SEBASTIAN COUNTY

Hazard Mitigation Plan Update - 2023

WAPDD
Western Arkansas Planning & Development District

SEBASTIAN COUNTY
ARKANSAS

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Section One: Planning Process

1.1: Plan Introduction

Hazard mitigation is sustained action taken to reduce or eliminate long-term risk to people and their property from hazards. Hazard mitigation planning is the process State, Tribal, and local governments use to identify risks and vulnerabilities associated with natural disasters, and to develop long-term strategies for protecting people and property from future hazard events.

The occurrence of floods, hurricanes, tornadoes, winter storms, earthquakes, wildfires, and other hazardous events are inevitable. These events can cause damage to the ecological environment; fire can destroy forests, high winds and tornadoes can uproot trees, earthquakes can alter the landscape, and floods can quickly reclaim natural floodplains.

We cannot prevent natural hazards; we do have some means to reduce some of their adverse consequences. We have tools and techniques which allow us to avoid the worst-case scenario when a hazard does occur. By managing the characteristic of the existing and future human environment in a community before a hazardous event occurs, we can mitigate many of its negative impacts so that a disaster is less likely to result or will at least be of diminished magnitude.

The Sebastian County Hazard Mitigation Plan is divided into sections to address FEMA requirements for a local multi-jurisdictional plan. These sections are:

1. Planning Process
2. Risk Assessment
3. Mitigation Strategy
4. Plan Maintenance
5. Plan Update
6. Plan Adoption
7. Appendices

This plan is multi-jurisdictional with a planning area that includes all unincorporated Sebastian County, municipalities of Barling, Bonanza, Central City, Fort Smith, Greenwood, Hackett, Hartford, Huntington, Mansfield, Midland, Lavaca, and the school districts of Fort Smith, Greenwood, Hackett, Mansfield, and Lavaca. Also participating are Future School of Fort Smith, University of Arkansas-Fort Smith (UAFS) and Arkansas Colleges of Health Education (ACHE).

All jurisdictions and school districts listed above actively participate in the planning process from its inception. Each jurisdiction provided a representative to participate on the planning team or if a representative was unable to attend, they chose to be represented by the Sebastian County Office of Emergency Management. Planning team members actively participated in meetings, solicited input from members of their communities, and ensured that all jurisdiction information was reflected in the plan.

1.2: Schedule of Activities for Plan Development

Sebastian County's planning process for this Hazard Mitigation Plan Update was initiated in July 2022, when the County, through the efforts of the Sebastian County Office of Emergency Management (OEM) and Western Arkansas Planning and Development District, submitted a Hazard Mitigation Grant Program (HMGP) application to FEMA through Arkansas Department of Emergency Management (ADEM). The application was approved, and funds were obligated for the plan update December 7, 2022. Sebastian County contracted with Western Arkansas Planning and Development District to facilitate their mitigation planning efforts. Western Arkansas Planning and Development District served as facilitator and Sebastian County Office of Emergency Management led the planning effort.

Multiple planning events were scheduled throughout the planning process. Meeting materials are available from WAPDD upon request.

January 11, 2023 – Grant Management Meeting. Attended by ADEM, Sebastian County, and WAPDD.

January 26, 2023 - Kickoff Meeting. Each aspect of the Planning Process was discussed. Guidelines for the mitigation plan were discussed as well as how to locate and research the data needed for the mitigation plan. It was stressed to have public involvement and to work together with cities, schools, and county. Participants were provided with worksheets to be completed by each jurisdiction.

Task 1: Determine Planning Area and Resources
Task 2: Build Planning Team and Create Outreach Strategy
Task 3: Review Community Capabilities
Task 4: Conduct Risk Assessment
Task 5: Develop Mitigation Strategy
Task 6: Review, Revise, and Submit Plan
Task 7: Adopt Plan

February 9, 2023 – Risk Assessment Meeting. A brief overview of the kickoff meeting was followed by a detailed discussion of the steps to be taken to conduct a Risk Assessment. Participants completed a Hazard Identification Worksheet to identify vulnerabilities and potential actions.

February 23, 2023 – Mitigation Strategy Meeting. A discussion based on the results of the Hazard Identification Worksheet from the February 9th meeting helped to identity new mitigation actions. The STAPLEE method of mitigation action selection and prioritization criteria was explained.

Individual meetings were held with each participating jurisdiction as needed.

February 17, 2023 – Meeting with Bonanza Mayor to discuss worksheets and new mitigation actions.

February 28, 2023 – Meeting with Huntington Mayor to discuss worksheets and new mitigation actions.

March 14, 2023 – Midland City Council meeting to brief elected officials and the public on the plan update.

WAPDD conducted office hours to address any questions concerning the planning process and to assist with completion of the worksheets on March 16 and March 21.

1.3: Plan Developers

An initial planning team comprised of representatives from Sebastian County and all participating jurisdiction was organized. This initial team was instructed to solicit interested people from their community to participate on the planning team. This solicitation led to the addition of several additional planning team members. The planning team members include representatives from county government, local city governments, public works officials, emergency management officials, fire districts, and school districts. All participating jurisdictions actively participated in the planning process through soliciting input from their communities, participation in meetings, and completion of worksheets. If a city or school district could not attend a meeting, all materials were mailed out to the jurisdiction.

Table 1 - Plan Developers

Jurisdiction	Participation/Involvement
Sebastian County	Steve Hotz/Sebastian County Judge-Met with WAPDD Kendall Beam/Sebastian County OEM-Attended Meetings, Completed Forms Travis Cooper/Sebastian County OEM-Attended Meetings, Completed Forms Shannon Scott/Floodplain Manager-Attended Meetings Tina Thompson/Floodplain Manager-Attended Meetings
Barling	Matthew Pierce/Public Works Director-Attended Meetings Joe Kaelin/Code Enforcement-Attended Meetings Steve Core/City Administrator-Attended Meetings, Completed Forms Tom Sizemore/Fire Chief-Attended Meetings
Bonanza	Elmer Nelson/Mayor-Met with WAPDD, Completed Forms
Central City	Daymon Blount/Police Chief-Attended Meetings, Completed Forms Terry Wallace/Mayor-Attended Meetings
Fort Smith	Mark Talley/Fort Smith Fire-Attended Meetings, Completed Forms Jerrod Rego/Office of Mayor-Attended Meetings
Greenwood	Doug Kinslow/Mayor-Attended Meetings Jeff Turner/Street Superintendent-Attended Meetings Sonny Bell/Planning & Development Director-Attended Meetings Hunter Mikles/Floodplain Manager-Attended Meetings, Completed Forms Stewart Bryan/Fire Chief-Attended Meetings Joey Deer/Lieutenant-Attended Meetings Will Dawson/Police Chief-Attended Meetings
Hackett	Billy Garner/Street Superintendent-Attended Meetings Louis Kirkendall/Mayor-Completed Forms
Hartford	Danielle Woodard/Water Clerk-Attended Meetings, Completed Forms
Huntington	Gary Lawrence/Mayor- Met with WAPDD, Completed Forms
Lavaca	Hugh Hardgrave/Mayor-Attended Meetings Susan Hayden/Finance Director-Attended Meetings, Completed Forms

Mansfield	Buddy Black/Mayor-Attended Meetings, Completed Forms Everett Robb/Police Chief-Attended Meetings
Midland	Michael Sweeten/Mayor-Attended Meeting Judy Thompson/Treasurer-Attended Meeting, Completed Forms Joe Cepeda/City Councilman -Attended Meeting Doris Hearron/City Councilman -Attended Meeting Loyd Morris/City Councilman -Attended Meeting Barry Morrison/City Councilman -Attended Meeting Milton Ray Pittman/City Councilman - Attended Meeting
Fort Smith Schools	Eric Huber/Safety Supervisor-Attended Meetings, Completed Forms Bill Hollenbeck/Director of Security-Attended Meetings Terry Morawski/Superintendent-Attended Meetings
Future School of Fort Smith	Did not participate in meetings
Greenwood Schools	Kevin Hesslen/Deputy Superintendent-Attended Meetings, Completed Forms
Hackett Schools	Lonnie Hester/Asst. Principle-Attended Meetings Aliza Jones/Academic Facilities Planner-Attended Meetings, Completed Forms
Lavaca Schools	Aliza Jones/Academic Facilities Planner - Attended Meetings, Completed Forms
Mansfield Schools	Joe Staton/Superintendent-Attended Meetings, Completed Forms
ACHE	Zane Black/Frontier Engineers-Attended Meetings Bobby Aldridge/Frontier Engineers - Attended Meetings
UAFS	Ray Ottman/Police Chief-Attended Meetings, Completed Forms Ken Warden/Associate Vice Chancellor-Completed Forms

1.4: Neighboring Community and Stakeholder Involvement

During the Mitigation Planning Process for Sebastian County, neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development were informed of the meetings and invited to attend planning meetings. A survey was provided to Emergency Managers in Crawford, Franklin, Logan, and Scott Counties. Additional stakeholder surveys were provided to area businesses, rural fire districts, and rural water districts.

Notification was made at the March 15, 2023, WAPDD Board Meeting that the Sebastian County Hazard Mitigation Plan was being updated and board members were provided with a brochure outlining the plan and asked to complete a survey. The WAPDD Board includes representatives from Crawford, Sebastian, Franklin, Logan, Scott, and Polk Counties.

March 30, 2023 – Frontier Metropolitan Planning Organization (MPO) held its quarterly Technical Committee and Policy Board Meetings. Frontier MPO is made up of representatives from Sebastian and Crawford Counties in Arkansas and Leflore and Sequoyah Counties in Oklahoma. Board members were provided with a brochure outlining the plan and asked to complete a survey.

The following stakeholders actively participated in planning meetings.
Chris Joannides - Riverview Hope Campus (homeless shelter)
Mitch Minnick - Fort Smith Housing Authority
Reese Brewer - Frontier Metropolitan Planning Organization

1.5: Public Involvement and Review

Surveys were distributed to the public through various outlets. Draft of plan was also made available to the public via the Western Arkansas Planning and Development District website and other sources.

WAPDD and the participating jurisdictions distributed a survey during January-March 2023. These surveys assisted in identifying local hazards and assessing local risk. Much of the information used for determining flooding locations came from these responses. Additionally, comments regarding potential hazard mitigation actions were considered when developing the Mitigation Strategy element of this plan.

1.6: Incorporation of Existing Planning Mechanisms Into Plan

Existing plans, studies, reports, and technical information relevant to mitigation planning were collected and reviewed by planning team members. This information was used to identify existing, planned, and potential mitigation initiatives designed to reduce Sebastian County's vulnerability to natural hazards.

A list of all the documents that were reviewed is included below.

Table 2 - Incorporation of Existing Planning Mechanisms

Jurisdiction	Planning Mechanism and How Incorporated
Sebastian County	Comprehensive Master Plan-Mitigation Actions EOP–Critical Facilities COOP-Critical Facilities Stormwater Management Plan-Mitigation Actions Building Codes-Mitigation Actions Flood Maps-Flooding Data Planning and Zoning Maps-Risk Assessment
Barling	EOP-Critical Facilities COOP-Critical Facilities Stormwater Management Plan-Mitigation Actions Building Codes-Mitigation Actions Flood Maps-Flooding Data Planning and Zoning Maps-Risk Assessment Maintenance Programs-Mitigation Actions
Bonanza	Building Codes-Mitigation Actions Flood Maps-Flooding Data Planning and Zoning Maps-Risk Assessment Maintenance Programs-Mitigation Actions
Central City	Building Codes-Mitigation Actions
Fort Smith	Comprehensive Master Plan-Mitigation Actions Capital Improvement Plan-Mitigation Actions Economic Development Plan-Mitigation Actions EOP-Critical Facilities Stormwater Management Plan-Mitigation Actions Building Codes-Mitigation Actions Flood Maps-Flood Data Planning and Zoning Maps-Risk Assessment Maintenance Programs-Mitigation Actions

Greenwood	Comprehensive Master Plan-Mitigation Actions Capital Improvement Plan-Mitigation Actions Economic Development Plan-Mitigation Actions EOP-Critical Facilities Building Codes-Mitigation Actions Flood Maps-Flood Data Planning and Zoning Maps-Risk Assessment Maintenance Programs-Mitigation Actions
Hackett	
Hartford	Economic Development Plan-Mitigation Actions EOP-Critical Facilities COOP-Critical Facilities Stormwater Management Plan-Mitigation Actions Flood Maps-Flood Data Maintenance Programs-Mitigation Actions
Huntington	
Lavaca	EOP-Critical Facilities Building Codes-Mitigation Actions Flood Maps-Flood Data Planning and Zoning Maps-Risk Assessment
Mansfield	Comprehensive Master Plan-Mitigation Actions Economic Development Plan-Mitigation Actions EOP-Critical Facilities COOP-Critical Facilities Building Codes-Mitigation Actions Flood Maps-Flood Data Planning and Zoning Maps-Risk Assessment Maintenance Programs-Mitigation Actions
Midland	Flood Maps-Flood Data Maintenance Programs-Mitigation Actions
Fort Smith Schools	Comprehensive Master Plan-Mitigation Actions Capital Improvement Plan-Mitigation Actions School Emergency Plan-Critical Facilities
Future School of Fort Smith	Comprehensive Master Plan-Mitigation Actions Capital Improvement Plan-Mitigation Actions School Emergency Plan-Critical Facilities
Greenwood Schools	Comprehensive Master Plan-Mitigation Actions Capital Improvement Plan-Mitigation Actions School Emergency Plan-Critical Facilities
Hackett Schools	Comprehensive Master Plan-Mitigation Actions Capital Improvement Plan-Mitigation Actions School Emergency Plan-Critical Facilities
Lavaca Schools	Comprehensive Master Plan-Mitigation Actions Capital Improvement Plan-Mitigation Actions School Emergency Plan-Critical Facilities

Mansfield Schools	Comprehensive Master Plan-Mitigation Actions Capital Improvement Plan-Mitigation Actions School Emergency Plan-Critical Facilities
ACHE	
UAFS	Comprehensive Master Plan-Mitigation Actions Capital Improvement Plan-Mitigation Actions School Emergency Plan-Critical Facilities
All Jurisdictions	State of Arkansas All-Hazards Mitigation Plan (2018)-Reviewed for all hazards Fourth National Climate Assessment (2018)-Extreme Heat Data Southern Wildfire Risk Assessment Summary Report-Wildfire Data USDA Census of Agriculture for Sebastian County (2012, 2017)-Land Use Data USDA Drought Severity Monitor-Drought Data Arkansas Geological Survey- Earthquake Data National Performance of Dams Program-Dam Data US Army Corp of Engineers National Inventory of Dams-Dam Data Community Resilience Assessment Tool-Vulnerability EPA-Mitigation Actions, Climate Change FEMA Mitigation Ideas by Hazard Type-Mitigation Actions Simple Planning Tool for Arkansas Climate Hazards-Risk Assessment Southern Climate Impacts Planning Program (SCIPP)-Risk Assessment

Section Two: Risk Assessment

2.1: Natural Hazards Affecting Sebastian County

Hazard identification, the process of identifying hazards that threaten a given area, is the first step in the risk assessment process. Sebastian County has identified several natural hazards that pose a threat to the county and its residents, have warranted a complete profile in this hazard mitigation plan.

The Hazards which have affected Sebastian County in the past or could possibly affect Sebastian County in the near future are Dam Failure, Drought, Earthquake, Expansive Soil, Extreme Heat, Flooding, Landslide, Thunderstorms, Tornado, Wildfire, and Winter Storms.

Expansive Soils were profiled in the original Sebastian County Hazard Mitigation Plan but will be removed from this plan update for the following reasons: 1) lack of any significant impact, and 2) Sebastian County is not listed in the Arkansas All-Hazard Mitigation Plan (version 2018) as containing highly expansive soil. The planning team agreed that while expansive soils may exist, they are a nuisance rather than a hazard. The extreme lack of impact led the team to omit the hazard.

The following hazards were identified from historical information provided by planning team members, newspapers, review of plans and reports, internet research, the State Mitigation Plan, and FEMA publication “Multi-Hazard-Identification and Risk Assessment”, and information provided by FEMA and ADEM.

2.1.1 Dam Failure

2.1.1.1 Description of Dam Failure

A dam failure is the collapse, breach, or other failure resulting in downstream flooding. A dam impounds water in the upstream area, referred to as the reservoir. The amount of water impounded is measured in acre-feet. An acre-foot is the volume of water that covers an acre of land to a depth of one foot. As a function of upstream topography, even a very small dam may impound or detain many acre-feet of water. Two factors influence the potential severity of a full or partial dam failure: the amount of water impounded, and the density, type, and value of development and infrastructure located downstream.

2.1.1.2 Location of Dams in Sebastian County

Twenty-two (22) dam locations exist in Sebastian County according to the National Performance of Dams Programs. The National Inventory of Dams by the U.S. Army Corp of Engineers lists twenty-one (21) dams for Sebastian County.

There are 12 dams in Sebastian County that carry a High or Significant Hazard Ranking. These Significant and High Hazard ranked dams will be profiled for their potential dam failure hazard Impact and Extent. Low Hazard dams are not being profiled.

Data Limitation: Updated Inundation Zone Studies have not been completed for the dam locations in Sebastian County, Arkansas. A mitigation action item has been included in this mitigation plan revision to complete inundation zone studies for dams in Sebastian County.

Following is a table outlining major dam locations in Sebastian County. Maps illustrating the locations of these Significant and High Hazard Dams are located in Section 7.2: Appendix B.

Table 3 - Location of Dams

Dam	Jurisdiction *Primary Location **Secondary Impact	Latitude	Longitude	Hazard Ranking
Immanuel Dam	*Sebastian County	35.17305556	-94.16361111	Significant
Jack Nolen Lake Dam	*City of Greenwood	35.2125	-94.20916667	Significant
James W. Trimble Dam (L&D 13)	*City of Barling **Central City **Sebastian County	35.3505956	-94.2971416	Significant
Johnny Cake Lake No. 1 Dam	*Sebastian County	35.025	-94.26833333	Significant
McMahan Lake Dam	*City of Barling	35.32833333	-94.29861111	Significant
Carol Ann Cross Dam	*City of Fort Smith	35.36833333	-94.34833333	High
Echols Lake Dam	*City of Fort Smith	35.36	-94.38666667	High
James Fork Lake Dam	*Sebastian County	34.99055556	-94.32694444	High
Sebastian Lake Dam	*Sebastian County	35.21333333	-94.40333333	High
Shadow Lake Dam	*Sebastian County	35.23333333	-94.30666667	High
Sugar Loaf Lake Dam	*Sebastian County	35.09444444	-94.395	High
Vache Grasse Creek Dam	*City of Greenwood **Sebastian County	35.19333333	-94.25	High

The following jurisdictions are not vulnerable to dam failure due to their location and lack of proximity to any of the Significant and High Hazard ranked dams: municipalities of Bonanza, Hackett, Lavaca, Mansfield, Hartford, Midland, and Huntington and the school districts of Hackett, Lavaca, Fort Smith, Future School of Fort Smith, University of Arkansas-Fort Smith, Arkansas Colleges of Health Education (ACHE), Greenwood School District, Mansfield School District.

Immanuel Dam is located in unincorporated Sebastian County, southeast of the city of Greenwood, south of Highway 10 and east of Milltown Road. There is very limited development around the lake with just a few houses south of the dam.

Jack Nolen Lake Dam is located in the city limits of Greenwood. It is accessible off Highway 10 east of Greenwood, then off Chimsville Road. There is heavy development south and northeast of lake. Inundation would be to the northwest side of lake where there is limited development and primarily agricultural land.

