) federally declared disasters with seven (7) involving flooding. These recent events have had a significant impact on the number of flood claims and an increase in the repetitive loss structures in the state. Reducing the number of RL and SRL properties continues to be a priority for the State of Arkansas.

As of March 31, 2018 the State of Arkansas had 1092 total RLs accounting for 3,052 losses with total (contents and structure) payments of $80,339,315.27, according to FEMA BureauNet data. In the previous plan the State of Arkansas had 808 total RLs this is an increase of 284 RLs from the number identified in the CRS Report of June 2012. Based on the continuing and increasing claims we anticipate the dollar losses to equal or exceed the average payments.

Part 201.4(c)(2) Risk assessments that provide the factual basis for activities proposed in the strategy portion of the mitigation plan. Statewide risk assessments must characterize and analyze natural hazards and risks to provide a statewide overview. This overview will allow the State to compare potential losses throughout the State and to determine their priorities for implementing mitigation measures under the strategy, and to prioritize jurisdictions for receiving technical and financial support in developing more detailed local risk and vulnerability assessments.

Number of Repetitive Loss Properties by County
(Data as of March 2018)



127 of the 1,092 RLs have been mitigated and are not currently counted as subject to repetitive flooding leaving 965 non-mitigated RLs. Mitigated means that the building has been elevated, acquired, floodproofed, or otherwise protected from flood damage, or the building has been destroyed by some natural disaster or human-caused event.

The State of Arkansas has 965 active non-mitigated RLs spread over 58 counties as well as 40 SRL properties within those counties (data as of March 2018). Only 454 out of the 965 identified non-mitigated RLs in Arkansas or approximately 47 percent are currently insured by the NFIP. The City of Little Rock has the highest number of unmitigated RLs with 61 followed by the City of West Memphis with 56. The Table below shows the number of non-mitigated RL properties by community.

Non-Mitigated Repetitive Loss Properties In Arkansas (Data as of March 2018) *SRL Properties

County Name	Community Name	RL Bldgs Total	RL Bldgs Insured	Building Payments	Contents Payments	Total Payments	Average Payment	Losses
Arkansas County	Arkansas County	6	3	$449,342.67	$24,245.17	$473,587.84	$29,599.24	16
Arkansas County	Stuttgart	1	0	$4,400.00	$0.00	$4,400.00	$2,200.00	2
Ashley County	Ashley County	5	0	$144,218.73	$10,749.16	$154,967.89	$15,496.79	10
Ashley County	Crossett	1	0	$9,057.94	$421.00	$9,478.94	$2,369.74	4
Ashley County	Hamburg	1	0	$92,861.03	$0.00	$92,861.03	$46,430.52	2
Baxter County	Mountain Home	1	1	$40,803.28	$0.00	$40,803.28	$20,401.64	2
Baxter County	Norfork *	14	10	$1,381,098.12	$198,187.48	$1,579,285.60	$45,122.45	35
Baxter County	Salesville	1	1	$234,619.85	$26,328.62	$260,948.47	$130,474.24	2
Benton County	Benton County	13	9	$2,069,533.67	$393,839.72	$2,463,373.39	$76,980.42	32
Benton County	Bentonville	1	0	$5,046.72	$0.00	$5,046.72	$2,523.36	2
Benton County	Cave Springs *	2	2	$70,174.07	$9,817.43	$79,991.50	$13,331.92	6
Benton County	Decatur	2	0	$105,219.74	$241,397.70	$346,617.44	$57,769.57	6
Benton County	Gentry	1	1	$12,526.73	$0.00	$12,526.73	$4,175.58	3
Benton County	Gravette	1	1	$20,693.82	$740.46	$21,434.28	$10,717.14	2
Benton County	Rogers	6	5	$151,911.98	$64.00	$151,975.98	$10,131.73	15
Benton County	Siloam Springs	2	0	$121,523.42	$38,368.10	$159,891.52	$26,648.59	6
Benton County	Springdale	3	1	$173,923.50	$31,220.89	$205,144.39	$29,306.34	7
Boone County	Boone County	1	0	$13,474.89	$0.00	$13,474.89	$4,491.63	3
Boone County	Harrison	2	1	$114,793.34	$3,960.19	$118,753.53	$29,688.38	4
Bradley County	Bradley County *	8	3	$284,133.57	$63,826.77	$347,960.34	$18,313.70	19
Bradley County	Warren	4	1	$140,221.23	$1,887.71	$142,108.94	$12,918.99	11
Calhoun County	Hampton	1	0	$65,889.37	$0.00	$65,889.37	$32,944.69	2
Chicot County	Chicot County	12	1	$800,010.50	$158,971.56	$958,982.06	$27,399.49	35
Chicot County	Dermott	1	0	$8,842.76	$0.00	$8,842.76	$2,947.59	3
Chicot County	Lake Village *	3	1	$52,839.67	$3,777.97	$56,617.64	$6,290.85	9
Clark County	Arkadelphia	1	1	$19,277.00	$0.00	$19,277.00	$6,425.67	3
Clark County	Clark County	1	1	$55,949.09	$0.00	$55,949.09	$27,974.55	2
Clark County	Gurdon	2	1	$23,167.17	$51,763.59	$74,930.76	$18,732.69	4
Clay County	Clay County	12	6	$891,574.35	$82,567.32	$974,141.67	$36,079.32	27
Clay County	Corning	5	2	$171,407.95	$4,024.00	$175,431.95	$12,530.85	14

Clay County	Piggott	2	0	$39,346.90	$10,905.53	$50,252.43	$12,563.11	4
Clay County	Success	1	0	$69,771.66	$0.00	$69,771.66	$34,885.83	2
Cleburne County	Cleburne County *	5	5	$691,168.68	$252,952.67	$944,121.35	$72,624.72	13
Conway County	Morrilton *	2	1	$88,622.91	$4,633.74	$93,256.65	$10,361.85	9
Conway County	Plumerville	1	0	$12,808.26	$6,618.73	$19,426.99	$9,713.50	2
Craighead County	Bono *	8	1	$184,972.46	$26,783.52	$211,755.98	$10,083.62	21
Craighead County	Caraway	1	0	$8,302.73	$0.00	$8,302.73	$4,151.37	2
Craighead County	Jonesboro *	32	20	$2,763,332.38	$1,178,108.93	$3,941,441.31	$38,266.42	103
Craighead County	Lake City	1	1	$7,296.39	$0.00	$7,296.39	$3,648.20	2
Crawford County	Crawford County	1	1	$56,940.36	$10,234.18	$67,174.54	$33,587.27	2
Crawford County	Van Buren	2	2	$198,937.16	$21,200.14	$220,137.30	$44,027.46	5
Crittenden County	Crittenden County	2	1	$107,867.73	$6,999.15	$114,866.88	$19,144.48	6
Crittenden County	Earle	3	0	$131,525.27	$0.00	$131,525.27	$16,440.66	8
Crittenden County	Marion	4	2	$62,489.41	$2,295.02	$64,784.43	$7,198.27	9
Crittenden County	West Memphis *	56	30	$4,114,300.47	$298,162.33	$4,412,462.80	$23,596.06	187
Cross County	Cross County	2	1	$161,824.23	$6,896.95	$168,721.18	$42,180.30	4
Cross County	Wynne	6	1	$127,888.67	$68,850.75	$196,739.42	$11,572.91	17
Desha County	Desha County	3	2	$86,543.48	$0.00	$86,543.48	$14,423.91	6
Desha County	Dumas	4	1	$58,859.49	$10,049.28	$68,908.77	$6,264.43	11
Desha County	McGehee	12	4	$419,288.82	$35,312.43	$454,601.25	$14,206.29	32
Drew County	Drew County	1	0	$195,420.11	$0.00	$195,420.11	$27,917.16	7
Drew County	Monticello	1	0	$14,982.27	$0.00	$14,982.27	$4,994.09	3
Faulkner County	Conway	7	4	$188,636.06	$107,624.47	$296,260.53	$14,813.03	20
Faulkner County	Faulkner County	11	6	$710,484.29	$102,185.74	$812,670.03	$33,861.25	24
Faulkner County	Greenbrier	1	1	$163,431.24	$7,863.77	$171,295.01	$42,823.75	4
Faulkner County	Mayflower *	7	6	$294,212.05	$63,720.52	$357,932.57	$21,054.86	17
Faulkner County	Vilonia	1	1	$53,001.97	$14,239.62	$67,241.59	$33,620.80	2
Franklin County	Charleston	1	1	$19,494.54	$0.00	$19,494.54	$4,873.64	4
Franklin County	Franklin County	2	2	$53,583.68	$34,396.74	$87,980.42	$17,596.08	5
Franklin County	Ozark	1	0	$294,967.12	$40,033.53	$335,000.65	$30,454.60	11
Fulton County	Fulton County *	7	6	$347,102.45	$77,265.66	$424,368.11	$20,208.01	21
Fulton County	Mammoth Spring	3	3	$387,467.03	$150,619.88	$538,086.91	$59,787.43	9
Garland County	Garland County	7	3	$319,330.41	$5,063.77	$324,394.18	$23,171.01	14
Garland County	Hot Springs	8	6	$514,721.99	$45,216.51	$559,938.50	$31,107.69	18
Grant County	Grant County	2	1	$32,074.92	$0.00	$32,074.92	$8,018.73	4

Grant County	Sheridan	1	0	$16,550.39	$0.00	$16,550.39	$8,275.20	2
Greene County	Greene County	1	1	$179,585.77	$0.00	$179,585.77	$59,861.92	3
Greene County	Paragould	6	3	$133,497.49	$0.00	$133,497.49	$10,269.04	13
Howard County	Nashville	1	0	$26,439.86	$8,828.77	$35,268.63	$11,756.21	3
Independence County	Batesville *	15	3	$477,338.27	$49,809.84	$527,148.11	$13,178.70	40
Independence County	Independence County *	7	3	$238,225.09	$13,024.97	$251,250.06	$14,779.42	17
Independence County	Oil Trough	2	2	$74,885.82	$33,490.07	$108,375.89	$27,093.97	4
Izard County	Calico Rock	4	0	$184,966.25	$0.00	$184,966.25	$18,496.63	10
Izard County	Izard County *	12	5	$815,984.86	$106,990.58	$922,975.44	$31,826.74	29
Jackson County	Diaz *	1	1	$138,428.46	$45,150.33	$183,578.79	$45,894.70	4
Jackson County	Grubbs *	2	1	$130,835.61	$0.00	$130,835.61	$18,690.80	7
Jackson County	Jackson County *	16	7	$1,119,223.21	$110,234.99	$1,229,458.20	$25,090.98	49
Jackson County	Newport	6	1	$373,544.92	$18,183.51	$391,728.43	$27,980.60	14
Jefferson County	Altheimer	2	1	$36,283.53	$19,700.00	$55,983.53	$13,995.88	4
Jefferson County	Jefferson County *	30	21	$2,413,762.80	$279,096.41	$2,692,859.21	$27,761.44	97
Jefferson County	Pine Bluff *	28	6	$1,672,043.76	$377,185.33	$2,049,229.09	$21,570.83	95
Jefferson County	White Hall	1	0	$59,308.36	$5,327.24	$64,635.60	$7,181.73	9
Lawrence County	Black Rock	1	0	$38,000.00	$0.00	$38,000.00	$19,000.00	2
Lawrence County	Hoxie	1	0	$57,715.87	$5,966.03	$63,681.90	$31,840.95	2
Lawrence County	Lawrence County	6	3	$202,657.62	$3,663.26	$206,320.88	$14,737.21	14
Lee County	Lee County	3	1	$124,164.89	$16,416.97	$140,581.86	$17,572.73	8
Lincoln County	Gould	4	1	$66,610.84	$20,764.87	$87,375.71	$8,737.57	10
Little River County	Ashdown	1	0	$66,114.67	$15,389.25	$81,503.92	$40,751.96	2
Lonoke County	Cabot	3	1	$111,559.88	$17,662.67	$129,222.55	$21,537.09	6
Lonoke County	Lonoke County	7	1	$310,376.96	$49,625.02	$360,001.98	$18,947.47	19
Miller County	Miller County	1	0	$6,356.72	$0.00	$6,356.72	$3,178.36	2
Miller County	Texarkana	4	2	$41,258.35	$30,290.59	$71,548.94	$5,110.64	14
Mississippi County	Gosnell *	2	1	$121,595.66	$48,440.89	$170,036.55	$21,254.57	8
Mississippi County	Mississippi County	1	0	$7,824.06	$3,300.00	$11,124.06	$5,562.03	2
Monroe County	Brinkley	2	2	$36,033.68	$0.00	$36,033.68	$9,008.42	4
Monroe County	Clarendon	3	0	$12,057.79	$9,065.38	$21,123.17	$3,520.53	6
Monroe County	Holly Grove	1	0	$69,774.27	$0.00	$69,774.27	$34,887.14	2
Monroe County	Monroe County	15	5	$1,137,605.91	$62,208.92	$1,199,814.83	$38,703.70	31
Montgomery County	Montgomery County	16	6	$725,406.80	$214,848.49	$940,255.29	$24,743.56	38
Newton County	Jasper *	2	1	$116,841.07	$0.00	$116,841.07	$19,473.51	6

Ouachita County	Camden	3	0	$43,417.88	$0.00	$43,417.88	$7,236.31	6
Ouachita County	Ouachita County	4	2	$208,014.18	$60,648.85	$268,663.03	$26,866.30	10
Perry County	Perry County	3	2	$124,871.88	$0.00	$124,871.88	$17,838.84	7
Phillips County	Helena-West Helena	35	3	$650,134.82	$463,727.69	$1,113,862.51	$9,282.19	120
Phillips County	Phillips County	5	2	$372,971.94	$149,799.11	$522,771.05	$27,514.27	19
Phillips County	West Helena	5	1	$272,710.46	$141,874.86	$414,585.32	$13,819.51	30
Poinsett County	Harrisburg	1	0	$10,898.56	$4,986.68	$15,885.24	$7,942.62	2
Poinsett County	Lepanto	1	1	$8,775.76	$0.00	$8,775.76	$4,387.88	2
Poinsett County	Marked Tree	2	2	$49,866.64	$16,176.25	$66,042.89	$16,510.72	4
Poinsett County	Poinsett County *	2	2	$89,151.93	$24,002.65	$113,154.58	$18,859.10	6
Poinsett County	Trumann	2	0	$303,072.16	$8,710.86	$311,783.02	$62,356.60	5
Poinsett County	Tyronza	1	0	$16,298.94	$1,345.00	$17,643.94	$5,881.31	3
Polk County	Mena	1	1	$46,875.21	$0.00	$46,875.21	$7,812.54	6
Pope County	Russellville	6	3	$181,705.31	$122,781.83	$304,487.14	$21,749.08	14
Prairie County	De Valls Bluff	2	0	$85,103.70	$1,300.00	$86,403.70	$21,600.93	4
Prairie County	Prairie County	9	2	$507,049.39	$23,149.17	$530,198.56	$29,455.48	18
Pulaski County	Jacksonville	10	6	$434,875.50	$79,791.19	$514,666.69	$21,444.45	24
Pulaski County	Little Rock *	61	29	$4,453,058.54	$2,523,451.99	$6,976,510.53	$35,413.76	197
Pulaski County	North Little Rock	10	9	$955,875.01	$34,364.69	$990,239.70	$41,259.99	24
Pulaski County	Pulaski County	32	15	$2,073,216.39	$371,839.42	$2,445,055.81	$32,171.79	76
Pulaski County	Sherwood	25	19	$1,038,443.15	$42,806.15	$1,081,249.30	$16,382.57	66
Randolph County	Pocahontas	14	9	$937,221.19	$10,742.61	$947,963.80	$28,726.18	33
Randolph County	Randolph County *	30	22	$2,840,992.13	$458,391.02	$3,299,383.15	$42,849.13	77
Saline County	Benton *	3	1	$214,131.53	$44,837.32	$258,968.85	$19,920.68	13
Saline County	Bryant	3	2	$106,103.95	$13,114.47	$119,218.42	$19,869.74	6
Saline County	Saline County	7	1	$636,804.17	$831,042.34	$1,467,846.51	$69,897.45	21
Saline County	Shannon Hills	18	4	$444,107.14	$104,405.65	$548,512.79	$11,427.35	48
Scott County	Waldron	2	1	$378,209.89	$116,321.32	$494,531.21	$123,632.80	4
Sebastian County	Fort Smith *	30	16	$3,236,875.12	$282,869.46	$3,519,744.58	$38,258.09	92
Sebastian County	Greenwood	3	2	$94,756.14	$17,182.19	$111,938.33	$13,992.29	8
Sebastian County	Sebastian County	1	0	$148,938.10	$12,874.38	$161,812.48	$80,906.24	2
Sevier County	Sevier County	2	1	$23,142.55	$9,391.07	$32,533.62	$8,133.41	4
Sharp County	Cherokee Village	1	0	$25,415.20	$12,551.64	$37,966.84	$18,983.42	2
Sharp County	Hardy	9	4	$525,572.87	$124,686.80	$650,259.67	$27,094.15	24
Sharp County	Sharp County	3	1	$159,723.00	$14,636.15	$174,359.15	$29,059.86	6
Sharp County	Williford	1	0	$42,506.36	$65,986.61	$108,492.97	$54,246.49	2
Union County	Calion	4	2	$210,915.26	$41,231.05	$252,146.31	$28,016.26	9

Union County	El Dorado	3	2	$95,348.40	$442.53	$95,790.93	$13,684.42	7
Union County	Felsenthal	1	0	$13,441.04	$0.00	$13,441.04	$6,720.52	2
Union County	Union County	1	0	$29,505.18	$13,076.12	$42,581.30	$14,193.77	3
Van Buren County	Van Buren County	2	1	$79,138.26	$14,983.89	$94,122.15	$18,824.43	5
Washington County	Elkins	3	0	$75,285.56	$0.00	$75,285.56	$10,755.08	7
Washington County	Elm Springs	1	1	$107,377.42	$20,147.42	$127,524.84	$63,762.42	2
Washington County	Farmington	5	5	$832,953.12	$466.80	$833,419.92	$55,561.33	15
Washington County	Fayetteville	23	16	$1,779,428.03	$26,822.20	$1,806,250.23	$34,080.19	53
Washington County	Goshen	2	1	$124,494.56	$11,984.32	$136,478.88	$27,295.78	5
Washington County	Greenland	1	1	$101,356.61	$0.00	$101,356.61	$50,678.31	2
Washington County	Johnson	5	2	$849,401.96	$95,909.09	$945,311.05	$94,531.11	10
Washington County	Tontitown	1	1	$86,668.41	$0.00	$86,668.41	$43,334.21	2
Washington County	Washington County	6	3	$718,778.81	$222,944.08	$941,722.89	$67,265.92	14
White County	Bald Knob	2	0	$94,338.53	$3,362.42	$97,700.95	$24,425.24	4
White County	Beebe	3	1	$175,106.10	$39,809.42	$214,915.52	$35,819.25	6
White County	Judsonia	2	0	$80,462.82	$8,300.00	$88,762.82	$22,190.71	4
White County	White County	8	2	$700,163.71	$12,225.73	$712,389.44	$37,494.18	19
Woodruff County	Augusta	1	1	$106,692.92	$12,200.00	$118,892.92	$59,446.46	2
Woodruff County	McCrory	4	3	$185,447.86	$28,698.64	$214,146.50	$23,794.06	9
Woodruff County	Woodruff County	9	5	$571,735.54	$51,279.34	$623,014.88	$27,087.60	23
Yell County	Ola	1	0	$7,128.97	$870.00	$7,998.97	$3,999.49	2
	Total	965	454	$60,818,449.00	$12,293,599.25	$73,112,048.25		

Part 201.4(c)(3)(iii)) *identify, evaluate and prioritize cost-effective, environmentally sound, and technically feasible mitigation actions for repetitive loss properties.*

Further refining the RLs we have the communities with SRLs. Actual losses include building and contents losses as recorded by FEMA. Priority Ranking, on table from highest to lowest, is based on the community with the greatest annualized losses and Number of SRL Properties.

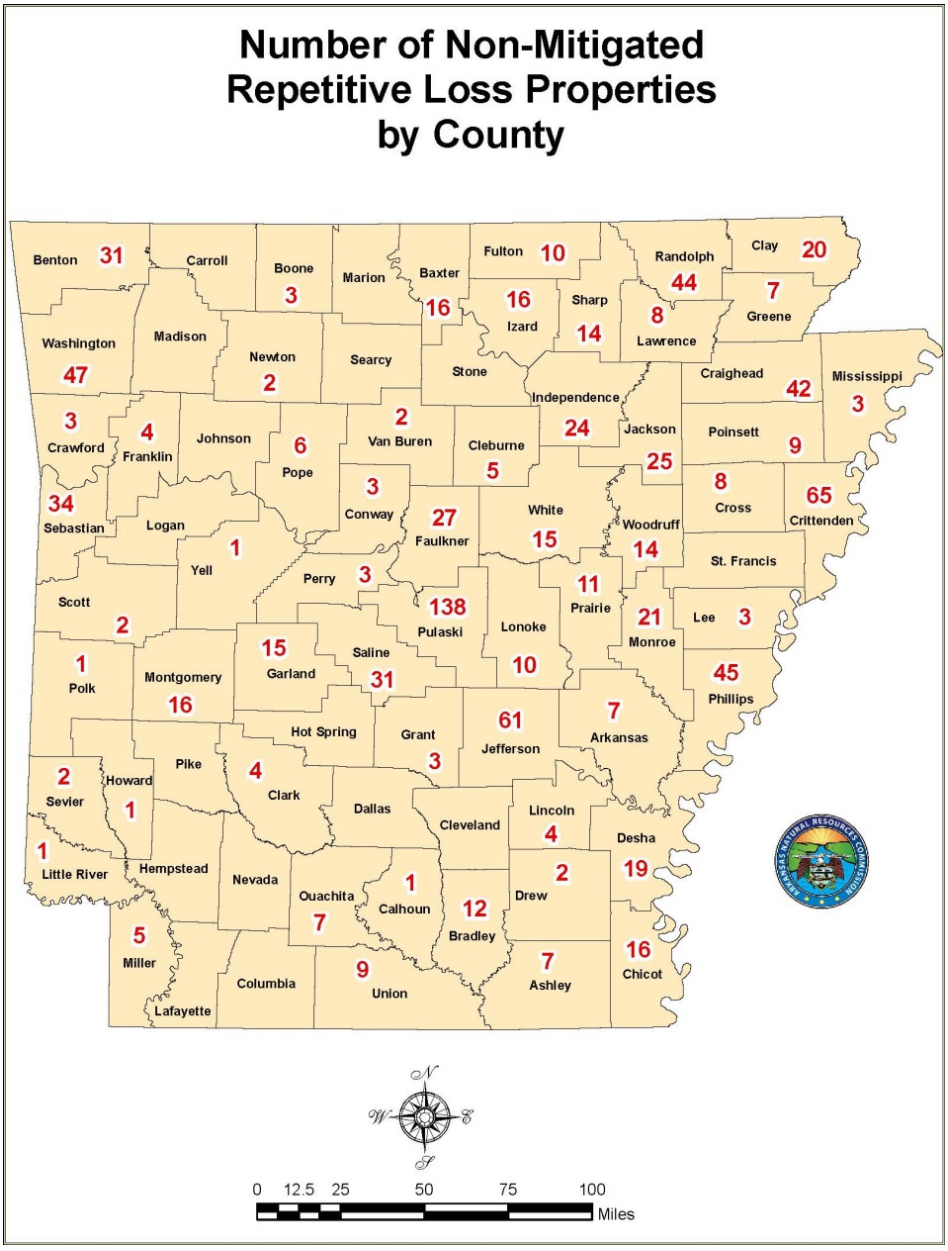
Severe Repetitive Loss Properties By Community (Data as of March 2018)

County Name	Community Name	Total Payments	Average Payment	Losses	Properties

Crittenden County	West Memphis	$665,671.06	$31,698.62	21	4
Jefferson County	Jefferson County	$540,393.91	$16,375.57	33	4
Craighead County	Jonesboro	$519,222.97	$17,904.24	29	4
Randolph County	Randolph County	$373,190.07	$46,648.76	8	2
Baxter County	Norfork	$364,068.57	$45,508.57	8	2
Pulaski County	Little Rock	$339,324.88	$24,237.49	14	3
Sebastian County	Fort Smith	$219,057.72	$54,764.43	4	1
Izard County	Izard County	$218,178.75	$54,544.69	4	1
Jackson County	Diaz	$183,578.79	$45,894.70	4	1
Fulton County	Fulton County	$177,556.29	$29,592.72	6	1
Cleburne County	Cleburne County	$153,828.14	$38,457.04	4	1
Jackson County	Jackson County	$153,330.41	$38,332.60	4	1
Mississippi County	Gosnell	$142,971.78	$23,828.63	6	1
Faulkner County	Mayflower	$139,289.06	$34,822.27	4	1
Independence County	Batesville	$133,909.28	$12,173.57	11	2
Bradley County	Bradley County	$129,533.74	$25,906.75	5	1
Saline County	Benton	$120,586.77	$30,146.69	4	1
Independence County	Independence County	$117,876.79	$29,469.20	4	1
Jackson County	Grubbs	$99,244.36	$24,811.09	4	1
Conway County	Morrilton	$89,204.17	$12,743.45	7	1
Jefferson County	Pine Bluff	$72,941.27	$18,235.32	4	1
Newton County	Jasper	$71,300.89	$17,825.22	4	1
Poinsett County	Poinsett County	$66,921.73	$16,730.43	4	1
Craighead County	Bono	$60,355.34	$15,088.84	4	1
Benton County	Cave Springs	$58,638.81	$14,659.70	4	1
Chicot County	Lake Village	$48,338.52	$9,667.70	5	1
	Totals	**$5,258,514.07**	**$730,068.28**	**209**	**40**

Analysis of the communities with SRL properties having the greatest financial losses will be utilized to identify and prioritize areas for mitigation projects. HMA Grant Program Managers, at ADEM and ANRC, will work closely with these twenty-six (26) SRL communities to determine the potential for project development.

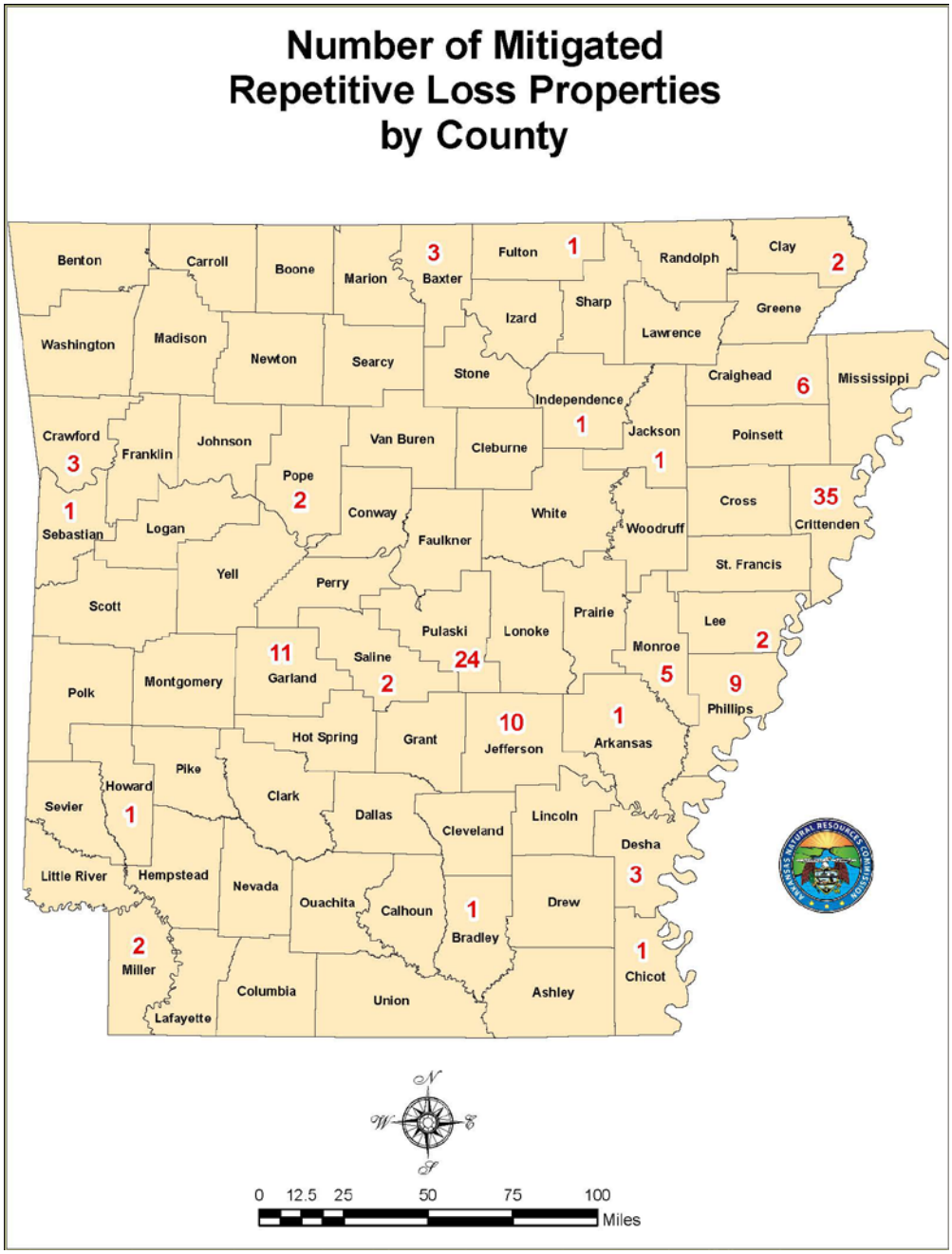
Non-Mitigated Repetitive Loss Properties In Arkansas (Data as of March 2018)



Actions Taken to Reduce the Number of Repetitive Loss Properties

In total there are 127 mitigated properties in the state funded from HMGP, FMA, Increased Cost of Compliance (NFIP policy holders), and the RFC program as well as some private funding. Twenty-three out of the 75 total counties in Arkansas have mitigated at least one RL. Crittenden County has 35 mitigated RLs, the next highest number of mitigated RLs belongs to Pulaski County with 24. The remaining counties each have less than 11 mitigated RLs.

Number of Mitigated Repetitive Loss Properties by County
(Data as of March 2018)



The State of Arkansas has completed two acquisition and demolition projects and has four additional acquisition projects taking place through funding from the Flood Mitigation Assistance (FMA) Program and the Hazard Mitigation Grant Program (HMGP).

FY Year/Grant	County	Jurisdiction	Properties Mitigated	Project Type	Project Total	Status
RFC 2012	Pulaski	City of Sherwood	5	Acquisition & Demolition	$509,890.00	Grant Closed
RFC 2012	Pulaski	City of Little Rock Public Works	1	Acquisition & Demolition	$93,640.11	Grant Closed
2015 FMA	Pulaski	City of Sherwood	1	Acquisition & Demolition	$139,130.00	Project Ongoing
2016 FMA	Pulaski	City of Little Rock	1	Acquisition & Demolition	$249,563.75	Project Ongoing
2016 FMA	Garland	Garland County	1	Acquisition & Demolition	$156,550.00	Project Ongoing
DR-4270	Pulaski	City of Sherwood	1	Acquisition & Demolition	$71,195.00	Project Ongoing

Part 201.4 (c)(4)(i) *A description of the State process to support, through funding and technical assistance, the development of local mitigation plans.*

Through inter-agency coordination the State has maintained its commitment to providing mitigation grant program funding to local jurisdictions for eligible planning activities through funding from HMGP, PDM and FMA programs. Technical assistance in plan development and update is provided by ADEM and FEMA Region VI, as well as ANRC providing direct assistance with the risk assessment sections on Dams and Flooding. ANRC has also included mitigation planning, HMA grants, and ICC mitigation into their annual floodplain accreditation training that is conducted, required by Act 754 of 2003, for all NFIP participating communities.

Part 201.4 (c)(3)(iv) Identification of current and potential sources of Federal, State*, local, or private funding to implement mitigation activities.*

For FMA FY2017 there are three projects pending FEMA approval and award, these projects will mitigate eight residential properties through acquisition and demolition, as well as elevate one residential property. The State will continue to utilize HMGP, PDM, and FMA grant funds to perform acquisitions and/or elevations of SRL and RL properties as well as work with communities to maximize the benefits available through Increased Cost of Compliance funds available through individual NFIP flood policies after flood events.

Part 201.4 (c)(3)(i) *A description of State goals to guide the selection of activities to mitigate and reduce potential losses.*

Repetitive Loss Strategy Goals

The State of Arkansas is re-emphasizing its commitment to mitigating losses to flood prone properties through the following steps to ensure repetitive loss and severe repetitive loss properties are addressed and the total numbers are further reduced. Specific Goals and Objectives have been compiled from Section 6 Mitigation Strategy:

Goal 1: Reduce the vulnerability to jurisdictions and state owned facilities in Arkansas to all hazards.

- **Objective 1.1:** Participate in all appropriate federal programs related to disaster planning and mitigation including FEMA, DHS, CDC, and others.
- **Objective 1.2:** Educate and assist the Governor's Office and the Arkansas General Assembly in developing policies and state legislation that will further enhance hazard mitigation.
- **Objective 1.3:** Expand mitigation project opportunities throughout Arkansas.

Goal 2: Promote sustainable and disaster resilient development within Arkansas and its communities.

- **Objective 2.1:** Promote NFIP participation and compliance for all communities throughout the state
- **Objective 2.2:** Promote sustainable development and "smart growth" initiatives through coordination with state agencies and non-profit organizations.
- **Objective 2.3:** Identify mitigation opportunities to protect, upgrade and strengthen existing structures through acquisition, elevation, relocation and retrofit.

Goal 3: Support mitigation grant opportunities for local governments, their sub-jurisdictions and the general public.

- **Objective 3.1:** Provide mitigation grant program technical assistance and funding to local jurisdictions for eligible planning and project activities.
  Objective 3.2: Provide floodplain management technical assistance and resources to all communities.

Goal 4: Offer hazard mitigation training, education, and technical assistance to local jurisdictions in the development of hazard mitigation plans and implementation of projects.

- **Objective 4.1:** Provide training, education and technical assistance to local jurisdictions in the development of local mitigation plans.
- **Objective 4.2:** Provide training, education and technical assistance to local jurisdictions in the implementation of local mitigation plans.
- **Objective 4.3:** Provide training, education and technical assistance to local jurisdictions in the use of FEMA's Benefit-Cost Analysis software.

- **Objective 4.4:** Increase awareness and knowledge of hazard mitigation principles and practices among local public officials.

Goal 5: Utilize the latest technology to improve vulnerability assessments of all identified hazards.

- **Objective 5.1:** Coordinate with partners at all government levels to identify and promote best technology practices in the development and implementation of hazard mitigation plans and projects.
- .
- **Objective 5.3:** Develop and implement a methodology for identifying and prioritizing new mitigation projects based upon on loss reduction criteria.
- **Objective 5.4:** Develop and monitor any mitigation data deficiencies referenced in the current state mitigation plan.

Goal 6: Reduce the total number of repetitive loss and severe repetitive loss properties.

- **Objective 6.1:** Develop and implement a repetitive loss strategy to prevent future losses
- **Objective 6.2:** Utilize HMGP, PDM, and FMA grant funds to perform acquisitions and elevations of severe repetitive loss and repetitive loss properties.
- **Objective 6.3:** Enhance education efforts that increase the public's, and home or business owners' knowledge and awareness of NFIP insurance, its benefits, and mitigation grants by conducting various outreach activities.
- **Objective 6.4:** Analysis of the repetitive loss communities and SRL properties with the greatest financial losses will be utilized to identify and prioritize areas for cost-effective mitigation projects
- **Objective 6.5:** Work with jurisdictions to ensure grant eligibility by keeping mitigation plans current.
- **Objective 6.6:** Provide assistance in the implementation of flood mitigation plans and projects in flood-prone areas, in accordance with federal and state regulatory, funding, and technical assistance programs.

National Flood Insurance Program (NFIP) Actions

The NFIP provides individuals the opportunity to purchase flood insurance; flood insurance from the NFIP is only available in participating communities. Since 2011 seventeen (17) communities have joined the program bringing the state total to 424 NFIP participating communities.

Community Rating System (CRS)

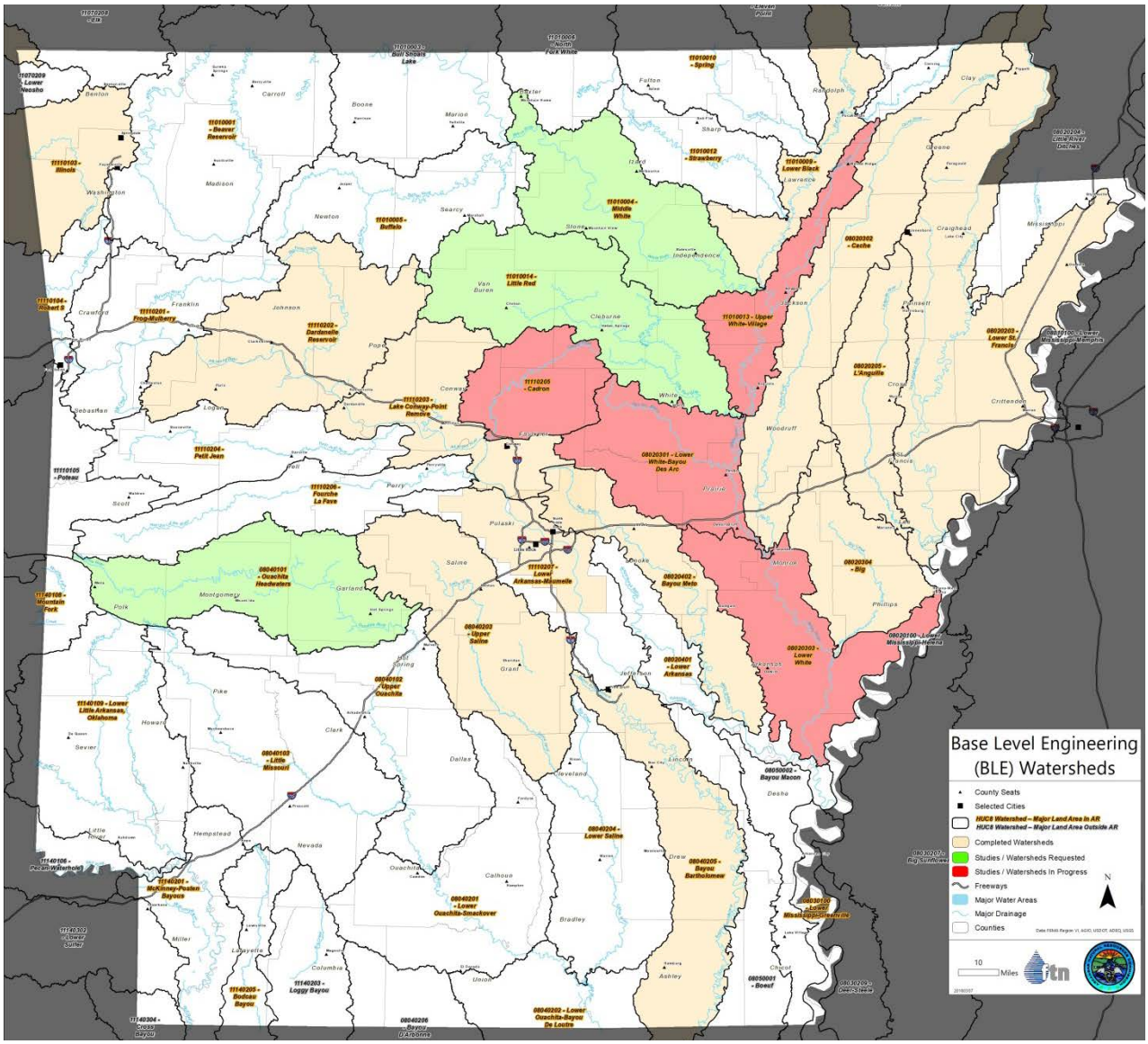
The NFIP CRS, a voluntary incentive program, has been developed to provide incentives in the form of premium discounts for communities to go beyond the minimum NFIP floodplain management requirements. The ANRC floodplain management staff includes one CRS Coordinator. The coordinator assists local communities to identify and implement strategies that support higher floodplain management standards, enabling communities to exceed NFIP minimum requirements, achieve ranking in the CRS, and obtain lower flood insurance premiums for their constituents.

Cooperating Technical Partner (CTP)

In 2011 ANRC became a Cooperating Technical Partner (CTP) with FEMA. Since then the flood mapping has completed approximately 164 FIRMs across the state. These maps are the central regulatory tool of the NFIP. The release of preliminary FIRMs provides community officials, the public, and other stakeholders with their first view of the current flood hazards, which include changes that may have occurred in the flood risks throughout the community, or county, since the last flood hazard map was published.

Activities:

- 17 HUC 8 watersheds totaling 25,500 sq. mi. in area
- Approximately 250 communities and parts of 48 counties; 1.7 million people in the watersheds
- FIRMs total: approximately 164
    - FIRMs completed: Grant (37 panels)
    - FIRMs pending: Saline, Parts of Pulaski, Lonoke (46 panels)
    - FIRMs in progress: Washington, Craighead, other Phase 2 studies (81 panels)
- Approximate # of miles of study
    - Base Level Engineering (not including current 4 watersheds) = 14,100 miles
    - Detailed Studies (includes remapping of existing detail areas) = 237 miles
    - Zone A (approximate) studies = 1780 miles
- Upcoming for 2019:
    - Discovery and Base Level Engineering (BLEs) in 3 watersheds (Ouachita Headwaters, Little Red, Middle White)
- Arkansas NFIP Policy Initiative- seeks to increase flood insurance buy-in by focusing on small communities who have recently experienced flood events and/or have been a part of the CTP Discovery process.
    - ANRC will partner with representatives from the Priority Communities, the ADEM, FEMA, and local insurance agencies to (1) help communities gain a better understanding of their flood risk; (2) identify opportunities for mitigating risk through flood insurance; and (3) facilitate purchase of flood policies through providing access to insurance agents to discuss costs and options for coverage.


Base Level Engineering (BLE) Watersheds
County Seats
Selected Cities
HUC8 Watershed – Major Land Area in AR
HUC8 Watershed – Major Land Area Outside AR
Completed Watersheds
Studies / Watersheds Requested
Studies / Watersheds In Progress
Freeways
Major Water Areas
Major Drainage
Counties
10
Miles
N

7.0 Coordination of Local Mitigation Planning

7.1 – Introduction

It is the goal of the State of Arkansas to provide all available assistance to local governments in developing and maintaining hazard mitigation plans. In having FEMA approved plans, local governments are available for the mitigation grant funding from HMGP, PDM, and the SRL program.

7.2 – Local Plan Status

The State of Arkansas is actively working with all applicable jurisdictions to ensure they have an approved, current hazard mitigation plan. To date:

- 41 jurisdictions had FEMA-approved hazard mitigation plans.
- 12 jurisdictions have plans under revision
- 19 jurisdictions have plans in progress
- One jurisdiction has an approved plan awaiting formal adoption
- Five jurisdictions have expired plans
- Five jurisdictions, Carrol County, Cross County, Lee County, St. Francis County and Stone County, have no hazard mitigation plan

Using available hazard mitigation plans ADEM can effectively coordinate with local jurisdictions and assess how to most efficiently distribute project funding and technical assistance. The following table shows the status of local hazard mitigation plans.

2018 Local Hazard Mitigation Plan Status

Plan Title/ Jurisdiction	Update Number	Plan Status	Expiration Date	Grant Number
Arkansas County	2	Approved	7/8/2020	
Arkansas Tech University	0	Awaiting Revisions	-	
Ashley County	1	Approved	10/23/2022	PDMC-PL-06-AR-2015 #1
Baxter County	0	Approved	11/19/2020	FEMA-1819-DR-AR; #0037
Beebe School District	1	Approved	3/1/2022	
Benton County	1	Approved	11/9/2021	FEMA-4143-DR-AR #02
Boone County	0	Plan in Progress	-	PDMC-PL-06-AR-2016-007
Boone County Educational Co-Op	0	Approved	12/21/2021	PDMC-PL-06-AR-2013; 001
Bradley County	1	Approved	7/9/2023	FMA-PJ-06-AR-2014-003
Calhoun County	1	Plan in Progress	-	PDM 2015
Chicot County	1	Approved	7/9/2023	FEMA-4174-DR-AR
Clark County	1	Approved	7/5/2022	FEMA-4100-DR-AR; 0002
Clay County	1	Plan in Progress	-	FEMA-4254-AR-0003
Cleburne County	1	Approvable Pending Adoption	-	PDM 2014
Cleveland County	1	Plan in Progress	-	PDM 2015
Columbia County	1	Awaiting Revisions	-	FEMA-4174-DR-AR
Conway County	1	Approved	4/6/2021	FEMA-1975-DR-AR; 0017
Craighead County	1	Approved	12/28/2021	PDMC-PL-06-AR-2014; 010
Crawford County	3	Plan in Progress	-	FMA-PL-06-AR-2014-007
Crittenden County	1	Plan in Progress	-	PDM 2015

2018 Local Hazard Mitigation Plan Status

Plan Title/ Jurisdiction	Update Number	Plan Status	Expiration Date	Grant Number
Dallas County	0	Plan in Progress	-	FEMA-4174-DR-AR
Desha County	1	Approved	10/15/2022	FMA-PJ-06-AR-2014-009
Drew County	1	Approved	5/18/2022	FMA-PJ-06-AR-2014-004
Eureka Springs	0	Awaiting Revisions	-	FEMA-1975-DR-AR
Faulkner County	1	Approved	12/1/2020	-
Franklin County	1	Approved	11/19/2022	FEMA-4124-DR-AR
Fulton County	0	Expired	12/15/2014	EMT-2004-PC-0002 AR-2003-
Garland County	1	Approved	6/8/2021	FEMA-4100-DR-AR #007
Grant County	1	Approved	4/2/2020	FEMA-4000-DR-AR
Greene County	0	Awaiting Revisions	-	FEMA-4143-DR-AR
Hempstead County	1	Approved	12/12/2021	FEMA-4000-DR-AR; 002
Hot Spring County	1	Approved	8/28/2022	FEMA-4100-DR-AR; 003
Howard County	1	Plan in Progress	-	PDMC-PL-06-AR-2016-002
Independence County	1	Approved	3/15/2022	FEMA-4121-DR-AR; 0003
Izard County	0	Approved	7/21/2019	
Jackson County	3	Approved	5/8/2022	PDMC-PL-06-AR-2013-004
Jefferson County	1	Approved	7/5/2022	PDMC-PL-06-AR-2013-006
Johnson County	1	Approved	6/3/2023	FEMA-4160-DR-AR
Lafayette County	1	Plan in Progress	-	PDM 2015
Lawrence County	1	Plan in Progress	-	FEMA-4174-DR-AR
Lincoln County	0	Plan in Progress	-	PDM 2015
Little River County	0	Approved	12/26/2022	FEMA-1975-DR-AR; 7
Logan County	1	Approved	9/27/2021	-
Lonoke County	0	Plan in Progress	-	PDM 2014
Madison County	0	Plan in Progress	-	PDM 2015
Marion County	1	Plan in Progress	-	PDM 2016
Mississippi County	1	Approved	11/12/2020	FEMA-1975-DR-AR
Montgomery County	1	Approved	8/9/2022	FEMA 4124-DR-AR
Mountain View	1	Plan in Progress	-	FEMA-4174-DR-AR
Nevada County	0	Approved	10/15/2022	FEMA-1975-DR-AR; 6
Newton County	0	Plan in Progress	-	-
Ouachita County	0	Expired	2/1/2015	EMT-2004-PC-0002 AR-2003-
Perry County	1	Approved	10/16/2022	FMA-PL-06-AR-2014-001
Phillips County	0	Plan in Progress	-	-
Pike County	1	Approved	5/1/2022	PDMC-PL-06-AR #1
Poinsett County	1	Approved	2/6/2023	PDMC-PL-06-AR-2014-009
Polk County	0	Approved	3/13/2018	FEMA-1751-DR-AR 15
Pope County	2	Approved	5/20/2020	-
Prairie and Monroe Counties	0	Plan in Progress	-	PL-06-AR-2014-005
Pulaski County	1	Approved	11/16/2019	FEMA-1819-DR-AR 1
Randolph County	0	Awaiting Revisions	-	FEMA-4143-DR-AR
Saline County	1	Approved	10/9/2022	FEMA-4100-DR-AR
Scott County	1	Approved	11/19/2022	FEMA-PDMC-PJ-06-AR-2014
Searcy County	0	Plan in Progress	-	PDMC-PL-06-AR-2016-006

2018 Local Hazard Mitigation Plan Status

Plan Title/ Jurisdiction	Update Number	Plan Status	Expiration Date	Grant Number
Searcy County Educational Co-Op	0	Approved	9/6/2022	PL-06-AR-2015-003
Sebastian County	2	Approvable Pending Adoption	-	FMA-PL-06-AR-2015-008
Sevier County	1	Plan in Progress	-	PDMC-PL-06-AR-2016-003
Sharp County	1	Approved	10/15/2022	FEMA-4160-DR-AR: #0002
Union County	1	Plan in Progress	-	Self-Funded
Van Buren County	0	Approved	1/26/2020	-
Washington County	1	Approved	11/30/2020	Self-Funded
White County	1	Approved	12/1/2019	-
Woodruff County	1	Awaiting Revisions	-	PDMC-PL-06-AR-2014-002
Yell County	1	Approved	12/10/2019	FEMA-1819-DR-AR 30

Source: ADEM/FEMA

7.3 – Local Mitigation Funding

44 CFR 201.4 (c)(4)(i) A description of the State process to support, through funding and technical assistance, the development of local mitigation plans.

An obstacle most jurisdictions face that hinders their ability to maintain a mitigation plan is funding. The majority cannot fund a plan on their own, so they wait until a grant opportunity is available.

The three main grant-funding sources for hazard mitigation planning are the HMGP, PDM, and the FMA program. The FMA program can fund the flood related portion of the mitigation plan. For planning projects, these grants usually have a federal cost share of 75% and the local jurisdiction is responsible for the remaining 25%.

Under the HMGP, PDM, and FMA programs, mitigation planning grants are considered the highest priority. The table above demonstrates that most of local mitigation plans are funded by mitigation grants administered by ADEM and ANRC.

7.4 – Available Technical Assistance

44 CFR 201.4 (c)(4)(ii) A description of the State process to support, through funding and technical assistance, the development of local mitigation plans.

In light of the number of disasters and the significant amount of HMGP funding received, ADEM has placed a renewed emphasis on the completion and adoption of FEMA-approved plans for all Arkansas counties by the time of the next state plan update. Many jurisdictions within the state require assistance in developing and maintaining hazard mitigation plans. As funding for planning purposes is generally minimal, and ADEM is unable to provide planning funds to every jurisdiction, technical assistance is the primary method used to provide planning assistance. ADEM has been actively supporting local

jurisdictions and contractors by providing various forms of training and outreach on a regular basis. This available assistance includes:

- Planning workshops
- Trainings
- Planning consultation via phone and email
- On-site visits

In addition, as part of this proactive assistance, ADEM consults with jurisdictions and contractors when they are preparing to submit planning and project grant applications to the state and FEMA. This helps to ensure that the applicant understand the requirements for the grant program they are requesting funding from and that the application contains all necessary information. These proactive reviews have reduced problems and have gained a higher success rate for grant awards for applications.

7.5 – Review and Approval of Local Hazard Mitigation Plans

44 CFR 201.4 (c)(4)(ii) A description of the State process and timeframe by which the local plans will be reviewed, coordinated, and linked to the State Mitigation Plan.

When a plan is submitted to ADEM for review, it is first logged in to a spreadsheet with the date received and assigned a reviewer. Any subsequent information regarding the plan will also be entered on the spreadsheet until the plan reaches final FEMA approval.

The plans are reviewed in the order in which they are received. When possible, ADEM will review plans within 30 days of their submission. If revisions are necessary, the period for resubmittal will vary depending on the request for information. ADEM will then submit the plan on a disc to FEMA Region 6 where it should be reviewed within 45 days whenever possible.

If revisions are needed, FEMA will notify ADEM and ADEM will notify the jurisdiction within five business days. Depending on the request for information will determine how long the jurisdiction takes to resubmit to ADEM. Once the revised plan is submitted to ADEM, it will be logged in to the spreadsheet again and reviewed in the order that it was received. Whenever possible the plan will be reviewed with 30 days then submitted to FEMA via disc for review where it could take up to 45 days.

If the plan is deemed acceptable, FEMA will notify ADEM that the plan has reached approvable pending adoption (APA) status. ADEM will mail the jurisdiction a copy of the FEMA APA letter, ADEM APA letter, and FEMA Review Tool within five business days whenever possible. The jurisdiction then has 90 days to obtain resolutions from the participating jurisdictions.

Then the final plan with resolutions is submitted to ADEM. ADEM then submits the final mitigation plan to FEMA R6 within five business days. FEMA then issues a final approval letter that is sent to ADEM. ADEM then prepares a final state letter and issues it along with the final FEMA approval letter and Review Tool to the jurisdiction.

7.6 – Prioritizing Local Assistance for Mitigation Planning

44 CFR 201.4 (c)(4)(iii) Criteria for prioritizing communities and local jurisdictions that would receive planning and project grants under available funding programs, which should include consideration for communities with the highest risks, repetitive loss properties, and most intense development pressures. Further, that for non-planning grants, a principal criterion for prioritizing grants shall be the extent to which benefits are maximized according to a cost benefit review of proposed projects and their associated costs.

In general, federal and state funding for mitigation planning is limited and often competitive. When reviewing initial requests for assistance with mitigation planning, ADEM considers:

- Availability of funds
- A demonstrated desire and capability to complete the planning process
- The jurisdiction can complete proposed mitigation projects
- Expiration date of current plan, if applicable

When funding becomes available for the HMGP, PDM, and FMA programs, ADEM and the ANRC first have a notice of intent (NOI) period. NOIs are received for a limited amount of time then graded on various criteria to determine which ones will be selected to develop planning applications.

ADEM considerations for planning projects include the following:

ADEM Local Mitigation Planning Assistance Request Ranking Criteria

Ranking Criteria	Awarded Points	
Is this project for a mitigation plan development or update?	Update: 0	Development: 5
Current plan explanation?	< 6 months: 0	> 6 months: 10
Did the county receive a federal disaster declaration?	No: 0	Yes: 10
Will the Plan be multi-jurisdictional or single?	Single: 0	Multi: 5
Has an NOI been submitted under previous grants that went unfunded?	No: 0	Yes: 5
Is the jurisdiction a participant in CRS?	No: 0	Yes: 1
Is the jurisdiction a Fire Wise Community?	No: 0	Yes: 1
Is the jurisdiction a Storm-Ready Community?	No: 0	Yes: 1
Is the jurisdiction a member of the NFIP?	No: 0	Yes: 1
Has the jurisdiction participated in training directly related to hazard mitigation?	No: 0	Yes: 1

7.7 – Prioritizing Local Assistance for Mitigation Projects

44 CFR 201.4 (c)(4)(iii) Criteria for prioritizing communities and local jurisdictions that would receive planning and project grants under available funding programs, which should include consideration for communities with the highest risks, repetitive loss properties, and most intense development pressures. Further, that for non-planning grants, a principal criterion for prioritizing grants shall be the extent to which benefits are maximized according to a cost benefit review of proposed projects and their associated costs.

When considering hazard mitigation projects, the State of Arkansas attempts to align priorities with that of FEMA. Under the FMA and PDM grants, ADEM and the ANRC use the priorities outlined in the FEMA Notice of Funding Opportunity to prioritize project applications. When funding comes from the HMGP (post-disaster funding), priority is given to mitigation projects which are related to the hazard that necessitated the disaster declaration and those jurisdictions included in the disaster declaration. If there are not enough eligible projects to use these criteria, ADEM will default to the following priorities:

1. Community saferooms
2. Acquisition/relocation of severe repetitive loss structures.
3. Acquisition/relocation of repetitive loss structures.
4. Acquisition/Relocation Projects will be further prioritized as follows:
    a. Two repetitive losses;
    b. Structures in the floodway with >50% damage;
    c. Structures in the floodplain with >50% damage;
    d. Structures in the floodway with <50% damage;
    e. Structures in the floodplain with <50% damage;
    f. Vacant lots in the floodway;
    g. Vacant lots in the floodplain;
        i. Priority of structures will be as follows:
            1. *Primary Residence*
            2. *Secondary/Rental Property*
            3. *Commercial Property*
5. Structural flood control measures.
6. Structural retrofit of public critical facilities to resist high wind and seismic effects.
7. Community safe rooms.
8. Retrofitting, such as wet and dry flood proofing.
9. Non-structural retrofit for seismic effects.
10. 5 % projects such as: window film, Gas Shutoff valves, and NOAA weather radios.
11. Wildland fire suppression measures.
12. Promote mitigation in public information campaigns and public education activities.
13. GIS/spatial data related activities to support mitigation.
14. Mapping projects to assist in planning.
15. Promote legislation to include mitigation actions in all new construction.
16. Any cost-effective activity (structural or nonstructural), which supports the goals of the state and federal hazard mitigation plans.
17. Additional activities that support the NFIP

In evaluating mitigation projects that have been submitted for review and possible approval, ADEM first considers the following factors for eligibility:

- **Benefit/Cost** - a benefit/cost review is required for all projects using FEMA's BCA software. Benefit/Cost ratios in excess of 1:1 are required for funding consideration.
- **NFIP Participation** - Communities are encouraged to participate in the NFIP.
- **Approved Local Mitigation Plan -** Communities must have a FEMA approved Hazard

Mitigation Plan to be considered for mitigation project funding.

Next, ADEM considers the following factors for scoring and ranking the mitigation project grant proposals:

ADEM Local Mitigation Planning Assistance Request Ranking Criteria

Ranking Criteria	Awarded Points	
	Yes	No
Participant in a FEMA-Approved Mitigation Plan	Eligible	Ineligible
Project is in the Mitigation Plan	Eligible	Ineligible
Does the project cost exceed the funding available	Eligible	Ineligible
Mitigation Plan Expires in?	5 years: Minimum	1 year: Maximum
Has the NOI been submitted under previous grants that went unfunded	No: 0	Yes: 5
How many individuals will the project protect	<500: 0	>500: 5
Has the jurisdiction received FEMA funding for previous mitigation projects	No: 20	Yes: 0
Did the county receive a federal declaration due to the disaster	No: 0	Yes: 15
Has the jurisdiction participated in training directly related to hazard mitigation	No: 0	Yes: 1
Is the jurisdiction a Fire Wise Community	No: 0	Yes: 1
Is the jurisdiction a Storm-Ready Community	No: 0	Yes: 1
Is the jurisdiction a member of the NFIP (mandatory for flood related projects)	No: 0	Yes: 1
Does the jurisdiction participate in the CRS	No: 0	Yes: 1

Primary funding for local hazard mitigation projects comes from the FMA program, HMGP and PDM, which generally require a local funding match. As state general revenue is no longer available, future matching funds will have to come primarily from local sources, including local revenue or in-kind donations. In addition, the State intends to increase the utilization of the RL Flood Claims and SRL programs for repetitive-loss mitigation in upcoming years.

7.8 – Local/State Plan Utilization and Integration

Data from local jurisdictional mitigation plans was incorporated into the state hazard mitigation plan. ADEM was contacted to obtain all available local mitigation plans for integration purposes. A comprehensive review was conducted of all currently approved local hazard mitigation plans to integrate the local risk assessments into the state's analysis. Each local plan's hazard vulnerability assessment was carefully reviewed and analyzed to compile a local plan driven loss estimate. Integrating state and local mitigation planning efforts is a collaborative effort between all levels of government working toward the shared goal of reducing the potential impacts of disasters in Arkansas. By integrating elements from local hazard mitigation plans into the state hazard mitigation plan, and vice versa, each planning effort is stronger, more comprehensive, and provides a better all-inclusive view of the hazards and capabilities of the state.

Collected data was then translated into the unified model. It was necessary to translate the local plans into a unified model due to the high variability in methodologies used across the state. The result of this assessment is more of a total picture of how local jurisdictions perceive threat than an actionable risk assessment. Planners at the local level are limited in scope by analyzing hazard risk to their sole jurisdiction without comparison. This limit creates an effect where, without comprehensive hazard data

and unified methodologies, local planners may have a skewed perception of their hazard risks. What one emergency manager perceives as catastrophic could be a seasonal impact for another. With such varying analyses, county by county, we must view this aggregation of local plans as a supplement to the state's risk assessment and not a comprehensive assessment itself.

For this plan revision, each of the above referenced local hazard mitigation plans was reviewed for the following elements, with data incorporated into the state plan:

- Mitigation goals and objectives
- Prioritized hazards
- Risk assessment
- Jurisdictional capabilities
- Mitigation actions

Information from local jurisdictional mitigation plans will be integrated into future state plan updates every five years by using the same process that was utilized in this plan update. All approved current local mitigation plans will be examined to gather data regarding risk assessments, vulnerability, capabilities, actions, etc. The state plan will then be updated to reflect this information.

The State of Arkansas will also make all data from the state hazard mitigation plan available to all local jurisdictions for review and inclusion in their planning efforts.

7.9 – Small and Impoverished Communities

As defined in 44 CFR 201.2, a small and impoverished community is:

- A community of 3,000 or fewer individuals that is identified by the State as a rural community
- Is not a remote area within the corporate boundaries of a larger city
- Is economically disadvantaged, by having an average per capita annual income of residents not exceeding 80 percent of national, per capita income
- The local unemployment rate exceeds by one percentage point or more, the most recently reported, average yearly national unemployment rate
- Any other factors identified in the State Plan in which the community is located

FEMA regional administrators may waive requirements for small and impoverished communities related to HMGP project funds. In addition, small and impoverished communities that receive grants from the PDM program may receive a federal cost share of up to 90 percent of the total amount approved under the grant award.