James W. Trimble Dam (L&D 13) is located to the east of Fort Smith and north of Barling on Highway 59. This portion of the Arkansas River flows from the West to East, therefore eliminating any exposure to the city of Fort Smith from a possible dam breach to Lock 13.

Johnny Cake Lake No. 1 Dam is located in unincorporated Sebastian County south of Mansfield and east of Hartford. It is located west of Johnny Cake Road and north of Johnny Cake Way. There is no development around the lake.

McMahan Lake Dam is located in Barling city limits in the middle of residential neighborhood south of E Street and north of Chateau Street between N. 6th Street and N. 2nd Street.

Carol Ann Cross Dam is located in Fort Smith city limits in Carol Ann Cross Park off of S. 74th Street. The lake is surrounded by woods on three sides.

Echols Lake Dam is located in Fort Smith city limits north of Country Club Avenue, east of Hendricks Blvd. and west of Berry Hill Road. There is some residential development around the lake. Inundation would be north of the dam and is mostly wooded.

James Fork Lake Dam is located to the southeast of the city limits of Hartford. This dam does not have significant residential development around the lake shore or below the dam. There is a water treatment plant located below the dam that is exposed to a dam failure event.

Sebastian Lake Dam is located in unincorporated Sebastian County north of the city of Hackett east of Highway 45 and north of Bethel Road. Substantial development around the lake. Inundation would be south of the dam crossing Bethel Road into a largely agricultural area with a few residential structures.

Shadow Lake Dam is located to the west of the city limits of Greenwood. This is an earthen dam that does have significant development around the lake shore.

Sugar Loaf Lake Dam is located to the east of the city limits of Midland. This is an earthen dam that does have significant residential development around the lake shore. The area below the dam also has some residential development as well as farmland that would be exposed in a possible dam failure scenario. Although no critical facilities are in the exposure zone, houses located along county roads 116, 117, and 26 could be affected by a dam breach or failure.

Vache Grasse Creek Dam is located along the southern city limits of the City of Greenwood. This is an earthen dam that does not have significant development around the lake shore. The area below the dam, also, does not have any major population or development exposure to date.

2.1.1.3 Extent, Magnitude or Severity of Dam Failure

Immanuel Dam would release 110 acre-feet of water in the event of a total dam failure. Jurisdictions to be impacted would be unincorporated Sebastian County.

Jack Nolen Lake Dam would release 4,600 acre-feet of water in the event of a total dam failure. Jurisdictions to be impacted would be the city of Greenwood.

James W. Trimble Dam (L&D 13) would release 59,100 acre-feet of water into an undetermined inundation area in the event of a total dam failure. Jurisdictions to be impacted would be unincorporated Sebastian County and the cities of Barling and Central City.

Johnny Cake Lake No. 1 Dam would release 210 acre-feet of water in the event of a total dam failure. Jurisdictions to be impacted would be unincorporated Sebastian County.

McMahan Lake Dam would release 43 acre-feet of water in the event of a total dam failure. Jurisdictions to be impacted would be the city of Barling.

Carol Ann Cross Dam would release 165 acre-feet of water in the event of a total dam failure. The jurisdiction to be impacted would be the city of Fort Smith.

Echols Lake Dam would release 85 acre-feet of water in the event of a total dam failure. The jurisdiction to be impacted would be the city of Fort Smith.

James Fork Lake Dam would release 8,390 acre-feet of water in the event of a total dam failure. Jurisdictions to be impacted would be unincorporated Sebastian County.

Sebastian Lake Dam would release 685 acre-feet of water in the event of a total dam failure. Jurisdictions to be impacted would be unincorporated Sebastian County.

Shadow Lake Dam would release 3,326 acre-feet of water in the event of a total dam failure. Jurisdictions to be impacted would be unincorporated Sebastian County.

Sugar Loaf Lake Dam would release 11,150 acre-feet of water in the event of a total dam failure. Jurisdictions to be impacted would be unincorporated Sebastian County

Vache Grasse Creek Dam would release 950 acre-feet of water in the event of a total dam failure. Jurisdictions to be impacted would be unincorporated Sebastian County and the city of Greenwood.

2.1.1.4. Previous Occurrences

Sebastian County has no documented historical record of dam failure.

2.1.1.5. Probability of Future Dam Failure Events

Extreme water inflow from prolonged rainfall and flooding is one of the leading causes of dam failure. As discussed in a later section of this plan, the project area is experiencing an increase in flooding due to increased heavy rainfall events. More frequent and intense heavy-rainfall events could lead to increased risk of dam failure.

Immanuel Dam
Location: Unincorporated Sebastian County
Negligible: Less than 10 percent of planning area or isolated single-point occurrences
Maximum Probable Extent (Magnitude/Strength based on historic events or future probability)
Severe: Severe classification on scientific scale, fast speed of onset or long duration of event, resulting in devastating damage and loss of services for weeks or months.
Probability of Future Events
Unlikely: Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.
Overall Significance
Low: Two or more criteria fall in lower classifications, or the event has a minimal impact on the planning area. This rating is sometimes used for hazards with a minimal or unknown record or occurrences or for hazards with minimal mitigation potential.

Jack Nolen Lake Dam
Location: City of Greenwood
Negligible: Less than 10 percent of planning area or isolated single-point occurrences
Maximum Probable Extent (Magnitude/Strength based on historic events or future probability)
Severe: Severe classification on scientific scale, fast speed of onset or long duration of event, resulting in devastating damage and loss of services for weeks or months.
Probability of Future Events
Unlikely: Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.
Overall Significance
Low: Two or more criteria fall in lower classifications, or the event has a minimal impact on the planning area. This rating is sometimes used for hazards with a minimal or unknown record or occurrences or for hazards with minimal mitigation potential.

James W. Trimble Dam (L&D 13)
Location: City of Barling
Negligible: Less than 10 percent of planning area or isolated single-point occurrences
Maximum Probable Extent (Magnitude/Strength based on historic events or future probability)
Severe: Severe classification on scientific scale, fast speed of onset or long duration of event, resulting in devastating damage and loss of services for weeks or months.
Probability of Future Events
Unlikely: Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.
Overall Significance
Low: Two or more criteria fall in lower classifications, or the event has a minimal impact on the planning area. This rating is sometimes used for hazards with a minimal or unknown record or occurrences or for hazard with minimal mitigation potential.

Johnny Cake Lake No. 1 Dam
Location: Unincorporated Sebastian County
Negligible: Less than 10 percent of planning area or isolated single-point occurrences
Maximum Probable Extent (Magnitude/Strength based on historic events or future probability)
Severe: Severe classification on scientific scale, fast speed of onset or long duration of event, resulting in devastating damage and loss of services for weeks or months.
Probability of Future Events
Unlikely: Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.
Overall Significance
Low: Two or more criteria fall in lower classifications, or the event has a minimal impact on the planning area. This rating is sometimes used for hazards with a minimal or unknown record or occurrences or for hazards with minimal mitigation potential.

McMahan Lake Dam
Location: City of Barling
Negligible: Less than 10 percent of planning area or isolated single-point occurrences
Maximum Probable Extent (Magnitude/Strength based on historic events or future probability)
Severe: Severe classification on scientific scale, fast speed of onset or long duration of event, resulting in devastating damage and loss of services for weeks or months.
Probability of Future Events
Unlikely: Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.
Overall Significance
Low: Two or more criteria fall in lower classifications, or the event has a minimal impact on the planning area. This rating is sometimes used for hazards with a minimal or unknown record or occurrences or for hazards with minimal mitigation potential.

Carol Ann Cross Dam
Location: City of Fort Smith
Negligible: Less than 10 percent of planning area or isolated single-point occurrences
Maximum Probable Extent (Magnitude/Strength based on historic events or future probability)
Severe: Severe classification on scientific scale, fast speed of onset or long duration of event, resulting in devastating damage and loss of services for weeks or months.
Probability of Future Events
Unlikely: Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.
Overall Significance
Low: Two or more criteria fall in lower classifications, or the event has a minimal impact on the planning area. This rating is sometimes used for hazards with a minimal or unknown record or occurrences or for hazards with minimal mitigation potential.

Echols Lake Dam
Location: City of Fort Smith
Negligible: Less than 10 percent of planning area or isolated single-point occurrences
Maximum Probable Extent (Magnitude/Strength based on historic events or future probability)
Severe: Severe classification on scientific scale, fast speed of onset or long duration of event, resulting in devastating damage and loss of services for weeks or months.
Probability of Future Events
Unlikely: Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.
Overall Significance
Low: Two or more criteria fall in lower classifications, or the event has a minimal impact on the planning area. This rating is sometimes used for hazards with a minimal or unknown record or occurrences or for hazards with minimal mitigation potential.

James Fork Lake Dam
Location: Unincorporated Sebastian County
Negligible: Less than 10 percent of planning area or isolated single-point occurrences
Maximum Probable Extent (Magnitude/Strength based on historic events or future probability)
Severe: Severe classification on scientific scale, fast speed of onset or long duration of event, resulting in devastating damage and loss of services for weeks or months.
Probability of Future Events
Unlikely: Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.
Overall Significance
Low: Two or more criteria fall in lower classifications, or the event has a minimal impact on the planning area. This rating is sometimes used for hazards with a minimal or unknown record or occurrences or for hazards with minimal mitigation potential.

Sebastian Lake Dam

Location: Unincorporated Sebastian County

Negligible: Less than 10 percent of planning area or isolated single-point occurrences

Maximum Probable Extent (Magnitude/Strength based on historic events or future probability)

Severe: Severe classification on scientific scale, fast speed of onset or long duration of event, resulting in devastating damage and loss of services for weeks or months.

Probability of Future Events

Unlikely: Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.

Overall Significance

Low: Two or more criteria fall in lower classifications, or the event has a minimal impact on the planning area. This rating is sometimes used for hazards with a minimal or unknown record or occurrences or for hazards with minimal mitigation potential.

Shadow Lake Dam

Location: Unincorporated Sebastian County

Negligible: Less than 10 percent of planning area or isolated single-point occurrences

Maximum Probable Extent (Magnitude/Strength based on historic events or future probability)

Severe: Severe classification on scientific scale, fast speed of onset or long duration of event, resulting in devastating damage and loss of services for weeks or months.

Probability of Future Events

Unlikely: Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.

Overall Significance

Low: Two or more criteria fall in lower classifications, or the event has a minimal impact on the planning area. This rating is sometimes used for hazards with a minimal or unknown record or occurrences or for hazards with minimal mitigation potential.

Sugar Loaf Lake Dam

Location: Unincorporated Sebastian County

Negligible: Less than 10 percent of planning area or isolated single-point occurrences

Maximum Probable Extent (Magnitude/Strength based on historic events or future probability)

Severe: Severe classification on scientific scale, fast speed of onset or long duration of event, resulting in devastating damage and loss of services for weeks or months.

Probability of Future Events

Unlikely: Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.

Overall Significance

Low: Two or more criteria fall in lower classifications, or the event has a minimal impact on the planning area. This rating is sometimes used for hazards with a minimal or unknown record or occurrences or for hazards with minimal mitigation potential.

Vache Grasse Creek Dam
Location: City of Greenwood
Negligible: Less than 10 percent of planning area or isolated single-point occurrences
Maximum Probable Extent (Magnitude/Strength based on historic events or future probability)
Severe: Severe classification on scientific scale, fast speed of onset or long duration of event, resulting in devastating damage and loss of services for weeks or months.
Probability of Future Events
Unlikely: Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.
Overall Significance
Low: Two or more criteria fall in lower classifications, or the event has a minimal impact on the planning area. This rating is sometimes used for hazards with a minimal or unknown record or occurrences or for hazards with minimal mitigation potential.

2.1.1.6. Impact of Dam Failures

Immanuel Dam does not have significant development around the lake shore. The area directly below the dam is also sparse in development. Damage from a dam failure could impact the few residential structures located south of the dam. No school district property is exposed to a possible dam failure to Immanuel Dam.

Jack Nolen Lake Dam does not have significant development below the dam. All development is on the south and northeast side of the lake. Damage from a dam failure would impact the northwest side of the lake where there is limited development and primarily agricultural land. No school district property is exposed to a possible dam failure to Jack Nolen Lake Dam.

James W. Trimble Dam (L&D 13) does have significant development along this portion of the Arkansas River. Jurisdictions that carry an exposure to a dam failure at James W. Trimble Dam (L&D 13) are the city of Barling, Sebastian County, and Central City. In Barling, areas impacted would include Springhill Park and Campground, Barling City Park and residential developments access from P Street or H Street, as well as future development on Frontier Road, Park Road, and Interstate 49. In unincorporated Sebastian County, an area north of Highway 255/22 would be impacted. In Central City areas north of Highway 255/22, Reeder Road and Butler Street, and the Vache Grasse Public Use Area would be impacted. No school district property is exposed to a possible dam failure to James W. Trimble Dam.

Johnny Cake Lake No. 1 Dam does not have any development along the lake shore. The lake is surrounded by agricultural land. The only impact would be to Chocoville Road to the northwest of the dam. No school district property is exposed to a possible dam failure to Johnny Cake Lake No. 1 Dam.

McMahan Lake Dam does have significant development around the lake shore as it is located within a residential neighborhood. Impacts would be to those residences on E Street and N. 2nd Street. No school district property is exposed to a possible dam failure to McMahan Lake Dam.

Carol Ann Cross Dam does have significant development around the lake shore as it is located within Carol Ann Cross Park. Impacts would be to the park as well as residences north of the dam along Riverlyn Drive and Riverlyn Terrace. No school district property is exposed to a possible dam failure to Carol Ann Cross Dam.

Echols Lake Dam does have some development around the lake shore. The area directly below the dam is primarily a wooded area. Residences along S. 40th Street, S. T Street, S. S Street, S. Albert Pike Avenue, and Berry Hill Road would be impacted by a dam failure. No school district property is exposed to a possible dam failure to Echols Lake Dam.

James Fork Lake Dam does not have significant residential development around the lake shore or below the dam. There is a water treatment plant located below the dam that is exposed to a dam failure event. Impacts to a dam failure at James Fork Lake Dam would include James Fork Water Treatment Plant, West Harmony Road, and Ouachita National Forest. No school district property is exposed to a possible dam failure to the James Fork Lake Dam.

Sebastian Lake Dam does have significant development around the lake shore. Impacts from a dam failure would include Bethel Road below the dam and a largely agricultural area with a few residential structures. Structures along Sebastian Court and Sebastian Lake Drive could also be impacted. No school district property is exposed to a possible dam failure to the Sebastian Lake Dam.

Shadow Lake Dam does have significant development around the lake shore. Impacts from a dam failure would include Highway 71 and commercial development including Highway 71 Pit Stop and Philpot's Automotive, residential development along Lakeside Drive, Edgewater Drive, and Shadow Lake Drive. No school district property is exposed to a possible dam failure to Shadow Lake Dam.

Sugar Loaf Lake Dam does have significant residential development around the lake shore. The area below the dam also has some residential development as well as farmland that would be exposed in a possible dam failure scenario. Although no critical facilities are in the exposure zone, houses located along county roads 116/Dugan Drive, 117/Dugan Way, and 26/Tyro Road could be affected by a dam breach or failure. No school district property is exposed to a possible dam failure to the Sugar Loaf Lake Dam.

Vache Grasse Creek Dam does not have significant development around the lake shore. While the area below the dam does not have any major population or development, there are some residences along Stewart Court that would be impacted by a dam failure. No school district property is exposed to a possible dam failure to Vache Grasse Creek Dam.

2.1.1.7. Vulnerability and Estimating Potential Loss

As there have been no failures to date, future events are impossible to predict; however, based on Dam Classification Parameters, the area could expect to see the following in the event of a complete failure of each classification: Failure of a class A (low hazard) dam would see no loss of life, damages would be less than $100,000 and limited to the dam owners land and no structures should be affected; class B (significant hazard) dam failure would result in potential loss of life, between $100,000 and $500,000 in damages to nearby land, structures, and roads; class C (high hazard) dam failure would result in fatalities, over $500,000 in damages to land, structures, and roads, and would require major mitigation (if possible) to re-build.

Dam failure can be a life-threatening event. In the event of a dam failure, the energy of the water stored behind even a small dam can cause loss of life and great property damage if there are people downstream of the dam.

The Hazard Potential Table below shows potential losses for each class of dam and how each of the profiled dams is classified.

Table 4 - Hazard Potential of Dams

HAZARD POTENTIAL CLASSIFICATION FOR CIVIL WORKS PROJECTS			
CATEGORY	LOW (CLASS A)	SIGNIFICANT (CLASS B)	HIGH (CLASS C)
Direct Loss of Life	None expected (due to rural location with no permanent structures for human habitation)	Uncertain (rural location with few residences and only transient or industrial development)	Certain (one or more extensive residential, commercial, or industrial development)
Lifeline Losses	No disruption of services - repairs are cosmetic or rapidly repairable damage	Disruption of essential facilities and access	Disruption of critical facilities and access
Property Losses	Private, agricultural lands, equipment, and isolated buildings	Major public and private facilities	Extensive public and private facilities
Environmental Losses	Minimal incremental damage	Major mitigation required	Extensive mitigation cost or impossible to mitigate
Economic Losses	Less than $100K	Between $100K & $500K	Over $500K

Loss estimates were derived from the Hazard Class Definitions that the Arkansas Natural Resources Commissions assigns to all state regulated dams.

High Hazard – Potential for loss of human life and/or excessive public, industrial, commercial, or agricultural development in inundation areas. Losses could be over **$500,000**. Emergency Action Plans are required for all High Hazard Dams.

Significant Hazard – No potential for loss of human life. But, significant structures, industrial, or commercial development, or cropland in inundation areas. Losses could be **$100,000 to $500,000.**

Low Hazard – No potential for loss of human life. No significant structures in inundation areas. Primarily pastures, woodland, or undeveloped land. Losses expected to be less than **$100,000.**

With these definitions in mind, loss estimates were calculated for each county as follows:
($500,000) * the number of High Hazard Dams,
($250,000) * the number of Significant Hazard Dams, and
($50,000) * the number of Low Hazard Dams.

Table 5 - Dam Failure Loss Estimates

County	Loss Estimates
Sebastian County	$4,800,000

2.1.1.8. Multi-Jurisdictional Risk Assessment and Impact

According to data from the Arkansas Soil and Water Conservation Commission Dam Safety Program, no failure of a permitted dam has occurred in Sebastian County or anywhere in the State of Arkansas. Permitted dams are those that exceed 25 feet in height and impound at least 50 acre-feet of water. Smaller, non-permitted dams have failed or been overtopped on occasion in Arkansas, although records of these events are not kept. These non-permitted dams are generally low hazard dams that lacked engineering design and have not caused significant damage in the past. Based on this limited data and considering current design and inspection requirements, failure of permitted dams is an extremely unlikely event. Failure of small, non-permitted dams may occur, but the effects are not expected to be significant.

Sebastian County, Barling, Central City, Fort Smith, and Greenwood are the only jurisdictions with any vulnerability to dam failure. None of these jurisdictions have significant infrastructure or critical facilities within any area that could be affected by a dam breach. The section of land below most dams in Sebastian County is extremely rural and undeveloped.

2.1.2 Drought

2.1.2.1 Description of Drought

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

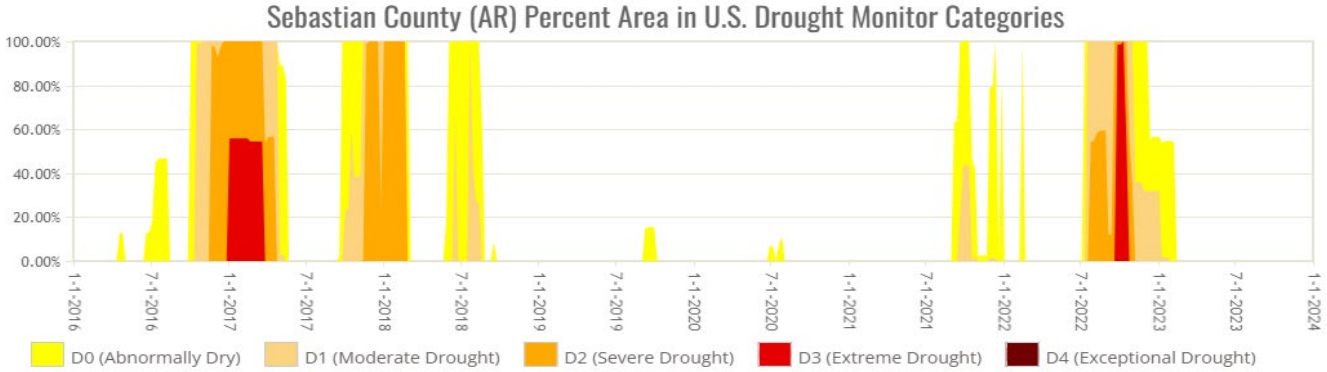
2.1.2.2 Location of Drought Events

All participating jurisdictions of the entire planning area are equally likely to experience severe drought, there is no defined geographic hazard boundary.

2.1.2.3 Extent, Magnitude or Severity of Drought

A useful measure of a certain area's drought severity at particular points in time is the Drought Severity Monitor, which is published by the U. S. Department of Agriculture. The Drought Monitor displays day-by-day drought conditions for areas within the U.S. and within individual states, using the following Drought Conditions table. As noted, "D0" represents abnormally dry, "D1" moderate, "D2" Severe, "D3" Extreme, and "D4" Exceptional. Since 2000, the entire planning area has experienced drought anywhere from D0 to D4 and can expect to experience similar droughts in the future based on previous drought occurrences.

Graphic 1 - Sebastian County Drought Monitor



When drought begins, the agricultural sector is usually the first to be affected because of its heavy dependence on stored soil water. Soil water can be rapidly depleted during extended dry periods. If precipitation deficiencies continue, then people dependent on other sources of water will begin to feel the effects of the shortage. Those who rely on surface water (i.e., reservoirs and lakes) and subsurface water (i.e., ground water), for example, are usually the last to be affected. A short-term drought that persists for 3 to 6 months may have little impact on these sectors, depending on the characteristics of the hydrologic system and water use requirements.

The Palmer Index is most effective in determining long term drought–a matter of several months–and is not as good with short-term forecasts (a matter of weeks). It uses a 0 as normal, and drought is shown in terms of minus numbers; for example, minus 2 is moderate drought, minus 3 is severe drought, and minus 4 is extreme drought. The advantage of the Palmer Index is that it is standardized to local climate, so it can be applied to any part of the country to demonstrate relative drought or rainfall conditions.

Table 6 - Palmer Drought Severity Index

Palmer Drought Severity Index (PDSI)	
4.0 or more	Extremely wet
3.0 to 3.99	Very wet
2.0 to 2.99	Moderately wet
1.0 to 1.99	Slightly wet
0.5 to 0.99	Incipient wet spell
0.49 to -0.49	Near normal
-0.5 to -0.99	Incipient dry spell
-1.0 to -1.99	Mild drought
-2.0 to -2.99	Moderate drought
-3.0 to -3.99	Severe drought
-4.0 or less	Extreme drought

2.1.2.4 Previous Drought Occurrences

There have been 14 event(s) reported between January 1, 2016, and December 31, 2022. All 14 of these events occurred between 2016 and 2018.

2.1.2.5 Probability of Future Drought Events

According to the NOAA National Centers for Environmental Information State Climate Summaries 2022, increases in evaporation rates due to rising temperatures may increase the rate of soil moisture loss and the intensity of naturally occurring droughts.

Location (All participating jurisdictions within the entire planning area)
Extensive: 75 to 100 percent of planning area or consistent single-point of occurrences
Maximum Probable Extent (Magnitude/Strength based on historic events or future probability)

Weak: Limited classification on scientific scale, slow speed of onset or short duration of event resulting in little to no damage. Of the 15 drought events occurring since 2010, zero have resulted in death, injury, property, or crop damage.

Probability of Future Events

*Likely:*10 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years. Previous drought events have occurred in 2016, 2017, and 2018.

Overall Significance

Medium: The criteria fall mostly in the middle ranges of classifications and the event's impacts on the planning area are noticeable but not devastating. This rating is sometime used for hazards with a high extent rating but very low probability rating.

2.1.2.6 Impact of Drought

Drought produces impacts that affect the social, environmental, and economical standard of living. Some direct impacts of drought are reduced crop, rangeland, and forest productivity; reduced water levees; increased fire hazard; increased livestock and wildlife death rates; and damage to wildlife and fish habitat. A reduction in crop productivity usually results in less income for farmers, retailers, and increased prices for food. The likelihood that businesses beyond row-crop agriculture operations would be seriously affected by drought is low, because municipal water impoundments in the county are large enough to continue supplying drinking and industrial process water through 100-year drought conditions.

Environmental losses are caused by damage to plant and animal species. Wildlife habitat and air and water quality are usually damaged due to a lack of water and an increase in forest and range fires, insect infestations, plan disease and wind erosion. Most of the effects of drought are short-term, and as the drought comes to an end many problems are solved.

2.1.2.7 Vulnerability and Estimating Potential Loss

Though the county is within a region of the country that is highly susceptible to severe drought, it would be unusual for the condition to pose serious, direct threats to structures. Extreme and prolonged drought conditions can result in soil constriction or shrinkage that can cause building foundations to settle, possibly cracking foundations and walls. It is not likely, however, that drought conditions would be so prolonged and severe to cause such damage.

Drought can seriously affect agricultural operations, which make up about a fourth of the county's economy. Farmers in the county that depend upon ground water (wells) and surface water (ponds & small lakes) for crop irrigation and livestock drinking water would be negatively impacted by a severe drought. Also, municipal water supplies in the area provide treated water for users in the cities and throughout the rural areas of the county.

Though most of these impoundments can produce an adequate yield throughout a yearlong drought period, water rationing would no doubt be implemented, which would affect all

customers, including agricultural and other businesses dependent on water for production. Drought leading to serious water shortages would negatively affect the local economy.

2.1.2.8 Multi-Jurisdictional Risk Assessment

All participating jurisdictions are equally subject to drought, there is no defined geographic hazard boundary. Damages from drought are generally economic. Assets at risk would include open land that could become vulnerable to wildfire hazards due to extended periods of low rain and high heat. Water supply resources would be affected and the vulnerable populations such as the farmers.

Public Health would be affected through lack of water supply, unsafe water in ponds and creeks, and airborne dust. Those affected most would be the homeless, children, those with health conditions and the elderly. Thus, the threat is countywide, multi-jurisdictional.

Sebastian County has 706 farms covering 100,790 acres, a majority of which (467) are cattle operations.

Forests occupy 155,871 acres (45%) of the land area in Sebastian County; 53% of the forests are privately owned. 12% of the forest land (18,956 acres) is in the Ouachita National Forest, other public lands are largely federal. Drought conditions leave the forest land vulnerable to wildfire due to extended periods of low rain and high heat and increases the infestation of insects.

Drought would affect the main agriculture crop in Sebastian County, which is hay, and accounts for 308 farms and 22,389 acres. Public Safety would be affected across the county, cities, and school districts, from the threat of fire, and contaminated water.

2.1.3 Earthquake

2.1.3.1 Description of earthquake

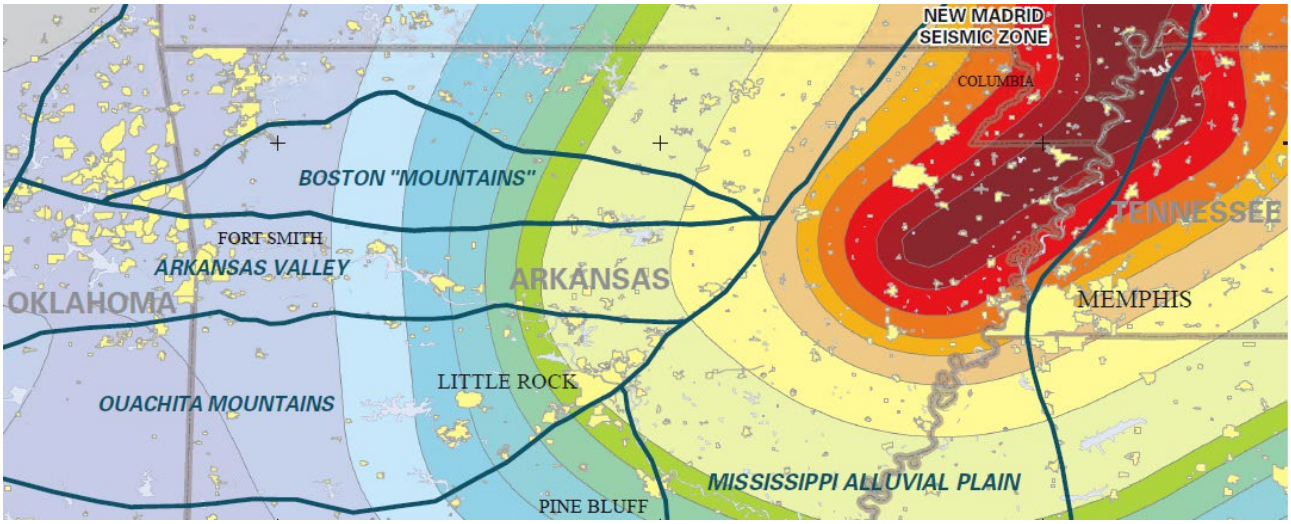
An earthquake is naturally induced shaking of the ground, caused by the fracture, and sliding of rock within the Earth's crust. Magnitude is determined by the dimensions of the rupturing fracture (fault) and the amount of displacement that takes place - the larger the fault surface and displacement, the greater the energy. In addition to deforming the rock near the fault, this energy produces shaking and a variety of seismic waves that radiate through the Earth.

2.1.3.2 Location of Earthquake Events

Earthquake activity will follow a fault line. Per the USGS, the New Madrid Fault Line runs through the north-east section of Arkansas. Sebastian County is in the north-west section of Arkansas and does not fall on the fault line.

Earthquake distributions can be misleading because, unlike other hazards, the event does not have to occur in a jurisdiction for that jurisdiction to be affected by it.

Graphic 2 - Earthquake Potential



2.1.3.3 Extent, Magnitude, or Severity of Earthquakes

Sebastian County is in an area with a .05 to .10 peak ground acceleration (PGA) coefficient, which means it has some possibility of seismic hazard. Though Sebastian County is vulnerable to the effects of a major earthquake in the region, it is unlikely that an earthquake will affect the area at a significant level.

While Sebastian County has no documented historical record of earthquakes, in 2011 Jasper, Arkansas recorded a 2.5 magnitude earthquake and Greenbrier, Arkansas recorded 3.5 to 3.9 magnitude earthquakes. Neighboring Oklahoma has begun to experience more earthquakes in recent years, but none have occurred in the Oklahoma counties that are adjacent to Sebastian County. In 2011, Prague, Oklahoma experienced a 5.6 magnitude earthquake and in 2016 Pawnee, Oklahoma experienced a 5.8 magnitude earthquake.

Earthquakes are measured by intensity and magnitude. The Richter scale is used for magnitude measurement to describe the energy released while the Modified Mercalli Intensity scale measures intensity to demonstrate the effects of the event.

The United States Geological Survey developed an Instrumental Intensity scale, which maps peak ground acceleration and peak ground velocity on an intensity scale similar to the felt Mercalli scale. These values are used to create shake maps by seismologists around the world. Based on Sebastian County's PGA, earthquakes across the entire planning area would most likely fall into category V on the Mercalli scale.

Table 7 - Instrumental Intensity Scale

Instrumental Intensity	Acceleration (g)	Velocity (cm/s)	Perceived shaking	Potential damage
I	< 0.000464	< 0.0215	Not felt	None
II-III	0.000464 - 0.00297	0.135 - 1.41	Weak	None
IV	0.00297 - 0.0276	1.41 - 4.65	Light	None
V	**0.0276 - 0.115**	**4.65 - 9.64**	**Moderate**	**Very light**
VI	0.115 - 0.215	9.64 - 20	Strong	Light
VII	0.215 - 0.401	20 - 41.4	Very strong	Moderate
VIII	0.401 - 0.747	41.4 - 85.8	Severe	Moderate to heavy
IX	0.747 - 1.39	85.8 - 178	Violent	Heavy
X+	> 1.39	> 178	Extreme	Very heavy

Table 8 - Modified Mercalli Intensity Scale

Mercalli Intensity	Damage Description
I	Not felt except by a very few under especially favorable conditions.
II	Felt only by a few persons at rest, especially on upper floors of buildings. Delicately suspended objects may swing.
III	Felt quite noticeably by people indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing cars may rock slightly. Vibrations are like the passing of a truck. Duration estimated.
IV	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motorcars rocked noticeably.
V	Felt by nearly everyone; many awakened. Some dishes, windows broken; cracked plaster in a few places; unstable objects overturned. Disturbances of trees, poles, and other objects sometimes noticed. Pendulum clocks may stop.
VI	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster and damaged chimneys. Damage slight
VII	Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken. Noticed by people driving cars.
VIII	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage is great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, and walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. People driving cars disturbed.
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage is great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes are broken.
X	Some well-built wooden structures were destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from riverbanks and steep slopes. Shifted sand and mud. Water splashed and slopped over banks.
XI	Few, if any (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines are completely out of service. Earth slumps and land slips in soft ground. The rails bent greatly.
XII	Damage total. Waves seen on the ground. Lines of sight and level are distorted. Objects thrown into the air.

Table 9 - Richter Scale

Descriptor	Richter Magnitudes	Earthquake Effects	Frequency of Occurrence
Micro	Less than 2.0	Microearthquakes, not felt.	About 8,000 per day
Very Minor	2.0-2.9	Generally not felt but recorded.	About 1,000 per day
Minor	3.0-3.9	Often felt, but rarely causes damage.	49,000 (estimated) per year
Light	4.0-4.9	Noticeable shaking of indoor items, rattling noises. Significant damage unlikely.	6,200 (estimated) per year
Moderate	5.0-5.9	Can cause major damage to poorly constructed buildings over small regions. At most, slight damage to well-designed buildings.	800 per year
Strong	6.0-6.9	Can be destructive in areas up to about 100 miles across populated areas.	120 per year
Major	7.0-7.9	Can cause serious damage over larger areas.	18 per year
Great	8.0-8.9	Can cause serious damage in areas several hundred miles across	1 per year
Rare Great	9.0 or greater	Catastrophic damage	1 per 20 years

2.1.3.4 Previous Occurrences

Sebastian County has no documented historical record of earthquakes.

2.1.3.5 Probability of Future Earthquakes

Future earthquake events will depend on the amount of stress on the fault line. According to NASA, the amount of stress is impacted by both increased surface water and drought. When there is heavier rainfall, this precipitation and any subsequent flooding increases stress and decreases seismicity. When the season dries up and there's less water, the weight on the Earth's crust decreases and this can lead to micro-seismicity. Participating jurisdictions are expected to experience increases in both precipitation and intensity of naturally occurring droughts.

Location (All participating jurisdictions of the entire planning area.)
Negligible: Less than 10 percent of planning area or isolated single-point of occurrences
Maximum Probable Extent (Magnitude/Strength based on historic events or future probability)
Weak: Limited classification on scientific scale, slow speed of onset or short duration of event resulting in little to no damage.
Probability of Future Events
Unlikely: Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.
Overall Significance
Low: Two or more criteria fall in lower classifications, or the event has a minimal impact on the planning area.

2.1.3.6 Impact of Earthquakes

This hazard can directly impact building inventory (especially Unreinforced Masonry Buildings), people (from being displaced to causing fatalities), infrastructure (damage to bridges, railroads, highways, and runways), livestock, as well as indirect economic impacts.

Businesses can suffer economic losses when roads are closed, buildings are damaged, as well as forced closure to protect public health and safety if fresh water is unavailable or when gas leaks are present.

Per 2021 American Community Survey 5-Year Estimates, Sebastian County has 56,672 housing units, 54% of which are owner occupied with a median value of $136,600.

2.1.3.7 Vulnerability and Estimating Potential Loss

To date, among the seven States in the New Madrid Seismic Zone (NMSZ), four (Arkansas, Indiana, Kentucky, and Tennessee) have statewide building codes as minimum requirements. In the States where statewide building codes are mandatory, a local jurisdiction still must introduce an ordinance to adopt and enforce the State building codes for the jurisdiction.

Effective January 1, 2023, Arkansas follows the 2021 AR Fire Prevention Code based on the 2021 IFC, IBC and IRC. Arkansas currently adopts the 2018 AR Plumbing Code based on the 2018 IPC and the 2018 AR Fuel Gas Code based on the 2018 IFGC. Effective July 1, 2022, Arkansas adopted the 2021 IMC.

The State code is mandatory and applicable to all buildings. It is required that local codes must be in accordance with the State code, and only more stringent amendments are allowed by local adoption. The State only oversees code enforcement for state capital investments. Local authorities have jurisdiction over private, district, municipal and county constructions.

This legislation attempts to make public buildings and bridges safer; however, in a major event, inventory will still suffer heavy losses.

Earthquake's Safest & Most Dangerous Buildings
Small, Wood-frame House - Safest (most widely used in US)
Steel-Frame (used in US)
Reinforced Concrete (used in US)
Unreinforced Masonry (widely used in US)
Adobe - Most Dangerous (not widely used in US)

In the United States, Unreinforced Masonry (URM) is the most dangerous building structure type where earthquakes are concerned.

All structures in the planning area are vulnerable to damage by a large magnitude earthquake. In general terms, the building types most vulnerable to ground shaking are those constructed of unreinforced masonry and concrete. Infrastructure most vulnerable to earthquakes includes all utility distribution lines (water, wastewater, natural gas) and facilities. Transportation infrastructure most vulnerable to earthquakes includes highway bridges and railway bridges.

2.1.3.8 Multi-Jurisdictional Risk Assessment

Earthquakes are not unique to any area of the county; the threat is countywide with no significant variation at the county or jurisdiction levels. Jurisdictions with the most infrastructures carry the biggest vulnerability to an earthquake event. Three-story buildings and interstate locations can cause vast damage and destruction during an earthquake event.

With no recorded earthquake event in recent history, its potential magnitude and severity are considered negligible.

2.1.4 Extreme Heat

2.1.4.1 Description of Extreme Heat

Temperatures that hover 10 degrees or more above the average high temperature for the region and last for several weeks are defined as extreme heat. Humid or muggy conditions, which add to the discomfort of high temperatures, occur when a "dome" of high atmospheric pressure traps hazy, damp air near the ground.

2.1.4.2 Locations Affected by Extreme Heat

There is no defined geographic hazard boundary for extreme heat. Extreme heat generally affects people rather than property. All participating jurisdictions within the entire planning area are equally likely to experience an extreme heat event.