8.0 Plan Maintenance Process

8.1 – Hazard Mitigation Plan Monitoring and Evaluation

44 CFR 201.4 (c)(5) A plan maintenance process that includes: (i) An established method and schedule for monitoring, evaluating, and updating the plan.

The State of Arkansas Hazard Mitigation Plan will be updated then approved by FEMA every five years. During the five-year cycle, the plan will undergo continuous monitoring and evaluation to ensure that the policies, procedures, priorities, and state environment established in the plan reflect current conditions.

To achieve this, the MPC will meet at a minimum of annually in the first two years after plan approval. If needed, more meetings will take place during this timeframe. The ADEM SHMO will determine the meeting dates and location and is responsible for sending invitations.

In order to monitor the implementation of the plan, team members will report on the following information:

- How the actions from the mitigation strategy are being pursued and completed
    - Are actions being prioritized
- How the plan goals and objectives are being carried out
- How mitigation funding mechanisms are being utilized
- How local jurisdictions are receiving technical assistance

In addition to these meetings, the Mitigation Branch at ADEM well monitor and evaluate the progress of mitigation projects via quarterly reports, site visits, correspondence, and reimbursements. Completed projects will be evaluated for loss avoidance and alignment with local development plans.

During the evaluation phase, the MPC is responsible for assessing the effectiveness of the plan by:

- Reviewing the hazards and determining if any of them have changed
- Determining if there are new hazards that pose a risk to the state
- Ensuring goals and objectives are still relevant
- Determining if any actions have been completed or are deemed irrelevant
- Determining if new actions should be added
- Determining if capabilities have changed

8.2 – Plan Updates

44 CFR 201.4 (c)(5) A plan maintenance process that includes: (i) An established method and schedule for monitoring, evaluating, and updating the plan.

Information from the annual MPC meetings will be incorporated in to the plan update. Starting in calendar year 2021, the formal update process will begin. If necessary, ADEM will seek grant funding for a plan update. A thorough review and revision of the plan will take place, following all requirements detailed in 44 CFR 201.4, FEMA guidance documents, and the Disaster Mitigation Act of 20000. The following breakdown represents general guidelines for subsequent plan revisions.

- **2021 Spring Meeting:** The MPC will begin updating the risk assessment portion of the plan. Hazards will be analyzed to determine if they are still relevant, if location should be updated, and if new hazards should be added. Previous occurrences will be reviewed to help determine the probability of future events.
- **2021 Fall Meeting:** The MPC will begin updating the vulnerability assessment. The MPC will update the vulnerability assessment portion of the plan. Data will need to be gathered for state assets, critical facilities, building stock values, crop losses, jurisdictional damages, etc.
- **2022 Spring Meeting:** The MPC will review information received from the 2019 and 2020 meetings and determine if the goals and objectives are still relevant and if new ones should be added. Actions will be reviewed and determined if they should remain in the plan, have been completed, or are no longer relevant. The MPC will review the potential funding sources for each action.
- **2022 Fall Meeting:** The MPC will evaluate the policies, programs, capabilities, and funding sources from the previous plan to determine if they are still accurate and if any new items should be added. During this timeframe the ADEM Mitigation Branch will begin reviewing approved local mitigation plans and incorporating their programs and capabilities in to the plan.
- **2023 Spring Meeting:** MPC will review the draft copy of the mitigation plan and make comments and updates if necessary. Before the draft is presented to the MPC, ADEM Mitigation will compile a list of grant recipients over the five-year timeframe and incorporate it into the plan. Formal submittal to FEMA for re-approval will follow.

In addition, it is anticipated that numerous currently unavailable plans and reports will be available for inclusion on to subsequent plans. Research conducted as part of this planning effort indicates that new data should be available concerning the following:

- A statewide assessment of vulnerability due to dam failure, including a revision to the current vulnerability ranking system
- Inclusion of data from the Drought Contingency Response Network and processes for:
    - Monitoring, Early Warning and Prediction
    - Risk, Impact and Vulnerabilities
    - Mitigation and Response
- Improved HAZUS modelling capabilities
- Inclusion of data from update and revised regional earthquake studies

8.3 – Monitoring of Mitigation Actions and Project Closeouts

44 CFR 201.4 (c)(5) A plan maintenance process that includes: (ii) A system for monitoring implementation of mitigation measures and project closeouts.

The ADEM Mitigation Branch is responsible for monitoring the progress of mitigation activities and projects throughout the state. The SHMO has assigned staff members to monitor and track the progress of state and federally-funded mitigation projects on a quarterly basis. The requirements for monitoring state and federal projects are the same. As part of the plan update process, the MPC reviewed the existing system for tracking mitigation activities. The system for monitoring the initiation, status and completion

of actions is described below. This mitigation activity monitoring system has not changed since the approval of the previous state hazard mitigation plan.

The State of Arkansas ensures all HMA grants are implemented in accordance with current FEMA guidance, as detailed in "Hazard Mitigation Assistance Guidance: Hazard Mitigation Grant Program, Pre-Disaster Mitigation Program, and Flood Mitigation Assistance Program, February 27, 2015." The State of Arkansas HMGP utilizes its own manual to administer grants.

To facilitate the tracking of all HMA Grants and State of Arkansas Hazard Mitigation Grants, ADEM will compile a list of projects funded throughout the calendar year and add it to a database. Additionally, the MPC will be solicited annually to provide information on any other mitigation projects that were not funded through ADEM, FEMA, or the ANRC. This information will be included in the database as well.

HMA Grant Monitoring and Closeout

Upon notification from FEMA that an HMGP or PDM project has been approved for funding, the SHMO will notify the subrecipient and will arrange a meeting to provide the subrecipient with appropriate information on regulatory program requirements. Based upon the approved application and work schedule of the project, a record keeping, and financial system will be implemented for the duration of the project.

As the recipient, ADEM recognizes its roll for project management, accountability of funds, and for ensuring that subrecipients meet all program and administrative requirements in accordance with 2 CFR Part 200. Approved applicants are considered subrecipients and are accountable to the recipient for funds awarded them.

ADEM is committed to monitoring and providing technical assistance to all eligible and funded subrecipients. The SHMO, project manager, and/or technical support staff attend subgrantee meetings to ensure the policies and procedures are explained correctly. Numerous worksheets, financial forms, and targeted guidebooks for local officials are provided by ADEM to assist the subrecipient.

To track mitigation projects from initiation to closeout, project tracking spreadsheets that include the following information are used:

- Applicant/Subrecipient
- Grant Identifier
- Contractor
- Total Cost Estimate
- Federal/Local share
- Award Date
- Period of Performance
- Quarterly Reports
- Subrecipient Risk
- Reimbursements

Quarterly progress reports based upon the work schedule will be submitted to the SHMO, who will then submit them to FEMA on January 30th, April 30th, July 30th, and December 30th. Any non-compliance with FEMA approved grant conditions shall be described in a letter to FEMA requesting an extension, change in scope of work, etc.

Under the HMGP Program, should it be determined that the original funded and approved scope of work cannot be accomplished with the grant funds allocated, the subgrantee will submit a request for additional funds. Upon review and approval, the Governor's Authorized Representative will submit a fully justified request with a recommendation to the FEMA Regional Administrator. The FEMA Regional Administrator will provide written notification as to their determination on the validity of the claim. In no case will the total amount obligated to the State exceed funding limits set forth in 44 CFR §206.432 (b).

Upon completion of a project, a member of the ADEM Mitigation Branch will conduct a closeout site visit to:

- Review all files and all documents related to grant and state general revenue funds
- Review all procurement files and contracts to third parties
- Take photos of the completed project

Closeout packages will generally be submitted 90 days after a project has been completed, and will include the following:

- Summary of Documentation
- Pictures of completed project
- Materials, labor and equipment forms, if required
- Hazard Mitigation Grant Close-Out Certification

On behalf of the subrecipient, the State may appeal any FEMA denial for Federal assistance. All subrecipient appeals to FEMA decisions are administered in accordance with implementing program regulations.

The FMA Grant Program is administered by the ANRC and mirrors the grant administration process that ADEM uses for the HMGP and PDM programs.

8.4 – Review of Mitigation Goals, Objectives and Actions

44 CFR 201.4 (c)(5) A plan maintenance process that includes: (iii) A system for reviewing progress on achieving goals as well as activities and projects identified in the Mitigation Strategy.

As part of the continuous hazard mitigation planning process, each plan revision completes a review of the identified hazard mitigation program goals, objectives and actions.

As part of this review, each goal and objective are measured according to the following:

- Is the goal and objective realistic based on current capabilities and funding mechanisms

- Are the goals and objectives in line with local planning efforts
- Changes in the statewide risk assessment
- Changes and challenges in state and local capabilities
- Analysis of the similarities and differences of the state mitigation plan goals with local mitigation plan goals and objectives

Progress and viability of identified mitigation actions is measured based on the following variables:

- The number of projects successfully implemented
- The breadth of disbursement of mitigation grant funds
- The disaster losses avoided over time
- Public awareness
- Success of completed mitigation projects in helping address and achieve identified goals and objectives
- Have the completed mitigation actions resulted in a safer Arkansas

STATE OF ARKANSAS
EXECUTIVE DEPARTMENT

PROCLAMATION

EO 18-15

TO ALL TO WHOM THESE PRESENTS COME – GREETINGS:

AN EXECUTIVE ORDER ADOPTING THE STATE OF ARKANSAS ALL-HAZARDS MITIGATION PLAN, PURSUANT TO SECTION 322 OF THE FEDERAL DISASTER MITIGATION ACT OF 2000

WHEREAS: The State of Arkansas believes mitigation projects, initiatives, and activities result in the reduction of risk from natural hazards; and

WHEREAS: The State of Arkansas supports mitigation planning and believes that it will result in the judicious selection of cost effective, risk reduction actions; more disaster resistant sustainable communities; building of partnerships among local, state, federal, private, and non-profit shareholders; identification of financial and technical resources; and a reduction in loss of life and injury recover time; and cost associated with natural disasters;

NOW, THEREFORE, I, Asa Hutchinson, Governor of the State of Arkansas, as directed by Section 322 of the Federal Disaster Mitigation Act of 2000, the State of Arkansas All-Hazards Mitigation Plan is formally adopted.

IN TESTIMONY WHEREOF, I have hereunto set my hand and caused the Great Seal of the State of Arkansas to be affixed this 5th day of September, in the year of our Lord 2018.

Asa Hutchinson, Governor

GREAT SEAL OF THE STATE OF ARKANSAS

Attest:

Mark Martin

Mark Martin, Secretary of State

U.S. Department of Homeland Security
FEMA Region 6
800 North Loop 288
Denton, TX 76209

FEMA

September 7, 2018

A. J. Gary, Director and Homeland Security Advisor
Arkansas Department of Emergency Management
Building 9501
Camp Joseph T. Robinson
North Little Rock, AR 72199-9600

Re: Approval of the State of Arkansas Standard Multi-Hazard Mitigation Plan Update

Dear Mr. Gary:

We are pleased to inform you that the State of Arkansas Standard Multi-Hazard Mitigation Plan Update is reviewed and determined to be compliant with the standards set forth in the Disaster Mitigation Act of 2000, as contained in 44 CFR § 201.4. The plan is hereby approved as a Standard State Plan for a period of five years from the date of this letter, expiring on September 6, 2023.

We commend the State for meeting the requirements of including a repetitive loss strategy, which grants eligibility to receive a reduced cost share on Flood Mitigation Assistance grant opportunities, and also developing a solid, workable state plan that demonstrates a commitment to reducing risks from natural hazards. This plan should guide State mitigation activities over the coming years.

A formal update is required every five years. If the plan is amended or revised, it must be resubmitted to FEMA Region 6 for review and approval. If the plan is not updated prior to the required five year update, please ensure that a draft update is submitted by the State no later than six months prior to the expiration of this plan approval.

Approval of this plan ensures that the State will remain eligible to receive the following Stafford Act assistance and other grant programs:

- Public Assistance (Categories C-G)
- Fire Management Assistance Grants
- Hazard Mitigation Grant Program
- Pre-Disaster Mitigation
- Flood Mitigation Assistance

Thank you for your dedication to mitigation and for the close coordination and communication with our office in the review and approval of this plan update. If you have any questions, please

contact Sandra Keefe, Mitigation Division Director, at (940) 898-5127 or Sandra.keefe@fema.dhs.gov.

Sincerely,

George A. Robinson
Regional Administrator

Enclosure

cc: Lacye Blake, ADEM State Hazard Mitigation Officer
Sandra Keefe, FEMA Region 6 Mitigation Division Director
Traci Brasher, FEMA Region 6 Recovery Division Director
Camille Crain, FEMA Region 6 Hazard Mitigation Assistance Branch Chief
Ron Wanhanen, FEMA Region 6 Risk Analysis Branch Chief
Jennifer Burmester, FIMA NMPP Program Manager

APPENDIX B: STATE MITIGATION PLAN REVIEW TOOL

This section is organized as follows:

FEMA uses the State Mitigation Plan Review Tool ("**Plan Review Tool**") to document how the state mitigation plan meets the regulation. If plan requirements are not met, FEMA informs the state of the changes it needs to make in each of the Required Revisions sections.

The "**Strengths and Opportunities for Improvement**" summary offers FEMA an opportunity to provide more comprehensive feedback to the state.

INSTRUCTIONS: The Regulation Checklist must be completed by FEMA. The FEMA Plan Approver must reference the *State Mitigation Plan Review Guide* when completing the *Plan Review Tool*. The purpose of the Checklist is to identify the location of relevant or applicable content in the Plan by Element/sub-element and to determine if each requirement has been 'Met' or 'Not Met.'

The **"Required Revisions"** summary at the bottom of each Element must be completed by FEMA to provide a clear explanation of the revisions that are required for plan approval. Required revisions must be explained for each plan sub-element that is 'Not Met.' Sub-elements should be referenced in each summary by using the appropriate number, where applicable. Requirements for each Element and sub-element are described in detail in the *State Mitigation Plan Review Guide*.

FEMA will provide a narrative summary of the review findings that includes a discussion of **"Strengths and Opportunities for Improvement"** as a means to offer more comprehensive feedback to the state to acknowledge where the plan exceeds minimum requirements as well as provide suggestions for improvements. FEMA will describe the strengths that are demonstrated and highlight examples of best practices.

FEMA may provide suggestions for improvement as part of the Plan Review Tool or in a separate document. FEMA's suggestions for improvement are not required to be made for plan approval.

Required revisions from the Regulation Checklist are not documented in the **"Strengths and Opportunities for Improvement"** section.

B.1 Plan Review Tool Summary

State: Arkansas	Title and Date of Plan: 2018	Date Submission: 2018
State point of Contact (Name/Title): Lacye Blake, State Hazard Mitigation Officer	Address: Bldg. 9501 Camp Joseph T. Robinson North Little Rock, AR 72199-9600	
Agency: Arkansas Department of Emergency Management		
Phone Number: (501) 683-6724	Email: Lacye.Blake@adem.arkansas.gov	

Date Received in FEMA Region 6:	Date: 9/6/2018
FEMA Reviewer (HM Planning – Name/Title): David Reiff / HM Community Planner	Date: 9/6/2018
FEMA Reviewer (HMA – Name/Title): N/A	Date:
FEMA Reviewer (Name/Title):	Date:
FEMA Reviewer (Name/Title):	Date:
FEMA Approver (Name/Title): David Reiff	Date: 9/6/2018
Plan Status (Not Approved, Approved Pending Adoption, Approved): **Approved**	Date: 9/7/2018

Summary	Yes	No
STANDARD STATE MITIGATION PLAN	**X**	
Does the plan meet the standard state mitigation plan requirements?		
REPETITIVE LOSS STRATEGY	**X**	
Does the plan include a Repetitive Loss Strategy? [see S6 / RL1; S8 / RL2; S9 / RL3; S10 / RL4; S13 / RL5; and S15 / RL6]		
ENHANCED STATE MITIGATION PLAN		**X**
Does the plan meet the enhanced state mitigation plan requirements?		

B.2 Standard State Mitigation Plan Regulation Checklist

REGULATION CHECKLIST – STANDARD PLAN *M=Met; NM=Not Met	Location in Plan	M / NM*
STANDARD (S) STATE MITIGATION PLAN		
Planning Process		
S1. Does the plan describe the planning process used to develop the plan? [44 CFR §§201.4(b) and (c)(1)]	**8-12**	**M**
S2. Does the plan describe how the state coordinated with other agencies and stakeholders? [44 CFR §§201.4(b) and (c)(1)]	**9-12**	**M**
Required Revisions:		
Hazard Identification and Risk Assessment		
S3. Does the risk assessment include an overview of the type and location of all natural hazards that can affect the state? [44 CFR §201.4(c)(2)(i)]	**36, 53, 62, 72, 81, 107, 113, 126, 135, 145** **36, 53, 65, 73-77, 84, 108, 113, 126, 135, 145** **45-47, 54-56, 62-63, 78, 85-87, 108-109, 114, 127-128, 136-138, 146, 148**	**M**
S4. Does the risk assessment provide an overview of the probabilities of future hazard events? [44 CFR §201.4(c)(2)(i)]	**46-47, 55-56, 64, 78, 93, 116-117, 128, 138, 148** **29,78,143**	**M**
S5. Does the risk assessment address the vulnerability of state assets located in hazard areas and estimate the potential dollar losses to these assets? [44 CFR §§201.4(c)(2)(ii) and 201.4(c)(2)(iii)]	**78-79, 94-95, 110, 117-124, 128-130, 139-140, 150-151**	**M**
S6. Does the risk assessment include an overview and analysis of the vulnerability of jurisdictions to the identified hazards and the potential losses to vulnerable structures? [44 CFR §§201.4(c)(2)(ii) and 201.4(c)(2)(iii)]	**60, 65-68, 78, 95-96, 110-111, 120-121, 131, 140-141, 151-153**	**M**
S7. Was the risk assessment revised to reflect changes in development? [44 CFR §201.4(d)]	**15-32, 122, 132, 143. 153-154**	**M**
Required Revisions:		

REGULATION CHECKLIST – STANDARD PLAN *M=Met; NM=Not Met	Location in Plan	M / NM*
Mitigation Strategy and Priorities		
S8. Does the mitigation strategy include goals to reduce / avoid long-term vulnerabilities from the identified hazards? [44 CFR §201.4(c)(3)(i)]	**213-214**	**M**
S9. Does the plan prioritize mitigation actions to reduce vulnerabilities identified in the risk assessment? [44 CFR §§201.4(c)(3)(iii) and (iv)]	**216-219**	**M**
S10. Does the plan identify current and potential sources of funding to implement mitigation actions and activities? [44 CFR §201.4(c)(3)(iv)]	**213-214** **226-230**	**M**
S11. Was the plan updated to reflect changes in development, progress in statewide mitigation efforts, and changes in priorities? [44 CFR §201.4(d)]	**219-226**	**M**
Required Revisions:		
State Mitigation Capabilities		
S12. Does the plan discuss the evaluation of the state's hazard management policies, programs, capabilities, and funding sources to mitigate the hazards identified in the risk assessment? [44 CFR §201.4(c)(3)(ii)]	**194-206**	**M**
Required Revisions:		
Local Coordination and Mitigation Capabilities		
S13. Does the plan generally describe and analyze the effectiveness of local and tribal, as applicable, mitigation policies, programs, and capabilities? [44 CFR §201.4(c)(3)(ii)]	**207-212**	**M**
S14. Does the plan describe the process to support the development of approvable local and tribal, as applicable, mitigation plans? [44 CFR §201.3(c)(5) and 201.4(c)(4)(i)]	**249, 250**	**M**
S15. Does the plan describe the criteria for prioritizing funding? [44 CFR §201.4(c)(4)(iii)]	**251-253**	**M**
S16. Does the plan describe the process and timeframe to review, coordinate and link local and tribal, as applicable, mitigation plans with the state mitigation plan? [44 CFR §§201.3(c)(6), 201.4(c)(2)(ii), 201.4(c)(3)(iii), and 201.4(c)(4)(ii)]	**248-249** **253-254**	**M**
Required Revisions:		
Plan Review, Evaluation, and Implementation		
S17. Is there a description of the method and schedule for keeping the plan current? [44 CFR §§201.4(c)(5)(i) and 201.4(d)]	**255-256**	**M**
S18. Does the plan describe the systems for monitoring implementation and reviewing progress? [44 CFR §§201.4(c)(5)(ii) and 201.4(c)(5)(iii)]	**258-259**	**M**
Required Revisions:		
Adoption and Assurances		
S19. Did the state provide documentation that the plan has been formally adopted? [44 CFR §201.4(c)(6)]	**7, 259**	**M**
S20. Did the state provide assurances? [44 CFR §201.4(c)(7)]	**6**	**M**

REGULATION CHECKLIST – STANDARD PLAN *M=Met; NM=Not Met	Location in Plan	M / NM*
Required Revisions:		
Repetitive Loss (RL) Strategy		
RL1. Did Element S6 (risk assessment) address RL and SRL properties? [44 CFR §§201.4(c)(2)(ii), 201.4(c)(2)(iii), and 201.4(c)(3)(v)]	**233-240**	**M**
RL2. Did Element S8 (mitigation goals) address RL and SRL properties? [44 CFR §§201.4(c)(3)(i) and 201.4(c)(3)(v)]	**213-214** **242-243**	**M**
RL3. Did Element S9 (mitigation actions) address RL and SRL properties? [44 CFR §§201.4(c)(3)(iii) and 201.4(c)(3)(v)]	**216**	**M**
RL4. Did Element S10 (funding sources) address RL and SRL properties? [44 CFR §§201.4(c)(3)(iv) and 201.4(c)(3)(v)]	**216**	**M**
RL5. Did Element S13 (local and tribal, as applicable, capabilities) address RL and SRL properties? [44 CFR §§201.4(c)(3)(ii) and 201.4(c)(3)(v)]	**207-212** **243-244**	**M**
RL6. Did Element S15 (prioritizing funding) address RL and SRL properties? [44 CFR §§201.4(c)(4)(iii) and 201.4(c)(3)(v)]	**251-253**	**M**
Required Revisions:		

B.3 Enhanced State Mitigation Plan Regulation Checklist

REGULATION CHECKLIST – STANDARD PLAN *M=Met; NM=Not Met	Location in Plan	M / NM*
ENHANCED (E) STATE MITIGATION PLAN		
Meet Standard State Mitigation Plan Elements		
E1. Does the Enhanced plan include all elements of the standard state mitigation plan? [44 CFR §201.5(b)]		**N/A**
Required Revisions:		
Integrated Planning		
E2. Does the plan demonstrate integration to the extent practicable with other state and/or regional planning initiatives and FEMA mitigation programs and initiatives? [44 CFR §201.5(b)(1)]		**N/A**
Required Revisions:		
State Mitigation Capabilities		
E3. Does the state demonstrate commitment to a comprehensive mitigation program? [44 CFR §201.5(b)(4)]		**N/A**
E4. Does the enhanced plan document capability to implement mitigation actions? [44 CFR §§201.5(b)(2)(i), 201.5(b)(2)(ii), and 201.5(b)(2)(iv)]		**N/A**
E5. Is the state effectively using existing mitigation programs to achieve mitigation goals? [44 CFR §201.5(b)(3)]		**N/A**
Required Revisions:		
HMA Grants Management Performance		
E6. With regard to HMA, is the state maintaining the capability to meet application timeframes and submitting complete project applications? [44 CFR §201.5(b)(2)(iii)(A)]		**N/A**
E7. With regard to HMA, is the state maintaining the capability to prepare and submit accurate environmental reviews and benefit-cost analyses? [44 CFR §201.5(b)(2)(iii)(B)]		**N/A**
E8. With regard to HMA, is the state maintaining the capability to submit complete and accurate quarterly progress and financial reports on time? [44 CFR §201.5(b)(2)(iii)(C)]		**N/A**
E9. With regard to HMA, is the state maintaining the capability to complete HMA projects within established performance periods, including financial reconciliation? [44 CFR §201.5(b)(2)(iii)(D)]		**N/A**
Required Revisions:		

B.4 Strengths and Opportunities for Improvement

STRENGTHS AND OPPORTUNITIES FOR IMPROVEMENT
STANDARD (S) STATE MITIGATION PLAN
INSTRUCTIONS: The purpose of the "**Strengths and Opportunities for Improvement**" section is for FEMA to provide more comprehensive feedback on the state mitigation plan to help the state advance mitigation planning. The intended audience is the state staff responsible for the mitigation plan update. FEMA will address the following topics: 1. Plan strengths, including specific sections in the plan that are above and beyond the minimum requirements; and 2. Suggestions for future improvements. FEMA will provide feedback and include examples of best practices, when possible, as part of the Plan Review Tool, or, if necessary, as a separate document. The state mitigation plan elements are included below in italics for reference but should be deleted as the narrative summary is completed. FEMA is not required to provide feedback for each element. Required revisions from the **Regulation Checklist** are not documented in the **Strengths and Opportunities for Improvement** section. Results from the **Strengths and Opportunities for Improvement** section are not required for Plan Approval, but may inform discussions during the Program Consultation.
Describe the mitigation plan strengths, including areas that may exceed minimum requirements. • *Planning process* • *Hazard identification and risk assessment* • *Mitigation strategy* • *State mitigation capabilities* • *Local and tribal, as applicable, coordination and mitigation capabilities* • *Plan review, evaluation, and implementation* • *Adoption and assurances* • *Repetitive loss strategy, if applicable* • *Integrated planning process, if applicable* • *Commitment to a comprehensive mitigation program, if applicable* • *HMA grants management performance, if applicable*
Describe areas for future improvements to the mitigation plan. • *Planning process* • *Hazard identification and risk assessment* • *Mitigation strategy* • *State mitigation capabilities* • *Local and tribal, as applicable, coordination and mitigation capabilities* • *Plan review, evaluation, and implementation* • *Adoption and assurances* • *Repetitive loss strategy, if applicable* • *Integrated planning process, if applicable* • *Commitment to a comprehensive mitigation program, if applicable* • *HMA grants management performance, if applicable*

ftn Associates Ltd.
water resources / environmental consultants

DAMS IMPACT ASSESSMENT ANNEX

APRIL 12, 2018

Dams Impact Assessment Annex

Prepared for

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1.0 INTRODUCTION

1.1 Background

The Arkansas Natural Resources Commission (ANRC) currently regulates 410 dams across 57 counties (See Table 1.1) under its dam safety program. Per the Rules Governing Design and Operation of Dams, Title VII, all dams within the State of Arkansas, except those owned by the United States Government are subject to regulation unless they meet any of the following criteria:

A. Dams with height less than 25 feet,

B. Dams with normal storage less than 50 acre-feet, or

C. Dams with crest elevations below the ordinary high water mark of the stream at that location.

The hazard due to potential dam breach for each of these dams should be understood to identify the magnitude and nature of economic, human (population at risk), and critical facility impacts. This annex will provide the information needed to better define the hazard and subsequent mitigation actions that should be taken. The definition of the hazard (i.e., potential consequences due to dam failure) when combined with data regarding the condition and design of dams informed a risk assessment and provided an updated view of impacts relative to changes in downstream development. This document does not address dam hazard class ranking for regulatory purposes i.e., High, Significant, or Low.

Table 1.1. Regulated dams by county.

COUNTY	HAZARD CLASSIFICATION			TOTAL NUMBER OF DAMS
	HIGH	SIGNIFICANT	LOW	
Arkansas	-	-	1	1
Benton	4	6	3	13
Bradley	-	-	1	1
Carroll	1	-	3	4
Clay	-	-	3	3
Cleburne	-	-	4	4
Cleveland	-	-	2	2

Table 1.1. Regulated dams by county (Continued).

COUNTY	HAZARD CLASSIFICATION			TOTAL NUMBER OF DAMS
	HIGH	SIGNIFICANT	LOW	
Columbia	-	1	1	2
Conway	2	7	12	21
Craighead	9	5	2	16
Crawford	5	-	2	7
Cross	3	2	3	8
Dallas	-	-	1	1
Drew	1	-	-	1
Faulkner	-	2	9	11
Franklin	-	2	7	9
Fulton	2	1	5	8
Garland	7	6	6	19
Grant	-	1	2	3
Greene	2	2	1	5
Hempstead	1	-	13	14
Hot Spring	2	-	1	3
Howard	1	1	5	7
Independence	-	1	2	3
Izard	-	1	3	4
Jefferson	-	-	3	3
Johnson	2	-	1	3
Lafayette	-	1	-	1
Lawrence	1	4	10	15
Lincoln	-	1	-	1
Little River	1	-	-	1
Logan	5	6	6	17
Lonoke	-	-	2	2
Madison	-	-	3	3
Monroe	-	-	1	1
Montgomery	1	1	2	4
Newton	-	-	1	1
Ouachita	1	1	-	2
Perry	3	3	5	11
Pike	-	1	1	2
Poinsett	9	1	6	16
Polk	5	-	2	7
Pope	2	4	5	11
Prairie	-	-	1	1
Pulaski	7	10	5	22
Randolph	-	5	3	8
Saline	5	5	13	23
Scott	3	5	11	19
Sebastian	6	2	1	9
Sevier	-	-	3	3
Sharp	13	-	3	16
St. Francis	0	-	1	1

Table 1.1. Regulated dams by county (Continued).

COUNTY	HAZARD CLASSIFICATION			TOTAL NUMBER OF DAMS
	HIGH	SIGNIFICANT	LOW	
Stone	-	-	1	1
Van Buren	-	-	6	6
Washington	5	2	4	11
White	1	2	10	13
Yell	4	-	2	6
Total	**114**	**92**	**204**	**410**

1.2 Goals

The purpose of this document is to create an annex to the current State Hazard Mitigation Plan (HMP). This annex will utilize dam breach inundation zones for state-regulated dams created under a previously state-funded project. Using these projected inundation zones, each dam will be assessed to determine the hazard potential downstream. Data including, but not limited to, census information, state-identified critical facility locations, and highway crossings were used to identify impacts within the respective dam inundation zones. This analysis does not identify individual buildings for the purposes of updating a dam's regulatory hazard class ranking as was previously completed. Based on an aggregation of hazard potential, dams were ranked using methods adapted from the Consequence-Based Top Screen (CTS) Methodology defined by the Department of Homeland Security (DHS). This ranking will allow the state and local officials to better prioritize dams for based on their potential impacts. Included in this Annex are potential mitigation action items that state and local agencies can implement as well as ways for communities to improve their standing with the Federal Emergency Management Agency (FEMA) Community Rating System (CRS).

2.0 RULE OF THUMB INUNDATION MAPPING

2.1 Methodology

In 2016, ANRC Dam Safety and Floodplain Management Section (DSFPMS) contracted with FTN Associates, Ltd. (FTN) to produce approximate inundation maps for dam failure. These inundation areas are GIS-based approximations for desktop planning and evaluation purposes only. They are not appropriate for disaster event usage. FTN developed the rule of thumb method and an ArcGIS model (version 10.1) to apply this rule of thumb (Reed, et al 2011) in order to produce the approximate inundation maps. The rule of thumb method does not take into consideration the volume of the impoundment, inflows or outflows from the dam, type of dam, condition of the dam, or the storage capacity of the floodplain downstream of the dam. The rule of thumb assumes the peak height of the breach floodwave at the dam is roughly half of the height of the water behind the dam and that the wave height is halved every 10 miles downstream (Table 2.1).