2.1.4.3 Extent, Magnitude or Severity of Extreme Heat Events

According to the third U.S. National Climate Assessment released in 2014, for Arkansas, there have been increasing numbers of days above 95 degrees F and nights above 75 degrees F and decreasing number of extremely cold days since 1970. (NCA, Ch. 17: Southeast)

Across the entire planning area, June, July, and August are the months most likely to experience Extreme Heat. The planning area experiences an average of 12 days above 90 degrees each June, 23 days above 90 degrees each July, and 22 days above 90 degrees each August.

Graphic 3 - Heat Index

NOAA's National Weather Service

Heat Index

Temperature (°F)

Relative Humidity (%)	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Caution | Extreme Caution | Danger | Extreme Danger

2.1.4.4 Previous Occurrences

There have been 15 events reported between January 1, 2016, and December 31, 2022. Extreme Heat events occurred in 2016, 2018, 2019, 2020, 2021, and 2022; all during the months of June, July, and August.

2.1.4.5 Probability of Future Extreme Heat Events

Temperatures in Arkansas have risen by 0.5 degrees Fahrenheit since the beginning of the 20th century, less than a third of the warming for the contiguous United States, but the warmest consecutive 5-year interval was 2015-2019. (NOAA National Centers for Environmental Information State Climate Summaries 2022)

According to NOAA Future Heat Events, in 2020 Sebastian County had a projected maximum of 59 total days with temperatures over 95 degrees Fahrenheit. For 2050, that number increases to 79.

Location (All participating jurisdictions within the entire planning area.)
Extensive: 75 to 100 percent of planning area or consistent single-point of occurrences
Maximum Probable Extent (Magnitude/Strength based on historic events or future probability)
Weak: Limited classification on scientific scale, slow speed of onset or short duration of event resulting in little to no damage. Of the 15 extreme heat events occurring since 2016, zero have resulted in property or crop damage.
Probability of Future Events
Likely: 10 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years.
Overall Significance
Medium: The criteria fall mostly in the middle ranges of classifications and the event's impacts on the planning area are noticeable but not devastating. This rating is sometime used for hazards with a high extent rating but very low probability rating.

2.1.4.6 Impact of Extreme Heat

Heat is the number one weather-related killer in the United States, resulting in hundreds of fatalities each year. In fact, on average, excessive heat claims more lives each year than floods, lightning, tornadoes, and hurricanes combined.

Extreme heat, though not a serious threat to structures, can negatively affect agri-businesses, particularly poultry grow-out operations, thus affecting the local economy. Sebastian County has 133 poultry operations. Heat stress also adversely affects dairy and livestock production. Optimal temperatures for milk production are between 40 degrees F and 75 degrees F. Sebastian County has 7 dairy farms.

Extreme heat can also be a hazard to critical facilities that must be temperature controlled, such as hospitals, nursing homes and communications facilities (due to the heat sensitive electronic equipment). A total power outage or brown-out during a time of extreme heat would create a very serious situation for those facilities that do not have a backup power supply, such as a generator, to power air conditioning systems.

2.1.4.7 Vulnerability and Estimating Potential Loss by Jurisdiction to Extreme Heat

An extreme heat event will extend throughout all participating jurisdictions within the entire planning area.

It affects people of all ages, primarily the elderly, children and the homeless. All agriculture crops, livestock, water supply and forestlands are vulnerable to extreme heat. No area can be said to be immune from, or any more or less vulnerable to extreme heat.

Heat exhaustion usually affects people who are working or exercising in a hot environment. Infants and young children are at risk because their temperature regulation mechanisms are not fully developed. They also are dependent upon others for water and appropriate clothing. In Sebastian County 6.5% of the county's population is under the age of 5 years. The elderly are similarly at risk because of underlying medical conditions that limit the ability to sweat including poor circulation, skin changes, and chronic medication usage. In Sebastian County 16% of the county's population is over the age of 65 years.

Table 10 - Sebastian County Vulnerable Populations

2021 American Community Survey 5-Year Estimates		
Total Population	Under 5 years	Over 65 Years
127,941	8,276/6.5%	20,515/16%

Socioeconomic issues increase the risk of heat exhaustion if access to air conditioning is limited. During heat waves, large cities often open cooling centers to help minimize the risk of large numbers of people succumbing to heat-related illness.
Certain medications may impair the ability of the body to sweat.

2.1.4.8 Multi-Jurisdictional Risk Assessment

Based on historical records for Sebastian County, the region's location is within one of the country's highest exposures to an extreme heat index. All participating jurisdictions within the entire planning area will sometime in the near future face extreme heat. Extreme heat is equally dangerous to all jurisdictions and school districts throughout the county. Extreme heat will not affect one area of Sebastian County more than another.

2.1.5 Flooding

2.1.5.1 Description of Flooding

A flood is the partial or complete inundation of normally dry land. The various types of flooding include riverine flooding and flash flooding in Sebastian County.

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

Sebastian County is subject to both riverine and flash flooding, with flash flood events occurring most frequently. Urban development in this part of the state exacerbates the flash flooding problem. Intense rainfall events, often accompanying the large thunderstorms that occur in the County several times a year, may result in water accumulating rapidly.

2.1.5.2 Location of Flooding Events

Sebastian County is subject to flash flooding. Research on flooding history in the county included news accounts of floods, data collected by the National Climatic Data Center and the National Flood Insurance Program, and surveys from individual county residents.

Floods are common along the Arkansas River corridor, which forms the northern boundary of the county. However, this flooding is typically not caused by river overflows but by upstream discharges to the river through the flat terrain in the northern portions of the county, where these discharges are sometimes inhibited by high river waters. These areas exhibit low relief and typically have flat, broad floodplains. The areas adjoining and near the Arkansas River in the county can be typically characterized as having wide, flat floodplains, large amounts of wetlands, and, outside of Fort Smith and Barling (cities near the river), mainly farmland and sparsely populated.

The Hazard Mitigation Planning Team has reviewed Sebastian County's Flood Insurance Rate Maps (FIRMs). These maps are located in Section 7.3: Appendix C.

Flood zones are geographic areas that FEMA has defined in terms of varying levels of flood risk. These zones are illustrated by a community's Flood Insurance Rate Map (FIRM) or Flood Hazard Boundary Map. Each zone reflects the severity or type of flooding in the area. Following are explanations of the FEMA flood zone designations:

Table 11 - FEMA Flood Zones

Zone	Description
A	Areas of 100-year Flood; Base flood elevations and flood hazard factors not determined
AO	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundations are shown, but no flood hazard factors are determined.
AE	Base flood elevations determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; Base Flood Elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; Base Flood Elevations and Flood Hazard Factors determined.
A-99	Areas of 100-year flood to be protected by flood protection system under construction; Base Flood Elevations and Flood Hazard Factors not determined.
AR	The base floodplain that results from the de-certification of a previously accredited flood protection system that is in the process of being restored to provide a 100-year or greater level of flood protection.
V	The coastal area subject to a velocity hazard (wave action) where BFE's are not determined on the FIRM.
VE	The coastal area subject to a velocity hazard (wave action) where BFE's are provided on the FIRM.
B & X Shaded	Areas of moderate flood hazard, usually the area between the limits of the 100 year and 500-year floods. B zones are also used to designate base floodplains of lesser hazards, such as areas protected by levees from the 100-year flood, or shallow flooding areas with average depths of less than one foot or drainage areas less than 1 square mile.
C &X Unshaded	Areas of minimal flood hazard, usually depicted on FIRMs as exceeding 500-year flood levels. Zone C may have ponding and local drainage problems that do not warrant a detailed study or designation as base floodplain. Zone X is the area determined to be outside the 500-year flood.
D	Ares of undetermined but possible flood hazards.

Sebastian County: Areas with previous flooding events in unincorporated Sebastian County include: Centerpoint Road near Hartford, Highway 96 between Lavaca and Greenwood, Highway 255 between Central City and Lavaca, Highway 252 at Sullivan Road and Highway 217, Highway 252 northeast of Lavaca at Onion Creek, Highway 45 and the James Fork Bridge between Hackett and Midland, Slaytonville Road south of Hackett, and Highway 10 between Hackett and Highway 71, Highway 22 at Fort Chaffee, Highway 45 north of Hackett and north of Bonanza.

Barling: Areas with previous flooding include the intersection of Strozier Lane and Highway 22 resulting from an issue with highway department culverts, the bridges on H Street and 5th Terrace, and 22nd Street off Highway 22 due to houses being built on an old creek bed that has been rerouted, but naturally wants to follow its old path and also Highway 255. The Fort Smith School District operates Barling Elementary within the Barling city limits. There are no critical facilities located within the floodplain. The area around the Vache Grasse Creek floodplain though Barling is mostly undeveloped.

Bonanza: Areas with previous flooding include those along Wells Creek. Oak Street and First Street have also previously experienced flooding which resulted in the need for extensive road repairs.

Central City: Areas with previous flooding include Highway 255 north east of Central City including Hickman Bluff.

Fort Smith: Areas with previous flooding include Highway 271/Texas Rd., Highway 71/Riley Park Drive, Brooken Hill/Willow Brook, South 16th/Rogers Ave, Highway 271/Hillside, North D and North 10th, North G and North 9th, Jenny Lind/Knoxville, North H/North 10th, South 91st/Houston, North 16th/North H, North 16th/Grand Ave., North 10th/North B, North 9th/North E, North O/North Greenwood Ave., South 25th/Dodson, Towson/South O, Towson/Phoenix Ave., northbound lanes on Towson between Phoenix and Fresno, Country Club/Old Greenwood, Highway 45 between Planters and Burrough, North 8th/Kelley Highway. Residential areas prone to flooding include South O Street, Riverlyn Drive, and Oak Park. Commercial areas that have previously experienced flooding include Rogers Avenue, 74th Street, and 79th Street on the east side of the city. Howard Elementary (Fort Smith School District) is located just on the edge of the floodplain on North 8th Street. The Future School of Fort Smith is located just outside the floodplain on North 7th Street.

Greenwood: Areas with previous flooding include those along Hartsill Creek, Vache Grasse Creek, and Highway 96. Hartsill Creek intersects with Highway 10, Old Hackett Road, W. Denver Street, N. Ulmer Street, W. Center Street, Westwood Avenue, and Liberty Drive. Flooding along this creek could impact Westwood Elementary School, and residences along Crooked Creek Road and Creekside Drive. Vache Grasse Creek intersects with E. Center Street and could impact the Greenwood water and wastewater treatment facilities.

Hackett: Areas with previous flooding include Highway 10 the Henderson Street bridge that crosses Hackett Creek. There are 6 houses on Henderson Street as well as Hackett City Park.

Hartford: Areas with previous flooding include those along West Creek. West Creek intersects with S. Pine Street, a residential area, and W. Hartford Road, mostly agriculture land.

Huntington: Because of the topography of the city, Huntington experiences very little flooding. Areas most likely to flood would be those located along Cherokee Creek. The City Park is adjacent to Cherokee Creek and there's a bridge that crosses Cherokee Creek on Highway 252 heading west out of Huntington.

Lavaca: Areas with previous flooding include Harding Street by City Hall, the car wash, and El Paso Street at the bridge, Adams Street, and the City Park. Other than that, most of the flooding problems occur outside the city limits on Highway 255 in the bottoms and sometimes on 96 Highway around the bridge at Nixon Road and on Utah Ranch Road at the low water bridge and Crowe Road.

Mansfield: Areas with previous flooding include West Howard Street, Huntington Avenue, Caldwell Avenue, and Walnut Avenue. Flooding along Coop Creek impacts the Mansfield City Park and the mobile home park on Huntington Avenue, the Mansfield Elementary School and bus lot between Caldwell Avenue and Walnut Avenue, and the Mansfield Middle School on Walnut Avenue. Flooding along Cherokee Creek impacts West Howard Street and the mobile home park and the Mansfield Wastewater Treatment Plant both on N. Division Street.

Midland: Areas with previous flooding include the area along James Fork as being prone to flooding. This is a mostly wooded area. The James Fork Bridge on Highway 253 is just northeast of the Midland city limits.

2.1.5.3 Extent, Magnitude or Severity of Flooding

Flood severity categories used by the NWS include minor flooding, moderate flooding, and major flooding. Each category has a definition based on property damage and public threat.

Minor Flooding - minimal or no property damage, but possibly some public threat or inconvenience

Moderate Flooding - some inundation of structures and roads near streams. Some evacuations of people and/or transfer of property to higher elevations are necessary.

Major Flooding - extensive inundation of structures and roads. Significant evacuations of people and/or transfer of property to higher elevations.

Sebastian County considers three to four inches of heavy rainfall in a short period of time a severe event. During this amount of rainfall, flash flooding will start to occur, and the storm water drainage system will not accommodate the excess rainfall. Generally, the only flooding that occurs is in low-lying areas and the 100-year flood plain.

A variety of factors affect the type and severity of flooding within the County, including topography, geology, urban development, and infrastructure. Flash floods are common across the county. Urban development in the County exacerbates the flash flooding problem. Intense

rainfall events, often accompanying the large thunderstorms that occur in the County several times a year, may result in water accumulating rapidly.

A flood is generally measured by the 100-year (base flood) level and is considered to be a flood with a 1% chance of occurring annually in areas with “Special Flood Hazard Areas” identified on FEMA Flood Insurance Rate Maps. Bridges, roads, and structures have been destroyed by this hazard.

Local storm events typically average between one to six inches of rain falling within a short period of time, resulting in flash floods.

Flash flooding is the bigger risk as it can occur across the entire planning area. Flash floods result from heavy or excessive rainfall in a short period of time, generally less than 6 hours and can occur within minutes or a few hours of excessive rainfall. Flowing at just 6 mph, water exerts the same force per unit area as air blowing at EF5 tornado wind speeds. Water moving at 25 mph has the pressure equivalent of wind blowing at 790 mph, faster than the speed of sound.

Barling flood maps indicate areas of Zone AE with levels of flooding at 390 to 408 feet above sea level along the Little Vache Grasse Creek.

Bonanza flood maps indicate limited areas of Zone X and Zone A for which base flood elevations are not determined.

Central City does not participate in NFIP, therefore flood maps and data regarding flood extent are not available.

Fort Smith flood maps indicate areas of Zone AE with levels of flooding at 408 to 480 feet above sea level along the Little Vache Grasse Creek, 405 to 476 feet above sea level along Massard Creek, and 405 to 474 feet above sea level along the Arkansas River.

Greenwood flood maps indicate areas of Zone AE and levels of flooding at 484 to 573 feet above sea level along Heartsill Creek, Hester Creek, and Adamson Creek.

Hackett flood maps indicate areas of Zone AE and levels of flooding at 499 to 523 feet above sea level along Hackett Creek.

Hartford flood maps indicate areas of Zone AE and levels of flooding at 608 to 649 feet above sea level along West Creek.

Huntington does not participate in NFIP, therefore flood maps and data regarding flood extent are not available.

Lavaca flood maps indicate areas of Zone AE and levels of flooding at 403 to 406 feet above sea level along Cox Creek.

Mansfield flood maps indicate limited areas of Zone A along Cherokee Creek for which base flood elevations are not determined.

Midland flood maps indicate mostly Zone X with a minimal area of Zone A for which base flood elevations are not determined.

2.1.5.4 Previous Flood and Flash Flooding Occurrences

There were 31 flood/flash flood event(s) were reported between 1/1/2016 and 12/31/2022.

This time-period included the historic May 2019 Arkansas River Flooding for which the total amount of the damages is still unknown.

The remining 30 flood/flash flood events resulted in $690K in damage and 3 deaths. Fort Smith experienced the most damage at $540,000.

2.1.5.5 Probability of Future Flooding

West Central Arkansas has already seen a 15.72% increase in precipitation from 1900-2021. The project area is experiencing an increase in flooding due to increased heavy rainfall events. In Fort Smith and the surrounding area, 3 of the 5 wettest years since 1946 have occurred since 2015.

According to the National Climate Assessment, models show an overall increase in precipitation in Arkansas by the end of the century, with changes spread unevenly across the state. More frequent and intense heavy-rainfall events are also expected to increase the risk of flooding.

Location (All participating jurisdictions within the entire planning area)
Extensive: 75 to 100 percent of planning area or consistent single-point of occurrences
Maximum Probable Extent (Magnitude/Strength based on historic events or future probability)
Moderate: Moderate classification on scientific scale, moderate speed of onset or moderate duration of event, resulting in some damage and loss of service for days
Probability of Future Events
Highly Likely: 90 to 100 percent probability of occurrence in the next year or a recurrence interval of 1 year.
Overall Significance
High: The criteria consistently fall in the high classifications and the event is likely/highly likely to occur with severe strength over a signification to extensive portion of the planning area.

2.1.5.6 Impact of Flooding

Common impacts of flooding include damage to personal property, buildings, and infrastructure; bridge and road closures; service disruptions; and injuries or even fatalities.

This hazard can directly impact building inventory, people, infrastructure (roads, bridges), agriculture, and livestock that are in the inundation areas, as well as having indirect economic impacts. Water velocity is increased when severe flooding occurs, which can flood or completely wash away buildings of all construction types (masonry, wood, concrete, or metal),

automobiles, and farm equipment; topple trees, destroy crops, erode bridges, and damage roads.

The events between 2016 and 2022 resulted in $690K in property damage. Bridges have been washed out, homes have been flooded, roads have been flooded with as much as 3 feet of water, and people have been evacuated.

Businesses can suffer economic losses when buildings are damaged or roads are closed, as well as during times of forced closure to protect public health and safety if fresh water is unavailable or if fire safety poses a risk.

Sebastian County has experienced 31 flooding events over the last 7 years. There are 25 repetitive flood loss structures in Fort Smith and 3 in Greenwood. listed on FEMA's Repetitive Flood Loss List. Damage to structures caused by flooding in recent years has not been widespread but specific to particular locations in the county.

Listed are other areas in which flooding can affect Sebastian County:

Environmental - Flat areas that do not have trees or rocks to prevent erosion are often swept away. Farm fields, which typically are located in flat areas, become washed out and crops are lost. Contaminants from sewer back-ups and other waste may be washed into the water supply, resulting in water that is unsafe for residents to use. The shelters of animals in the area are also washed out, resulting in many homeless animals that can cause problems for their owners.

Economic - Residential loss or repair. Businesses also suffer, not only from the loss of property, but the lack of customers during the flood and for a while after during recovery. Farmers also suffer from the loss of their crops.

Financial - Some residents who do not carry flood insurance suffer great financial hardship. Those who do have insurance get help with the clean-up, but some costs may still come out of pocket. Towns and cities that are impacted by a flood carry the financial burden of fixing the public buildings, roads and other structures damaged by the flood waters. People who are impacted by the flood may also lose wages because the business they work for suffered damages or they are unable to get to work.

Health - Flood water can also damage the health of those living and working in the area. Because flood waters can wash dangerous waste into water supplies, tap water may become unsafe to use if the local authorities do not issue a boil advisory warning everyone to boil water before ingesting it. Mold is also likely to grow in homes and other buildings that were engulfed by the flood waters. It is important to search all homes for mold and remove it completely before moving back in. Breathing the mold spores is dangerous for your health. A flood can also contribute to other health problems from human waste that contaminates the ground.

Safety - Once flooding begins, strong currents can pull a grown man beneath the water to drown. Once the flood waters have settled, it is still unsafe to wander through the water by car or on foot. Deep spots may be undetectable and there may be electric currents running through the water as well.

Timber Plantations Flooding can severely stress or even kill trees, depending on how deeply or how long they remain submerged. Floods kill trees that are completely covered by water and seedlings pushed over by the force of the water or buried under silt. Prolonged flooding can cause root rot, leading to tree death. Prior tree health plays a role in whether the trees survive after flooding.

Soil Flooding results in poor soil aeration, leading to poor plant growth. Soil becomes more acidic following flooding. In addition, flooding can lead to soil erosion or soil contamination from such man-made pollutants as oils (on roadways), fertilizers (in yards and farms) and paints.

Rural Impact Floods damage farmland by burying crops in silt, uprooting crops by the force of the water or drowning crops. Flood waters can drown livestock as well. Flooding devastates wetlands and other wildlife habitats by depositing massive amounts of silt or leaving behind toxic substances such as petroleum products, fertilizers and pesticides and other man-made chemicals. This can kill animals and lead to water and land pollution.

Disease Flooding increases human exposure to dysentery and other diseases. Flooded sewage treatment plants contaminate drinking water supplies. Contaminated drinking water is a greater problem in developing countries.

2.1.5.7 Addressing Repetitive Loss Properties

Table 12 - Repetitive Loss Properties

Community Name	Community Number	County Name	# of Properties	Type of Property
Sebastian County	050462	Sebastian County	0	N/A
Barling (City)	050305	Sebastian County	0	N/A
Bonanza (Town)	050392	Sebastian County	0	N/A
Fort Smith (City)	055013	Sebastian County	25	10 Residential 15 Non-residential
Greenwood (City)	050198	Sebastian County	3	3 Residential
Hackett (City)	050199	Sebastian County	0	N/A
Hartford (City)	050200	Sebastian County	0	N/A
Lavaca (City)	050201	Sebastian County	0	N/A
Mansfield (City)	050202	Sebastian County	0	N/A
Midland (Town)	050203	Sebastian County	0	N/A

*Huntington and Central City do not participate in the National Flood Program.

The above records indicate that Fort Smith and Greenwood each have multiple repetitive loss properties in their jurisdiction.

According to the FEMA website:
"The primary objective of the Repetitive Loss Properties Strategy is to eliminate or reduce the damage to property and the disruption of life caused by repeated flooding of the same properties. A specific target group of repetitive loss properties is identified and serviced separately from other NFIP policies by the Special Direct Facility (SDF). The target group includes every NFIP-insured property that, since 1978 and regardless of any change(s) of ownership during that period, has experienced:

a) Four or more paid flood losses of more than $1,000 each.

b) Two paid flood losses within a 10-year period that, in the aggregate, equal or exceed the current value of the insured property.

c) Three or more paid losses that, in the aggregate, equal or exceed the current value of the insured property."

"Severe Repetitive Loss Property Definition: The definition of severe repetitive loss as applied to this program was established in section 1361A of the National Flood Insurance Act, as amended (NFIA), 42 U.S.C. 4102a. An SRL property is defined as a residential property that is covered under an NFIP flood insurance policy and:

(a) That has at least four NFIP claim payments (including building and contents) over $5,000 each, and the cumulative amount of such claims payments exceeds $20,000; or

(b) For which at least two separate claims payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.

For both (a) and (b) above, at least two of the referenced claims must have occurred within any ten-year period and must be greater than 10 days apart."

2.1.5.8 Vulnerability and Estimating Potential Loss

All participating jurisdictions within the entire planning area are vulnerable to flooding. Loss of life and injuries are possible, damage to residential and business structures, transportation systems, disruption of utility services, and major environmental damage.

Based on historical data, the average estimated losses per flood event is approximately $22,258 and averages $98,571 per year.

Table 13 - Flood Events

	Events	Deaths	Injuries	Property Damage	Crop Damage	Total Damages
Total 2016-2022	31	3	0	$690K	0	$690K

2.1.5.9 Multi-Jurisdictional Risk Assessment

Sebastian County has experienced 31 countywide flooding events (2016-2022) affecting the county as a whole. Property damages total $690K.

Though flooding, specifically flash floods, is a problem affecting all jurisdictions in the county at one time or another to varying degrees of seriousness, mitigation solutions are typically site specific and generally the responsibility of the specific jurisdictions within which the problems exist.

2.1.6 Landslide

2.1.6.1 Description of Landslide

A landslide is a downward movement of materials under the force of gravity. Landslides include ground movement such as rockfalls, deep failure of slopes, shallow debris flows and mudflows.

The type of movement that occurs and the type of material involved classify landslides. The types of movement are slides, flows, lateral spreads, falls and topples. The types of material involved in landslides include bedrock and soil (including artificial fill). Soils are described as material that is either predominantly coarse (debris) or predominantly fine (earth). A combination of two or more of the principal types of flows is referred to as a complex movement.

Slides: One of the most common types of movements is sliding, which involves downward displacement along one or more failure surfaces (also referred to as a discontinuity, rupture or slip surface). The material from the slide may be broken into several pieces or remain as a single, intact block. Sliding can be translational or rotational. Rotational motion involves movement turning about a specific point, where translational sliding is movement down slope on a path roughly parallel to the slip surface. The most common example of a rotational slide is a slump, which has a strong, backward rotational component and a curved upwardly concave failure surface. Slides and slumps are common throughout Arkansas, especially along streams and highways. Slides are commonly initiated when the bottom of a slope is removed (by running water or human activity), thereby steepening the overall slope to the point that a landslide will occur.

Flows: Flows consist of a slurry of loose rocks, soil, organic matter, air and water moving down slope in the manner similar to a viscous fluid. They are distinguished from slides by having high water content and are thoroughly deformed internally during movement. While flows can dominate the failure, they are commonly observed as a minor component or extension of the toe (bottom of the landslide) of a slide or fall. Although flows are not as severe a problem in Arkansas as in some of the western states, they are common in all areas of the State, especially along the slopes of Crowley's Ridge (Cronin, 1992; see McFarland, 1992). A type of flow known as soil creep is an extremely slow and steady process that may persist over long periods of time. It is commonly observed in weathered bedrock and soil on steep slopes throughout Arkansas.

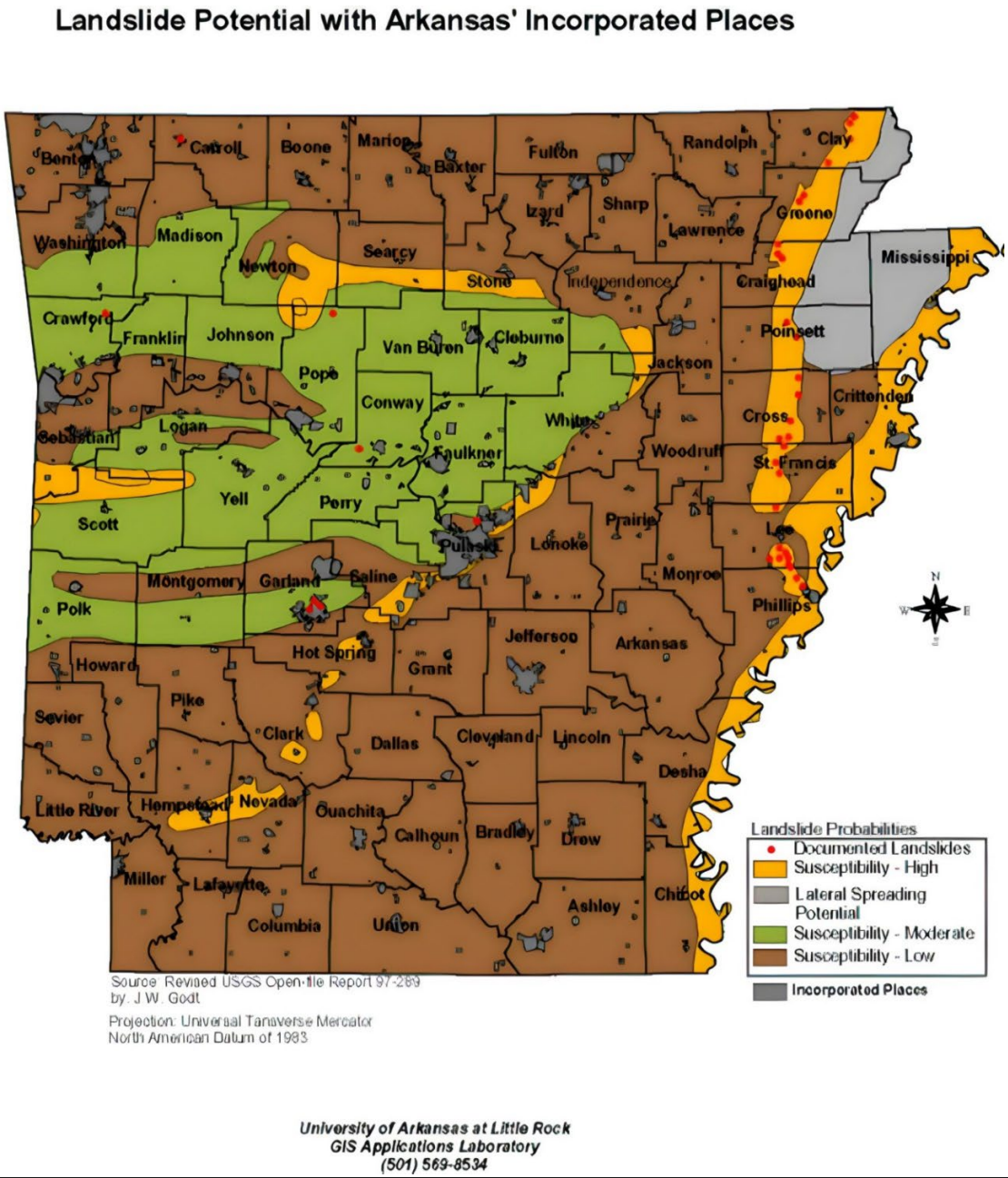
Lateral Spreads: The slow-to-rapid lateral extensional movements of rock or soil masses on almost level ground are known as lateral spreads. In fine-grained soils, such as quick clays, lateral spreading occurs if the soils are remolded or disturbed by construction or grading. Loose, granular soils commonly produce lateral spreads through the process of liquefaction. Liquefaction is the transformation of a granular material from a solid state into a liquefied state as a biproduct of increased water pressure in the spaces between the grains of sand. Liquefaction is caused by vibration of the earth produced by a strong earthquake.

Falls and Topples: Falls occur when masses of rock or other material detach from a steep slope or cliff and descend by free fall, rolling, or bouncing. Topples consist of the forward rotation of rocks or other material about a pivot point on a hill slope. Topples generally develop in rock slopes divided into blocks by vertical fractures or joints oriented parallel to the slope face. Falls and topples can be triggered by an earthquake or erosion at the base of the affected slope. In Arkansas, falls and topples are infrequent in occurrence and are restricted to the rock outcrops of the Ouachita and Ozark Mountains, and the bluff faces of the Arkansas River valley.

2.1.6.2 Location of Landslide Events

The following map shows areas of the State and its susceptibility to landslide and lateral spread.

Graphic 4 - Landslide Potential



Although a landslide may occur almost anywhere, from man-made slopes to natural, pristine ground, most slides often occur in areas that have experienced sliding in the past. Landslides may also be triggered by other natural hazards. For example, the safety of a dam can be severely compromised by upstream landslides or collapse of slopes bordering the reservoir or dam abutments. Landslides and flooding are closely related because both involve precipitation, runoff, and ground saturation. Debris flows usually occur in small, steep channels and are often mistaken for floods. Landslides and lateral spreads often result from seismic activity. The simultaneous or sequential occurrence of interactive hazards may produce cumulative effects that differ significantly from those expected from any one event.

2.1.6.3 Extent, Magnitude or Severity of Landslide

Because of the limited significant landslide events that have affected the county, the extent or severity of the landslide hazard is not well known. Because of the low frequency of significant landslides – and the likeliness they would be isolated events if they did occur – this event's potential magnitude is considered negligible and its severity negligible.

The landslides that have been recorded in neighboring Crawford and Franklin Counties have typically been a couple hundred feet across. Franklin County experienced a slide of 700 linear feet that caused 3.2 miles of road closure.

Based on best available data from neighboring Crawford and Franklin County slides, Sebastian County and all participating jurisdictions can expect to experience a landslide up to 700 linear feet, but typically see slides averaging two hundred to three hundred linear feet.

2.1.6.4 Previous Occurrences

There have been no previous landslide occurrences of any significance recorded for the county.

2.1.6.5 Probability of Future Landslide

With water and wildfires being two of the leading causes of landslides, future conditions could lead to more frequent and severe landslides. As previously mentioned, more frequent and intense heavy-rainfall events are expected across the planning area. As described in a later section of this plan, warmer and drier conditions in Arkansas are projected to cause an increase in wildfires.

Location (All participating jurisdictions of the entire planning area.)
Limited: 10 to 25 percent of planning area or limited single-point of occurrences
Maximum Probable Extent (Magnitude/Strength based on historic events or future probability)
Weak: Limited classification on scientific scale, slow speed of onset or short duration of event, resulting in little to no damage.
Probability of Future Events
Occasional:1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.
Overall Significance
Low: Two or more criteria fall in lower classifications, or the event has a minimal impact on the planning area.

2.1.6.6 Impact of Landslide

Landslides have occurred in nearly every county in Arkansas. They have destroyed or damaged roads, railroads, bridges, mining facilities, parks and recreational areas, residential and commercial buildings, sewers, dams, reservoirs, forests, fisheries, and farms. Damage caused directly by landslides is largely undocumented or often misreported. The devastating effects of landslides often are attributed to triggering events such as a flood, earthquake, or storm.

Based on the best available data, observed conditions, and past occurrences, the probable impact of landslide on the life, safety, and health of the citizens of Sebastian County would be little or no impact. This is based on the lack of exposure of any structure or facility critical to the safety and health of the citizens of the county.

Roads are the primary target of impact and would cause traffic disruptions should the slide affect the roadway. There are some minor roads (local dirt roads) that could be impacted.

2.1.6.7 Vulnerability and Estimating Potential Loss

Per the earlier map, landslide risk within Sebastian County varies. Location, rather than structure type, is the primary control on the vulnerability of structures to landslide events. Landslides can destroy or damage roads, railroads, bridges, residential and commercial buildings, sewers, dams, reservoirs, pipelines, and other structures. Most landslides in the State are human induced and result from cutting into the lower slope of a previously stable hill. The most vulnerable structures are therefore those buildings, roads, distribution lines, and other structures adjacent to slope cuts. All types of building stock (wood, steel, masonry, etc.) are equally vulnerable to the effects of landslides.

Larger slides or those on major highways can be quite costly. Recent landslides in Franklin County cost the Arkansas Department of Transportation $2.3 million for repairs to Interstate 40 and $1.8 million for repairs to Highway 23.

2.1.6.8 Multi-Jurisdictional Risk Assessment

Landslide risks are not unique to any area of the county; the threat is countywide with no significant variation at the county or jurisdiction levels. Jurisdictions with higher infrastructure density make up the landslide high risk zone as they carry a higher exposure to a landslide event in Sebastian County.

A landslide occurrence has not been recorded in Sebastian County to date. Based on USGS data, the southern quarter of the county has more landslide exposure than the other locations.

Economic loss due to landslides has not been well documented. The Arkansas State Highway and Transportation Department (AHTD) has estimated that during the five-year period of 1986-1990, it spent about $600,000 per year statewide for road repairs damaged by landslides. Landslide loss statistics have not been kept at the county level by AHTD, so it is impossible to say how much of this was spent in Sebastian County.

2.1.7 Thunderstorms

2.1.7.1 Description of Thunderstorm/Strong Wind, Lightning, and Hail Events

A thunderstorm, also known as an electrical storm, a lightning storm, thundershower or simply a storm, is a form of turbulent weather characterized by the presence of lightning and its acoustic effect on the Earth's atmosphere known as thunder. The meteorologically assigned cloud type associated with the thunderstorm is the cumulonimbus. Thunderstorms are usually accompanied by strong winds, heavy rain and sometimes snow, sleet, hail, or no precipitation at all. Those that cause hail to fall are called hailstorms. Thunderstorms may line up in a series or rain band, known as a squall line. Strong or severe thunderstorms may rotate, known as supercells. While most thunderstorms move with the mean wind flow through the layer of the troposphere that they occupy, vertical wind shear causes a deviation in their course at a right angle to the wind shear direction.

Strong Winds: Damaging winds are often called “straight-line” winds to differentiate the damage they cause from tornado damage. Strong thunderstorm winds can come from several different processes. Most thunderstorm winds that cause damage at ground level are a result of outflow generated by a thunderstorm downdraft. Damaging winds are classified as those exceeding 50-60 mph.

Damage from severe thunderstorm winds account for half of all severe reports in the lower 48 states and is more common than damage from tornadoes. Wind speeds can reach up to 100 mph and can produce damage extending for hundreds of miles.

Lightning: Lightning is a channel of electrical charge called a stepped leader that zigzags downward in roughly 50-yard segments in a forked pattern. This step leader is invisible to the human eye, and shoots to the ground in less time than it takes to blink. As it nears the ground, the charged step leader is attracted to a channel of opposite charge reaching up, a streamer, normally through something tall, such as a tree, house, or telephone pole. When the oppositely charged leader and streamer connect, a powerful electrical current begins flowing. A bright return stroke travels about 60,000 miles per second back towards the cloud. A flash consists of one or perhaps as many as 20 return strokes. We see lightning flicker when the process rapidly repeats itself several times along the same path. The actual diameter of a lightning channel is one-to-two inches.

Hail: Hail is a form of precipitation that occurs when updrafts in thunderstorms carry raindrops upward into extremely cold areas of the atmosphere where they freeze into balls of ice. Hail can damage aircraft, homes, and cars, and can be deadly to livestock and people.

2.1.7.2 Location of Thunderstorm/Strong Wind, Lightning, and Hail Events

All participating jurisdictions of the entire planning area have experienced thunderstorms, lightning, strong winds and hail events and are equally at risk.

2.1.7.3 Extent, Magnitude or Severity of Thunderstorm/Strong Wind, Lightning, and Hail Events

Based on historical data, the entire planning area could experience thunderstorm winds from 52 knots to 71 knots as well as hail from .75 to 2.50 inches placing thunderstorms in Sebastian County in the TS3 to TS5 range of the thunderstorm criteria scale and H2 to H7 of the Hailstorm Intensity Scale.

The following are some characteristics of the different thunderstorm types.

TS1: *WEAK* - No tornadoes, no hail, winds less than 25 mph, only a few lightning strikes total, rainfall rates 0.03-0.10 of an inch per hour, no damage.

TS2: *MODERATE* - No tornadoes, no hail, winds 25-40 mph, 1-10 lightning strikes per five-minute interval, rainfall rates 0.10-0.25 of an inch per hour, little damage--mainly limited to breakage of small tree branches and movement of lawn furniture.

TS3: *HEAVY* - EF0 tornado possible, hail 0.25-0.75 of an inch in diameter, winds 41-57 mph, 10-20 lightning strikes per five-minute interval, rainfall rates 0.25-0.55 of an inch per hour, minor damage to small branches and roofs, with street flooding and lightning-sparked house fires possible.

TS4: *INTENSE* - EF1-EF2 tornado possible, hail 1.00-1.50 inches in diameter, winds 58-70 mph, 20-30 lightning strikes per five-minute interval, rainfall rates 0.55-1.25 inches per hour, moderate damage--wind damage to trees and buildings, possible tornado damage, hail dents in cars, damage to crops, power outages, and flooding along streams, creeks, and roadways.