FTN produced flowpaths and potential inundation areas for each of the 410 permitted dams using the National Elevation Dataset (NED) 1/9 Arc-second and 1/3 Arc-second Digital Elevation Model (DEM). FTN visually verified or moved the geographic location of each dam to be on the top of the dam before proceeding.

Table 2.1. Rule of thumb relationship for flood wave height vs. distance downstream.

Distance Downstream of Dam	Assumed Breach Flood Wave Height (H = Height of Dam)
Just Below Dam	0.500 * H
0.5 miles	0.488 * H
1.0 miles	0.475 * H
1.5 miles	0.463 * H
2.0 miles	0.450 * H
3.0 miles	0.425 * H
4.0 miles	0.400 * H
5.0 miles	0.375 * H
10.0 miles	0.250 * H

The estimated breach flood wave height was calculated at a location based on the distance along the flowpath downstream from the dam. The wave height at that location, was added to the stream invert elevation obtained from the underlying DEM to produce an estimated breach flood wave elevation. The DEM was not evaluated for errors, omissions, or historical changes and was used as-is. The potential breach inundation area was determined by calculating the difference between the estimated breach flood wave elevation and the underlying DEM. Dam heights used for this project were provided by the ANRC DSFPMS. For dams whose listed dam height and structure height were different, the greater value between these two was used.

Once the downstream flowpaths and potential inundation areas were mapped, an analyst reviewed the full inundation area beginning from the dam and extending downstream along the expected breach outflow path. The analyst reviewed the full inundation area for a pre-determined review distance downstream from the dam. At the end of the review distance, the analyst cut the inundation area and drew a "limit of review" line. The "limit of review" line merely designates that the review process was ended at this location and does not suggest that adverse impacts from a dam breach will be limited to this extent. The review distance is listed below in Table 2.2 and is a function of the reservoir surface area.

Table 2.2 Review distance downstream of dam.

Reservoir Surface Area	Review Distance
≤ 5 acres	1 mile
10 Acres	1.5 miles
25 Acres	2 miles
100 acres	5 miles
>100 acres	10 miles

Due to the scale of the project, assumptions were made and rules were defined to streamline and simply the evaluation process. Those assumptions and rules are as follows:

- The model evaluated a maximum inundation width of 1.5 miles (0.75 miles left of flow line, 0.75 miles right of flow line);
- The model does not take into account the volume of water associated with each dam when creating the inundation area; and
- This model does not properly account for lateral flow distribution downstream of the dam in areas with very flat channel and overbank slopes.

2.2 Inundation and Depth Grid Generation

In order to complete the hazard potential analysis for each dam, a potential depth grid was needed for each estimated inundation area. The initial development of the inundation areas did not produce this as an output. In order to calculate this, the inundation area for each dam was estimated using the best judgment in evaluating the potential extent of each dam's downstream inundation based on the information in Table 3. All inundation areas were evaluated for depth against the National Elevation Dataset 1/3 arc-second raster to ensure a consistent elevation source across the state. A flood depth grid was created for each potential inundation area by subtracting the underlying terrain elevation from the estimated water surface elevation. The resulting depth grids were used in the hazard potential analysis as detailed below in Section 3.2.

3.0 HAZARD POTENTIAL ANALYSIS

To determine the hazard potential for each dam, a visual assessment of the critical facilities in the potential inundation zone and an economic impact assessment using HAZUS was completed.

3.1 Critical Facilities

Critical Facilities, as defined in the Arkansas HMP, are broken into the following six (6) categories: 1) Emergency Response, 2) Education Facilities, 3) Medical Facilities, 4) Infrastructure, 5) Private Business, and 6) Transportation. Datasets were collected from the Arkansas Geographic Information Office (AGIO) and provided by ANRC. A list of datasets can be found in Section 4 along with the methodology for the ranking. Due to limitations of the data, such as location accuracy and age of the data source, some facilities may have been missed. It is recommended that the potential downstream hazards be reviewed by local personnel to ensure that all critical infrastructure and facilities in a potential inundation area are identified.

3.2 HAZUS

FEMA's HAZUS-MH version 4.0 was used to estimate the economic losses due to a dam breach. HAZUS is a nationally applicable software that contains models for estimating the potential losses from floods as well as earthquakes, hurricanes and tsunamis. Using GIS technology, HAZUS estimates the physical, economic, and social impacts of disasters, in this instance, a dam breach. HAZUS accomplishes this by using 2010 Census Blocks and a user-provided depth grid representative of the estimated inundation area.

Once the floodplain is established, HAZUS analyzes the floodplain based on set parameters including both direct and indirect economic losses. The results of HAZUS are then input in the Flood Map Desktop (FMD) software to calculate the following losses for that floodplain region:

- Total losses,
- Total building losses,
- Total building contents losses,
- Total residential buildings losses,
- Total residential contents losses,
- Total commercial buildings losses,
- Total commercial contents losses,
- Total other building losses,
- Total other contents losses, and
- Business disruption costs.

For the purposes of this Annex, only the summation of the losses, Total Losses, will be presented and used in the Impact Assessment Ranking. Table 3.1 presents the Sum Total Losses, in thousands of dollars, for each county. Based on this methodology, the estimated losses for the State of Arkansas are approximately 4.7 billion dollars.

Some assumptions were made in the analysis of economic loss. A key component of the HAZUS methodology is that the inventory is assumed to be equally distributed across the entire census block. In order to help limit the effects of this assumption, HAZUS incorporates dasymetric mapping which removes areas that are underdeveloped such as bodies of water or forests from the census block. By removing these areas, census blocks are changed in shape and often reduced in size, therefore removing areas that might have been misrepresented. Due to the confidentiality, privacy, and other concerns of data collected by the U.S. Census Bureau, census blocks and tracts in HAZUS may not accurately reflect the actual location or distribution of human populations or buildings.

Table 3.1. Estimated total losses (Thousands $).

County	Sum of Total Loss (Thousands $)	County	Sum of Total Loss (Thousands $)	County	Sum of Total Loss (Thousands $)
Arkansas	-	Greene	16,355	Perry	124,530
Benton	462,147	Hempstead	10,766	Pike	160
Bradley	-	Hot Spring	26,959	Poinsett	32,720
Carroll	12,283	Howard	20,367	Polk	38,793
Clay	2,040	Independence	5,236	Pope	139,848
Cleburne	1,315	Izard	16,505	Prairie	1,915
Cleveland	2,475	Jefferson	11,091	Pulaski	663,433
Columbia	991	Johnson	107,879	Randolph	6,245
Conway	22,029	Lafayette	411	Saline	471,006
Craighead	222,242	Lawrence	9,665	Scott	57,186
Crawford	568,265	Lincoln	169	Sebastian	293,234
Cross	183,842	Little River	984	Sevier	1,101
Dallas	257	Logan	171,154	Sharp	280,224
Drew	5,439	Lonoke	4,240	St. Francis	650
Faulkner	22,467	Madison	3,063	Stone	-
Franklin	6,332	Monroe	14	Van Buren	1,266
Fulton	25,896	Montgomery	6,484	Washington	206,510
Garland	369,732	Newton	242	White	27,502
Grant	1,115	Ouachita	1,372	Yell	54,564

Post HAZUS, assumptions were made to assist with reporting data for this Annex. For reporting purposes, it is assumed that inundation areas remained in the county in which the dam embankment was located. This is not the case for all dams and should be considered when reviewing the Sum of Total Losses for each county. Also, some dams are reported as having zero Total Losses. This is due to the location of the potential inundation area. These dam inundation areas did not cross into populated Census Blocks and were therefore reported as having zero economic loss by HAZUS. As an example, Arkansas, Bradley, and Stone counties, have only one regulated dam in each county and are reported as having zero economic loss. Due to the assumptions from both HAZUS and by the reporting analysis, results for each county will vary and may be either over or under estimated depending on the inundation area of each dam. These

economic losses are generalized estimates and emergency personnel, planners, and regulators should use them as a broad estimate and not as a detailed determination of the potential economic losses. More detailed results, including a breakdown of losses by Census Block, have been provided to the ARNC DSFPMS.

4.0 DAMS IMPACT ASSESSMENT RANKING

The purpose of this ranking is to allow ANRC Dam Safety Staff to identify and rank dams across the state for risks to critical infrastructure. Additionally, as detailed studies are completed and more accurate inundation areas are developed or updated for both existing and proposed dams, their risk score can be calculated and ranked across the state or county. By doing this analysis, it is hoped that this information can be used to more fully understand risk to critical infrastructure across the state. The overview of methods, data, assumptions, and the resulting ranking list is provided below.

4.1 Overview of Method and Assumptions

For calculating the Impact Assessment Ranking (IAR), several datasets and GIS techniques were utilized. The IAR calculation utilizes the rule of thumb GIS-based inundation areas previously discussed in Section 2.0. For each dam, critical facilities and 2010 Census Blocks were intersected with its inundation area. The resulting GIS data were summarized for each dam and added to the statewide ranking sheet. These inundation areas are GIS-based approximations for desktop planning and evaluation purposes only. They are not appropriate for disaster event usage. The downstream extent of each inundation area may not fully cover the full potential inundation extent. The project that developed the inundation areas had a downstream limit based on risk factors and size. Additionally, backwater reaches and flat-areas were limited in extent and may not fully cover the full potential inundation extent. Population counts for the various downstream distances are approximate. The limitations of intersecting US Census Blocks and inundation areas are discussed in Section 3.2.

4.2 GIS Datasets for Critical Facilities

The following is a list of datasets used to derive the IAR scoring. They are provided with this report in digital form as either tables or GIS datasets for future analysis of new dam inundation areas by ANRC. These datasets were collected from both AGISO and ANRC.

Table 4.1. Datasets used in IAR Scoring.

GIS Datasets	File Name
Critical Infrastructure	Arkansas_CI_FOUO.KMZ (From ANRC)
Airports	AIRPORTS_AHTD.shp
Armories	ARMORIES_AHTD.shp
Chicken Houses	CHICKEN_HOUSES_AHTD.shp
Houses of Worship	CHURCHES_AHTD.zip
Universities and Colleges (4 yr. and 2 yr.)	COLLEGES_4YR_ADHE_2001.zip
	COLLEGES_COMMUNITY_ADHE_2001.zip
County or State Correctional Facilities	CORRECTIONAL_INSTITUTIONS_TGS.zip
	COUNTY_STATE_PRISONS_AHTD.zip
Electrical Providers	ELECTRIC_PROVIDERS_EIA_2001.zip
Emergency Medical Services and Ambulance Services	EMERG_MEDICAL_SERVICES_AHD.zip
Environmental Facilities	FACILITIES_ADEQ.zip
Fairgrounds and Speedways (Potential Shelters)	FAIRGROUNDS_SPEEDWAY_AHTD.zip
County Health Units, Hospices, and Related Medical Facilities	HOSPITAL_RELATED_SERVICES_ADH.zip
Hospitals	HOSPITALS_ADH.zip
Intermodal Transportation Terminal, Elevators, Docks, and Ports	INTERMODAL_TERMINALS_BTS_1998.zip
Houses of Worship	JEWISH_SYNAGOGUES_TGS.zip
	CHURCHES_AHTD.zip
Local Government Health Departments	LOCAL_HEALTH_UNITS_ADH.zip
Long-Term Health Care Facilities and Nursing Care Facilities	LONG_TERM_CARE_FACILITIES_ADH.zip
Oil and Gas Wells	OIL_AND_GAS_WELLS_AOGC.zip
Pipeline Networks	PIPELINES_USGS_1986.zip
Post Offices	POST_OFFICES_AGIO.zip
Bridges	POSTED_HIGHWAY_BRIDGE_AHTD.zip
Private Schools	PRIVATE_SCHOOLS_DOE_2001.zip
Public Schools	PUBLIC_SCHOOLS_DOE.zip
TV and Radio Stations	RADIO_TELEVISION_STATION_AHTD.zip
US Census Blocks, 2010	BLOCKS_TIGER_2010.shp
Railroads	RAILROAD_AHTD.zip
Interstates, US Highways, and State Highways	ROAD_INVENTORY_AHTD_NEW.zip
Rural Health Clinics	RURAL_HEALTH_CLINICS_ADH.zip
Veteran's Affairs Hospitals and Medical Facilities	VETERANS_AFFAIRS_SERVICES_ADH.zip
Water Supply Tanks	WATERSUPPLY_TANKSTANDPIPE_AHTD.zip

The GIS datasets were merged into single files as point-based GIS data or polyline-based GIS data. The source name and type were added to each point or polyline with the identifiable data removed from the dataset. The ANRC-provided Google Earth KMZ was converted to a GIS Shapefile dataset and added to the master point file. The Census Block GIS data was used as-is with only the "POP100" field being queried. The final ranking table had the HAZUS results manually added. See 3.2 for description of HAZUS data development.

4.3 GIS IAR Toolset

Toolsets (provided digitally as part of the delivery) were developed as an ESRI model builder in ArcGIS 10.4.1. to help aggregate the above-mentioned datasets. The toolset has input of the pre-determined inundation area polygon which is divided into downstream mileage segments of 0-3 miles, 3-7 miles, and 7-15 miles. These segments are intersected with 2010 US Census Bureau Block data to derive potential downstream population at risk. In most cases, the resulting population counts overestimate the population at risk due to the varying size and boundaries of the Census Blocks and intersection with the inundation area as previously discussed. This assumption is consistent for all estimated inundation areas during the IAR process.

After calculating the potential downstream population at risk, the toolset takes the inundation area and intersects it with the point and polyline Critical Facilities Datasets. These are summarized by type and counts and output to GIS datasets.

The final output of the models are types and counts of each potential impact. These can be inserted into the master ranking spreadsheet to be ranked against with all dams in the state. The following tables show a limited breakdown of the results from that analysis before the ranking. Table 4.2 shows the analysis of the Population analysis. Population has been divided into subgroups of 0-3 miles downstream, 3-7 miles downstream and 7-15 miles downstream. These are estimates based on the methodology as previously described.

Table 4.2. Estimated population in potential inundation area.

County	Total Population 0-3 miles	Total Population 3-7 miles	Total Population 7-15 miles
Arkansas	172	-	-
Benton	27,549	8,047	-
Bradley	15	-	-
Carroll	751	332	-
Clay	408	-	-
Cleburne	917	-	-
Cleveland	499	111	-
Columbia	60	86	52
Conway	2,989	1,723	585
Craighead	16,841	3,940	-
Crawford	10,575	3,343	424
Cross	7,335	973	149
Dallas	128	-	-
Drew	411	-	69
Faulkner	3,468	1,142	374
Franklin	690	110	117
Fulton	868	1,148	449
Garland	11,174	7,284	6,859
Grant	354	79	58
Greene	3,324	3,078	1,019
Hempstead	1,120	336	-
Hot Spring	830	340	36
Howard	1,274	670	-
Independence	904	131	-
Izard	792	156	69
Jefferson	306	386	43
Johnson	866	2,760	884
Lafayette	60	18	-
Lawrence	1,106	403	9
Lincoln	114	13	140
Little River	70	-	-
Logan	4,598	890	265
Lonoke	1,480	-	-
Madison	353	208	-
Monroe	123	123	-
Montgomery	298	148	-
Newton	80	-	-
Ouachita	310	24	19
Perry	2,454	737	209
Pike	71	-	-
Poinsett	3,414	263	8
Polk	1,852	902	295
Pope	3,764	3,518	1,688
Prairie	102	174	88
Pulaski	29,776	4,694	1,581
Randolph	1,431	601	-
Saline	19,542	6,445	1,095

Table 4.2. Estimated population in potential inundation area (continued).

County	Total Population 0-3 miles	Total Population 3-7 miles	Total Population 7-15 miles
Scott	2,870	1,862	235
Sebastian	7,449	2,598	529
Sevier	185	44	-
Sharp	6,019	2,512	146
St. Francis	127	-	-
Stone	77	-	-
Van Buren	983	198	-
Washington	6,750	3,205	973
White	4,873	1,631	112
Yell	1,883	292	65
Total	**196,834**	**67,678**	**18,644**

Table 4.3 represents the linear hazards downstream of dams. These are hazards that are represented by polylines in the GIS datasets including railroads, highways, and pipelines. Because of the possibility of multiple intersects of the inundation area and a specific polyline occurring, this table represents the number of dams within a county that have those items as potential hazards. A detailed list of the actual number of intersects between polyline and inundation area can be found in the final ranking table in Appendix B.

Table 4.3. Number of dams per county with linear hazards in potential inundation areas.

County	Number of Dams with Railroad Hazards	Number of Dams with Highway Hazards	Number of Dams with Pipeline Hazards
Arkansas	-	-	-
Benton	1	8	-
Bradley	-	-	-
Carroll	-	3	-
Clay	-	2	-
Cleburne	-	-	-
Cleveland	2	1	-
Columbia	-	2	-
Conway	1	13	-
Craighead	4	9	-
Crawford	5	5	-
Cross	6	6	-
Dallas	-	1	-
Drew	-	1	1
Faulkner	-	4	-
Franklin	-	5	1

Table 4.3. Number of dams per county with linear hazards in potential inundation areas (continued).

County	Number of Dams with Railroad Hazards	Number of Dams with Highway Hazards	Number of Dams with Pipeline Hazards
Fulton	3	3	-
Grant	-	2	-
Greene	-	5	-
Hempstead	4	6	-
Hot Spring	1	2	-
Howard	3	3	1
Independence	1	1	-
Izard	-	3	-
Jefferson	-	-	-
Johnson	1	3	-
Lafayette	-	1	-
Lawrence	-	6	1
Lincoln	-	1	-
Little River	-	-	-
Logan	-	11	-
Lonoke	-	2	-
Madison	-	2	-
Monroe	-	-	-
Montgomery	-	2	-
Newton	-	-	-
Ouachita	-	1	-
Perry	-	6	-
Pike	-	1	-
Poinsett	-	15	-
Polk	1	6	-
Pope	2	8	2
Prairie	-	1	-
Pulaski	4	10	-
Randolph	-	6	2
Saline	4	9	1
Scott	6	13	-
Sebastian	-	8	1
Sevier	-	-	1
Sharp	6	10	1
St. Francis	-	-	-
Stone	-	-	-
Van Buren	-	1	-
Washington	1	6	2
White	1	6	5
Yell	1	3	-
Total	**62**	**233**	**20**

Table 4.4 represents the number of point hazards per county. These categories are a summation of the various GIS sources as cited above. These values are summed into seven main categories: Transportation, Critical Infrastructure, Correctional Facilities, Emergency Response and Public Safety, Medical Facilities, and Private. A detailed table with the complete breakdown of point hazards is included in Appendix A.

Table 4.4. Number of point hazards in potential inundation areas per county.

County	Sum Total	Transportation	Critical Infrastructure	Correctional Facilities	Education Facilities	Emergency Response and Public Safety	Medical Facilities	Private
Arkansas	-	-	-	-	-	-	-	-
Benton	20	4	2	-	-	9	1	4
Bradley	-	-	-	-	-	-	-	-
Carroll	3	-	1	-	-	1	-	1
Clay	2	-	-	-	-	2	-	-
Cleburne	-	-	-	-	-	-	-	-
Cleveland	-	-	-	-	-	-	-	-
Columbia	1	-	1	-	-	-	-	-
Conway	20	1	8	-	-	8	-	3
Craighead	11	1	3	-	-	6	-	1
Crawford	38	3	10	-	4	12	2	7
Cross	32	2	7	1	1	11	4	6
Dallas	-	-	-	-	-	-	-	-
Drew	2	-	1	-	-	-	-	1
Faulkner	4	-	1	-	-	3	-	-
Franklin	9	-	6	-	-	2	-	1
Fulton	4	-	-	-	-	4	-	-
Garland	24	-	11	-	-	10	1	2
Grant	2	-	1	-	-	1	-	-
Greene	7	-	1	1	-	5	-	-
Hempstead	10	-	1	-	-	5	-	4
Hot Spring	6	-	5	-	-	1	-	-
Howard	13	-	5	-	-	3	1	4
Independence	3	-	-	-	-	1	-	2
Izard	2	1	-	-	-	1	-	-
Jefferson	6	-	4	-	-	1	-	1
Johnson	12	-	5	-	-	4	1	2
Lafayette	1	-	1	-	-	-	-	-
Lawrence	6	1	3	-	-	2	-	-
Lincoln	-	-	-	-	-	-	-	-
Little River	3	1	1	-	-	-	-	1
Logan	36	-	16	1	-	12	3	4
Lonoke	4	1	-	-	-	2	-	1
Madison	4	1	-	-	-	1	-	2

Table 4.4. Number of point hazards in potential inundation areas per county (continued).

County	Sum Total	Transportation	Critical Infrastructure	Correctional Facilities	Education Facilities	Emergency Response and Public Safety	Medical Facilities	Private
Monroe	-	-	-	-	-	-	-	-
Montgomery	1	-	-	-	-	-	-	1
Newton	-	-	-	-	-	-	-	-
Ouachita	3	-	3	-	-	-	-	-
Perry	23	2	6	1	1	8	1	4
Pike	1	-	1	-	-	-	-	-
Poinsett	10	-	2	-	-	6	-	2
Polk	8	-	2	-	-	2	-	4
Pope	27	2	8	-	1	6	-	1-
Prairie	1	-	-	-	-	1	-	-
Pulaski	45	2	13	-	4	19	2	5
Randolph	2	1	-	-	-	-	-	1
Saline	22	-	8	-	-	9	4	1
Scott	23	-	6	-	-	6	-	11
Sebastian	34	-	13	-	-	11	3	7
Sevier	1	-	-	-	-	-	-	1
Sharp	28	1	11	-	-	15	-	1
St. Francis	-	-	-	-	-	-	-	-
Stone	-	-	-	-	-	-	-	-
Van Buren	4	-	3	-	-	1	-	-
Washington	20	-	8	-	-	7	1	4
White	11	1	4	-	-	3	-	3
Yell	19	-	5	-	1	6	-	7
Total	**568**	**25**	**187**	**4**	**12**	**207**	**24**	**109**

4.4 Dams Critical to the State of Arkansas

Prior to this project, the Arkansas Dam Safety Program designated nine dams, listed below, as being critical infrastructure or critical to the State of Arkansas. These dams are classified as High Hazard and are permitted for water-supply use. In the event of a dam failure, significant damage could potentially occur downstream along with the potential of a community losing their source of water. Since these nine dams are known and listed as critical dams with ANRC DSFPMS, they will not be given a higher-ranking score for the purposes of this impact assessment ranking. This listing is intended for information purposes only. The dams classified as being critical to the State are listed in Table 4.5.

Table 4.5. Dams critical to the State of Arkansas.

Dam County	AR ID	Dam Name
Crawford	AR00446	Lake Fort Smith Dam
Garland	AR00724	Rick's Dam
Howard	AR00918	Nichols Lake Dam
Logan	AR00880	Paris Dam
Logan	AR00895	Auxiliary Dam #1
Pulaski	AR00081	Lake Maumelle Dam
Pulaski	AR00146	Jackson Reservoir Dam
Saline	AR01549	Chenault Reservoir Dam
Sebastian	AR00936	Vache Grasse

4.5 Results

Once all data was analyzed a final ranking was completed. The dams were analyzed and ranked categorically based on population, estimated total losses, and linear and point critical infrastructure. For example, after the total estimated losses was determined for each dam, they were ranked in order of total loss. The dam with the highest total losses received the highest-ranking score (410). This method was applied to all four categories and each dam was given a corresponding rank score. Once all rank scores were determined, the scores were summed and a final rank score was calculated. Dams with the higher total scores are considered to have the highest risk potential. Those with lower total scores are considered to have a lower risk potential. The dam with the highest risk potential (highest total score) was ranked Number 1 and the dam with the lowest risk potential (lowest total score) was ranked last. Dams that had equal total scores were given the same rank position and should be evaluated on individual basis for the varying potential hazards. As shown in Table 4.6, the resulting ranks were sorted by County, and then ranked with the highest rank (lowest number) first. The detailed and completed hazard ranking is found in Appendix B.

Table 4.6. Impact assessment ranking.

State ID	County Name	Final Rank
AR00999	Arkansas	385
AR00262	Benton	22
AR00264	Benton	30
AR01102	Benton	34
AR00263	Benton	36
AR00266	Benton	37
AR00265	Benton	75
AR00260	Benton	137
AR01408	Benton	145
AR01527	Benton	171
AR01100	Benton	218
AR00526	Benton	369
AR00525	Benton	371
AR00258	Benton	409
AR00967	Bradley	406
AR00238	Carroll	88
AR01104	Carroll	232
AR00237	Carroll	234
AR00234	Carroll	347
AR01274	Clay	172
AR00485	Clay	188
AR01275	Clay	373
AR01453	Cleburne	296
AR00308	Cleburne	377
AR00200	Cleburne	393
AR00313	Cleburne	398
AR00671	Cleveland	195
AR00675	Cleveland	251
AR01478	Columbia	124
AR00785	Columbia	339
AR00323	Conway	74
AR00356	Conway	76
AR00334	Conway	84
AR01422	Conway	93
AR00324	Conway	121
AR00319	Conway	149
AR01286	Conway	164
AR00336	Conway	166
AR00318	Conway	186
AR00320	Conway	203
AR00332	Conway	223
AR00335	Conway	254
AR00333	Conway	283
AR00329	Conway	287
AR00349	Conway	302
AR00322	Conway	333
AR00317	Conway	357
AR00331	Conway	360

Table 4.6. Impact assessment ranking (continued).

State ID	County Name	Final Rank
AR00348	Conway	366
AR00321	Conway	391
AR00330	Conway	404
AR00474	Craighead	31
AR00466	Craighead	58
AR00467	Craighead	66
AR00459	Craighead	103
AR00457	Craighead	116
AR00463	Craighead	134
AR00465	Craighead	152
AR00460	Craighead	155
AR00461	Craighead	160
AR00454	Craighead	203
AR00453	Craighead	211
AR00451	Craighead	227
AR00462	Craighead	252
AR00464	Craighead	262
AR00456	Craighead	265
AR00452	Craighead	300
AR00448	Crawford	1
AR00446	Crawford	3
AR01123	Crawford	12
AR01492	Crawford	23
AR01442	Crawford	40
AR00528	Crawford	382
AR00527	Crawford	401
AR00420	Cross	19
AR00424	Cross	25
AR00423	Cross	32
AR00421	Cross	33
AR00422	Cross	43
AR00418	Cross	162
AR01285	Cross	313
AR01284	Cross	314
AR00572	Dallas	292
AR01516	Drew	52
AR00048	Faulkner	109
AR00042	Faulkner	112
AR00038	Faulkner	135
AR01238	Faulkner	180
AR00055	Faulkner	229
AR01538	Faulkner	260
AR01243	Faulkner	307
AR01242	Faulkner	329
AR01261	Faulkner	349
AR00059	Faulkner	353
AR01239	Faulkner	374
AR00562	Franklin	59

Table 4.6. Impact assessment ranking (continued).

State ID	County Name	Final Rank
AR00415	Franklin	146
AR00416	Franklin	189
AR00408	Franklin	212
AR00405	Franklin	236
AR00417	Franklin	274
AR00411	Franklin	312
AR01137	Franklin	390
AR00402	Franklin	393
AR00245	Fulton	56
AR00244	Fulton	136
AR00243	Fulton	185
AR01471	Fulton	197
AR01157	Fulton	304
AR00501	Fulton	325
AR00277	Fulton	388
AR00242	Fulton	399
AR00724	Garland	14
AR01235	Garland	18
AR00534	Garland	49
AR01530	Garland	65
AR01451	Garland	79
AR00719	Garland	96
AR01544	Garland	99
AR01170	Garland	104
AR00722	Garland	140
AR00721	Garland	142
AR00720	Garland	192
AR00723	Garland	213
AR01206	Garland	282
AR01534	Garland	316
AR01171	Garland	319
AR01531	Garland	332
AR00728	Garland	350
AR00726	Garland	364
AR00729	Garland	387
AR00632	Grant	128
AR00629	Grant	222
AR00631	Grant	381
AR00436	Greene	68
AR00437	Greene	71
AR00438	Greene	114
AR00430	Greene	123
AR00439	Greene	200
AR01161	Hempstead	41
AR01504	Hempstead	227
AR01491	Hempstead	238
AR01543	Hempstead	271
AR01556	Hempstead	278

Table 4.6. Impact assessment ranking (continued).

State ID	County Name	Final Rank
AR01505	Hempstead	310
AR01502	Hempstead	330
AR01523	Hempstead	335
AR01537	Hempstead	345
AR01085	Hempstead	352
AR01529	Hempstead	363
AR01503	Hempstead	384
AR01517	Hempstead	399
AR01151	Hempstead	407
AR00535	Hot Spring	46
AR00566	Hot Spring	111
AR01145	Hot Spring	327
AR00911	Howard	39
AR00918	Howard	63
AR01480	Howard	77
AR00915	Howard	178
AR00912	Howard	234
AR00914	Howard	331
AR00913	Howard	401
AR01119	Independence	153
AR00367	Independence	165
AR00369	Independence	293
AR00232	Izard	115
AR00229	Izard	158
AR00228	Izard	257
AR00231	Izard	290
AR01316	Jefferson	122
AR01318	Jefferson	187
AR01317	Jefferson	259
AR00442	Johnson	5
AR00441	Johnson	106
AR01417	Johnson	192
AR00872	Lafayette	160
AR00373	Lawrence	131
AR00385	Lawrence	144
AR00378	Lawrence	231
AR00371	Lawrence	244
AR00377	Lawrence	303
AR00370	Lawrence	305
AR00374	Lawrence	309
AR00376	Lawrence	337
AR00381	Lawrence	337
AR00372	Lawrence	342
AR01482	Lawrence	343
AR00379	Lawrence	369
AR00380	Lawrence	376
AR01565	Lawrence	380
AR00383	Lawrence	403

Table 4.6. Impact assessment ranking (continued).

State ID	County Name	Final Rank
AR01460	Lincoln	225
AR00579	Little River	233
AR00880	Logan	2
AR00890	Logan	51
AR00883	Logan	78
AR00893	Logan	87
AR00889	Logan	101
AR01322	Logan	125
AR00885	Logan	138
AR00882	Logan	139
AR01199	Logan	175
AR00888	Logan	203
AR01198	Logan	206
AR00884	Logan	218
AR00881	Logan	221
AR00894	Logan	255
AR00895	Logan	320
AR00877	Logan	344
AR00876	Logan	350
AR00096	Lonoke	133
AR00177	Lonoke	177
AR01488	Madison	94
AR00241	Madison	209
AR01501	Madison	362
AR00976	Monroe	336
AR01489	Montgomery	85
AR01469	Montgomery	320
AR01439	Montgomery	324
AR00897	Montgomery	408
AR01106	Newton	378
AR00633	Ouachita	150
AR00648	Ouachita	245
AR01196	Perry	13
AR01194	Perry	61
AR00833	Perry	88
AR01532	Perry	132
AR01510	Perry	157
AR01195	Perry	262
AR00835	Perry	267
AR01470	Perry	283
AR01415	Perry	328
AR01526	Perry	368
AR00839	Perry	375
AR01152	Pike	322
AR00923	Pike	355
AR00477	Poinsett	91
AR01511	Poinsett	98
AR01498	Poinsett	117

Table 4.6. Impact assessment ranking (continued).