TS5: *EXTREME* - EF3-EF5 tornado possible, hail larger than 1.50 inches in diameter, winds greater than 70 mph, more than 30 lightning strikes per five-minute interval, rainfall rates greater than 1.25 inches per hour, severe damage--significant, widespread damage to trees and property, flooding, hail damage to property and crops, EF3-EF5 tornado damage possibly devastating, and widespread power outages.

Table 14 - Modified NOAA/TORRO Hailstorm Intensity Scale

Size Code	Intensity Category	Typical Hail Diameter (inches)	Approximate Size	Typical Damage Impacts
H0	Hard Hail	Up to 0.33	Pea	No damage
H1	Potentially Damaging	0.33-0.60	Marble or Mothball	Slight damage to plants, crops
H2	Potentially Damaging	0.60-0.80	Dime or Grape	Significant damage to fruit, crops, vegetation
H3	Severe	0.80-1.20	Nickel to Quarter	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
H4	Severe	1.2-1.6	Half Dollar to Ping Pong Ball	Widespread glass damage, vehicle bodywork dented, brick walls pitted
H5	Destructive	1.6-2.0	Silver Dollar to Golf Ball	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
H6	Destructive	2.0-2.4	Egg	Aircraft bodywork dented; brick walls pitted
H7	Very Destructive	2.4-3.0	Tennis Ball	Severe damage to aircraft bodywork
H8	Very Destructive	3.0-3.5	Baseball to Orange	Severe damage to aircraft bodywork
H9	Super Hailstorms	3.5-4.0	Grapefruit	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open
H10	Super Hailstorms	4+	Softball and up	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open.

2.1.7.4 Previous Thunderstorm/Strong Wind, Lightning, and Hail Events

There have been 76 Thunderstorm/Strong Wind events reported between 2016 and 2022 ranging from 52 kts.EG to 71 kts.EG resulting in $142K in property damages.

Unusually gusty winds occur in Arkansas due to the pressure difference between low pressure to the northeast of the state and high pressure to the west. The difference in pressure between low pressure to the northeast of Arkansas and high pressure to the southwest of the state caused very windy conditions.

Hail Events - There have been 41 hail events reported between 2016 and 2022 ranging from .75 to 2.50 inches resulting in $1,060,000 in property damages.

2.1.7.5 Probability of Future Thunderstorm/Strong Wind, Lightning, and Hail Events

Two key factors fuel the formation of severe thunderstorms: convective available potential energy (CAPE) and strong wind shear. There is evidence that climate change should increase CAPE by warming the surface and putting more moisture in the air through evaporation. The evidence suggests that the increase in CAPE will be the strongest in the Southeast, including Arkansas, leading to an increase in days favorable to severe thunderstorm formation.

Location (All participating jurisdictions within the entire planning area)
Extensive: 75 to 100 percent of planning area or consistent single-point of occurrences
Maximum Probable Extent (Magnitude/Strength based on historic events or future probability)
Moderate: Moderate classification on scientific scale, moderate speed of onset or moderate duration of event, results in some damage and loss of services for days. There have been 117 Thunderstorm/Strong Wind, Lightning, and Hail events between 2016 and 2022 resulting in $1.2M in property damages.
Probability of Future Events
Highly Likely: 90 to 100 percent probability of occurrence in the next year or a recurrence interval of 1 year.
Overall Significance
High: The criteria consistently fall in the high classifications and the event is likely/highly likely to occur with severe strength over a significant to extensive portion of the planning area.

2.1.7.6 Impact of Thunderstorm/Strong Wind, Lightning, and Hailstorm Events

Thunderstorm hazard can contribute to property damage and in some cases, injuries or fatalities.

Across Sebastian County, thunderstorm winds have resulted in large tree limbs being snapped and entire trees being uprooted or blown down blocking roads and damaging property. Thunderstorm winds have also been responsible for downed power lines resulting in loss of power for residences.

Hail frequently occurs in conjunction with thunderstorms and has resulted in substantial damage to structures and vehicles in Sebastian County.

Table 15 - Thunderstorm Threats

Severe Wind Threat Level	Threat Level Descriptions
Extreme	"An Extreme Threat to Life and Property from Severe Wind Gusts Associated with Thunderstorms." Within 12 miles of a location, there is an extreme likelihood (36% or greater) of severe wind, with storms capable of damaging wind gusts (greater than or equal to 58 mph) causing minor damage to major damage in the worst situations.
High	"A High Threat to Life and Property from Severe Wind Gusts Associated with Thunderstorms." Within 12 miles of a location, there is a high likelihood (26% to 35% probability) of severe wind, with storms capable of damaging wind gusts (greater than or equal to 58 mph) causing minor damage to major damage in the worst situations.
Moderate	"A Moderate Threat to Life and Property from Severe Wind Gusts Associated with Thunderstorms." Within 12 miles of a location, there is a moderate likelihood (16% to 25% probability) of severe wind, with storms capable of damaging wind gusts (greater than or equal to 58 mph) causing minor damage to major damage in the worst situations.
Low	"A Low Threat to Life and Property from Severe Wind Gusts Associated with Thunderstorms." Within 12 miles of a location, there is a low likelihood (6% to 15% probability) of severe wind, with storms capable of damaging wind gusts (greater than or equal to 58 mph) causing minor damage to major damage in the worst situations.
Very Low	"A Very Low Threat to Life and Property from Severe Wind Gusts Associated with Thunderstorms." Within 12 miles of a location, there is a very low likelihood (2% to 5%) of strong wind gusts (greater than or equal to 58 mph) causing minor damage to major damage in the worst situations.
Non-Threatening	"No Discernable Threat to Life and Property from Severe Wind Gusts Associated with Thunderstorms." Within 12 miles of a location, environmental conditions do not support the occurrence of severe wind gusts from thunderstorms.

Note: To be considered severe, associated wind gusts must be 58 mph or greater (50 knots or greater).
Damaging Wind Gusts - Severe thunderstorm wind gusts between 58 mph and 74 mph (between 50 knots and 64 knots) causing minor damage, to severe damage with wind gusts of 90 to 150 mph (78 to 130 knots).

2.1.7.7 Vulnerability and Estimating Potential Loss

All participating jurisdictions within the entire planning area are equally likely to experience severe thunderstorms, lightning, high winds, and hailstorm events.

All structures in the county and their contents are vulnerable to damage by thunderstorms winds. High winds can down trees onto power lines, damage mobile homes that are not anchored, and rip off roofing. Winds can cause death and injuries by lifting unanchored objects creating flying missiles.

Lightning strikes have the power to topple trees many times disrupting service, and structural fires. Lightning can possibly cause death and injuries. Zero injuries due to lightning have been reported in Sebastian County. Wind and lightning can damage communication towers located throughout the county.

Hailstorm events are frequent in the county and can cause damage to all structures, namely roof shingles which can lead to roof leaks and further damage to the structure interiors. All types of real and personal property are vulnerable to hailstorms, cars, trailers, boats, and crops. Hailstorms can cause bodily injury if caught outside without protection.

Table 16 - Thunderstorm Events

Event	Events	Fatalities X $8M	Injuries X $1M	Total Fatalities, Injuries, Personal and Crop Damages	Average loss per event
Thunderstorm/ Strong Winds	76/$142,000	$0	$0	$142,000	$20,286
Hail Events	41/$1,060,000	$0	$0	$1,060,000	$151,429

The entire county is subject to thunderstorm events where usually high winds, lightning and hail are involved.

2.1.7.8 Multi-Jurisdictional Risk Assessment of Thunderstorms/Strong Wind, Lightning, and Hailstorms

Severe thunderstorms do not seem to be unique to particular areas of the county. The threat is countywide and with no significant variation at the county or jurisdiction levels. However, certain facilities under county government control that are critical to the entire county are particularly at risk of thunderstorms. Specifically, this is the county's emergency operations center and E-911 dispatch center located in Fort Smith. Communications equipment and antenna towers, which are prone to damage by lighting, are integral components of these facilities. Protection of these facilities is a high priority.

2.1.8 Tornado

2.1.8.1 Description of a Tornado

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

2.1.8.2. Locations of Tornado Events

Because there is no defined geographic hazard boundary, all people and property within all participating jurisdictions within the entire planning area are exposed to the risk of damage from tornadoes. Based on the short 65-year dataset, no clear areas of high tornado occurrence occur at any particular county level. Thus, although tornado risk appears to vary on a statewide scale, variable tornado risk at the county scale cannot be demonstrated. Thus, mapping variations in tornado risk at a local or county scale is not currently possible. For the purpose of this plan, all parts of this plan are considered equally likely to experience a tornado event.

2.1.8.3. Extent, Magnitude or Severity of Tornado

While the entire planning area is susceptible to tornados, since 2016 Sebastian County has experienced ten tornados, with 1 classified as EF0, 8 classified as EF1, and 1classified as EF-Unknown (EFU), since the damage could not be reviewed by a survey team. Due to the extreme unpredictability of tornados, it is not outside the realm of possibilities for any of the participating jurisdictions within the planning area to experience an EF5 tornado.

The Enhanced Fujita (EF) Scale was devised by a panel of meteorologists and engineers convened by the Wind Science and Engineering Research Center at Texas Tech University. The Weather Channel's severe weather expert Dr. Greg Forbes was on the team of experts who determined the revised wind speed ranges. Since 2007, the EF Scale has been used to rate tornadoes.

Table 17 - Enhanced Fujita Scale

Enhanced Fujita Scale		
Category	**Wind Speed**	**Potential Damage**
EF0	105–137 km/h 65–85 mph	Light damage. Peels surface off roofs; some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; mobile homes pushed off foundations or overturned; sign boards damaged.
EF1	138–179 km/h 86–110 mph	Moderate damage. Roofs torn off frame houses; windows and glass doors broken; moving autos blown off roads; mobile homes demolished; boxcars overturned.
EF2	180–217 km/h 111–135 mph	Considerable damage. Roofs torn off well-constructed houses; foundations of frame homes shifted; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF3	218–266 km/h 136–165 mph	Severe damage. Some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
EF4	267–324 km/h 166–200 mph	Devastating damage. Well-constructed houses and whole frame houses completely leveled; structures with weak foundations blown away some distance; trees debarked; cars thrown and small missiles generated.
EF5	>324 km/h >200 mph	Incredible damage. Strong frame houses leveled off foundations and swept away; with strongest winds, brick houses completely wiped off foundations; automobile-sized missiles fly through the air in excess of 100 m (109 yd); cars thrown and large missiles generated; incredible phenomena will occur.

2.1.8.4. Previous occurrences

There were 10 tornados reported between 01/01/2016 and 12/31/2022, 1 EF0, 8 EF1s and one EFU, causing $1,535,000 in damages with no deaths or injuries reported.

2.1.8.5. Probability of Future Tornadoes

According to the Fourth National Climate Assessment, some types of extreme weather like rainfall and extreme heat can be directly attributed to global warming. Other types of extreme weather, such as tornadoes, are also exhibiting changes which may be linked to climate change, but scientific understanding isn't detailed enough to project direction and magnitude of future change. As western Arkansas becomes warmer and wetter the likelihood to have an effect on extreme weather events, including tornadoes, increases.

Location (All participating jurisdictions within the entire planning area)
Extensive: 75 to 100 percent of planning area
Maximum Probable Extent (Magnitude/Strength based on historic events or future probability)
Extreme: onset or extended duration of tornado event, resulting in catastrophic damage and uninhabitable conditions.
Probability of Future Events
Likely: 10 to 90 percent probability of tornado occurrence in the next year or a recurrence interval of 1 to 10 years.
Overall Significance
High: A tornado event is likely/highly likely to occur with severe strength over a significant to extensive portion of the planning area.

2.1.8.6 Impact of Tornado

Tornadoes can cause significant damage to trees, buildings, and power infrastructure. They can cause fatalities, particularly when people are unable to get to a protective shelter. Associated hazards include:

- Wind- Tornadoes consist of strong, often destructive winds that can uproot trees and damage buildings and cars
- Rain/Hail-Tornadoes are associated with thunderstorms and may be preceded or followed by heavy rainfall or hail. Depending on the hydrological conditions, flash flooding may occur.
- Obstacles to Response- Damage or destruction of public facilities, including hospitals, can complicate emergency response efforts. Additionally, debris may block roadways, there may be extensive damage to electric and telephone lines, utility lines may be broken, and communication may be cut off because of damaged or destroyed cell, radio, and television towers.

There were 10 tornados reported between 01/01/2016 and 12/31/2022. There was 1 EF0, 8 EF1s and one EFU, causing $1,535,000 in damages with no deaths or injuries reported. These tornadoes were responsible for snapped and uprooted trees, downed power lines, and damage to residential and commercial structures, barns, and chicken houses.

2.1.8.7. Vulnerability and Estimating Potential Loss

The National Climatic Data Center provides historical details about past hazard events in the county. The chart shows a breakdown of the magnitudes of the tornadoes which have occurred in Sebastian County from 2016-2022.

Table 18 - Tornado Events

Magnitude of Tornadoes	NDCD Total Events- (-)
EF-U	1 (2020)
EF-0	1 (2018)
EF-1	8 (2018,2019,2021,2022)
EF-2	0
EF-3	0
EF-4	0
EF-5	0
Total	10

Table 19 - Tornado Damages

Based on historical data, the average estimated losses per tornado is $153,500

	Events	Deaths	Injuries	Property Damage	Crop Damage	Total Damages
Total 2016-2022	10	0	0	$1,535,000	$0	$1,535,000

2.1.8.8 Multi-Jurisdictional Risk Assessment

Because there is no defined geographic hazard boundary, all people and property in Sebastian County are exposed to the risk of damage from tornadoes. All structures in Sebastian County are vulnerable to tornadoes. The most vulnerable to tornadoes are wood frame structures and manufactured homes. Damage to residential structures could cause hundreds to be without shelter or try to live in unsafe conditions.

Utilities most vulnerable to tornado winds are electrical power (e.g., power generation facility, above ground transmission lines and sub-stations) and communication structures (radio towers, cell phone towers). Most transportation systems such as highways and railways are not highly vulnerable to tornadoes, but downed power lines and trees and limbs can delay travel until roads are cleared. This would not only affect the day-to-day traffic but also critical services such as emergency police, fire, and ambulance.

Vulnerable populations (retirement homes, schools, and childcare centers) are primarily located in the incorporated cities and towns within Sebastian County.

All participating jurisdictions within the entire planning area would be affected due to the lost power, water, sewer, gas, and communications. Power and water outages would cause food spoilage and sanitation problems for communities. Hospitals, grocery stores and other critical need and economically important facilities are damaged and closed for extended periods.

Businesses and local government infrastructure often suffer extensive damage in tornados as well as the death of people, wildlife, and livestock. Employment is often affected because of businesses that close due to the tornado damage and loss of business. Even with the advances in meteorology, warning times may be short.

The school districts within Sebastian County could be closed for extended periods due to power and water outages, or possible damage to building structures on school campuses. The school buses are also disrupted due to damaged or destroyed roads and bridges. Employment would be affected by school closings.

2.1.9 Wildfire

2.1.9.1 Description of Wildfire

A wildfire is any outdoor fire that is not controlled, supervised, or arranged that spreads through vegetative fuels, exposing and possibly consuming structures. They often begin unnoticed and spread quickly and are usually signaled by dense smoke that fills the area for miles around. Naturally occurring and non-native species of grasses, brush, and trees fuel wildfires. A wildland fire is a wildfire in an area in which development is essentially nonexistent, except for roads, railroads, power lines and similar facilities. A Wildland-Urban Interface (WUI) fire is a wildfire in a geographical area where structures and other human development meet or intermingle with wildland or vegetative fuels. Areas with a large amount of wooded, brush and grassy areas are at the highest risk of wildfires. Additionally, areas anywhere that have experienced prolonged droughts or are excessively dry are also at risk of wildfires.

2.1.9.2 Location of Wildfire

The area most affected by wildfire would be wooded areas such as forestland. The entire county possesses some type of fuel, whether grass, agriculture, forestry, shrubs, structures, or other vegetation types. Sebastian County includes 155,871 acres of forestland, 45% of the land area in Sebastian County.

According to the county emergency management coordinator and chiefs of the county's rural fire districts, wildfires occur often at various locations in rural areas of the county. Most at risk are structures in the rural and urban fringe areas of the county where vegetation fuels and development interface. Unlike some areas in western United States, such as California, rarely are there any threats to areas in the county with high concentrations of population. The areas of the county most affected and threatened by wildfire are those outside the incorporated cities and typically related to open-field grass and brush fires.

Wildfires are scattered across Sebastian County; to assess jurisdictions most at risk of wildland fires, one must consider the wildland-urban interface (WUI). Maps demonstrating each jurisdiction's Wildfire Hazard Potential are located in Section 7.4: Appendix D.

2.1.9.3 Extent, Magnitude or Severity of Wildfire

Based on historical data, the planning area experiences an average of 13 wildfires per year burning an average of 9 acres per fire and 117 acres per year.

From a landscape perspective, burn severity is defined as the degree of environmental change caused by fire. Heterogeneity in burn severity is a result of the spatial variation of factors such as fire intensity, topography, and vegetation type. Burn severity can be broken down into several categories, useful in gauging post burn ecological responses:

Table 20 - Burn Severity

Rank	Burn Severity	Description	Characteristics
0	Unburned	Fire extinguished before reaching microsite	• Leaf litter from previous years intact and uncharred • No evidence of char around base of trees and shrubs • Pre-burn seedlings and herbaceous vegetation present.
1	Low Severity Burn	Surface fire which consumes litter yet has little effect on trees and understory vegetation.	• Burned with partially consumed litter present • Evidence of low flame heights around base of trees and shrubs (<0.5 m) • No significant decreases in overstory & understory basal area, diversity, or species richness from pre-burn assessments • Usually burning below 80 ° C
2	Medium-Low Severity Burn	No significant differences in overstory density and basal area, & no significant differences in species richness. However, understory density, basal area, and species richness declined.	• No litter present and 100% of the area covered by duff • Flame lengths < 2 m • Understory mortality present, little or no overstory mortality
3	Medium-High Severity Burn	Flames that were slightly taller than those of Medium-low intensity fires, but these fires had occasional hot spots that killed large trees, With significant reduction in the understory	• Soil exposure on l-50% of the area • Flame lengths <6m • High understory mortality with some overstory trees affected
4	High Severity Burn	Crown fires, usually a stand replacing burn with relatively high overstory mortality	• Soil exposure >50% • Flame lengths >6m • Higher overstory mortality >20% • Usually burning above 800 ° C

2.1.9.4 Previous Occurrences

The Arkansas Department of Agriculture reported the following data for 2013-2019.

Table 21 - Wildfire Events

	2013		2014		2015		2016		2017		2018		2019		Totals	
County	Fires	AC	Fires	AC	Fires	AC	Fires	AC	Fires	AC	Fires	AC	Fires	AC	Fires	AC
Sebastian	6	21	15	182	13	53	21	222	26	316	7	52	6	46	94	892

2.1.9.5 Probability of Future Wildfire Occurrences

According to the EPA, warmer and drier conditions in Arkansas are projected to cause an increase in the frequency and intensity of forest fires. Changing climate conditions may cause existing tree species to expand northward and be replaced by species from the south. Warmer conditions will also allow more pests to survive through the winter, threatening forest health throughout the state.

Location (Forest land accounts for 155,871 acres, or 45 percent of Sebastian County.)
Significant: 25 to 75 percent of planning area or consistent single-point occurrences
Maximum Probable Extent (Magnitude/Strength based on historic events or future probability)
Weak: Limited classification on scientific scale, slow speed on onset or short duration of even resulting in little to no damage.
Probability of Future Events
Highly Likely: 90 to 100 percent probability of occurrence in the next year or a recurrence interval of 1 year.
Overall Significance
Medium: The criteria fall mostly in the middle ranges of classifications and the event's impacts on the planning area are noticeable but not devastating.

2.1.9.6 Impact of Wildfire

Wildland fires not only consume forest and rangeland vegetation, but impact wildlife habitat, recreation and tourism, water quality and supply and property values. Wildfires can cause extensive damage, both to property and human life.

In Sebastian County, most rural residents depend on their local volunteer fire departments to protect their property from loss.

In drought conditions, wildfires can be easily started and are extremely dangerous. Protecting structures in the wildland from fires poses special problems and puts additional burdens on local firefighting resources. Weather conditions leading to wildfires can change rapidly. Thus, there are few measures, other than rapid response, that can contain wildfires and limit their threat to property. Local economic impacts from catastrophic wildfires include disruptions to both consumption and production of local goods and services. Immediate effects may include decreased recreation / tourism and timber harvest in the fire region, as well as disruptions from

evacuations and transportation delays. Increased use of local goods and services for fire protection also impacts local economies. Other effects include direct property losses (in the form of buildings, timber, livestock, and other capital), damage to human health, and possible changes in the long-term structure of the local economy. There are many secondary effects to wildfire. All vegetation may be destroyed as well as the organic material in the soil may be burned away or may decompose into water repellent substances that prevent water from absorbing into the soil. In effect, normal rainfall after a wildfire may result in unusual erosion or flooding from burned areas; depending on the topography of the burned area, heavy rain can produce destructive debris flows. Wildfires also have an effect on water supplies. The loss of ground-surface cover, such as pine needles and small branches, and the chemical transformation of burned soils make watersheds more susceptible to erosion from rainstorms.

In 2011, Sebastian County experienced one particularly large wildfire with extensive damage. A wildfire, initially started by children in Greenwood spread to Fort Chaffee destroying 120 former military barracks causing over $6 million in damages over 7 days. Wildfires in neighboring counties have caused between $25,000 and $250,000 per year.

2.1.9.7 Vulnerability and Estimating Potential Loss

Sebastian County is approximately 351,358 acres. Forest land accounts for 155,871 acres, or 45 percent of Sebastian County. Sebastian County also has 706 farms covering 100,790 acres.

For the Sebastian County project area, it is estimated that 98,353 people or 78 percent of the total project area population live within the WUI.

The majority of the planning area's population (61,033) is in a density area of 1 house/2 acres to 3 houses/1 acre, meaning most of the planning area's population is vulnerable to wildfire.

Structure location is the primary control on vulnerability to wildfire. Structures most vulnerable to wildfire are those located within the rural areas of the county where wildfire events typically occur and, to a less extent, in the rural-urban interface areas of the county. These are areas where structures and other human development meet or intermix with undeveloped or open rural land. These interfaces create an environment in which fire can move readily between structural and vegetation fuels. Its expansion over the past several years has increased the likelihood that wildfires will threaten structures and people. Although all building construction types within the interface are vulnerable, the most vulnerable construction type is wood frame, which comprises about three-fourths of the structures in the county. These wood frame structures are found at locations throughout the county.

Most vulnerable are wood frame structures and mobile homes in the rural and urban interface areas that are adjacent to land that is subject to wildfire, due namely to natural fuel characteristics in the vicinity. As a predominately rural county with small cities and numerous scattered home-sites and businesses, interface settings are found throughout the county and affect all jurisdictions. Accordingly, all fire departments are mindful of fire conditions and threats in their service areas.

Fire fighters are the most vulnerable populations during wildfires. Fire fighters can face mortality due to heat exhaustion. Other vulnerable populations are those that live in a high intensity area, the population in the dense housing area referenced on the previous pages, and those that reside in wood frame structures or manufactured homes, especially the elderly and children. In Sebastian County 6.5% of the county's population is under the age of 5 years. In Sebastian County 16% of the county's population is over the age of 65 years.

Table 22 - Sebastian County Vulnerable Populations

2021 American Community Survey 5-Year Estimates		
Total Population	Under 5 years	Over 65 Years
127,941	8,276/6.5%	20,515/16%

2.1.9.8 Multi-Jurisdictional Risk Assessment

Wildfires are more prevalent in the rural, unincorporated areas of the county and pose a greater threat to property and lives where structures interface with wildfire-prone conditions (such as high fuel grass lands and shrubbery). Though records on wildfires in the county have not always been well maintained, rural fire departments and the County Emergency Coordinator state that the risk of wildfire exists throughout the county and is not associated with any particular sector.

Throughout the country, associated with the risk of wildfire is the expansion of the wildfire/urban interface (WUI) in recent decades, which has significant implications for wildfire management and impact. The WUI creates an environment in which fire can move readily between structural and vegetation fuels. Its expansion has increased the likelihood that wildfires will threaten structures and people. For this reason, the areas of greatest concern for wildland fire damages are those rural, urban-interfaced areas in the growing areas of the county outside the cities. In Sebastian County, the growing areas are generally those in proximity to state highway corridors and main county roads. Crisscrossing the county, these corridors traverse much of the county and are not specific to one sector or another.

The risk for wildfire is thus much greater within jurisdictional areas of county government and less likely within areas under jurisdictional purview of the incorporated cities. For this reason, rural fire departments throughout the county, which are to some extent under the auspices of county government, play a central role in terms of mitigating against and responding to wildfire events.

2.1.10 Winter Storm

2.1.10.1 Description of Winter Storm

Severe winter storms, which may include heavy snowfall, sleet, freezing rain, or a mix of these wintry forms of precipitation. Severe winter weather can down trees, cause widespread power outages, damage property, and cause fatalities and injuries. Areas where such weather is uncommon, such as Arkansas, are typically disrupted more severely by severe winter storms than are regions that experience this weather more frequently.

The National Weather Service defines snow as a steady fall of snow for several hours or more. Heavy snow is defined as either a snowfall accumulating to 4 inches in depth in 12 hours or less, or snowfall accumulation to 6 inches or more in depth in 24 hours or less. A blizzard means that the following conditions prevail for a period of three hours or longer: 1) sustained wind or frequent gusts to 35 miles an hour or greater; and 2) considerable falling and/or blowing snow. Sleet is defined as pellets of ice composed of frozen or mostly frozen raindrops or refrozen partially melted snowflakes. These pellets of ice usually bounce after hitting the ground or other hard surfaces. Heavy sleet is a relatively rare event defined as the accumulation of ice pellets covering the ground to a depth of 0.5 inch or more. Freezing rain or freezing drizzle occurs when rain or drizzle freezes on surfaces such as the ground, trees, power lines, vehicles, streets, highways, etc. An ice storm is used to describe occasions when damaging accumulations of ice are expected during freezing rain situations. Significant ice accumulations are usually accumulations of 0.25 inches or greater.

2.1.10.2 Location of Winter Storm Events

All participating jurisdictions of the entire planning area are equally susceptible to severe winter storm events. Not all areas of Arkansas are equally affected, Sebastian County is affected less often by severe winter events than the northwestern corner of the state.

2.1.10.3 Extent, Magnitude or Severity of Winter Storms

According to the National Climatic Data Center (NCDC) and National Weather Service Data, typical snow accumulations in Sebastian County during heavy snow and winter storm events ranges from 1 inch to 8 inches. Typical ice storm accumulations range from 1/10 of one inch to 1/2 of an inch. Since 2016, four severe winter storm events have impacted Sebastian County. When severe winter storm events do occur (the worse typically associated with ice), they are usually wide-spread over the area and impede the movement of vehicles – limiting regular movement of traffic, causing accidents, and limiting responsiveness of emergency services – and can down power and communications lines and seriously damage some structures, thus creating potentially critical conditions for the entire area.

2.1.10.4 Previous Occurrences

There have been 4 winter storm events reported between 01/01/2016 and 12/31/2022. All 4 events occurred in either 2021 or 2022.

2.1.10.5 Probability of Future Winter Storms

According to EPA, total snowfall has decreased in many parts of the country since widespread observations became available in 1930, with 57 percent of monitored stations showing a decline. Among all of the stations, the average change is a decrease of 0.19 percent per year. The Fort Smith Regional Airport station saw a decrease of 0.47 percent per year. The 20th century had many winters with widespread patterns of unusually low temperatures, including a particularly large spike in the late 1970s. Since the 1980s, though, unusually cold winter temperatures have become less common, particularly very cold nights.

Location (All participating jurisdictions of the entire planning area.)
Extensive: 75 to 100 percent of planning area or consistent single-point of occurrences
Maximum Probable Extent (Magnitude/Strength based on historic events or future probability)
Moderate: Moderate classification on scientific scale, moderate speed of onset or moderate duration of event, resulting in some damage and loss of services for days.
Probability of Future Events
Highly Likely:10 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 year.
Overall Significance
High: The criteria consistently fall in the high classifications and the event is likely/highly likely to occur with severe strength over a significant to extensive portion of the planning area.

2.1.10.6 Impact of Winter Storms

Sebastian County experiences a major winter storm nearly every year. However, severe winter storms, such as heavy ice or snowstorms causing anything more than moderate disruptions of people's lives, are infrequent. Severe events – those causing millions of dollars in widespread damage – seem to occur only about every ten years to fifteen years. Also, the county is not located in a region of the country that is prone to frequent severe winter storms. Damage from of winter storms is often not reported to public agencies for recording in databases such as SHELDUS, typically because the damage is not widespread and usually amounts to no more than downed tree limbs and utility-lines and closed schools and businesses caused by icy road conditions.

Based on past experiences, an estimated ten to twenty structures might be impacted in any given year by severe winter storm events, resulting typically in only minor damage to the structures, mainly due to limbs breaking and falling on roofs, typically residential.

Winter storms can immobilize an entire county. Six inches of unplowed snow can make roads impassable. Trees can be brought down by the weight of wet snow, snap power lines and damage buildings and houses when they fall. Winter storms can cut off heat, power, and communications for several days or weeks. Death can occur from hypothermia.

Winter storms with freezing rain create a coating of ice which snaps tree branches, down power lines, ruin crops, and makes driving hazardous. Rural areas are most at risk of losing power and becoming isolated during a winter storm.

Winter storms can be accompanied by strong winds creating blizzard conditions with blinding wind driven snow, severe drifting, and dangerous wind chill. Strong winds with these intense storms and cold fronts can knock down trees, utility poles, and power lines.

Extreme cold often accompanies a winter storm; exposure to the cold can cause frostbite or hypothermia and be life-threatening. Infants and elderly people are most susceptible. Freezing temperatures can cause severe damage to crops and other vegetation. Pipes may freeze and burst in homes or businesses that are poorly insulated or without heat. Structure fires occur more frequently in the winter due to lack of proper safety precautions and present a greater danger because water supplies may freeze and impede firefighting efforts. People die of hypothermia from prolonged exposure to the cold. Elderly people are most vulnerable to winter storms and account for the largest percentage of hypothermia victims largely due to improperly or unheated homes, but the leading cause of death during winter storms is from automobile or other transportation accidents. Heavy accumulations of ice can bring down trees, electrical wires, telephone poles and lines, and communication towers. Communications and power can be disrupted for days while utility companies work to repair the extensive damage. Even small accumulations of ice may cause extreme hazards to motorists and pedestrians. Heavy snow can immobilize an area and paralyze a city, stranding commuters, stopping the flow of supplies, and disrupting emergency services. Large amounts of snow can collapse buildings and knock down trees and power lines. In rural areas, homes and farms may be isolated for days, and unprotected livestock may be lost. The cost of snow removal, repairing damage, and loss of business can have large economic impacts on cities and towns.

School officials with each of the school districts in Sebastian County monitor weather updates via television, radio, and internet. If the weather becomes hazardous, then appropriate actions are taken based on students being in school or getting ready to come to school. If weather due to snow or ice is forecasted to become hazardous, by the determination of the school officials, school may be cancelled. If weather becomes hazardous after school has started school officials may dismiss school early if road conditions are safe to do so. Students may be kept inside if there are extreme cold temperatures. Wind chill would be the determining factor in keeping students inside.

The University of Arkansas-Fort Smith and the Arkansas Colleges of Health Education (ACHE) also monitor weather updates via television, radio, and internet. If weather due to snow or ice is forecasted to become hazardous, by the determination of the school officials, classes may be cancelled. If the weather becomes hazardous after classes have started school officials may dismiss students early if road conditions are safe to do so.

2.1.10.7 Vulnerability and Estimating Potential Loss

Heavy accumulations of ice or snow commonly result in the collapse of structural damage to buildings. The damage may be caused directly by the excessive weight of the ice/snow accumulation, or by ice-laden trees or branches falling on structures. Homes, businesses, as well as weaker nonresidential structures are most vulnerable to this type of structural damage. The abundant wood structures and manufactured houses in the planning area are much more vulnerable than steel, concrete, or masonry structures. Experiences from past storms indicate that poultry houses are particularly vulnerable. Heavy accumulations of ice from ice storms or heavy snow can also bring down trees, electrical wires, telephone poles and lines, and communication towers.

The National Climatic Data Center provides historical details about past hazard events in the county.

Table 23 - Winter Storm Events

Winter Events 2016-2022	Fatalities	Injuries x $1M	Combined Fatalities, Injuries Personal Property, and Crop Damage Value	Average Cost per Event
4	0	0	$0	$0

2.1.10.8 Multi-Jurisdictional Risk Assessment

All participating jurisdictions within the entire planning area are equally affected by winter storms. Winter storms do not seem to be unique to particular areas of the county; the threat is considered to be countywide with no significant variation at the county or jurisdiction levels.

The entire county is usually affected when a winter storm hits Sebastian County. Parts of the county may not be affected as bad as others, but when major roads are affected, it affects the travel flow and the availability of essential services throughout the county.

Section Three: Mitigation Strategy

3.1: Capability Assessment

Table 24 - Capability Assessment

Planning and Regulatory Capabilities	Sebastian County	City of Barling	City of Bonanza	City of Central City	City of Fort Smith	City of Greenwood	City of Hackett	City of Hartford	City of Huntington	City of Lavaca	City of Mansfield	Town of Midland	Fort Smith Schools	Greenwood Schools	Hackett Schools	Lavaca Schools	Mansfield Schools	Future School (FS)	UAFS	ACHE
Comprehensive/ Master Plan	✓	✗	✗	✗	✓	✓	✗	✗	✗	✗	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓
Capital Improvement Plan	✗	✗	✗	✗	✓	✓	✗	✗	✗	✗	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓
Economic Development Plan	✗	✗	✗	✗	✓	✓	✗	✓	✗	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗
Local EOP	✓	✓	✗	✗	✓	✓	✗	✓	✗	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓
COOP	✓	✓	✗	✗	✗	✗	✗	✓	✗	✗	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓
Stormwater Management Plan	✓	✓	✗	✗	✓	✗	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
Wildfire Protection Plan	✓	✗	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗

Planning and Regulatory Capabilities																				
	Sebastian County	City of Barling	City of Bonanza	City of Central City	City of Fort Smith	City of Greenwood	City of Hackett	City of Hartford	City of Huntington	City of Lavaca	City of Mansfield	Town of Midland	Fort Smith Schools	Greenwood Schools	Hackett Schools	Lavaca Schools	Mansfield Schools	Future School (FS)	UAFS	ACHE
Building Code	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗
Zoning Ordinance	✗	✓	✓	✗	✓	✓	✓	✗	✗	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗
Subdivision Ordinance	✗	✓	✓	✗	✓	✓	✓	✗	✗	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗
Floodplain Ordinance	✓	✓	✓	✗	✓	✓	✓	✗	✗	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗
FIRM	✓	✓	✓	✗	✓	✓	✓	✓	✗	✓	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗
Planning and Zoning Maps	✓	✓	✓	✗	✓	✓	✓	✗	✗	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗
Hazard Specific Ordinance	✓	✓	✗	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
Watering Restrictions Ordinance	✗	✓	✓	✗	✓	✓	✓	✓	✗	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗
Illegal Dumping Ordinance	✓	✓	✓	✗	✓	✓	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗

Administrative and Technical																				
	Sebastian County	City of Barling	City of Bonanza	City of Central City	City of Fort Smith	City of Greenwood	City of Hackett	City of Hartford	City of Huntington	City of Lavaca	City of Mansfield	Town of Midland	Fort Smith Schools	Greenwood Schools	Hackett Schools	Lavaca Schools	Mansfield Schools	Future School (FS)	UAFS	ACHE
Planning Commission	✗	✓	✗	✗	✓	✓	✓	✗	✗	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗
Maintenance Programs	✓	✓	✓	✗	✓	✓	✗	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mutual Aid Agreements	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗
Building Inspector	✓	✓	✓	✗	✓	✓	✓	✓	✗	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓
Floodplain Administrator	✓	✓	✓	✗	✓	✓	✓	✓	✗	✓	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗
Emergency Manager	✓	✗	✗	✗	✓	✓	✗	✗	✗	✗	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓
GIS Coordinator	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Community/Economic Developer	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Warning Systems	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Financial	Sebastian County	City of Barling	City of Bonanza	City of Central City	City of Fort Smith	City of Greenwood	City of Hackett	City of Hartford	City of Huntington	City of Lavaca	City of Mansfield	Town of Midland	Fort Smith Schools	Greenwood Schools	Hackett Schools	Lavaca Schools	Mansfield Schools	Future School (FS)	UAFS	ACHE
Capital Improvements Project Funding	✓	✓	✓	✗	✓	✓	✗	✗	✗	✓	✗	✗	✓	✓	✓	✓	✓	✓	✓	✓
Authority to Levy Taxes for Specific Purposes	✓	✓	✓	✗	✓	✓	✗	✗	✗	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓
Fees for Water, Sewer, Gas, or Electric Services	✗	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗
Impact Fees for New Development	✗	✗	✓	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
Storm Water Utility Fee	✗	✓	✗	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
Incur Debt Through General Obligation Bonds or Special Tax Bonds	✓	✓	✓	✗	✓	✓	✗	✗	✗	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓
Incur Debt Through Private Activities	✗	✗	✗	✗	✗	✗	✗	✗	✗	✓	✗	✗	✓	✓	✓	✓	✓	✓	✓	✓

Education and Outreach																				
	Sebastian County	City of Barling	City of Bonanza	City of Central City	City of Fort Smith	City of Greenwood	City of Hackett	City of Hartford	City of Huntington	City of Lavaca	City of Mansfield	Town of Midland	Fort Smith Schools	Greenwood Schools	Hackett Schools	Lavaca Schools	Mansfield Schools	Future School (FS)	UAFS	ACHE
Ongoing Public Education Program	✓	✗	✗	✗	✓	✓	✗	✗	✗	✗	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓
Natural Disaster or Safety Related School Programs	✓	✗	✗	✗	✓	✓	✗	✗	✗	✗	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓
Storm Ready Certification	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗
Fire Wise Community Certification	✗	✗	✗	✗	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
Local Citizens Groups or Nonprofit Organizations Relevant to Hazard Mitigations	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

3.1.1: Improving Capabilities

Leadership and representatives in all participating jurisdictions are very receptive to mitigation. The Sebastian County Judge and Sebastian County OEM make mitigation a priority. All participating jurisdictions receive revenue from taxes, millage, and/or other revenue. In the case of the UA-Fort Smith, tuition fees are received. Representatives are actively seeking additional funding to improve the readiness and preparedness of their communities. Each jurisdiction could qualify for a variety of grants to improve financial capabilities. The Western Arkansas Planning and Development District assists all the jurisdictions with community and economic development activities including grant assistance. Ways the jurisdictions could improve capabilities are:

- Becoming Storm Ready Certified
- Becoming Fire Wise Communities
- Attending state-wide full-scale drills for evacuation
- Participating in Great Arkansas Shake Out
- Increasing GIS capabilities
- Expanding the County Road and City Street Department Budgets to improve culverts, box tiles, and water crossings
- Attending training through ADEM and FEMA to include ICS and NIMS
- Adopting additional regulatory ordinances
- Developing Stormwater Management and Wildfire Protection Plans
- Developing Comprehensive/Master Plans
- Expanding Maintenance Programs

3.2: NFIP Participation

Table 25 - NFIP Status

Jurisdiction	NFIP	Community ID Number	Init FHBM Identified	INIT FIRM Identified	Current Effective Map Date	Reg-Emergency Date	Community Adoption
Sebastian County	Yes	050462	05/31/1977	04/01/1988	03/02/2012	04/01/1988	ORD. 2012-3 01/24/2012
Barling	Yes	050305	02/14/1975	05/20/2010	03/02/2012	09/20/2007	ORD. 384 01/10/2012
Bonanza	Yes	050392	08/15/1975	05/20/2010	03/02/2012	09/26/2012	72412A 07/24/2012
Central City	No	050601	--	03/16/1998	03/02/2012	--	
Fort Smith	Yes	055013	--	08/28/1971	03/02/2012	08/27/1971	ORD. 102-11 12/06/2011
Greenwood	Yes	050198	06/14/1974	04/15/1981	03/02/2012	04/15/1981	ORD. 21-11 10/04/2021
Hackett	Yes	050199	10/18/1974	03/15/1982	03/02/2012	03/15/1982	ORD. 2011-08 12/15/2011
Hartford	Yes	050200	03/08/1974	03/15/1982	03/02/2012	03/15/1982	
Huntington	No	050334	03/05/1975	05/07/2001	03/02/2012	--	
Lavaca	Yes	050201	05/10/1974	03/15/1982	03/02/2012	03/15/1982	ORD. 2011-404
Mansfield	Yes	050202	03/15/1974	06/18/1987	03/02/2012	06/18/1987	ORD. 01-2012 01/31/2012
Midland	Yes	050203	08/16/1974	06/01/1987	05/20/2010	06/01/1987	ORD. 201001 05/11/2010

*None of the participating jurisdictions partake in the Community Rating System incentive program.