State ID	County Name	Final Rank
AR01464	Poinsett	159
AR01424	Poinsett	167
AR01277	Poinsett	176
AR01455	Poinsett	202
AR01434	Poinsett	208
AR01432	Poinsett	248
AR01433	Poinsett	250
AR01431	Poinsett	257
AR01458	Poinsett	273
AR01457	Poinsett	276
AR01436	Poinsett	288
AR01279	Poinsett	291
AR01278	Poinsett	301
AR00901	Polk	59
AR01624	Polk	97
AR00905	Polk	100
AR00906	Polk	169
AR00902	Polk	183
AR00903	Polk	264
AR01184	Polk	341
AR01136	Pope	5
AR01522	Pope	9
AR00343	Pope	82
AR00344	Pope	107
AR00339	Pope	108
AR00338	Pope	148
AR00271	Pope	169
AR00342	Pope	181
AR00341	Pope	230
AR00340	Pope	261
AR00337	Pope	281
AR00695	Prairie	92
AR00081	Pulaski	10
AR00098	Pulaski	11
AR00099	Pulaski	15
AR00130	Pulaski	64
AR00114	Pulaski	66
AR00095	Pulaski	80
AR00146	Pulaski	105
AR00120	Pulaski	127
AR00128	Pulaski	147
AR00139	Pulaski	168
AR01493	Pulaski	179
AR00066	Pulaski	196
AR00122	Pulaski	198
AR01221	Pulaski	198
AR00123	Pulaski	241
AR00119	Pulaski	252

Table 4.6. Impact assessment ranking (continued).

State ID	County Name	Final Rank
AR01536	Pulaski	270
AR00105	Pulaski	271
AR00126	Pulaski	277
AR01225	Pulaski	310
AR01230	Pulaski	315
AR01508	Pulaski	334
AR01265	Randolph	101
AR01497	Randolph	154
AR01446	Randolph	173
AR01507	Randolph	194
AR00386	Randolph	267
AR01266	Randolph	318
AR01518	Randolph	346
AR01448	Randolph	354
AR00013	Saline	8
AR01217	Saline	19
AR00014	Saline	28
AR00022	Saline	29
AR00024	Saline	120
AR01550	Saline	125
AR01528	Saline	130
AR01549	Saline	143
AR00023	Saline	151
AR01216	Saline	156
AR01535	Saline	181
AR00004	Saline	191
AR01539	Saline	214
AR00001	Saline	239
AR01540	Saline	245
AR00016	Saline	247
AR00018	Saline	269
AR01542	Saline	279
AR01541	Saline	280
AR01177	Saline	286
AR00012	Saline	361
AR01494	Saline	396
AR01495	Saline	405
AR00847	Scott	27
AR00849	Scott	48
AR00857	Scott	54
AR00843	Scott	95
AR01214	Scott	118
AR01421	Scott	141
AR00855	Scott	183
AR00848	Scott	190
AR00845	Scott	209
AR00853	Scott	217
AR00852	Scott	220

Table 4.6. Impact assessment ranking (continued).

State ID	County Name	Final Rank
AR00850	Scott	224
AR00844	Scott	275
AR01215	Scott	285
AR01512	Scott	294
AR00856	Scott	298
AR01213	Scott	308
AR00842	Scott	348
AR00859	Scott	358
AR00936	Sebastian	4
AR01209	Sebastian	34
AR00934	Sebastian	37
AR00938	Sebastian	42
AR01506	Sebastian	47
AR01208	Sebastian	73
AR01500	Sebastian	81
AR00941	Sebastian	86
AR00937	Sebastian	201
AR01481	Sevier	240
AR00929	Sevier	256
AR01165	Sevier	393
AR00250	Sharp	5
AR00249	Sharp	16
AR00248	Sharp	21
AR00255	Sharp	45
AR00252	Sharp	50
AR00247	Sharp	62
AR00254	Sharp	83
AR01450	Sharp	163
AR00257	Sharp	174
AR00253	Sharp	206
AR00251	Sharp	226
AR01126	Sharp	237
AR00256	Sharp	326
AR01125	Sharp	359
AR01454	Sharp	383
AR01440	Sharp	409
AR01291	St. Francis	356
AR01131	Stone	397
AR00326	Van Buren	215
AR00316	Van Buren	243
AR01566	Van Buren	249
AR00327	Van Buren	299
AR00315	Van Buren	322
AR00328	Van Buren	366
AR00289	Washington	17
AR00290	Washington	26
AR01101	Washington	44
AR00281	Washington	57

Table 4.6. Impact assessment ranking (continued).

State ID	County Name	Final Rank
AR00288	Washington	70
AR00285	Washington	110
AR00283	Washington	113
AR01553	Washington	216
AR01546	Washington	295
AR00286	Washington	306
AR01449	Washington	385
AR01410	White	55
AR01418	White	69
AR00304	White	90
AR01441	White	118
AR01414	White	129
AR01496	White	241
AR01413	White	265
AR01404	White	289
AR01614	White	297
AR00305	White	340
AR01405	White	365
AR01466	White	372
AR01490	White	379
AR00767	Yell	24
AR01406	Yell	53
AR00756	Yell	72
AR01519	Yell	317
AR00766	Yell	388
AR00765	Yell	391

5.0 DAM SAFETY IN ARKANSAS

5.1 Mitigation Action Items

As stated in the All-Hazards Mitigation Plan, it is essential that state and local mitigation policies be directed to minimize the risk of future devastation and the corresponding impact on the residents and property in the State of Arkansas. The state and local communities should develop mitigations strategies that achieve the following items: 1) reduce the potential for loss of life and substantial property loss downstream of the dams in the state, 2) increase the awareness of emergency personnel to the potential hazards of dams, in particular of the conditions of aging or critical dams, and 3) increase the education among emergency personnel and dam owners in regards to dam safety and mitigation strategy. Mitigations Action items have been identified and listed in the All-Hazards Mitigation Plan.

Mitigation items include the following:

- Provide education and outreach on a local level;
- Assist owners with development of Operations and Maintenance (O&M) plans to inspect, and replace if necessary, gate valves at outlet structures;
- Perform county-wide emergency preparedness drills for dam hazards;
- Install monitoring devices such as rain gauges or lake level monitors at high hazard dams;
- Evaluate downstream conditions and mitigate hazards such as pinch-points in the flow path;
- Perform new embankment surveys and bathymetric surveys of dam impoundments;
- Modify, upgrade, or repair dam outlet structures to provide for rapid lake level drawdown capabilities;
- Remove dams considered to be a nuisance to the State;
- Perform updated watershed analysis for high hazard dams;
- Perform annual county-wide reassessment of current inventory dam's hazard classification; and
- Perform annual county-wide analysis to determine if unpermitted dams have been constructed.

6.0 REFERENCES

DHS. 2010. *Dams Sector Consequence-Based Top Screen (CTS) Methodology*.

FEMA. 2015. *HAZUS-MH Data Inventories: Dasymetric vs Homogeneous*. November 2015.

FEMA. 2016. *Guidance for Flood Risk Analysis and Mapping. Flood Risk Assessments*. May 2016

FEMA. 2017. *National Flood Insurance Program Community Rating System Coordinator's Manual*. FIA-15-2017. OMB No. 1660-0022.

Reed, et al, (2011) Reed, Seann and James Halgren. *Validation of a new GIS Tool to Develop Simplified Dam Break Models*, *NOAA Office of Hydrologic Development*. 2011

APPENDIX A

Detailed GIS Datasets

COUNTY	AIRPORTS AHTD	INTERMODAL TERMINALS BTS 1998	POSTED HIGHWAY BRIDGE AHTD	TRANSPORTATION	CELLULAR TOWER	ELECTRIC PROVIDERS EIA 2001	OIL AND GAS WELLS AOGC	WASTEWATER TREATMENT PLANT	WATER SUPPLY TANK STANDPIPE AHTD	HIGH HAZARD DAM	RADIO TELEVISION STATION AHTD	POST OFFICES AGIO	C.I. AGRICULTURE AND FOOD	C.I. COMMERCIAL	C.I. ELECTRIC POWER GENERATION PLANT	C.I. SUBSTATIONS	CRITIAL INFRASTRUCTURE	CORRECTIONAL INSTITUTIONS TGS	COUNTY STATE PRISONS AHTD	CORRECTIONAL FACILITIES	COLLEGES 4YR ADHE 2001	PRIVATE SCHOOLS DOE 2001	PUBLIC SCHOOLS DOE	EDUCATION FACILITIES	EMERG MEDICAL SERVICES AHD	FACILITIES ADEQ	FIRE STATIONS	ARMORIES AHTD	LAW ENFORCE TGS	LOCAL EOC	FAIRGROUNDS SPEEDWAY AHTD	EMERGENCY RESPONSE AND PUBLIC SAFETY	HOSPITAL RELATED SERVICES ADH	HOSPITALS ADH	LOCAL HEALTH UNITS ADH	LONG TERM CARE FACILITIES ADH	RURAL HEALTH CLINICS ADH	MEDICAL FACILITIES	CHICKEN HOUSES AHTD	CHURCHES AHTD	PRIVATE
Arkansas	0	0	0	**0**	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	**0**	0	0	0	**0**	0	0	0	0	0	0	0	**0**	0	0	0	0	0	**0**	0	0	**0**
Benton	0	0	4	**4**	0	0	1	0	0	1	0	0	0	0	0	0	**2**	0	0	**0**	0	0	0	**0**	1	7	1	0	0	0	0	**9**	0	0	0	1	0	**1**	0	4	**4**
Bradley	0	0	0	**0**	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	**0**	0	0	0	**0**	0	0	0	0	0	0	0	**0**	0	0	0	0	0	**0**	0	0	**0**
Carroll	0	0	0	**0**	0	0	0	0	0	1	0	0	0	0	0	0	**1**	0	0	**0**	0	0	0	**0**	0	1	0	0	0	0	0	**1**	0	0	0	0	0	**0**	1	0	**1**
Clay	0	0	0	**0**	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	**0**	0	0	0	**0**	0	2	0	0	0	0	0	**2**	0	0	0	0	0	**0**	0	0	**0**
Cleburne	0	0	0	**0**	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	**0**	0	0	0	**0**	0	0	0	0	0	0	0	**0**	0	0	0	0	0	**0**	0	0	**0**
Cleveland	0	0	0	**0**	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	**0**	0	0	0	**0**	0	0	0	0	0	0	0	**0**	0	0	0	0	0	**0**	0	0	**0**
Columbia	0	0	0	**0**	0	0	1	0	0	0	0	0	0	0	0	0	**1**	0	0	**0**	0	0	0	**0**	0	0	0	0	0	0	0	**0**	0	0	0	0	0	**0**	0	0	**0**
Conway	0	0	1	**1**	0	0	8	0	0	0	0	0	0	0	0	0	**8**	0	0	**0**	0	0	0	**0**	0	8	0	0	0	0	0	**8**	0	0	0	0	0	**0**	2	1	**3**
Craighead	1	0	0	**1**	0	0	0	0	0	3	0	0	0	0	0	0	**3**	0	0	**0**	0	0	0	**0**	0	6	0	0	0	0	0	**6**	0	0	0	0	0	**0**	0	1	**1**
Crawford	1	1	1	**3**	0	0	3	2	1	1	0	3	0	0	0	0	**10**	0	0	**0**	0	0	4	**4**	1	5	3	0	3	0	0	**12**	0	0	0	1	1	**2**	3	4	**7**
Cross	1	0	1	**2**	2	0	0	0	0	0	0	1	2	0	0	2	**7**	1	0	**1**	0	0	1	**1**	1	5	1	1	1	2	0	**11**	1	1	1	1	0	**4**	1	5	**6**
Dallas	0	0	0	**0**	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	**0**	0	0	0	**0**	0	0	0	0	0	0	0	**0**	0	0	0	0	0	**0**	0	0	**0**
Drew	0	0	0	**0**	0	0	0	0	0	1	0	0	0	0	0	0	**1**	0	0	**0**	0	0	0	**0**	0	0	0	0	0	0	0	**0**	0	0	0	0	0	**0**	1	0	**1**
Faulkner	0	0	0	**0**	0	0	1	0	0	0	0	0	0	0	0	0	**1**	0	0	**0**	0	0	0	**0**	0	3	0	0	0	0	0	**3**	0	0	0	0	0	**0**	0	0	**0**
Franklin	0	0	0	**0**	0	0	6	0	0	0	0	0	0	0	0	0	**6**	0	0	**0**	0	0	0	**0**	0	2	0	0	0	0	0	**2**	0	0	0	0	0	**0**	0	1	**1**
Fulton	0	0	0	**0**	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	**0**	0	0	0	**0**	0	3	1	0	0	0	0	**4**	0	0	0	0	0	**0**	0	0	**0**

COUNTY	AIRPORTS AHTD	INTERMODAL TERMINALS BTS 1998	POSTED HIGHWAY BRIDGE AHTD	TRANSPORTATION	CELLULAR TOWER	ELECTRIC PROVIDERS EIA 2001	OIL AND GAS WELLS AOGC	WASTEWATER TREATMENT PLANT	WATER SUPPLY TANK STANDPIPE AHTD	HIGH HAZARD DAM	RADIO TELEVISION STATION AHTD	POST OFFICES AGIO	C.I. AGRICULTURE AND FOOD	C.I. COMMERCIAL	C.I. ELECTRIC POWER GENERATION PLANT	C.I. SUBSTATIONS	CRITIAL INFRASTRUCTURE	CORRECTIONAL INSTITUTIONS TGS	COUNTY STATE PRISONS AHTD	CORRECTIONAL FACILITIES	COLLEGES 4YR ADHE 2001	PRIVATE SCHOOLS DOE 2001	PUBLIC SCHOOLS DOE	EDUCATION FACILITIES	EMERG MEDICAL SERVICES AHD	FACILITIES ADEQ	FIRE STATIONS	ARMORIES AHTD	LAW ENFORCE TGS	LOCAL EOC	FAIRGROUNDS SPEEDWAY AHTD	EMERGENCY RESPONSE AND PUBLIC SAFETY	HOSPITAL RELATED SERVICES ADH	HOSPITALS ADH	LOCAL HEALTH UNITS ADH	LONG TERM CARE FACILITIES ADH	RURAL HEALTH CLINICS ADH	MEDICAL FACILITIES	CHICKEN HOUSES AHTD	CHURCHES AHTD	PRIVATE
Garland	0	0	0	**0**	1	0	0	1	2	4	0	0	0	0	2	1	**11**	0	0	**0**	0	0	0	**0**	0	10	0	0	0	0	0	**10**	0	0	0	1	0	**1**	0	2	**2**
Grant	0	0	0	**0**	0	0	1	0	0	0	0	0	0	0	0	0	**1**	0	0	**0**	0	0	0	**0**	0	1	0	0	0	0	0	**1**	0	0	0	0	0	**0**	0	0	**0**
Greene	0	0	0	**0**	0	0	0	0	0	1	0	0	0	0	0	0	**1**	0	1	**1**	0	0	0	**0**	0	4	1	0	0	0	0	**5**	0	0	0	0	0	**0**	0	0	**0**
Hempstead	0	0	0	**0**	0	0	0	0	0	1	0	0	0	0	0	0	**1**	0	0	**0**	0	0	0	**0**	0	4	1	0	0	0	0	**5**	0	0	0	0	0	**0**	3	1	**4**
Hot Spring	0	0	0	**0**	0	0	0	1	0	2	0	0	0	0	1	1	**5**	0	0	**0**	0	0	0	**0**	0	1	0	0	0	0	0	**1**	0	0	0	0	0	**0**	0	0	**0**
Howard	0	0	0	**0**	0	0	2	1	0	2	0	0	0	0	0	0	**5**	0	0	**0**	0	0	0	**0**	0	3	0	0	0	0	0	**3**	0	0	0	1	0	**1**	3	1	**4**
Independence	0	0	0	**0**	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	**0**	0	0	0	**0**	0	1	0	0	0	0	0	**1**	0	0	0	0	0	**0**	1	1	**2**
Izard	0	0	1	**1**	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	**0**	0	0	0	**0**	0	1	0	0	0	0	0	**1**	0	0	0	0	0	**0**	0	0	**0**
Jefferson	0	0	0	**0**	0	0	0	0	0	0	0	0	0	0	2	2	**4**	0	0	**0**	0	0	0	**0**	0	1	0	0	0	0	0	**1**	0	0	0	0	0	**0**	0	1	**1**
Johnson	0	0	0	**0**	0	0	2	1	0	1	0	1	0	0	0	0	**5**	0	0	**0**	0	0	0	**0**	0	1	1	0	1	1	0	**4**	0	0	0	1	0	**1**	1	1	**2**
Lafayette	0	0	0	**0**	0	0	1	0	0	0	0	0	0	0	0	0	**1**	0	0	**0**	0	0	0	**0**	0	0	0	0	0	0	0	**0**	0	0	0	0	0	**0**	0	0	**0**
Lawrence	0	0	1	**1**	0	0	2	0	0	0	0	1	0	0	0	0	**3**	0	0	**0**	0	0	0	**0**	0	2	0	0	0	0	0	**2**	0	0	0	0	0	**0**	0	0	**0**
Lincoln	0	0	0	**0**	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	**0**	0	0	0	**0**	0	0	0	0	0	0	0	**0**	0	0	0	0	0	**0**	0	0	**0**
Little River	1	0	0	**1**	0	0	0	0	0	1	0	0	0	0	0	0	**1**	0	0	**0**	0	0	0	**0**	0	0	0	0	0	0	0	**0**	0	0	0	0	0	**0**	0	1	**1**
Logan	0	0	0	**0**	0	1	13	0	0	1	0	1	0	0	0	0	**16**	1	0	**1**	0	0	0	**0**	1	6	2	1	1	1	0	**12**	1	0	1	1	0	**3**	1	3	**4**
Lonoke	1	0	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	**0**	0	0	0	**0**	0	1	1	0	0	0	0	**2**	0	0	0	0	0	**0**	1	0	**1**
Madison	0	0	1	**1**	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	**0**	0	0	0	**0**	0	1	0	0	0	0	0	**1**	0	0	0	0	0	**0**	1	1	**2**
Monroe	0	0	0	**0**	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	**0**	0	0	0	**0**	0	0	0	0	0	0	0	**0**	0	0	0	0	0	**0**	0	0	**0**

COUNTY	AIRPORTS AHTD	INTERMODAL TERMINALS BTS 1998	POSTED HIGHWAY BRIDGE AHTD	TRANSPORTATION	CELLULAR TOWER	ELECTRIC PROVIDERS EIA 2001	OIL AND GAS WELLS AOGC	WASTEWATER TREATMENT PLANT	WATER SUPPLY TANK STANDPIPE AHTD	HIGH HAZARD DAM	RADIO TELEVISION STATION AHTD	POST OFFICES AGIO	C.I. AGRICULTURE AND FOOD	C.I. COMMERCIAL	C.I. ELECTRIC POWER GENERATION PLANT	C.I. SUBSTATIONS	CRITIAL INFRASTRUCTURE	CORRECTIONAL INSTITUTIONS TGS	COUNTY STATE PRISONS AHTD	CORRECTIONAL FACILITIES	COLLEGES 4YR ADHE 2001	PRIVATE SCHOOLS DOE 2001	PUBLIC SCHOOLS DOE	EDUCATION FACILITIES	EMERG MEDICAL SERVICES AHD	FACILITIES ADEQ	FIRE STATIONS	ARMORIES AHTD	LAW ENFORCE TGS	LOCAL EOC	FAIRGROUNDS SPEEDWAY AHTD	EMERGENCY RESPONSE AND PUBLIC SAFETY	HOSPITAL RELATED SERVICES ADH	HOSPITALS ADH	LOCAL HEALTH UNITS ADH	LONG TERM CARE FACILITIES ADH	RURAL HEALTH CLINICS ADH	MEDICAL FACILITIES	CHICKEN HOUSES AHTD	CHURCHES AHTD	PRIVATE
Montgomery	0	0	0	**0**	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	**0**	0	0	0	**0**	0	0	0	0	0	0	0	**0**	0	0	0	0	0	**0**	1	0	**1**
Newton	0	0	0	**0**	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	**0**	0	0	0	**0**	0	0	0	0	0	0	0	**0**	0	0	0	0	0	**0**	0	0	**0**
Ouachita	0	0	0	**0**	0	0	1	0	0	2	0	0	0	0	0	0	**3**	0	0	**0**	0	0	0	**0**	0	0	0	0	0	0	0	**0**	0	0	0	0	0	**0**	0	0	**0**
Perry	0	0	2	**2**	0	0	0	0	0	3	0	1	0	0	0	2	**6**	1	0	**1**	0	0	1	**1**	0	3	3	0	1	1	0	**8**	0	0	0	1	0	**1**	1	3	**4**
Pike	0	0	0	**0**	0	0	0	1	0	0	0	0	0	0	0	0	**1**	0	0	**0**	0	0	0	**0**	0	0	0	0	0	0	0	**0**	0	0	0	0	0	**0**	0	0	**0**
Poinsett	0	0	0	**0**	0	0	0	0	0	2	0	0	0	0	0	0	**2**	0	0	**0**	0	0	0	**0**	0	3	1	0	0	0	2	**6**	0	0	0	0	0	**0**	0	2	**2**
Polk	0	0	0	**0**	0	0	1	0	0	1	0	0	0	0	0	0	**2**	0	0	**0**	0	0	0	**0**	0	2	0	0	0	0	0	**2**	0	0	0	0	0	**0**	2	2	**4**
Pope	0	0	2	**2**	0	0	7	0	0	0	0	1	0	0	0	0	**8**	0	0	**0**	0	0	1	**1**	0	3	1	0	1	0	1	**6**	0	0	0	0	0	**0**	7	3	**10**
Prairie	0	0	0	**0**	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	**0**	0	0	0	**0**	0	1	0	0	0	0	0	**1**	0	0	0	0	0	**0**	0	0	**0**
Pulaski	0	2	0	**2**	0	0	0	1	0	6	1	0	2	0	0	3	**13**	0	0	**0**	1	1	2	**4**	2	11	3	0	3	0	0	**19**	1	0	0	1	0	**2**	1	4	**5**
Randolph	0	0	1	**1**	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	**0**	0	0	0	**0**	0	0	0	0	0	0	0	**0**	0	0	0	0	0	**0**	1	0	**1**
Saline	0	0	0	**0**	0	0	0	3	0	4	0	0	0	0	0	1	**8**	0	0	**0**	0	0	0	**0**	0	8	1	0	0	0	0	**9**	3	0	1	0	0	**4**	0	1	**1**
Scott	0	0	0	**0**	0	0	1	0	0	3	0	0	0	0	0	2	**6**	0	0	**0**	0	0	0	**0**	0	5	1	0	0	0	0	**6**	0	0	0	0	0	**0**	7	4	**11**
Sebastian	0	0	0	**0**	0	0	8	1	0	1	0	2	0	1	0	0	**13**	0	0	**0**	0	0	0	**0**	0	6	2	0	3	0	0	**11**	2	0	0	1	0	**3**	3	4	**7**
Sevier	0	0	0	**0**	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	**0**	0	0	0	**0**	0	0	0	0	0	0	0	**0**	0	0	0	0	0	**0**	1	0	**1**
Sharp	0	0	1	**1**	0	0	0	0	0	9	0	2	0	0	0	0	**11**	0	0	**0**	0	0	0	**0**	0	8	2	0	5	0	0	**15**	0	0	0	0	0	**0**	0	1	**1**
St. Francis	0	0	0	**0**	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	**0**	0	0	0	**0**	0	0	0	0	0	0	0	**0**	0	0	0	0	0	**0**	0	0	**0**
Stone	0	0	0	**0**	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	**0**	0	0	0	**0**	0	0	0	0	0	0	0	**0**	0	0	0	0	0	**0**	0	0	**0**

COUNTY	AIRPORTS AHTD	INTERMODAL TERMINALS BTS 1998	POSTED HIGHWAY BRIDGE AHTD	TRANSPORTATION	CELLULAR TOWER	ELECTRIC PROVIDERS EIA 2001	OIL AND GAS WELLS AOGC	WASTEWATER TREATMENT PLANT	WATER SUPPLY TANK STANDPIPE AHTD	HIGH HAZARD DAM	RADIO TELEVISION STATION AHTD	POST OFFICES AGIO	C.I. AGRICULTURE AND FOOD	C.I. COMMERCIAL	C.I. ELECTRIC POWER GENERATION PLANT	C.I. SUBSTATIONS	CRITIAL INFRASTRUCTURE	CORRECTIONAL INSTITUTIONS TGS	COUNTY STATE PRISONS AHTD	CORRECTIONAL FACILITIES	COLLEGES 4YR ADHE 2001	PRIVATE SCHOOLS DOE 2001	PUBLIC SCHOOLS DOE	EDUCATION FACILITIES	EMERG MEDICAL SERVICES AHD	FACILITIES ADEQ	FIRE STATIONS	ARMORIES AHTD	LAW ENFORCE TGS	LOCAL EOC	FAIRGROUNDS SPEEDWAY AHTD	EMERGENCY RESPONSE AND PUBLIC SAFETY	HOSPITAL RELATED SERVICES ADH	HOSPITALS ADH	LOCAL HEALTH UNITS ADH	LONG TERM CARE FACILITIES ADH	RURAL HEALTH CLINICS ADH	MEDICAL FACILITIES	CHICKEN HOUSES AHTD	CHURCHES AHTD	PRIVATE
Van Buren	0	0	0	**0**	0	0	3	0	0	0	0	0	0	0	0	0	**3**	0	0	**0**	0	0	0	**0**	0	1	0	0	0	0	0	**1**	0	0	0	0	0	**0**	0	0	**0**
Washington	0	0	0	**0**	0	0	2	1	0	2	1	0	0	0	0	2	**8**	0	0	**0**	0	0	0	**0**	0	7	0	0	0	0	0	**7**	0	1	0	0	0	**1**	4	0	**4**
White	0	0	1	**1**	0	0	4	0	0	0	0	0	0	0	0	0	**4**	0	0	**0**	0	0	0	**0**	0	3	0	0	0	0	0	**3**	0	0	0	0	0	**0**	1	2	**3**
Yell	0	0	0	**0**	0	0	2	0	0	2	0	1	0	0	0	0	**5**	0	0	**0**	0	0	1	**1**	0	3	2	0	1	0	0	**6**	0	0	0	0	0	**0**	4	3	**7**
Grand Total	5	3	17	**25**	3	1	70	13	3	55	2	14	4	1	5	16	**187**	3	1	**4**	1	1	10	**12**	6	143	28	2	20	5	3	**207**	8	2	3	10	1	**24**	52	57	**109**

APPENDIX B

Supporting Data for Dams Impact Assessment Ranking

AR00018	AR00016	AR00014	AR00013	AR00012	AR00004	AR00001	State ID
Saline	Saline	Saline	Saline	Saline	Saline	Saline	County Name
769	308	3247	3858	520	177	27	0-3 miles
347	262	398	402	311	192	30	RANK
0	0	748	665	0	659	36	3-7 miles
1	1	388	386	1	385	254	RANK
0	0	0	327	0	325	50	7-15 miles
1	1	1	397	1	396	362	Rank
349	264	787	1185	313	973	646	Population Score
223	**164**	**360**	**408**	**193**	**382**	**322**	**TOTAL Population RANK**
2570000	1363000	52299000	122434000	0	11284000	142000	HAZUS Sum of Total Losses ($)
250	**204**	**381**	**406**	**1**	**337**	**66**	**HAZUS Rank**
0	0	0	0	0	0	1	PIPELINES USGS 1986
0	0	3	4	0	0	0	Railroad AHTD
0	1	2	5	0	0	0	Road Inventory AHTD New
0	1	5	9	0	0	1	Sum of Intersects
1	**169**	**343**	**373**	**1**	**1**	**169**	**Linear Hazard Rank**
0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	Cellular Tower
0	0	0	0	0	0	0	Chicken Houses AHTD
0	0	0	0	0	0	0	Churches AHTD
0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	Emerg Medical Services AHD
0	0	8	17	0	0	0	Facilities ADEQ
0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	0	0	0	Fire stations
0	0	1	1	0	0	0	High Hazard Dam
0	0	1	1	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	Long Term Care Facilities ADH
0	0	0	0	0	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	2	2	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
0	0	12	21	0	0	0	Sum of Intersects
1	**1**	**374**	**391**	**1**	**1**	**1**	**Point Hazard Rank**
475	538	1458	1578	196	721	558	Total Rank Score
269	**247**	**28**	**8**	**361**	**191**	**239**	**Final Rank**

AR00059	AR00055	AR00048	AR00042	AR00038	AR00024	AR00023	AR00022	State ID
Faulkner	Faulkner	Faulkner	Faulkner	Faulkner	Saline	Saline	Saline	County Name
241	468	508	0	149	171	1492	1582	0-3 miles
235	297	307	1	164	183	381	384	RANK
0	0	0	600	159	316	0	606	3-7 miles
1	1	1	382	312	352	1	383	RANK
0	0	0	374	0	0	0	0	7-15 miles
1	1	1	400	1	1	1	1	Rank
237	299	309	783	477	536	383	768	Population Score
148	**181**	**189**	**359**	**276**	**288**	**242**	**355**	**TOTAL Population RANK**
258000	1605000	6249000	6562000	1422000	20191000	6069000	17446000	HAZUS Sum of Total Losses ($)
89	**214**	**310**	**314**	**206**	**357**	**308**	**350**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
0	0	0	0	0	0	0	3	Railroad AHTD
0	0	3	5	1	0	4	5	Road Inventory AHTD New
0	0	3	5	1	0	4	8	Sum of Intersects
1	**1**	**294**	**343**	**169**	**1**	**324**	**368**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	0	0	0	0	0	0	Chicken Houses AHTD
0	0	0	0	0	0	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	1	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
0	1	2	0	2	7	0	5	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	0	0	0	0	Fire stations
0	0	0	0	0	0	0	0	High Hazard Dam
0	0	0	0	0	0	0	1	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	1	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
0	0	0	0	1	0	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	2	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
0	1	2	0	3	7	0	10	Sum of Intersects
1	**184**	**241**	**1**	**281**	**345**	**1**	**365**	**Point Hazard Rank**
239	580	1034	1017	932	991	875	1438	Total Rank Score
353	**229**	**109**	**112**	**135**	**120**	**151**	**29**	**Final Rank**

AR00114	AR00105	AR00099	AR00098	AR00096	AR00095	AR00081	AR00066	State ID
Pulaski	Pulaski	Pulaski	Pulaski	Lonoke	Pulaski	Pulaski	Pulaski	County Name
893	765	4939	5388	631	2106	570	477	0-3 miles
358	344	407	410	327	396	320	302	RANK
1689	0	16	171	0	0	2449	0	3-7 miles
404	1	236	318	1	1	407	1	RANK
0	0	0	0	0	0	1581	0	7-15 miles
1	1	1	1	1	1	409	1	Rank
763	346	644	729	329	398	1136	304	Population Score
354	**221**	**321**	**344**	**205**	**254**	**403**	**185**	**TOTAL Population RANK**
28533000	2543000	51079000	111741000	4240000	42717000	109312000	7339000	HAZUS Sum of Total Losses ($)
364	**249**	**379**	**403**	**283**	**372**	**402**	**319**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
0	0	37	37	0	5	3	0	Railroad AHTD
2	0	15	18	1	11	7	0	Road Inventory AHTD New
2	0	52	55	1	16	10	0	Sum of Intersects
246	**1**	**409**	**410**	**169**	**396**	**385**	**1**	**Linear Hazard Rank**
0	0	0	0	2	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	0	0	0	0	0	1	Chicken Houses AHTD
0	0	18	18	0	0	1	0	Churches AHTD
0	0	2	2	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	1	1	0	0	2	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	1	1	0	0	0	0	Emerg Medical Services AHD
3	0	53	53	0	0	8	0	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	1	1	1	0	1	0	Fire stations
1	0	1	1	0	1	0	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	5	5	0	0	0	0	Intermodal Terminals BTS 1998
0	0	2	2	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
0	0	0	0	0	0	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	1	1	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	4	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
4	0	85	85	3	1	16	1	Sum of Intersects
302	**1**	**408**	**408**	**281**	**184**	**385**	**184**	**Point Hazard Rank**
1266	472	1517	1565	938	1206	1575	689	Total Rank Score
66	**271**	**15**	**11**	**133**	**80**	**10**	**196**	**Final Rank**

AR00139	AR00130	AR00128	AR00126	AR00123	AR00122	AR00120	AR00119	State ID
Pulaski	Pulaski	Pulaski	Pulaski	Pulaski	Pulaski	Pulaski	Pulaski	County Name
417	644	1222	458	1087	378	1163	854	0-3 miles
289	330	376	296	371	278	373	355	RANK
0	0	0	0	0	0	0	0	3-7 miles
1	1	1	1	1	1	1	1	RANK
0	0	0	0	0	0	0	0	7-15 miles
1	1	1	1	1	1	1	1	Rank
291	332	378	298	373	280	375	357	Population Score
175	**207**	**239**	**180**	**234**	**170**	**238**	**225**	**TOTAL Population RANK**
2838000	52504000	8645000	3929000	6844000	3210000	7220000	5227000	HAZUS Sum of Total Losses ($)
262	**382**	**327**	**277**	**316**	**264**	**318**	**297**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
0	0	0	0	0	0	0	0	Railroad AHTD
1	4	4	0	0	0	1	0	Road Inventory AHTD New
1	4	4	0	0	0	1	0	Sum of Intersects
169	**324**	**324**	**1**	**1**	**1**	**169**	**1**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	0	0	0	0	0	0	Chicken Houses AHTD
0	0	0	0	0	0	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	1	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
1	8	0	0	0	1	2	0	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	0	0	0	0	Fire stations
0	0	0	0	0	1	0	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	1	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
0	0	0	0	0	0	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	1	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
1	11	0	0	0	2	2	0	Sum of Intersects
184	**369**	**1**	**1**	**1**	**241**	**241**	**1**	**Point Hazard Rank**
790	1282	891	459	552	676	966	524	Total Rank Score
168	**64**	**147**	**277**	**241**	**198**	**127**	**252**	**Final Rank**

AR00234	AR00232	AR00231	AR00229	AR00228	AR00200	AR00177	AR00146	State ID
Carroll	Izard	Izard	Izard	Izard	Cleburne	Lonoke	Pulaski	County Name
38	207	67	115	403	0	849	4929	0-3 miles
45	216	77	127	285	1	354	406	RANK
0	109	0	47	0	0	0	0	3-7 miles
1	292	1	259	1	1	1	1	RANK
0	69	0	0	0	0	0	0	7-15 miles
1	369	1	1	1	1	1	1	Rank
47	877	79	387	287	3	356	408	Population Score
31	**373**	**51**	**244**	**173**	**1**	**224**	**258**	**TOTAL Population RANK**
155000	4149000	505000	1221000	10630000	172000	0	213350000	HAZUS Sum of Total Losses ($)
69	**281**	**129**	**196**	**334**	**74**	**1**	**409**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
0	0	0	0	0	0	0	0	Railroad AHTD
1	1	2	1	0	0	2	0	Road Inventory AHTD New
1	1	2	1	0	0	2	0	Sum of Intersects
169	**169**	**246**	**169**	**1**	**1**	**246**	**1**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	0	0	0	0	2	0	Chicken Houses AHTD
0	0	0	0	0	0	0	1	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
0	0	0	2	0	0	1	6	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	0	0	0	0	Fire stations
0	0	0	0	0	0	0	2	High Hazard Dam
0	0	0	0	0	0	0	1	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	3	Long Term Care Facilities ADH
0	0	0	0	0	0	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	1	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	1	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
0	1	0	2	0	0	3	14	Sum of Intersects
1	**184**	**1**	**241**	**1**	**1**	**281**	**382**	**Point Hazard Rank**
270	1007	427	850	509	77	752	1050	Total Rank Score
347	**115**	**290**	**158**	**257**	**393**	**177**	**105**	**Final Rank**

AR00247	AR00245	AR00244	AR00243	AR00242	AR00241	AR00238	AR00237	State ID
Sharp	Fulton	Fulton	Fulton	Fulton	Madison	Carroll	Carroll	County Name
544	130	139	191	8	177	377	148	0-3 miles
315	140	151	203	12	192	277	162	RANK
592	580	452	72	0	0	332	0	3-7 miles
380	379	369	274	1	1	356	1	RANK
0	449	0	0	0	0	0	0	7-15 miles
1	404	1	1	1	1	1	1	Rank
696	923	521	478	14	194	634	164	Population Score
332	**377**	**286**	**277**	**9**	**118**	**318**	**99**	**TOTAL Population RANK**
20468000	14977000	4856000	5036000	49000	236000	11593000	30000	HAZUS Sum of Total Losses ($)
358	**348**	**289**	**293**	**47**	**83**	**339**	**42**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
0	1	0	0	0	0	0	0	Railroad AHTD
3	2	1	1	0	1	3	2	Road Inventory AHTD New
3	3	1	1	0	1	3	2	Sum of Intersects
294	**294**	**169**	**169**	**1**	**169**	**294**	**246**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	0	0	0	2	0	0	Chicken Houses AHTD
0	0	0	0	0	0	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
2	2	1	0	0	1	0	1	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	1	0	0	0	0	0	0	Fire stations
2	0	0	0	0	0	1	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
0	0	0	0	0	0	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
4	3	1	0	0	3	1	1	Sum of Intersects
302	**281**	**184**	**1**	**1**	**281**	**184**	**184**	**Point Hazard Rank**
1286	1300	928	740	58	651	1135	571	Total Rank Score
62	**56**	**136**	**185**	**399**	**209**	**88**	**234**	**Final Rank**

AR00255	AR00254	AR00253	AR00252	AR00251	AR00250	AR00249	AR00248	State ID
Sharp	Sharp	Sharp	Sharp	Sharp	Sharp	Sharp	Sharp	County Name
335	263	244	934	280	881	920	766	0-3 miles
270	247	239	360	250	357	359	346	RANK
77	0	0	186	0	551	453	363	3-7 miles
276	1	1	324	1	376	370	360	RANK
0	0	0	0	0	146	0	0	7-15 miles
1	1	1	1	1	381	1	1	Rank
547	249	241	685	252	1114	730	707	Population Score
290	**154**	**151**	**329**	**159**	**401**	**345**	**335**	**TOTAL Population RANK**
21449000	16195000	2799000	19152000	2304000	88996000	56255000	44904000	HAZUS Sum of Total Losses ($)
359	**349**	**261**	**356**	**242**	**396**	**385**	**375**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
7	4	0	0	0	8	3	4	Railroad AHTD
8	5	0	4	0	28	19	21	Road Inventory AHTD New
15	9	0	4	0	36	22	25	Sum of Intersects
395	**373**	**1**	**324**	**1**	**408**	**403**	**405**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	0	0	0	0	0	0	Chicken Houses AHTD
0	0	0	0	0	3	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
3	3	1	3	0	8	8	8	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	0	1	1	0	Fire stations
1	1	1	3	1	2	2	2	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
1	1	0	0	0	2	2	2	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
0	0	0	0	0	0	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	2	1	0	Post Offices AGIO
0	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
5	5	2	6	1	18	14	12	Sum of Intersects
324	**324**	**241**	**338**	**184**	**389**	**382**	**374**	**Point Hazard Rank**
1368	1200	654	1347	586	1594	1515	1489	Total Rank Score
45	**83**	**206**	**50**	**226**	**5**	**16**	**21**	**Final Rank**

AR00265	AR00264	AR00263	AR00262	AR00260	AR00258	AR00257	AR00256	State ID
Benton	Benton	Benton	Benton	Benton	Benton	Sharp	Sharp	County Name
3768	4479	4946	5250	188	0	97	192	0-3 miles
401	405	408	409	200	1	108	206	RANK
0	1082	0	1626	316	0	51	0	3-7 miles
1	394	1	402	352	1	260	1	RANK
0	0	0	0	0	0	0	0	7-15 miles
1	1	1	1	1	1	1	1	Rank
403	800	410	812	553	3	369	208	Population Score
255	**362**	**261**	**367**	**292**	**1**	**232**	**127**	**TOTAL Population RANK**
57648000	56351000	79791000	96932000	3677000	0	1049000	1265000	HAZUS Sum of Total Losses ($)
387	**386**	**393**	**397**	**274**	**1**	**186**	**197**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
0	0	0	0	4	0	2	0	Railroad AHTD
5	5	9	9	2	0	3	0	Road Inventory AHTD New
5	5	9	9	6	0	5	0	Sum of Intersects
343	**343**	**373**	**373**	**355**	**1**	**343**	**1**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	0	0	0	0	0	0	Chicken Houses AHTD
0	1	2	1	0	0	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	1	0	0	0	0	0	Emerg Medical Services AHD
2	4	5	5	0	0	0	0	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	1	0	0	0	0	0	Fire stations
0	0	0	0	0	0	0	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	1	0	0	0	0	0	Long Term Care Facilities ADH
0	0	0	0	0	0	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	1	1	1	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
2	6	11	7	0	0	0	0	Sum of Intersects
241	**338**	**369**	**345**	**1**	**1**	**1**	**1**	**Point Hazard Rank**
1226	1429	1396	1482	922	4	762	326	Total Rank Score
75	**30**	**36**	**22**	**137**	**409**	**174**	**326**	**Final Rank**

AR00288	AR00286	AR00285	AR00283	AR00281	AR00277	AR00271	AR00266	State ID
Washington	Washington	Washington	Washington	Washington	Fulton	Pope	Benton	County Name
468	119	142	304	627	59	244	3752	0-3 miles
297	129	157	260	325	72	239	400	RANK
559	0	108	233	1121	0	29	239	3-7 miles
378	1	291	338	395	1	245	339	RANK
213	0	0	0	0	0	51	0	7-15 miles
390	1	1	1	1	1	363	1	Rank
1065	131	449	599	721	74	847	740	Population Score
392	**81**	**272**	**308**	**341**	**48**	**371**	**349**	**TOTAL Population RANK**
9036000	412000	32395000	8777000	38077000	24000	452000	48482000	HAZUS Sum of Total Losses ($)
330	**114**	**367**	**328**	**371**	**38**	**120**	**378**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
0	0	0	0	0	0	0	0	Railroad AHTD
2	0	0	0	2	0	3	5	Road Inventory AHTD New
2	0	0	0	2	0	3	5	Sum of Intersects
246	**1**	**1**	**1**	**246**	**1**	**294**	**343**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	0	11	0	0	0	0	Chicken Houses AHTD
0	0	0	0	0	0	0	1	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
1	0	0	1	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
1	0	15	1	6	0	0	4	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	0	0	0	0	Fire stations
0	1	0	0	0	0	0	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
1	0	5	0	0	0	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	2	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
3	1	22	13	6	0	0	5	Sum of Intersects
281	**184**	**393**	**378**	**338**	**1**	**1**	**324**	**Point Hazard Rank**
1249	380	1033	1015	1296	88	786	1394	Total Rank Score
70	**306**	**110**	**113**	**57**	**388**	**169**	**37**	**Final Rank**

AR00316	AR00315	AR00313	AR00308	AR00305	AR00304	AR00290	AR00289	State ID
Van Buren	Van Buren	Cleburne	Cleburne	White	White	Washington	Washington	County Name
231	231	76	133	174	303	808	1882	0-3 miles
231	231	90	141	186	258	349	392	RANK
55	0	0	0	0	257	434	401	3-7 miles
262	1	1	1	1	346	367	364	RANK
0	0	0	0	0	6	152	279	7-15 miles
1	1	1	1	1	354	383	393	Rank
494	233	92	143	188	958	1099	1149	Population Score
280	**146**	**59**	**87**	**114**	**380**	**397**	**405**	**TOTAL Population RANK**
1000	0	0	120000	0	934000	25808000	66818000	HAZUS Sum of Total Losses ($)
22	**1**	**1**	**63**	**1**	**170**	**362**	**390**	**HAZUS Rank**
0	0	0	0	0	1	1	1	PIPELINES USGS 1986
0	0	0	0	0	1	0	2	Railroad AHTD
0	0	0	0	1	3	3	6	Road Inventory AHTD New
0	0	0	0	1	5	4	9	Sum of Intersects
1	**1**	**1**	**1**	**169**	**343**	**324**	**373**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	0	0	0	0	9	1	Chicken Houses AHTD
0	0	0	0	0	0	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
1	0	0	0	0	2	4	4	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	0	0	0	0	Fire stations
0	0	0	0	0	0	0	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	1	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
1	1	0	0	0	0	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	1	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
2	1	0	0	0	2	13	7	Sum of Intersects
241	**184**	**1**	**1**	**1**	**241**	**378**	**345**	**Point Hazard Rank**
544	332	62	152	285	1134	1461	1513	Total Rank Score
243	**322**	**398**	**377**	**340**	**90**	**26**	**17**	**Final Rank**

AR00324	AR00323	AR00322	AR00321	AR00320	AR00319	AR00318	AR00317	State ID
Conway	Conway	Conway	Conway	Conway	Conway	Conway	Conway	County Name
79	168	114	108	118	133	186	57	0-3 miles
96	178	125	119	128	141	198	65	RANK
184	175	0	0	84	27	0	0	3-7 miles
323	321	1	1	279	244	1	1	RANK
0	0	0	0	0	0	0	0	7-15 miles
1	1	1	1	1	1	1	1	Rank
420	500	127	121	408	386	200	67	Population Score
266	**281**	**80**	**76**	**258**	**243**	**121**	**44**	**TOTAL Population RANK**
2018000	4577000	104000	0	46000	393000	894000	941000	HAZUS Sum of Total Losses ($)
228	**287**	**59**	**1**	**45**	**110**	**167**	**172**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
0	0	0	0	0	0	0	0	Railroad AHTD
1	3	1	0	1	2	1	0	Road Inventory AHTD New
1	3	1	0	1	2	1	0	Sum of Intersects
169	**294**	**169**	**1**	**169**	**246**	**169**	**1**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	0	0	0	0	3	0	Chicken Houses AHTD
0	0	0	0	0	0	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
1	2	0	0	1	1	0	0	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	0	0	0	0	Fire stations
0	0	0	0	0	0	0	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
4	8	0	0	0	2	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
5	10	0	0	1	3	3	0	Sum of Intersects
324	**365**	**1**	**1**	**184**	**281**	**281**	**1**	**Point Hazard Rank**
987	1227	309	79	656	880	738	218	Total Rank Score
121	**74**	**333**	**391**	**203**	**149**	**186**	**357**	**Final Rank**

AR00333	AR00332	AR00331	AR00330	AR00329	AR00328	AR00327	AR00326	State ID
Conway	Conway	Conway	Conway	Conway	Van Buren	Van Buren	Van Buren	County Name
212	303	211	2	138	0	95	148	0-3 miles
219	258	218	7	149	1	106	162	RANK
0	0	0	0	160	5	93	45	3-7 miles
1	1	1	1	313	230	284	258	RANK
0	0	0	0	0	0	0	0	7-15 miles
1	1	1	1	1	1	1	1	Rank
221	260	220	9	463	232	391	421	Population Score
136	**162**	**135**	**5**	**274**	**145**	**247**	**267**	**TOTAL Population RANK**
488000	13000	128000	15000	822000	26000	609000	432000	HAZUS Sum of Total Losses ($)
126	**30**	**65**	**34**	**163**	**39**	**141**	**116**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
0	0	0	0	0	0	0	0	Railroad AHTD
0	1	0	0	0	0	0	0	Road Inventory AHTD New
0	1	0	0	0	0	0	0	Sum of Intersects
1	**169**	**1**	**1**	**1**	**1**	**1**	**1**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	0	0	0	0	0	0	Chicken Houses AHTD
0	0	0	0	0	0	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
0	0	0	0	0	0	0	0	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	0	0	0	0	Fire stations
0	0	0	0	0	0	0	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
1	1	0	0	0	0	0	2	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	1	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
1	2	0	0	0	0	0	2	Sum of Intersects
184	**241**	**1**	**1**	**1**	**1**	**1**	**241**	**Point Hazard Rank**
447	602	202	41	439	186	390	625	Total Rank Score
283	**223**	**360**	**404**	**287**	**366**	**299**	**215**	**Final Rank**

AR00341	AR00340	AR00339	AR00338	AR00337	AR00336	AR00335	AR00334	State ID
Pope	Pope	Pope	Pope	Pope	Conway	Conway	Conway	County Name
225	161	368	247	74	174	63	230	0-3 miles
227	174	275	241	88	186	75	230	RANK
0	0	190	0	31	0	0	212	3-7 miles
1	1	325	1	247	1	1	333	RANK
0	0	0	0	0	0	0	0	7-15 miles
1	1	1	1	1	1	1	1	Rank
229	176	601	243	336	188	77	564	Population Score
142	**107**	**309**	**152**	**212**	**114**	**49**	**298**	**TOTAL Population RANK**
1193000	1361000	2104000	3357000	84000	333000	503000	1649000	HAZUS Sum of Total Losses ($)
195	**203**	**233**	**267**	**55**	**100**	**127**	**217**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
0	0	0	0	0	0	0	0	Railroad AHTD
0	0	1	1	0	6	0	4	Road Inventory AHTD New
0	0	1	1	0	6	0	4	Sum of Intersects
1	**1**	**169**	**169**	**1**	**355**	**1**	**324**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
2	0	4	2	0	0	0	0	Chicken Houses AHTD
0	0	0	0	0	0	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
0	0	0	0	0	1	0	1	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	0	0	0	0	Fire stations
0	0	0	0	0	0	0	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
0	1	1	1	1	1	7	8	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	1	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
2	1	5	4	1	2	7	9	Sum of Intersects
241	**184**	**324**	**302**	**184**	**241**	**345**	**359**	**Point Hazard Rank**
579	495	1035	890	452	810	522	1198	Total Rank Score
230	**261**	**108**	**148**	**281**	**166**	**254**	**84**	**Final Rank**

AR00369	AR00367	AR00356	AR00349	AR00348	AR00344	AR00343	AR00342	State ID
Independence	Independence	Conway	Conway	Conway	Pope	Pope	Pope	County Name
312	192	359	0	55	136	166	104	0-3 miles
26 3	20 6	27 4	1	62	14 6	17 5	11 5	RANK
0	0	153	0	20	58	196	0	3-7 miles
1	1	310	1	240	263	328	1	RANK
0	0	13	0	0	0	0	0	7-15 miles
1	1	357	1	1	1	1	1	Rank
265	208	941	3	303	410	504	117	Population Score
165	**127**	**379**	**1**	**183**	**261**	**283**	**73**	**TOTAL Population RANK**
2257000	0	2270000	1633000	0	2164000	3278000	637000	HAZUS Sum of Total Losses ($)
238	**1**	**240**	**216**	**1**	**236**	**265**	**143**	**HAZUS Rank**
0	0	0	0	0	0	1	1	PIPELINES USGS 1986
0	1	1	0	0	0	0	0	Railroad AHTD
0	10	6	1	0	2	2	1	Road Inventory AHTD New
0	11	7	1	0	2	3	2	Sum of Intersects
1	**387**	**363**	**169**	**1**	**246**	**294**	**246**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	0	0	0	3	4	0	Chicken Houses AHTD
0	0	0	0	0	1	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
0	4	2	0	0	0	1	0	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	0	0	0	0	Fire stations
0	0	0	0	0	0	0	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
0	0	0	0	0	0	4	3	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
0	4	2	0	0	4	9	3	Sum of Intersects
1	**302**	**241**	**1**	**1**	**302**	**359**	**281**	**Point Hazard Rank**
405	817	1223	387	186	1045	1201	743	Total Rank Score
293	**165**	**76**	**302**	**366**	**107**	**82**	**181**	**Final Rank**

AR00378	AR00377	AR00376	AR00374	AR00373	AR00372	AR00371	AR00370	State ID
Lawrence	Lawrence	Lawrence	Lawrence	Lawrence	Lawrence	Lawrence	Lawrence	County Name
23	71	58	69	135	18	30	69	0-3 miles
27	85	66	80	145	20	37	80	RANK
34	0	0	0	0	0	34	18	3-7 miles
250	1	1	1	1	1	250	238	RANK
9	0	0	0	0	0	0	0	7-15 miles
356	1	1	1	1	1	1	1	Rank
633	87	68	82	147	22	288	319	Population Score
316	**56**	**45**	**53**	**90**	**15**	**174**	**198**	**TOTAL Population RANK**
275000	204000	190000	663000	2454000	195000	1028000	1024000	HAZUS Sum of Total Losses ($)
92	**80**	**76**	**147**	**247**	**78**	**183**	**181**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
0	0	0	0	0	0	0	0	Railroad AHTD
1	2	1	1	4	0	0	0	Road Inventory AHTD New
1	2	1	1	4	0	0	0	Sum of Intersects
169	**246**	**169**	**169**	**324**	**1**	**1**	**1**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	0	0	0	0	0	0	Chicken Houses AHTD
0	0	0	0	0	0	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
0	0	0	0	1	0	0	0	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	0	0	0	0	Fire stations
0	0	0	0	0	0	0	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
0	0	0	0	0	1	1	0	Oil And Gas Wells AOGC
0	0	0	0	1	0	0	0	Post Offices AGIO
0	0	0	0	1	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
0	0	0	0	3	1	1	0	Sum of Intersects
1	**1**	**1**	**1**	**281**	**184**	**184**	**1**	**Point Hazard Rank**
578	383	291	370	942	278	542	381	Total Rank Score
231	**303**	**337**	**309**	**131**	**342**	**244**	**305**	**Final Rank**

AR00405	AR00402	AR00386	AR00385	AR00383	AR00381	AR00380	AR00379	State ID
Franklin	Franklin	Randolph	Lawrence	Lawrence	Lawrence	Lawrence	Lawrence	County Name
119	64	96	325	21	51	34	19	0-3 miles
129	76	107	267	24	58	43	21	RANK
0	0	61	255	0	62	0	0	3-7 miles
1	1	266	345	1	267	1	1	RANK
0	0	0	0	0	0	0	0	7-15 miles
1	1	1	1	1	1	1	1	Rank
131	78	374	613	26	326	45	23	Population Score
81	**50**	**235**	**310**	**18**	**202**	**29**	**16**	**TOTAL Population RANK**
1337000	3000	177000	791000	1000	253000	465000	757000	HAZUS Sum of Total Losses ($)
200	**25**	**75**	**160**	**22**	**87**	**122**	**159**	**HAZUS Rank**
0	0	0	1	0	0	0	0	PIPELINES USGS 1986
0	0	0	0	0	0	0	0	Railroad AHTD
0	0	1	1	0	0	0	0	Road Inventory AHTD New
0	0	1	2	0	0	0	0	Sum of Intersects
1	**1**	**169**	**246**	**1**	**1**	**1**	**1**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	0	0	0	0	0	0	Chicken Houses AHTD
0	0	0	0	0	0	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
0	0	0	1	0	0	0	0	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	0	0	0	0	Fire stations
0	0	0	0	0	0	0	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
3	0	0	0	0	0	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
3	0	0	1	0	0	0	0	Sum of Intersects
281	**1**	**1**	**184**	**1**	**1**	**1**	**1**	**Point Hazard Rank**
563	77	480	900	42	291	153	177	Total Rank Score
236	**393**	**267**	**144**	**403**	**337**	**376**	**369**	**Final Rank**

AR00421	AR00420	AR00418	AR00417	AR00416	AR00415	AR00411	AR00408	State ID
Cross	Cross	Cross	Franklin	Franklin	Franklin	Franklin	Franklin	County Name
1261	811	297	58	106	54	28	133	0-3 miles
37 7	35 1	25 6	66	11 7	59	34	14 1	RANK
0	506	51	39	0	71	0	0	3-7 miles
1	374	260	255	1	273	1	1	RANK
0	0	0	0	0	0	0	0	7-15 miles
1	1	1	1	1	1	1	1	Rank
379	726	517	322	119	333	36	143	Population Score
240	**342**	**285**	**200**	**75**	**209**	**23**	**87**	**TOTAL Population RANK**
51252000	27466000	1875000	301000	363000	570000	28000	1459000	HAZUS Sum of Total Losses ($)
380	**363**	**226**	**97**	**108**	**137**	**40**	**207**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
2	2	1	0	0	0	0	0	Railroad AHTD
14	16	3	1	2	2	0	1	Road Inventory AHTD New
16	18	4	1	2	2	0	1	Sum of Intersects
396	**399**	**324**	**169**	**246**	**246**	**1**	**169**	**Linear Hazard Rank**
0	2	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
1	1	0	0	0	0	0	0	Cellular Tower
0	0	0	0	0	0	0	0	Chicken Houses AHTD
4	4	0	0	0	0	0	0	Churches AHTD
1	1	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
1	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
15	15	0	0	0	2	0	0	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	0	0	0	0	Fire stations
0	0	0	0	0	0	0	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
0	0	0	0	4	2	4	1	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
22	23	0	0	4	4	4	1	Sum of Intersects
393	**396**	**1**	**1**	**302**	**302**	**302**	**184**	**Point Hazard Rank**
1409	1500	836	467	731	894	366	647	Total Rank Score
33	**19**	**162**	**274**	**189**	**146**	**312**	**212**	**Final Rank**

AR00439	AR00438	AR00437	AR00436	AR00430	AR00424	AR00423	AR00422	State ID
Greene	Greene	Greene	Greene	Greene	Cross	Cross	Cross	County Name
1066	739	762	574	183	1083	2083	1622	0-3 miles
367	341	343	321	196	370	395	385	RANK
449	429	1378	762	60	201	0	0	3-7 miles
368	366	399	389	265	330	1	1	RANK
0	0	1019	0	0	149	0	0	7-15 miles
1	1	406	1	1	382	1	1	Rank
736	708	1148	711	462	1082	397	387	Population Score
346	**336**	**404**	**337**	**273**	**394**	**253**	**244**	**TOTAL Population RANK**
163000	1046000	5144000	6558000	3444000	10753000	44777000	46841000	HAZUS Sum of Total Losses ($)
71	**185**	**296**	**313**	**270**	**336**	**374**	**376**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
0	0	0	0	0	2	3	1	Railroad AHTD
2	2	2	8	2	7	9	6	Road Inventory AHTD New
2	2	2	8	2	9	12	7	Sum of Intersects
246	**246**	**246**	**368**	**246**	**373**	**390**	**363**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	2	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	0	0	0	1	0	0	Chicken Houses AHTD
0	0	0	0	0	3	5	5	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	1	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	1	0	Correctional Institutions TGS
0	0	1	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	1	Emerg Medical Services AHD
0	2	2	1	1	3	5	5	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	1	0	0	0	0	1	Fire stations
0	0	0	1	0	0	0	0	High Hazard Dam
0	0	0	0	0	0	4	0	Hospital Related Services ADH
0	0	0	0	0	0	1	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	2	0	Law Enforce TGS
0	0	0	0	0	0	1	1	Local EOC
0	0	0	0	0	0	1	0	Local Health Units ADH
0	0	0	0	0	0	1	0	Long Term Care Facilities ADH
0	0	0	0	0	0	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	1	0	Post Offices AGIO
0	0	0	0	0	2	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	3	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
0	2	4	2	1	9	22	19	Sum of Intersects
1	**241**	**302**	**241**	**184**	**359**	**393**	**390**	**Point Hazard Rank**
664	1008	1248	1259	973	1462	1410	1373	Total Rank Score
200	**114**	**71**	**68**	**123**	**25**	**32**	**43**	**Final Rank**

AR00454	AR00453	AR00452	AR00451	AR00448	AR00446	AR00442	AR00441	State ID
Craighead	Craighead	Craighead	Craighead	Crawford	Crawford	Johnson	Johnson	County Name
836	485	226	394	3998	580	397	216	0-3 miles
35	30	22	28	40	32	28	22	RANK
708	0	0	0	465	796	2527	63	3-7 miles
387	1	1	1	371	390	409	268	RANK
0	0	0	0	209	184	884	0	7-15 miles
1	1	1	1	389	388	405	1	Rank
741	306	230	283	1164	1100	1097	492	Population Score
350	**187**	**143**	**171**	**407**	**398**	**395**	**279**	**TOTAL Population RANK**
5443000	3888000	2344000	2323000	261621000	106078000	105490000	2274000	HAZUS Sum of Total Losses ($)
304	**276**	**244**	**243**	**410**	**400**	**399**	**241**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
0	0	0	0	1	4	0	0	Railroad AHTD
0	0	0	1	29	20	14	2	Road Inventory AHTD New
0	0	0	1	30	24	14	2	Sum of Intersects
1	**1**	**1**	**169**	**407**	**404**	**394**	**246**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	0	0	5	12	8	0	Chicken Houses AHTD
0	0	0	0	11	4	5	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	1	0	0	0	Emerg Medical Services AHD
0	1	0	0	22	9	8	0	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	2	1	1	0	Fire stations
0	0	0	0	1	0	0	1	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	1	1	1	0	Law Enforce TGS
0	0	0	0	0	0	1	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	2	0	1	0	Long Term Care Facilities ADH
0	0	0	0	58	0	9	2	Oil And Gas Wells AOGC
0	0	0	0	1	1	1	0	Post Offices AGIO
0	0	0	0	1	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	3	4	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	1	0	0	Rural Health Clinics ADH
0	0	0	0	2	0	2	0	Wastewater Treatment Plant
0	0	0	0	0	1	0	0	Watersupply Tankstandpipe Ahtd
0	1	0	0	110	34	37	3	Sum of Intersects
1	**184**	**1**	**1**	**410**	**405**	**406**	**281**	**Point Hazard Rank**
656	648	389	584	1634	1607	1594	1047	Total Rank Score
203	**211**	**300**	**227**	**1**	**3**	**5**	**106**	**Final Rank**

AR00464	AR00463	AR00462	AR00461	AR00460	AR00459	AR00457	AR00456	State ID
Craighead	Craighead	Craighead	Craighead	Craighead	Craighead	Craighead	Craighead	County Name
510	1387	961	880	424	583	989	658	0-3 miles
308	379	361	356	290	323	363	336	RANK
0	115	0	360	0	116	165	0	3-7 miles
1	295	1	359	1	296	316	1	RANK
0	0	0	0	0	0	0	0	7-15 miles
1	1	1	1	1	1	1	1	Rank
310	675	363	716	292	620	680	338	Population Score
190	**326**	**227**	**338**	**176**	**313**	**328**	**215**	**TOTAL Population RANK**
5368000	2717000	5052000	9551000	10696000	6857000	8894000	3372000	HAZUS Sum of Total Losses ($)
301	**257**	**295**	**332**	**335**	**317**	**329**	**268**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
0	0	0	0	1	1	2	0	Railroad AHTD
0	1	0	1	0	1	3	0	Road Inventory AHTD New
0	1	0	1	1	2	5	0	Sum of Intersects
1	**169**	**1**	**169**	**169**	**246**	**343**	**1**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	0	0	0	0	0	0	Chicken Houses AHTD
0	1	0	0	0	0	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
0	0	0	0	1	0	0	0	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	0	0	0	0	Fire stations
0	0	0	0	0	1	0	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
0	0	0	0	0	0	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
0	1	0	0	1	1	0	0	Sum of Intersects
1	**184**	**1**	**1**	**184**	**184**	**1**	**1**	**Point Hazard Rank**
493	936	524	840	864	1060	1001	485	Total Rank Score
262	**134**	**252**	**160**	**155**	**103**	**116**	**265**	**Final Rank**

AR00525	AR00501	AR00485	AR00477	AR00474	AR00467	AR00466	AR00465	State ID
Benton	Fulton	Clay	Poinsett	Craighead	Craighead	Craighead	Craighead	County Name
214	86	191	352	3625	1928	1905	1050	0-3 miles
221	100	203	271	399	394	393	366	RANK
0	44	0	125	2476	0	0	0	3-7 miles
1	256	1	300	408	1	1	1	RANK
0	0	0	8	0	0	0	0	7-15 miles
1	1	1	355	1	1	1	1	Rank
223	357	205	926	808	396	395	368	Population Score
138	**225**	**125**	**378**	**365**	**251**	**250**	**230**	**TOTAL Population RANK**
7000	351000	528000	7967000	52619000	32613000	65923000	4582000	HAZUS Sum of Total Losses ($)
29	**103**	**132**	**324**	**384**	**368**	**389**	**288**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
0	0	0	0	1	0	0	0	Railroad AHTD
0	0	3	2	8	3	3	1	Road Inventory AHTD New
0	0	3	2	9	3	3	1	Sum of Intersects
1	**1**	**294**	**246**	**373**	**294**	**294**	**169**	**Linear Hazard Rank**
0	0	0	0	0	0	2	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	0	0	0	0	0	0	Chicken Houses AHTD
0	0	0	0	0	0	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
0	0	1	1	4	7	6	1	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	0	0	0	0	Fire stations
0	0	0	0	0	1	1	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
0	0	0	0	0	0	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
0	0	1	1	4	8	9	1	Sum of Intersects
1	**1**	**184**	**184**	**302**	**353**	**359**	**184**	**Point Hazard Rank**
169	330	735	1132	1424	1266	1292	871	Total Rank Score
371	**325**	**188**	**91**	**31**	**66**	**58**	**152**	**Final Rank**

AR00572	AR00566	AR00562	AR00535	AR00534	AR00528	AR00527	AR00526	State ID
Dallas	Hot Spring	Franklin	Hot Spring	Garland	Crawford	Crawford	Benton	County Name
128	407	58	233	472	129	54	214	0-3 miles
138	286	66	233	300	139	59	221	RANK
0	240	0	100	1880	0	0	0	3-7 miles
1	341	1	287	405	1	1	1	RANK
0	0	117	36	1166	0	0	0	7-15 miles
1	1	377	360	407	1	1	1	Rank
140	628	444	880	1112	141	61	223	Population Score
85	**315**	**271**	**374**	**400**	**86**	**41**	**138**	**TOTAL Population RANK**
257000	2304800	2265000	2645000	1056000	48000	0	21000	HAZUS Sum of Total Losses ($)
88	**361**	**239**	**252**	**187**	**46**	**1**	**37**	**HAZUS Rank**
0	0	1	0	0	0	0	0	PIPELINES USGS 1986
0	0	0	5	1	0	0	0	Railroad AHTD
2	1	12	3	12	0	0	0	Road Inventory AHTD New
2	1	13	8	13	0	0	0	Sum of Intersects
246	**169**	**392**	**368**	**392**	**1**	**1**	**1**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	0	0	0	0	0	0	Chicken Houses AHTD
0	0	1	0	1	0	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	1	1	0	0	0	CI Electric Power Generation Plant
0	0	0	2	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
0	0	2	5	5	0	0	0	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	0	0	0	0	Fire stations
0	1	0	1	0	0	0	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
0	0	14	0	0	0	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	2	2	0	0	0	Wastewater Treatment Plant
0	0	0	0	2	0	0	0	Watersupply Tankstandpipe Ahtd
0	1	17	11	11	0	0	0	Sum of Intersects
1	**184**	**387**	**369**	**369**	**1**	**1**	**1**	**Point Hazard Rank**
420	1029	1289	1363	1348	134	44	177	Total Rank Score
292	**111**	**59**	**46**	**49**	**382**	**401**	**369**	**Final Rank**

AR00675	AR00671	AR00648	AR00633	AR00632	AR00631	AR00629	AR00579	State ID
Cleveland	Cleveland	Ouachita	Ouachita	Grant	Grant	Grant	Little River	County Name
173	326	288	22	54	109	191	70	0-3 miles
185	268	253	26	59	120	203	82	RANK
0	111	0	24	79	0	0	0	3-7 miles
1	293	1	242	277	1	1	1	RANK
0	0	0	19	58	0	0	0	7-15 miles
1	1	1	358	365	1	1	1	Rank
187	562	255	626	701	122	205	84	Population Score
113	**296**	**160**	**314**	**334**	**77**	**125**	**54**	**TOTAL Population RANK**
433000	2042000	1181000	191000	470000	109000	536000	984000	HAZUS Sum of Total Losses ($)
118	**230**	**194**	**77**	**123**	**60**	**133**	**175**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
2	1	0	0	0	0	0	0	Railroad AHTD
1	0	0	2	4	0	1	0	Road Inventory AHTD New
3	1	0	2	4	0	1	0	Sum of Intersects
294	**169**	**1**	**246**	**324**	**1**	**169**	**1**	**Linear Hazard Rank**
0	0	0	0	0	0	0	4	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	0	0	0	0	0	0	Chicken Houses AHTD
0	0	0	0	0	0	0	2	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
0	0	0	0	1	0	0	0	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	0	0	0	0	Fire stations
0	0	1	1	0	0	0	1	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
0	0	0	1	0	0	1	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
0	0	1	2	1	0	1	7	Sum of Intersects
1	**1**	**184**	**241**	**184**	**1**	**184**	**345**	**Point Hazard Rank**
526	696	539	878	965	139	611	575	Total Rank Score
251	**195**	**245**	**150**	**128**	**381**	**222**	**233**	**Final Rank**

AR00726	AR00724	AR00723	AR00722	AR00721	AR00720	AR00719	AR00695	State ID
Garland	Garland	Garland	Garland	Garland	Garland	Garland	Prairie	County Name
2	159	394	818	979	1191	1656	102	0-3 miles
7	17 1	28 1	35 2	36 2	37 4	38 7	11 4	RANK
0	1645	0	623	1205	0	83	174	3-7 miles
1	403	1	384	397	1	278	320	RANK
0	4549	0	0	0	306	324	88	7-15 miles
1	410	1	1	1	394	395	373	Rank
9	984	283	737	760	769	1060	807	Population Score
5	**385**	**171**	**347**	**353**	**356**	**391**	**364**	**TOTAL Population RANK**
0	105393000	4878000	7463000	30949000	18764000	60311000	1915000	HAZUS Sum of Total Losses ($)
1	**398**	**290**	**320**	**366**	**355**	**388**	**227**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
0	2	0	0	0	0	0	0	Railroad AHTD
0	8	1	2	0	0	0	6	Road Inventory AHTD New
0	10	1	2	0	0	0	6	Sum of Intersects
1	**385**	**169**	**246**	**1**	**1**	**1**	**355**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	1	0	Cellular Tower
0	0	0	0	0	0	0	0	Chicken Houses AHTD
0	0	0	0	0	0	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
1	7	0	0	1	0	1	1	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	0	0	0	0	Fire stations
0	1	0	0	0	0	2	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
0	0	0	0	0	0	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
1	8	0	0	1	0	4	1	Sum of Intersects
184	**353**	**1**	**1**	**184**	**1**	**302**	**184**	**Point Hazard Rank**
191	1521	631	914	904	713	1082	1130	Total Rank Score
364	**14**	**213**	**140**	**142**	**192**	**96**	**92**	**Final Rank**

AR00833	AR00785	AR00767	AR00766	AR00765	AR00756	AR00729	AR00728	State ID
Perry	Columbia	Yell	Yell	Yell	Yell	Garland	Garland	County Name
182	31	1009	31	33	170	42	4	0-3 miles
194	38	364	38	42	181	51	9	RANK
224	0	223	0	0	69	0	0	3-7 miles
335	1	334	1	1	271	1	1	RANK
132	0	0	0	0	65	0	0	7-15 miles
379	1	1	1	1	368	1	1	Rank
908	40	699	40	44	820	53	11	Population Score
376	**25**	**333**	**25**	**28**	**368**	**36**	**7**	**TOTAL Population RANK**
1745000	280000	30273000	112000	60000	5345000	72000	94000	HAZUS Sum of Total Losses ($)
224	**93**	**365**	**61**	**49**	**299**	**53**	**57**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
0	0	4	0	0	0	0	0	Railroad AHTD
3	1	7	0	0	1	0	0	Road Inventory AHTD New
3	1	11	0	0	1	0	0	Sum of Intersects
294	**169**	**387**	**1**	**1**	**169**	**1**	**1**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	5	0	0	7	0	0	Chicken Houses AHTD
0	0	2	0	0	1	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
1	0	3	0	0	2	0	1	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	1	0	0	0	0	0	Fire stations
1	0	1	0	0	0	0	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	1	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
0	0	0	0	0	23	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
2	0	13	0	0	33	0	1	Sum of Intersects
241	**1**	**378**	**1**	**1**	**403**	**1**	**184**	**Point Hazard Rank**
1135	288	1463	88	79	1239	91	249	Total Rank Score
88	**339**	**24**	**388**	**391**	**72**	**387**	**350**	**Final Rank**

AR00848	AR00847	AR00845	AR00844	AR00843	AR00842	AR00839	AR00835	State ID
Scott	Scott	Scott	Scott	Scott	Scott	Perry	Perry	County Name
76	429	194	195	219	121	151	204	0-3 miles
90	292	209	210	225	133	165	214	RANK
0	802	0	0	164	0	0	0	3-7 miles
1	391	1	1	315	1	1	1	RANK
0	63	0	0	0	0	0	0	7-15 miles
1	367	1	1	1	1	1	1	Rank
92	1050	211	212	541	135	167	216	Population Score
59	**389**	**129**	**130**	**289**	**83**	**100**	**133**	**TOTAL Population RANK**
1005000	12953000	3702000	846000	2657000	1045000	64000	333000	HAZUS Sum of Total Losses ($)
176	**344**	**275**	**166**	**253**	**184**	**52**	**100**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
1	4	1	0	2	0	0	0	Railroad AHTD
1	5	1	1	7	0	0	2	Road Inventory AHTD New
2	9	2	1	9	0	0	2	Sum of Intersects
246	**373**	**246**	**169**	**373**	**1**	**1**	**246**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
2	2	0	0	0	0	0	0	Chicken Houses AHTD
0	0	0	0	0	0	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	1	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
0	4	0	0	1	0	0	0	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	0	0	0	0	Fire stations
0	1	0	0	0	0	0	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
0	0	0	0	0	0	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
2	8	0	0	1	0	0	0	Sum of Intersects
241	**353**	**1**	**1**	**184**	**1**	**1**	**1**	**Point Hazard Rank**
722	1459	651	466	1099	269	154	480	Total Rank Score
190	**27**	**209**	**275**	**95**	**348**	**375**	**267**	**Final Rank**

AR00859	AR00857	AR00856	AR00855	AR00853	AR00852	AR00850	AR00849	State ID
Scott	Scott	Scott	Scott	Scott	Scott	Scott	Scott	County Name
67	49	98	106	227	31	137	306	0-3 miles
77	55	110	117	229	38	147	261	RANK
0	245	0	34	0	105	0	482	3-7 miles
1	342	1	250	1	289	1	372	RANK
0	172	0	0	0	0	0	0	7-15 miles
1	384	1	1	1	1	1	1	Rank
79	781	112	368	231	328	149	634	Population Score
51	**358**	**70**	**230**	**144**	**204**	**91**	**318**	**TOTAL Population RANK**
746000	7851000	606000	3431000	2046000	902000	696000	7722000	HAZUS Sum of Total Losses ($)
158	**323**	**140**	**269**	**231**	**168**	**149**	**322**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
0	0	0	0	0	1	0	3	Railroad AHTD
0	3	0	0	2	1	1	4	Road Inventory AHTD New
0	3	0	0	2	2	1	7	Sum of Intersects
1	**294**	**1**	**1**	**246**	**246**	**169**	**363**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	5	0	0	0	0	1	4	Chicken Houses AHTD
0	0	1	1	0	0	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	1	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
0	1	0	0	0	0	0	2	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	1	0	0	0	0	Fire stations
0	0	0	0	0	0	0	1	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
0	0	0	0	0	0	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
0	6	1	2	0	0	1	8	Sum of Intersects
1	**338**	**184**	**241**	**1**	**1**	**184**	**353**	**Point Hazard Rank**
211	1313	395	741	622	619	593	1356	Total Rank Score
358	**54**	**298**	**183**	**217**	**220**	**224**	**48**	**Final Rank**

AR00884	AR00883	AR00882	AR00881	AR00880	AR00877	AR00876	AR00872	State ID
Logan	Logan	Logan	Logan	Logan	Logan	Logan	Lafayette	County Name
159	139	110	105	1859	175	143	60	0-3 miles
171	151	122	116	391	189	159	73	RANK
0	200	0	0	280	0	0	18	3-7 miles
1	329	1	1	348	1	1	238	RANK
0	0	0	0	176	0	0	0	7-15 miles
1	1	1	1	387	1	1	1	Rank
173	481	124	118	1126	191	161	312	Population Score
105	**278**	**78**	**74**	**402**	**116**	**97**	**192**	**TOTAL Population RANK**
1093000	7696000	3456000	2751000	121139000	745000	702000	411000	HAZUS Sum of Total Losses ($)
190	**321**	**271**	**259**	**405**	**156**	**150**	**113**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
0	0	0	0	0	0	0	0	Railroad AHTD
0	3	2	0	18	0	0	3	Road Inventory AHTD New
0	3	2	0	18	0	0	3	Sum of Intersects
1	**294**	**246**	**1**	**399**	**1**	**1**	**294**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	2	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	0	0	0	0	0	0	Chicken Houses AHTD
1	0	1	0	7	0	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	1	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	1	0	0	0	Electric Providers EIA 2001
0	0	0	0	1	0	0	0	Emerg Medical Services AHD
0	1	0	1	10	0	0	0	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	2	0	0	0	Fire stations
0	0	0	0	0	0	0	0	High Hazard Dam
0	0	0	0	2	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	1	0	0	0	Law Enforce TGS
0	0	0	0	1	0	0	0	Local EOC
0	0	0	0	1	0	0	0	Local Health Units ADH
0	0	0	0	1	0	0	0	Long Term Care Facilities ADH
4	4	4	2	1	0	0	2	Oil And Gas Wells AOGC
0	0	0	0	1	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
5	5	5	3	32	0	0	2	Sum of Intersects
324	**324**	**324**	**281**	**402**	**1**	**1**	**241**	**Point Hazard Rank**
620	1217	919	615	1608	274	249	840	Total Rank Score
218	**78**	**139**	**221**	**2**	**344**	**350**	**160**	**Final Rank**

AR00897	AR00895	AR00894	AR00893	AR00890	AR00889	AR00888	AR00885	State ID
Montgomery	Logan	Logan	Logan	Logan	Logan	Logan	Logan	County Name
6	55	55	547	282	317	168	140	0-3 miles
10	62	62	316	251	266	178	153	RANK
0	0	0	0	246	0	0	0	3-7 miles
1	1	1	1	343	1	1	1	RANK
0	0	0	0	0	0	0	0	7-15 miles
1	1	1	1	1	1	1	1	Rank
12	64	64	318	595	268	180	155	Population Score
8	**42**	**42**	**197**	**307**	**167**	**110**	**93**	**TOTAL Population RANK**
0	477000	472000	11853000	4308000	2512000	555000	3994000	HAZUS Sum of Total Losses ($)
1	**125**	**124**	**340**	**284**	**248**	**136**	**279**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
0	0	0	0	0	0	0	0	Railroad AHTD
0	1	1	4	6	4	1	2	Road Inventory AHTD New
0	1	1	4	6	4	1	2	Sum of Intersects
1	**169**	**169**	**324**	**355**	**324**	**169**	**246**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	0	0	0	0	0	0	Chicken Houses AHTD
0	0	0	0	0	0	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
0	0	0	2	1	0	0	0	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	0	0	0	1	Fire stations
0	0	1	0	0	0	0	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
0	0	0	1	22	5	2	3	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
0	0	1	3	23	5	2	4	Sum of Intersects
1	**1**	**184**	**281**	**396**	**324**	**241**	**302**	**Point Hazard Rank**
11	337	519	1142	1342	1063	656	920	Total Rank Score
408	**320**	**255**	**87**	**51**	**101**	**203**	**138**	**Final Rank**

AR00913	AR00912	AR00911	AR00906	AR00905	AR00903	AR00902	AR00901	State ID
Howard	Howard	Howard	Polk	Polk	Polk	Polk	Polk	County Name
19	213	315	358	143	205	748	207	0-3 miles
21	220	264	273	159	215	342	216	RANK
0	0	146	162	207	0	0	357	3-7 miles
1	1	308	314	331	1	1	358	RANK
0	0	0	0	122	0	0	173	7-15 miles
1	1	1	1	378	1	1	385	Rank
23	222	573	588	868	217	344	959	Population Score
16	**137**	**301**	**304**	**372**	**134**	**220**	**381**	**TOTAL Population RANK**
4000	525000	13137000	2112000	4172000	918000	17626000	11338000	HAZUS Sum of Total Losses ($)
26	**131**	**345**	**235**	**282**	**169**	**351**	**338**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
0	0	3	0	0	0	0	0	Railroad AHTD
0	0	6	2	1	0	1	2	Road Inventory AHTD New
0	0	9	2	1	0	1	2	Sum of Intersects
1	**1**	**373**	**246**	**169**	**1**	**169**	**246**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	4	7	0	0	0	0	3	Chicken Houses AHTD
0	0	0	0	1	0	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
0	0	4	0	0	1	0	1	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	0	0	0	0	Fire stations
0	0	0	0	0	0	0	1	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	1	0	0	0	0	0	Long Term Care Facilities ADH
0	0	0	0	1	0	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
0	4	12	0	2	1	0	5	Sum of Intersects
1	**302**	**374**	**1**	**241**	**184**	**1**	**324**	**Point Hazard Rank**
44	571	1393	786	1064	488	741	1289	Total Rank Score
401	**234**	**39**	**169**	**100**	**264**	**183**	**59**	**Final Rank**

AR00937	AR00936	AR00934	AR00929	AR00923	AR00918	AR00915	AR00914	State ID
Sebastian	Sebastian	Sebastian	Sevier	Pike	Howard	Howard	Howard	County Name
145	1536	805	83	44	383	27	27	0-3 miles
161	383	348	98	53	280	30	30	RANK
0	1247	137	0	0	90	58	0	3-7 miles
1	398	305	1	1	281	263	1	RANK
0	80	0	0	0	0	0	0	7-15 miles
1	372	1	1	1	1	1	1	Rank
163	1153	654	100	55	562	294	32	Population Score
98	**406**	**323**	**66**	**38**	**296**	**178**	**21**	**TOTAL Population RANK**
1733000	85706000	14913000	648000	5000	2676000	334000	357000	HAZUS Sum of Total Losses ($)
223	**394**	**347**	**144**	**27**	**254**	**102**	**106**	**HAZUS Rank**
0	0	0	0	0	0	1	0	PIPELINES USGS 1986
0	0	0	0	0	3	0	0	Railroad AHTD
0	17	6	0	1	9	0	0	Road Inventory AHTD New
0	17	6	0	1	12	1	0	Sum of Intersects
1	**398**	**355**	**1**	**169**	**390**	**169**	**1**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	2	4	0	0	4	0	Chicken Houses AHTD
0	3	2	0	0	0	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
0	11	2	0	0	3	0	0	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	2	1	0	0	0	0	0	Fire stations
0	0	0	0	0	1	0	0	High Hazard Dam
0	1	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	2	1	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	1	0	0	0	0	0	0	Long Term Care Facilities ADH
6	6	2	0	0	1	0	1	Oil And Gas Wells AOGC
0	1	1	0	0	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	2	0	0	0	2	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
6	29	11	4	0	7	4	1	Sum of Intersects
338	**401**	**369**	**302**	**1**	**345**	**302**	**184**	**Point Hazard Rank**
660	1599	1394	513	235	1285	751	312	Total Rank Score
201	**4**	**37**	**256**	**355**	**63**	**178**	**331**	**Final Rank**

AR01101	AR01100	AR01085	AR00999	AR00976	AR00967	AR00941	AR00938	State ID
Washington	Benton	Hempstead	Arkansas	Monroe	Bradley	Sebastian	Sebastian	County Name
809	224	32	172	123	15	380	627	0-3 miles
350	226	41	184	134	17	279	325	RANK
349	0	0	0	123	0	143	134	3-7 miles
357	1	1	1	298	1	307	303	RANK
329	0	0	0	0	0	0	173	7-15 miles
398	1	1	1	1	1	1	385	Rank
1105	228	43	186	433	19	587	1013	Population Score
399	**141**	**27**	**112**	**269**	**12**	**302**	**387**	**TOTAL Population RANK**
21455000	6082000	42000	0	14000	0	2780000	12449000	HAZUS Sum of Total Losses ($)
360	**309**	**44**	**1**	**33**	**1**	**260**	**342**	**HAZUS Rank**
0	0	0	0	0	0	0	1	PIPELINES USGS 1986
0	0	0	0	0	0	0	0	Railroad AHTD
2	1	1	0	0	0	3	4	Road Inventory AHTD New
2	1	1	0	0	0	3	5	Sum of Intersects
246	**169**	**169**	**1**	**1**	**1**	**294**	**343**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
6	0	0	0	0	0	1	0	Chicken Houses AHTD
0	0	0	0	0	0	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
3	0	0	0	0	0	0	2	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	0	0	0	0	Fire stations
1	0	0	0	0	0	0	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
0	0	0	0	0	0	4	2	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
10	0	0	0	0	0	5	4	Sum of Intersects
365	**1**	**1**	**1**	**1**	**1**	**324**	**302**	**Point Hazard Rank**
1370	620	241	115	304	15	1180	1374	Total Rank Score
44	**218**	**352**	**385**	**336**	**406**	**86**	**42**	**Final Rank**

AR01131	AR01126	AR01125	AR01123	AR01119	AR01106	AR01104	AR01102	State ID
Stone	Sharp	Sharp	Crawford	Independence	Newton	Carroll	Benton	County Name
77	160	49	564	400	80	188	2416	0-3 miles
93	173	55	318	284	97	200	397	RANK
0	0	0	1193	131	0	0	4479	3-7 miles
1	1	1	396	302	1	1	410	RANK
0	0	0	31	0	0	0	0	7-15 miles
1	1	1	359	1	1	1	1	Rank
95	175	57	1073	587	99	202	808	Population Score
62	**106**	**39**	**393**	**302**	**65**	**123**	**365**	**TOTAL Population RANK**
0	4486000	827000	47409000	2979000	242000	505000	73247000	HAZUS Sum of Total Losses ($)
1	**286**	**164**	**377**	**263**	**84**	**129**	**392**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
0	0	0	2	0	0	0	0	Railroad AHTD
0	1	0	5	0	0	0	7	Road Inventory AHTD New
0	1	0	7	0	0	0	7	Sum of Intersects
1	**169**	**1**	**363**	**1**	**1**	**1**	**363**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	0	6	3	0	5	0	Chicken Houses AHTD
0	0	0	7	1	0	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
0	0	0	10	0	0	0	1	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	1	0	0	0	0	Fire stations
0	0	0	0	0	0	0	1	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	1	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
0	0	0	30	0	0	0	0	Oil And Gas Wells AOGC
0	0	0	1	0	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	1	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	1	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
0	0	0	57	4	0	5	3	Sum of Intersects
1	**1**	**1**	**407**	**302**	**1**	**324**	**281**	**Point Hazard Rank**
65	562	205	1540	868	151	577	1401	Total Rank Score
397	**237**	**359**	**12**	**153**	**378**	**232**	**34**	**Final Rank**

AR01165	AR01161	AR01157	AR01152	AR01151	AR01145	AR01137	AR01136	State ID
Sevier	Hempstead	Fulton	Pike	Hempstead	Hot Spring	Franklin	Pope	County Name
58	441	158	27	13	190	70	1627	0-3 miles
66	293	169	30	14	202	82	386	RANK
0	254	0	0	0	0	0	1411	3-7 miles
1	344	1	1	1	1	1	400	RANK
0	0	0	0	0	0	0	431	7-15 miles
1	1	1	1	1	1	1	403	Rank
68	638	171	32	16	204	84	1189	Population Score
45	**320**	**103**	**21**	**10**	**124**	**54**	**410**	**TOTAL Population RANK**
13000	8001000	381000	155000	0	1266000	6000	52563000	HAZUS Sum of Total Losses ($)
30	**325**	**109**	**69**	**1**	**198**	**28**	**383**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
0	0	1	0	0	0	0	4	Railroad AHTD
0	6	0	0	0	0	0	15	Road Inventory AHTD New
0	6	1	0	0	0	0	19	Sum of Intersects
1	**355**	**169**	**1**	**1**	**1**	**1**	**401**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	6	0	0	0	0	0	4	Chicken Houses AHTD
0	4	0	0	0	0	0	6	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
0	1	0	0	0	0	0	8	Facilities ADEQ
0	0	0	0	0	0	0	1	Fairgrounds Speedway AHTD
0	1	0	0	0	0	0	1	Fire stations
0	1	0	0	0	0	0	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	1	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
0	0	0	0	0	0	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	1	Post Offices AGIO
0	0	0	0	0	0	0	1	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	3	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	2	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
0	13	0	2	0	0	0	26	Sum of Intersects
1	**378**	**1**	**241**	**1**	**1**	**1**	**400**	**Point Hazard Rank**
77	1378	382	332	13	324	84	1594	Total Rank Score
393	**41**	**304**	**322**	**407**	**327**	**390**	**5**	**Final Rank**

AR01198	AR01196	AR01195	AR01194	AR01184	AR01177	AR01171	AR01170	State ID
Logan	Perry	Perry	Perry	Polk	Saline	Garland	Garland	County Name
78	1508	25	137	21	736	468	543	0-3 miles
94	382	29	147	24	340	297	314	RANK
0	225	32	171	0	0	0	0	3-7 miles
1	336	249	318	1	1	1	1	RANK
0	0	0	77	0	0	0	0	7-15 miles
1	1	1	371	1	1	1	1	Rank
96	719	279	836	26	342	299	316	Population Score
63	**339**	**169**	**369**	**18**	**219**	**181**	**196**	**TOTAL Population RANK**
2174000	10875300	605000	4011000	282000	1682000	745000	8117000	HAZUS Sum of Total Losses ($)
237	**401**	**139**	**280**	**95**	**221**	**156**	**326**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
0	0	0	0	0	0	0	0	Railroad AHTD
0	11	0	3	1	0	0	3	Road Inventory AHTD New
0	11	0	3	1	0	0	3	Sum of Intersects
1	**387**	**1**	**294**	**169**	**1**	**1**	**294**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
5	0	0	4	0	0	0	0	Chicken Houses AHTD
0	5	0	1	0	0	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	1	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	1	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
0	16	1	0	0	0	0	2	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	1	0	0	0	0	0	0	Fire stations
0	3	0	0	0	0	0	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	2	0	0	0	0	0	0	Law Enforce TGS
0	2	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	1	0	0	0	0	0	0	Long Term Care Facilities ADH
3	0	0	0	0	0	0	0	Oil And Gas Wells AOGC
0	1	0	0	0	0	0	0	Post Offices AGIO
0	0	0	1	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	1	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
8	33	1	7	0	0	0	2	Sum of Intersects
353	**403**	**184**	**345**	**1**	**1**	**1**	**241**	**Point Hazard Rank**
654	1530	493	1288	283	442	339	1057	Total Rank Score
206	**13**	**262**	**61**	**341**	**286**	**319**	**104**	**Final Rank**

AR01216	AR01215	AR01214	AR01213	AR01209	AR01208	AR01206	AR01199	State ID
Saline	Scott	Scott	Scott	Sebastian	Sebastian	Garland	Logan	County Name
332	142	218	41	1201	1826	457	92	0-3 miles
269	157	224	49	375	389	295	103	RANK
398	30	0	0	557	0	324	67	3-7 miles
363	246	1	1	377	1	355	270	RANK
0	0	0	0	0	0	398	0	7-15 miles
1	1	1	1	1	1	402	1	Rank
633	404	226	51	753	391	1052	374	Population Score
316	**256**	**140**	**34**	**352**	**247**	**390**	**235**	**TOTAL Population RANK**
17689000	1060000	4987000	719000	44374000	116063000	103000	432000	HAZUS Sum of Total Losses ($)
352	**188**	**291**	**152**	**373**	**404**	**58**	**116**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
0	0	0	0	0	0	0	0	Railroad AHTD
0	0	4	0	3	2	0	1	Road Inventory AHTD New
0	0	4	0	3	2	0	1	Sum of Intersects
1	**1**	**324**	**1**	**294**	**246**	**1**	**169**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	1	0	0	0	0	0	Chicken Houses AHTD
1	0	1	1	2	1	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	1	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
0	0	0	0	6	1	0	0	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	0	0	0	0	Fire stations
0	0	0	0	0	1	0	0	High Hazard Dam
0	0	0	0	0	1	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	1	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
0	0	0	0	6	0	0	2	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
1	0	2	1	14	6	0	2	Sum of Intersects
184	**1**	**241**	**184**	**382**	**338**	**1**	**241**	**Point Hazard Rank**
853	446	996	371	1401	1235	450	761	Total Rank Score
156	**285**	**118**	**308**	**34**	**73**	**282**	**175**	**Final Rank**

AR01242	AR01239	AR01238	AR01235	AR01230	AR01225	AR01221	AR01217	State ID
Faulkner	Faulkner	Faulkner	Garland	Pulaski	Pulaski	Pulaski	Saline	County Name
441	84	490	1816	633	585	654	1486	0-3 miles
293	99	306	388	328	324	334	380	RANK
0	0	278	318	0	0	0	2234	3-7 miles
1	1	347	354	1	1	1	406	RANK
0	0	0	0	0	0	0	393	7-15 miles
1	1	1	1	1	1	1	401	Rank
295	101	654	743	330	326	336	1187	Population Score
179	**67**	**323**	**351**	**206**	**202**	**212**	**409**	**TOTAL Population RANK**
570000	262000	2678000	87515000	725000	827000	1719000	157483000	HAZUS Sum of Total Losses ($)
137	**90**	**255**	**395**	**154**	**164**	**222**	**408**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
0	0	0	5	0	0	0	0	Railroad AHTD
0	0	1	3	0	0	0	4	Road Inventory AHTD New
0	0	1	8	0	0	0	4	Sum of Intersects
1	**1**	**169**	**368**	**1**	**1**	**1**	**324**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	0	0	0	0	0	0	Chicken Houses AHTD
0	0	0	1	0	0	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	2	0	0	0	0	CI Electric Power Generation Plant
0	0	0	3	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
0	0	0	12	0	0	2	7	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	0	0	0	1	Fire stations
0	0	0	2	0	0	0	1	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
0	0	0	0	0	0	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	1	0	0	0	0	Watersupply Tankstandpipe Ahtd
0	0	0	21	0	0	2	9	Sum of Intersects
1	**1**	**1**	**391**	**1**	**1**	**241**	**359**	**Point Hazard Rank**
318	159	748	1505	362	368	676	1500	Total Rank Score
329	**374**	**180**	**18**	**315**	**310**	**198**	**19**	**Final Rank**

AR01278	AR01277	AR01275	AR01274	AR01266	AR01265	AR01261	AR01243	State ID
Poinsett	Poinsett	Clay	Clay	Randolph	Randolph	Faulkner	Faulkner	County Name
58	153	41	176	92	86	243	475	0-3 miles
66	166	49	190	103	100	238	301	RANK
0	4	0	0	0	154	0	0	3-7 miles
1	229	1	1	1	311	1	1	RANK
0	0	0	0	0	0	0	0	7-15 miles
1	1	1	1	1	1	1	1	Rank
68	396	51	192	105	412	240	303	Population Score
45	**251**	**34**	**117**	**68**	**263**	**150**	**183**	**TOTAL Population RANK**
944000	1549000	503000	1009000	360000	978000	428000	1089000	HAZUS Sum of Total Losses ($)
173	**212**	**127**	**177**	**107**	**174**	**115**	**189**	**HAZUS Rank**
0	0	0	0	0	1	0	0	PIPELINES USGS 1986
0	0	0	0	0	0	0	0	Railroad AHTD
1	3	0	3	1	3	0	0	Road Inventory AHTD New
1	3	0	3	1	4	0	0	Sum of Intersects
169	**294**	**1**	**294**	**169**	**324**	**1**	**1**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	0	0	0	4	0	0	Chicken Houses AHTD
0	0	0	0	0	0	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
0	0	0	1	0	0	0	0	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	0	0	0	0	Fire stations
0	0	0	0	0	0	0	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
0	0	0	0	0	0	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
0	0	0	1	0	4	0	0	Sum of Intersects
1	**1**	**1**	**184**	**1**	**302**	**1**	**1**	**Point Hazard Rank**
388	758	163	772	345	1063	267	374	Total Rank Score
301	**176**	**373**	**172**	**318**	**101**	**349**	**307**	**Final Rank**

AR01318	AR01317	AR01316	AR01291	AR01286	AR01285	AR01284	AR01279	State ID
Jefferson	Jefferson	Jefferson	St. Francis	Conway	Cross	Cross	Poinsett	County Name
113	68	125	127	38	120	58	140	0-3 miles
124	79	135	137	45	132	66	153	RANK
112	151	123	0	420	95	120	0	3-7 miles
294	309	298	1	365	285	297	1	RANK
0	0	43	0	225	0	0	0	7-15 miles
1	1	361	1	392	1	1	1	Rank
419	389	794	139	802	418	364	155	Population Score
265	**246**	**361**	**84**	**363**	**264**	**228**	**93**	**TOTAL Population RANK**
2030000	2722000	6339000	650000	1537000	328000	550000	813000	HAZUS Sum of Total Losses ($)
229	**258**	**311**	**145**	**211**	**99**	**134**	**162**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
0	0	0	0	0	0	0	0	Railroad AHTD
0	0	0	0	2	0	0	1	Road Inventory AHTD New
0	0	0	0	2	0	0	1	Sum of Intersects
1	**1**	**1**	**1**	**246**	**1**	**1**	**169**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	0	0	0	0	0	0	Chicken Houses AHTD
0	0	1	0	0	0	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
1	0	1	0	0	0	0	0	CI Electric Power Generation Plant
1	0	1	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
0	0	1	0	0	0	0	0	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	0	0	0	0	Fire stations
0	0	0	0	0	0	0	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
0	0	0	0	0	0	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
2	0	4	0	0	0	0	0	Sum of Intersects
241	**1**	**302**	**1**	**1**	**1**	**1**	**1**	**Point Hazard Rank**
736	506	975	231	821	365	364	425	Total Rank Score
187	**259**	**122**	**356**	**164**	**313**	**314**	**291**	**Final Rank**

AR01414	AR01413	AR01410	AR01408	AR01406	AR01405	AR01404	AR01322	State ID
White	White	White	Benton	Yell	White	White	Logan	County Name
1068	648	176	1074	564	483	685	174	0-3 miles
368	333	190	369	318	303	338	186	RANK
0	0	194	305	0	0	0	97	3-7 miles
1	1	327	350	1	1	1	286	RANK
0	0	106	0	0	0	0	89	7-15 miles
1	1	375	1	1	1	1	374	Rank
370	335	892	720	320	305	340	846	Population Score
233	**211**	**375**	**340**	**199**	**186**	**217**	**370**	**TOTAL Population RANK**
5324000	3599000	5351000	34118000	18371000	0	29000	6795000	HAZUS Sum of Total Losses ($)
298	**272**	**300**	**370**	**353**	**1**	**41**	**315**	**HAZUS Rank**
1	0	1	0	0	0	1	0	PIPELINES USGS 1986
0	0	0	0	0	0	0	0	Railroad AHTD
1	0	1	0	8	0	0	0	Road Inventory AHTD New
2	0	2	0	8	0	1	0	Sum of Intersects
246	**1**	**246**	**1**	**368**	**1**	**169**	**1**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
1	0	0	0	9	0	0	0	Chicken Houses AHTD
0	0	2	0	5	0	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
0	0	2	0	3	0	0	1	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	1	0	0	0	Fire stations
0	0	0	0	1	0	0	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
0	0	13	1	2	0	0	2	Oil And Gas Wells AOGC
0	0	0	0	1	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	1	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
1	0	17	1	23	0	0	3	Sum of Intersects
184	**1**	**387**	**184**	**396**	**1**	**1**	**281**	**Point Hazard Rank**
961	485	1308	895	1316	189	428	967	Total Rank Score
129	**265**	**55**	**145**	**53**	**365**	**289**	**125**	**Final Rank**

AR01432	AR01431	AR01424	AR01422	AR01421	AR01418	AR01417	AR01415	State ID
Poinsett	Poinsett	Poinsett	Conway	Scott	White	Johnson	Perry	County Name
241	140	427	241	185	258	253	10	0-3 miles
235	153	291	235	197	245	243	13	RANK
0	0	0	288	0	483	170	31	3-7 miles
1	1	1	349	1	373	317	247	RANK
0	0	0	347	0	0	0	0	7-15 miles
1	1	1	399	1	1	1	1	Rank
237	155	293	983	199	619	561	261	Population Score
148	**93**	**177**	**384**	**120**	**312**	**295**	**163**	**TOTAL Population RANK**
1656000	2351000	1158000	3665000	3966000	9165000	115000	725000	HAZUS Sum of Total Losses ($)
219	**246**	**192**	**273**	**278**	**331**	**62**	**154**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
0	0	0	0	0	0	3	0	Railroad AHTD
1	1	2	1	1	2	3	0	Road Inventory AHTD New
1	1	2	1	1	2	6	0	Sum of Intersects
169	**169**	**246**	**169**	**169**	**246**	**355**	**1**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	0	1	3	0	0	0	Chicken Houses AHTD
0	0	0	1	0	0	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
0	0	1	1	1	1	0	0	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	0	0	0	0	Fire stations
0	0	0	0	1	0	0	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
0	0	0	0	1	8	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	0	0	1	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
0	0	1	3	6	10	0	0	Sum of Intersects
1	**1**	**184**	**281**	**338**	**365**	**1**	**1**	**Point Hazard Rank**
537	509	799	1107	905	1254	713	319	Total Rank Score
248	**257**	**167**	**93**	**141**	**69**	**192**	**328**	**Final Rank**

AR01446	AR01442	AR01441	AR01440	AR01439	AR01436	AR01434	AR01433	State ID
Randolph	Crawford	White	Sharp	Montgomery	Poinsett	Poinsett	Poinsett	County Name
94	3892	109	0	167	138	167	200	0-3 miles
105	403	120	1	176	149	176	212	RANK
227	0	103	0	0	0	0	0	3-7 miles
337	1	288	1	1	1	1	1	RANK
0	0	0	0	0	0	0	0	7-15 miles
1	1	1	1	1	1	1	1	Rank
443	405	409	3	178	151	178	214	Population Score
270	**257**	**260**	**1**	**108**	**92**	**108**	**132**	**TOTAL Population RANK**
1392000	146566000	1514000	0	72000	808000	1097000	1747000	HAZUS Sum of Total Losses ($)
205	**407**	**209**	**1**	**53**	**161**	**191**	**225**	**HAZUS Rank**
1	0	1	0	0	0	0	0	PIPELINES USGS 1986
0	2	0	0	0	0	0	0	Railroad AHTD
2	3	1	0	1	0	1	1	Road Inventory AHTD New
3	5	2	0	1	0	1	1	Sum of Intersects
294	**343**	**246**	**1**	**169**	**1**	**169**	**169**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	0	0	0	0	0	0	Chicken Houses AHTD
0	7	1	0	0	0	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
0	2	0	0	0	0	0	0	Facilities ADEQ
0	0	0	0	0	1	1	0	Fairgrounds Speedway AHTD
0	0	0	0	0	0	0	0	Fire stations
0	0	0	0	0	0	0	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
0	0	2	0	0	0	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	3	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
0	12	3	0	0	1	1	0	Sum of Intersects
1	**374**	**281**	**1**	**1**	**184**	**184**	**1**	**Point Hazard Rank**
770	1381	996	4	331	438	652	527	Total Rank Score
173	**40**	**118**	**409**	**324**	**288**	**208**	**250**	**Final Rank**

AR01457	AR01455	AR01454	AR01453	AR01451	AR01450	AR01449	AR01448	State ID
Poinsett	Poinsett	Sharp	Cleburne	Garland	Sharp	Washington	Randolph	County Name
187	257	153	708	642	201	110	62	0-3 miles
199	244	166	339	329	213	122	74	RANK
0	0	0	0	190	239	0	9	3-7 miles
1	1	1	1	325	339	1	232	RANK
0	0	0	0	116	0	0	0	7-15 miles
1	1	1	1	376	1	1	1	Rank
201	246	168	341	1030	553	124	307	Population Score
122	**153**	**101**	**218**	**388**	**292**	**78**	**188**	**TOTAL Population RANK**
934000	1521000	13000	1023000	5039000	62000	17000	50000	HAZUS Sum of Total Losses ($)
170	**210**	**30**	**180**	**294**	**51**	**35**	**48**	**HAZUS Rank**
0	0	0	0	0	1	0	0	PIPELINES USGS 1986
0	0	0	0	0	0	0	0	Railroad AHTD
1	3	0	0	2	1	0	0	Road Inventory AHTD New
1	3	0	0	2	2	0	0	Sum of Intersects
169	**294**	**1**	**1**	**246**	**246**	**1**	**1**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	0	0	0	0	0	0	Chicken Houses AHTD
0	0	0	0	0	0	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
0	0	0	0	3	0	0	0	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	0	0	0	0	Fire stations
0	0	0	0	0	0	0	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
0	0	0	0	0	0	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	0	0	2	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
0	0	0	0	3	2	0	0	Sum of Intersects
1	**1**	**1**	**1**	**281**	**241**	**1**	**1**	**Point Hazard Rank**
462	658	133	400	1209	830	115	238	Total Rank Score
276	**202**	**383**	**296**	**79**	**163**	**385**	**354**	**Final Rank**

AR01478	AR01471	AR01470	AR01469	AR01466	AR01464	AR01460	AR01458	State ID
Columbia	Fulton	Perry	Montgomery	White	Poinsett	Lincoln	Poinsett	County Name
29	97	20	6	155	234	114	182	0-3 miles
35	108	23	10	168	234	125	194	RANK
86	0	7	20	0	0	13	0	3-7 miles
280	1	231	240	1	1	234	1	RANK
52	0	0	0	0	0	140	0	7-15 miles
364	1	1	1	1	1	380	1	Rank
679	110	255	251	170	236	739	196	Population Score
327	**69**	**160**	**157**	**102**	**147**	**348**	**119**	**TOTAL Population RANK**
711000	222000	4440000	1011000	127000	1623000	169000	1026000	HAZUS Sum of Total Losses ($)
151	**82**	**285**	**178**	**64**	**215**	**73**	**182**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
0	3	0	0	0	0	0	0	Railroad AHTD
1	0	0	0	0	2	1	1	Road Inventory AHTD New
1	3	0	0	0	2	1	1	Sum of Intersects
169	**294**	**1**	**1**	**1**	**246**	**169**	**169**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	0	0	0	0	0	0	Chicken Houses AHTD
0	0	0	0	0	1	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
0	2	0	0	0	0	0	0	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	0	0	0	0	Fire stations
0	0	0	0	0	1	0	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
5	0	0	0	0	0	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
5	2	0	0	0	2	0	0	Sum of Intersects
324	**241**	**1**	**1**	**1**	**241**	**1**	**1**	**Point Hazard Rank**
971	686	447	337	168	849	591	471	Total Rank Score
124	**197**	**283**	**320**	**372**	**159**	**225**	**273**	**Final Rank**

AR01492	AR01491	AR01490	AR01489	AR01488	AR01482	AR01481	AR01480	State ID
Crawford	Hempstead	White	Montgomery	Madison	Lawrence	Sevier	Howard	County Name
1358	98	158	119	126	141	44	290	0-3 miles
378	110	169	129	136	156	53	254	RANK
889	66	0	128	208	0	44	376	3-7 miles
392	269	1	301	332	1	256	362	RANK
0	0	0	0	0	0	0	0	7-15 miles
1	1	1	1	1	1	1	1	Rank
771	380	171	431	469	158	310	617	Population Score
357	**241**	**103**	**268**	**275**	**96**	**190**	**311**	**TOTAL Population RANK**
6543000	165000	31000	5401000	2106000	1014000	440000	3334000	HAZUS Sum of Total Losses ($)
312	**72**	**43**	**302**	**234**	**179**	**119**	**266**	**HAZUS Rank**
0	0	0	0	0	0	2	0	PIPELINES USGS 1986
5	1	0	0	0	0	0	2	Railroad AHTD
14	1	0	9	6	0	0	3	Road Inventory AHTD New
19	2	0	9	6	0	2	5	Sum of Intersects
401	**246**	**1**	**373**	**355**	**1**	**246**	**343**	**Linear Hazard Rank**
2	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	0	2	0	0	0	0	Chicken Houses AHTD
0	0	0	0	1	0	0	1	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
10	0	0	0	0	0	0	2	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	0	0	0	0	Fire stations
0	0	0	0	0	0	0	1	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
2	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
7	0	0	0	0	0	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	0	1	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
4	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
25	0	0	2	2	0	0	4	Sum of Intersects
399	**1**	**1**	**241**	**241**	**1**	**1**	**302**	**Point Hazard Rank**
1469	560	148	1184	1105	277	556	1222	Total Rank Score
23	**238**	**379**	**85**	**94**	**343**	**240**	**77**	**Final Rank**

AR01501	AR01500	AR01498	AR01497	AR01496	AR01495	AR01494	AR01493	State ID
Madison	Sebastian	Poinsett	Randolph	White	Saline	Saline	Pulaski	County Name
50	680	276	282	169	34	78	193	0-3 miles
57	337	248	251	180	43	94	208	RANK
0	74	0	139	0	0	0	369	3-7 miles
1	275	1	306	1	1	1	361	RANK
0	60	0	0	0	0	0	0	7-15 miles
1	366	1	1	1	1	1	1	Rank
59	978	250	558	182	45	96	570	Population Score
40	**383**	**156**	**294**	**111**	**29**	**63**	**300**	**TOTAL Population RANK**
721000	4991000	5953000	1676000	1286000	0	0	287000	HAZUS Sum of Total Losses ($)
153	**292**	**307**	**220**	**199**	**1**	**1**	**96**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
0	0	0	0	0	0	0	0	Railroad AHTD
0	5	3	1	0	0	0	1	Road Inventory AHTD New
0	5	3	1	0	0	0	1	Sum of Intersects
1	**343**	**294**	**169**	**1**	**1**	**1**	**169**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	0	0	0	0	0	0	Chicken Houses AHTD
0	0	0	0	0	0	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
0	0	0	0	0	0	0	1	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	1	0	0	0	0	0	Fire stations
0	0	1	0	0	0	0	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
0	1	0	0	2	0	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	1	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
0	1	2	1	2	0	0	1	Sum of Intersects
1	**184**	**241**	**184**	**241**	**1**	**1**	**184**	**Point Hazard Rank**
195	1202	998	867	552	32	66	749	Total Rank Score
362	**81**	**117**	**154**	**241**	**405**	**396**	**179**	**Final Rank**

AR01510	AR01508	AR01507	AR01506	AR01505	AR01504	AR01503	AR01502	State ID
Perry	Pulaski	Randolph	Sebastian	Hempstead	Hempstead	Hempstead	Hempstead	County Name
70	656	644	249	99	88	98	38	0-3 miles
82	335	330	242	113	102	110	45	RANK
34	0	0	306	0	16	0	0	3-7 miles
250	1	1	351	1	236	1	1	RANK
0	0	0	216	0	0	0	0	7-15 miles
1	1	1	391	1	1	1	1	Rank
333	337	332	984	115	339	112	47	Population Score
209	**214**	**207**	**385**	**72**	**216**	**70**	**31**	**TOTAL Population RANK**
1167000	263000	1468000	10225000	60000	453000	91000	304000	HAZUS Sum of Total Losses ($)
193	**91**	**208**	**333**	**49**	**121**	**56**	**98**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
0	0	0	0	1	1	0	0	Railroad AHTD
1	0	3	3	1	1	0	0	Road Inventory AHTD New
1	0	3	3	2	2	0	0	Sum of Intersects
169	**1**	**294**	**294**	**246**	**246**	**1**	**1**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	0	1	0	0	0	0	Chicken Houses AHTD
0	0	0	0	0	0	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
1	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
0	0	0	4	0	0	0	1	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
1	0	0	0	0	0	0	0	Fire stations
0	0	0	0	0	0	0	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
0	0	0	2	0	0	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
1	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
3	0	0	7	0	0	0	1	Sum of Intersects
281	**1**	**1**	**345**	**1**	**1**	**1**	**184**	**Point Hazard Rank**
852	307	710	1357	368	584	128	314	Total Rank Score
157	**334**	**194**	**47**	**310**	**227**	**384**	**330**	**Final Rank**

AR01523	AR01522	AR01519	AR01518	AR01517	AR01516	AR01512	AR01511	State ID
Hempstead	Pope	Yell	Randolph	Hempstead	Drew	Scott	Poinsett	County Name
71	412	76	75	24	411	29	262	0-3 miles
85	288	90	89	28	287	35	246	RANK
0	1603	0	11	0	0	0	134	3-7 miles
1	401	1	233	1	1	1	303	RANK
0	1206	0	0	0	69	0	0	7-15 miles
1	408	1	1	1	369	1	1	Rank
87	1097	92	323	30	657	37	550	Population Score
56	**395**	**59**	**201**	**20**	**325**	**24**	**291**	**TOTAL Population RANK**
204000	72655000	403000	144000	18000	5439000	246000	1573000	HAZUS Sum of Total Losses ($)
80	**391**	**112**	**68**	**36**	**303**	**85**	**213**	**HAZUS Rank**
0	0	0	0	0	4	0	0	PIPELINES USGS 1986
0	2	0	0	0	0	0	0	Railroad AHTD
1	25	0	0	0	5	3	4	Road Inventory AHTD New
1	27	0	0	0	9	3	4	Sum of Intersects
169	**406**	**1**	**1**	**1**	**373**	**294**	**324**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	3	1	0	0	4	0	0	Chicken Houses AHTD
0	2	0	0	0	0	0	1	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
0	9	0	0	0	0	0	1	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	0	0	0	0	Fire stations
0	0	0	0	0	1	0	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
0	2	0	0	0	0	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
0	16	1	0	0	5	0	2	Sum of Intersects
1	**385**	**184**	**1**	**1**	**324**	**1**	**241**	**Point Hazard Rank**
306	1577	356	271	58	1325	404	1069	Total Rank Score
335	**9**	**317**	**346**	**399**	**52**	**294**	**98**	**Final Rank**

AR01534	AR01532	AR01531	AR01530	AR01529	AR01528	AR01527	AR01526	State ID
Garland	Perry	Garland	Garland	Hempstead	Saline	Benton	Perry	County Name
38	134	316	647	73	1828	1024	13	0-3 miles
45	144	265	332	87	390	365	14	RANK
0	0	0	1016	0	0	0	13	3-7 miles
1	1	1	393	1	1	1	234	RANK
0	0	0	0	0	0	0	0	7-15 miles
1	1	1	1	1	1	1	1	Rank
47	146	267	726	89	392	367	249	Population Score
31	**89**	**166**	**342**	**58**	**249**	**229**	**154**	**TOTAL Population RANK**
0	2686000	621000	32736000	550000	13967000	5791000	1000	HAZUS Sum of Total Losses ($)
1	**256**	**142**	**369**	**134**	**346**	**305**	**22**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
0	0	0	1	0	0	0	0	Railroad AHTD
4	3	0	3	0	1	0	0	Road Inventory AHTD New
4	3	0	4	0	1	0	0	Sum of Intersects
324	**294**	**1**	**324**	**1**	**169**	**1**	**1**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	0	0	0	0	0	0	Chicken Houses AHTD
0	2	0	0	0	0	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
0	0	0	2	0	0	2	0	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	1	0	0	0	0	0	0	Fire stations
0	1	0	0	0	1	0	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
0	0	0	0	0	0	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
0	4	0	2	0	1	2	0	Sum of Intersects
1	**302**	**1**	**241**	**1**	**184**	**241**	**1**	**Point Hazard Rank**
357	941	310	1276	194	948	776	178	Total Rank Score
316	**132**	**332**	**65**	**363**	**130**	**171**	**368**	**Final Rank**

AR01542	AR01541	AR01540	AR01539	AR01538	AR01537	AR01536	AR01535	State ID
Saline	Saline	Saline	Saline	Faulkner	Hempstead	Pulaski	Saline	County Name
517	517	522	295	369	13	765	196	0-3 miles
309	309	312	255	276	14	344	211	RANK
91	91	0	69	105	0	0	0	3-7 miles
282	282	1	271	289	1	1	1	RANK
0	0	0	0	0	0	0	0	7-15 miles
1	1	1	1	1	1	1	1	Rank
592	592	314	527	566	16	346	213	Population Score
305	**305**	**194**	**287**	**299**	**10**	**221**	**131**	**TOTAL Population RANK**
663000	659000	12496000	12217000	1344000	280000	2581000	1359000	HAZUS Sum of Total Losses ($)
147	**146**	**343**	**341**	**201**	**93**	**251**	**202**	**HAZUS Rank**
0	0	0	0	0	0	0	0	PIPELINES USGS 1986
0	0	0	0	0	1	0	0	Railroad AHTD
0	0	0	0	0	0	0	1	Road Inventory AHTD New
0	0	0	0	0	1	0	1	Sum of Intersects
1	**1**	**1**	**1**	**1**	**169**	**1**	**169**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	0	0	0	0	0	0	0	Chicken Houses AHTD
0	0	0	0	0	0	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
0	0	0	0	0	0	0	2	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	0	0	0	0	Fire stations
0	0	0	0	0	0	0	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	0	0	Long Term Care Facilities ADH
0	0	0	0	0	0	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
0	0	0	0	0	0	0	2	Sum of Intersects
1	**1**	**1**	**1**	**1**	**1**	**1**	**241**	**Point Hazard Rank**
454	453	539	630	502	273	474	743	Total Rank Score
279	**280**	**245**	**214**	**260**	**345**	**270**	**181**	**Final Rank**

AR01565	AR01556	AR01553	AR01550	AR01549	AR01546	AR01544	AR01543	State ID
Lawrence	Hempstead	Washington	Saline	Saline	Washington	Garland	Hempstead	County Name
42	16	1129	549	301	352	530	16	0-3 miles
51	18	372	317	257	271	313	18	RANK
0	0	0	507	25	0	0	0	3-7 miles
1	1	1	375	243	1	1	1	RANK
0	0	0	0	0	0	0	0	7-15 miles
1	1	1	1	1	1	1	1	Rank
53	20	374	693	501	273	315	20	Population Score
36	**13**	**235**	**331**	**282**	**168**	**195**	**13**	**TOTAL Population RANK**
351000	246000	1651000	18598000	395000	2064000	5876000	352000	HAZUS Sum of Total Losses ($)
103	**85**	**218**	**354**	**111**	**232**	**306**	**105**	**HAZUS Rank**
0	0	0	0	0	0	2	0	PIPELINES USGS 1986
0	0	0	0	2	0	0	0	Railroad AHTD
0	0	1	0	2	0	2	0	Road Inventory AHTD New
0	0	1	0	4	0	4	0	Sum of Intersects
1	**1**	**169**	**1**	**324**	**1**	**324**	**1**	**Linear Hazard Rank**
0	0	0	0	0	0	0	0	Airports AHTD
0	0	0	0	0	0	0	0	Armories AHTD
0	0	0	0	0	0	0	0	Cellular Tower
0	7	0	0	0	0	0	7	Chicken Houses AHTD
0	0	0	0	0	0	0	0	Churches AHTD
0	0	0	0	0	0	0	0	CI Agriculture and Food
0	0	0	0	0	0	0	0	CI Commercial Facilities
0	0	0	0	0	0	0	0	CI Electric Power Generation Plant
0	0	0	0	0	0	0	0	CI Substations
0	0	0	0	0	0	0	0	Colleges 4YR ADHE 2001
0	0	0	0	0	0	0	0	Correctional Institutions TGS
0	0	0	0	0	0	0	0	County State Prisons AHTD
0	0	0	0	0	0	0	0	Electric Providers EIA 2001
0	0	0	0	0	0	0	0	Emerg Medical Services AHD
0	2	0	3	1	0	0	1	Facilities ADEQ
0	0	0	0	0	0	0	0	Fairgrounds Speedway AHTD
0	0	0	0	0	0	0	0	Fire stations
0	0	0	0	0	0	1	0	High Hazard Dam
0	0	0	0	0	0	0	0	Hospital Related Services ADH
0	0	0	0	0	0	0	0	Hospitals ADH
0	0	0	0	0	0	0	0	Intermodal Terminals BTS 1998
0	0	0	0	0	0	0	0	Law Enforce TGS
0	0	0	0	0	0	0	0	Local EOC
0	0	0	0	0	0	0	0	Local Health Units ADH
0	0	0	0	0	0	1	0	Long Term Care Facilities ADH
0	0	0	0	0	0	0	0	Oil And Gas Wells AOGC
0	0	0	0	0	0	0	0	Post Offices AGIO
0	0	0	0	0	0	0	0	Posted Highway Bridge AHTD
0	0	0	0	0	0	0	0	Private Schools DOE 2001
0	0	0	0	0	0	0	0	Public Schools DOE
0	0	0	0	0	0	0	0	Radio Television Station AHTD
0	0	0	0	0	0	0	0	Rural Health Clinics ADH
0	0	0	0	0	0	0	0	Wastewater Treatment Plant
0	0	0	0	0	0	0	0	Watersupply Tankstandpipe Ahtd
0	9	0	3	1	0	2	8	Sum of Intersects
1	**359**	**1**	**281**	**184**	**1**	**241**	**353**	**Point Hazard Rank**
141	458	623	967	901	402	1066	472	Total Rank Score
380	**278**	**216**	**125**	**143**	**295**	**99**	**271**	**Final Rank**

AR01624	AR01614	AR01566	State ID
Polk	White	Van Buren	County Name
170	487	278	0-3 miles
181	305	249	RANK
176	594	0	3-7 miles
322	381	1	RANK
0	0	0	7-15 miles
1	1	1	Rank
504	687	251	Population Score
283	**330**	**157**	**TOTAL Population RANK**
2345000	142000	198000	HAZUS Sum of Total Losses ($)
245	**66**	**79**	**HAZUS Rank**
0	0	0	PIPELINES USGS 1986
1	0	0	Railroad AHTD
1	0	3	Road Inventory AHTD New
2	0	3	Sum of Intersects
246	**1**	**294**	**Linear Hazard Rank**
0	0	0	Airports AHTD
0	0	0	Armories AHTD
0	0	0	Cellular Tower
3	0	0	Chicken Houses AHTD
1	0	0	Churches AHTD
0	0	0	CI Agriculture and Food
0	0	0	CI Commercial Facilities
0	0	0	CI Electric Power Generation Plant
0	0	0	CI Substations
0	0	0	Colleges 4YR ADHE 2001
0	0	0	Correctional Institutions TGS
0	0	0	County State Prisons AHTD
0	0	0	Electric Providers EIA 2001
0	0	0	Emerg Medical Services AHD
0	0	0	Facilities ADEQ
0	0	0	Fairgrounds Speedway AHTD
0	0	0	Fire stations
0	0	0	High Hazard Dam
0	0	0	Hospital Related Services ADH
0	0	0	Hospitals ADH
0	0	0	Intermodal Terminals BTS 1998
0	0	0	Law Enforce TGS
0	0	0	Local EOC
0	0	0	Local Health Units ADH
0	0	0	Long Term Care Facilities ADH
0	0	0	Oil And Gas Wells AOGC
0	0	0	Post Offices AGIO
0	0	0	Posted Highway Bridge AHTD
0	0	0	Private Schools DOE 2001
0	0	0	Public Schools DOE
0	0	0	Radio Television Station AHTD
0	0	0	Rural Health Clinics ADH
0	0	0	Wastewater Treatment Plant
0	0	0	Watersupply Tankstandpipe Ahtd
4	0	0	Sum of Intersects
302	**1**	**1**	**Point Hazard Rank**
1076	398	531	Total Rank Score
97	**297**	**249**	**Final Rank**