Fort Smith School District: The School District has no jurisdiction over floodplain areas, as it is the responsibility of the County and/or municipalities to regulate them. The School District has facilities in Fort Smith and Barling.

Future School of Fort Smith: The School District has no jurisdiction over floodplain areas, as it is the responsibility of the County and/or municipalities to regulate them. The School District has facilities in Fort Smith.

Greenwood School District: The School District has no jurisdiction over floodplain areas, as it is the responsibility of the County and/or municipalities to regulate them. All schools are within Greenwood city limits.

Hackett School District: The School District has no jurisdiction over floodplain areas, as it is the responsibility of the County and/or municipalities to regulate them. The School District has facilities in Hackett and Hartford.

Lavaca School District: The School District has no jurisdiction over floodplain areas, as it is the responsibility of the County and/or municipalities to regulate them. All schools are within Lavaca city limits.

Mansfield School District: The School District has no jurisdiction over floodplain areas, as it is the responsibility of the County and/or municipalities to regulate them. All schools are within Mansfield city limits

University of Arkansas-Fort Smith: The University has no jurisdiction over floodplain areas, as it is the responsibility of the County and/or municipalities to regulate them. The University has facilities in Fort Smith.

Arkansas Colleges of Health Education (ACHE): The College has no jurisdiction over floodplain areas, as it is the responsibility of the County and/or municipalities to regulate them. The College has facilities in Fort Smith.

Table 26 - NFIP Compliance

NFIP Members	
Sebastian County	Sebastian County joined NFIP in 1988. **Participation:** Sebastian County participates in the NFIP by assisting with filling out documents for the NFIP and educating citizens about the NFIP program. If a person wishes to build in a floodplain, there is a permit that must be completed for Sebastian County then the CFM will monitor the construction process to ensure compliance. The vast majority of work done by CFM is assisting citizens in completing letters of map amendments and continuing education for the director of Sebastian County's flood insurance program. Continued participation will include ongoing floodplain education and remaining NFIP compliant. **Insurance Summary:** There are 5 policies in force with a total coverage of $8,252,900. **Staff Resources:** Sebastian County contracts with WAPDD to provide Floodplain Administration. WAPDD has 2 Certified Floodplain Managers who oversee floodplain management. The NFIP

	administrative services include floodplain maps, permit review, and inspections. **Compliance History:** Sebastian County is in good standing with NFIP and there are no outstanding compliance issues.
Barling	Barling joined NFIP in 2007. **Participation:** Barling participates in the NFIP by assisting with filling out documents for the NFIP and educating citizens about the NFIP program. If a person wishes to build in a floodplain, there is a permit that must be completed for City of Barling then the CFM will monitor the construction process to ensure compliance. The vast majority of work done by CFM is assisting citizens in completing letters of map amendments and continuing education for the director of City of Barling's flood insurance program. Continued participation will include ongoing floodplain education and remaining NFIP compliant. **Insurance Summary:** There are 2 policies in force with a total coverage of $362,000. **Staff Resources:** Barling has a Certified Floodplain Manager. The NFIP administrative services include floodplain maps, permit review, and inspections. **Compliance History:** Barling is in good standing with NFIP and there are no outstanding compliance issues.
Bonanza	Bonanza joined NFIP in 2012. **Participation:** Bonanza participates in the NFIP by assisting with filling out documents for the NFIP and educating citizens about the NFIP program. If a person wishes to build in a floodplain, there is a permit that must be completed for City of Bonanza then the CFM will monitor the construction process to ensure compliance. The vast majority of work done by CFM is assisting citizens in completing letters of map amendments and continuing education for the director of City of Bonanza's flood insurance program. Continued participation will include ongoing floodplain education and remaining NFIP compliant. **Insurance Summary:** **Staff Resources:** Bonanza has a Certified Floodplain Manager. The NFIP

	administrative services include floodplain maps, permit review, and inspections. **Compliance History:** Bonanza is in good standing with NFIP and there are no outstanding compliance issues.
Fort Smith	Fort Smith joined NFIP in 1971. **Participation:** Fort Smith participates in the NFIP by assisting with filling out documents for the NFIP and educating citizens about the NFIP program. If a person wishes to build in a floodplain, there is a permit that must be completed for City of Fort Smith then the CFM will monitor the construction process to ensure compliance. The vast majority of work done by CFM is assisting citizens in completing letters of map amendments and continuing education for the director of City of Fort Smith's flood insurance program. Continued participation will include ongoing floodplain education and remaining NFIP compliant. **Insurance Summary:** There are 264 policies in force with a total coverage of $77,443,900. **Staff Resources:** Fort Smith has a Certified Floodplain Manager. The NFIP administrative services include floodplain maps, permit review, and inspections. **Compliance History:** Fort Smith is in good standing with NFIP and there are no outstanding compliance issues.
Greenwood	Greenwood joined NFIP in 1981. **Participation:** Greenwood participates in the NFIP by assisting with filling out documents for the NFIP and educating citizens about the NFIP program. If a person wishes to build in a floodplain, there is a permit that must be completed for City of Greenwood then the CFM will monitor the construction process to ensure compliance. The vast majority of work done by CFM is assisting citizens in completing letters of map amendments and continuing education for the director of City of Greenwood's flood insurance program. Continued participation will include ongoing floodplain education and remaining NFIP compliant. **Insurance Summary:** There are 44 policies in force with a total coverage of $8,205,000.

	Staff Resources: Greenwood has a Certified Floodplain Manager. The NFIP administrative services include floodplain maps, permit review, and inspections. **Compliance History:** Greenwood is in good standing with NFIP and there are no outstanding compliance issues.
Hackett	Hackett joined the NFIP in 1982. **Participation:** Hackett participates in the NFIP by assisting with filling out documents for the NFIP and educating citizens about the NFIP program. If a person wishes to build in a floodplain, there is a permit that must be completed for City of Hackett then the CFM will monitor the construction process to ensure compliance. The vast majority of work done by CFM is assisting citizens in completing letters of map amendments and continuing education for the director of City of Hackett's flood insurance program. Continued participation will include ongoing floodplain education and remaining NFIP compliant. **Insurance Summary:** There are 2 policies in force with a total coverage of $100,000. **Staff Resources:** Hackett has a Certified Floodplain Manager. The NFIP administrative services include floodplain maps, permit review, and inspections. **Compliance History:** Hackett is in good standing with NFIP and there are no outstanding compliance issues.
Hartford	Hartford joined the NFIP in 1982. **Participation:** Hartford participates in the NFIP by assisting with filling out documents for the NFIP and educating citizens about the NFIP program. If a person wishes to build in a floodplain, there is a permit that must be completed for City of Hartford then the CFM will monitor the construction process to ensure compliance. The vast majority of work done by CFM is assisting citizens in completing letters of map amendments and continuing education for the director of City of Hartford's flood insurance program. Continued participation will include ongoing floodplain education and remaining NFIP compliant. **Insurance Summary:** There are 2 policies in force with a total coverage of $52,000.

	Staff Resources: Hartford has a Certified Floodplain Manager. The NFIP administrative services include floodplain maps, permit review, and inspections. **Compliance History:** Hartford is in good standing with NFIP and there are no outstanding compliance issues.
Lavaca	Lavaca joined the NFIP in 1982. **Participation:** Lavaca participates in the NFIP by assisting with filling out documents for the NFIP and educating citizens about the NFIP program. If a person wishes to build in a floodplain, there is a permit that must be completed for City of Lavaca then the CFM will monitor the construction process to ensure compliance. The vast majority of work done by CFM is assisting citizens in completing letters of map amendments and continuing education for the director of City of Lavaca's flood insurance program. Continued participation will include ongoing floodplain education and remaining NFIP compliant. **Insurance Summary:** There are 15 policies in force with a total coverage of $2,847,000. **Staff Resources:** Lavaca has a Certified Floodplain Manager. The NFIP administrative services include floodplain maps, permit review, and inspections. **Compliance History:** Lavaca is in good standing with NFIP and there are no outstanding compliance issues.

Mansfield	Mansfield joined the NFIP in 1987. **Participation:** Mansfield participates in the NFIP by assisting with filling out documents for the NFIP and educating citizens about the NFIP program. If a person wishes to build in a floodplain, there is a permit that must be completed for the City of Mansfield then the CFM will monitor the construction process to ensure compliance. The vast majority of work done by CFM is assisting citizens in completing letters of map amendments and continuing education for the director of City of Mansfield's flood insurance program. Continued participation will include ongoing floodplain education and remaining NFIP compliant. **Insurance Summary:** There are 3 policies in force with a total coverage of $655,000. **Staff Resources:** Mansfield has a Certified Floodplain Manager. The NFIP administrative services include floodplain maps, permit review, and inspections. **Compliance History:** Mansfield is in good standing with NFIP and there are no outstanding compliance issues.
Midland	Midland joined the NFIP in 1987. **Participation:** Midland participates in the NFIP by assisting with filling out documents for the NFIP and educating citizens about the NFIP program. If a person wishes to build in a floodplain, there is a permit that must be completed for City of Midland then the CFM will monitor the construction process to ensure compliance. The vast majority of work done by CFM is assisting citizens in completing letters of map amendments and continuing education for the director of City of Midland's flood insurance program. Continued participation will include ongoing floodplain education and remaining NFIP compliant. **Insurance Summary:** There is one policy in force with a total coverage of $105,000. **Staff Resources:** Midland has a Certified Floodplain Manager. The NFIP administrative services include floodplain maps, permit review, and inspections.

	Compliance History: Midland is in good standing with NFIP and there are no outstanding compliance issues.

*The cities of Barling, Fort Smith, and Greenwood are the only jurisdictions in the planning area that require property owners to obtain permits to bring substantially improved or damaged buildings into compliance with the floodplain management requirements.

**Sebastian County and the remaining cities (Bonanza, Hackett, Hartford, Lavaca, Mansfield, and Midland) will implement a permitting process to address SI/SD requirements.

3.3: Mitigation Goals

Based upon the results of the local and State risk assessments, the Sebastian County Hazard Mitigation Planning Team, with input from local jurisdictions and officials, developed hazard mitigation goals and selected those that were determined to be of greatest benefit. These goals represent what Sebastian County believes is a long-term vision for reduction and enhancement of mitigation capabilities:

Goal 1: Reduce the potential for loss of life and personal injury from natural disasters.

Goal 2: Protect existing and future properties from natural disasters.

3.4: Implementation of Mitigation Actions

The mitigation actions are prioritized based upon their effect on the overall risk to life and property. Ease of implementation, community and agency support and ease of obtaining funding. The County and participating jurisdictions have used the STAPLEE method to prioritize mitigation actions. This method has the benefit that the Mitigation actions are considered in discrete categories of Social, Technical, Administrative, Political, Economic and Environmental. Prioritization can therefore be made taking each of these categories into account, so that nothing is overlooked when considering which actions may be best for each jurisdiction to consider.

Criteria used for prioritization and review of mitigation actions based on STAPLEE.

Table 27 - STAPLEE Criteria

Evaluation Category	Sources of Information
Social	Members of Local governments and the Sebastian County Government were members of the Hazard Mitigation Planning Team and had input throughout the planning process. It must be noted that many small-town political leaders are also business or professional people. They are also members of the LEPC. Existing community plans were and will be relied on wherever possible. Members of the media were contacted and invited to all attend all HMPT meetings.
Technical	The following persons/agencies were consulted as to the technical feasibility of the various projects: Arkansas Geological Commission, University of Arkansas Extension Service, Arkansas Soil and Water Conservation Commission, Arkansas Health Department, Arkansas Highway and Transportation Department, Arkansas Department of Environmental Quality, Arkansas Governor's Pre-Disaster Advisory Council, Arkansas Governor's Earthquake Advisory Council, and Arkansas Forestry Service. Arkansas Department of Emergency Management. All of these had their comments and suggestions incorporated.
Administrative	Staffing for proper implementation of the plan currently will rely largely on existing members of the various agencies involved. Technical assistance is available from various local and state agencies. Some local jurisdictions have incorporated Hazard Mitigation efforts into their Capital Improvement Plans. Operations costs are under discussion by the appropriate agency or department heads.
Political	The County Quorum Court has passed resolutions in support of mitigation activities involving floodplain ordinances, mitigation planning, and fire districts, among others. The Governor of Arkansas issued an Executive Order in August of 2004 (EO 04-02) instructing all state agencies to assist ADEM in mitigation planning and implementation of mitigation goals.
Legal	Members of the HMPT discussed legal issues, and it was their opinion that no significant legal issues were involved in the projects that were selected by the HMPT. However, where legalities may be an issue, this is noted.
Economic	Economic and benefit cost issues were the predominant topics discussed by all concerned. Each entity felt that the projects selected would have positive effects, yet realized that actions often have costs, sometimes hidden, imposed on the community, residents, and businesses. Funding for the various activities was a major concern as

	local budgets are always under pressure with existing and competing projects and activities. Where necessary, particularly for costly capital projects, outside grants would be relied on heavily.
Environmental	The Arkansas Geological Survey, Arkansas Department of Environmental Quality, Arkansas Forestry Commission, and Arkansas Soil and Water Conservation Commission were all consulted as to the environmental impact of the various projects, and it was felt that there would be no negative impact. Local environmental issues and concerns were also taken into consideration.

The Planning Team prioritized the list of mitigation actions by conducting a cost-benefit review. This review was conducted by; first considering the number of people who would be affected by a chosen project, determining the area the project would cover, considering how critical the structures were within in the project area, and which structure were most critical, and finally how would it benefit the entire community. Actions are prioritized in three different categories: High need for immediate action; Medium need for action; Low lacking in urgency.

All Sebastian County actions are the responsibility of the director of Sebastian County Office of Emergency Management and the County Judge. The City's actions are the responsibility of the mayor. The School District's actions will be the responsibility of their School Board Administration.

The Responsible Agency for each mitigation action will identify resources. Their responsibility will be to examine resources from all levels of government. The responsible parties will integrate the requirements of the mitigation plan into other plans when appropriate. This also, includes funding and support for enacting and enforcing building codes and zoning ordinances, and developing public education programs to alert residents to risks and how they can reduce hazard losses. Plans will be made to earmark resources for implementing these actions.

Each jurisdiction and school district within the County that participated in the planning process has at least two actions that will benefit the jurisdiction.

For the purpose of developing the Sebastian County Hazard Mitigation Plan, mitigation actions are categorized into six groups:

- Actions that will keep problems from getting worse (Prevention).
- Actions that address individual buildings (Property protection)
- Actions that will inform the public (Public education and awareness)
- Actions that will protect natural resources (Natural resource protection)
- Actions that will protect emergency services before, during, and immediately after an occurrence (Emergency services protection)
- Actions that will control the hazard (Structural projects)

3.5: Mitigation Actions

Table 28 - Mitigation Actions

Actions Selected for Implementation in 2023 Plan Update Note: The term "All Jurisdictions" refers to Sebastian County, Cities of Barling, Bonanza, Central City, Fort Smith, Greenwood, Hackett, Hartford, Huntington, Lavaca, Mansfield, Midland, and the School Districts of Fort Smith, Greenwood, Hackett, Lavaca, Mansfield, and University of Arkansas-Fort Smith. The term "All Hazards" refers to Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Thunderstorm, Landslide, Winter Storm, Tornado, and Wildfire.							
Implementing Participating Jurisdiction	**Hazard**	**Action**	**Jurisdiction's Responsible Department or Personnel**	**Required Outside Resources**	**Length of Project**	**Cost Estimate (if avail.)**	**Funding**
Sebastian County, Cities of Greenwood, Fort Smith, Barling	Dam Failure, Flooding	Conduct inspections, maintenance and enforce programs on dams to ensure structural integrity. (NFIP consideration; CRS 330 Outreach, CRS 350 Flood Protection Information)	County Judge and OEM, Mayors and Public Works Dept.	Corps of Engineers, NRCS	Implement within 1 year and continue in perpetuity	Unknown	County and Cities, Corps of Engineers, NRCS
Cities of Greenwood, Fort Smith, Barling	Dam Failure, Flooding	Coordinate with dam owners/operators on preparation and maintenance of Emergency Action Plans	County Judge and OEM, Mayors and Public Works Dept.	Corps of Engineers, NRCS, Dam Owners/ Operators	Implement within 1 year and continue in perpetuity	Unknown	County and Cities, Corps of Engineers, NRCS, Dam Owners/Operators
Sebastian County, Cities of Barling, Central City, Fort Smith, and Greenwood	Dam Failure, Flooding	Complete a detailed flood inundation study for all current dam locations	County Judge and OEM, Mayors and Public Works Dept.	Engineering, Consultants	5 years	Extensive	FEMA
Sebastian County, Cities of Barling, Fort Smith, and Greenwood	Dam Failure, Flooding	Educate public and developers of hazards that can be caused by flooding caused by dam failure	County Judge and OEM, Mayors and Public Works Dept.	NRCS, Corps of Engineers	Begin within 1 year and continue in perpetuity	Minimal	County, Cities, Schools, NRCS, Cooperative Extension Services
Sebastian County, Cities of Barling, Central City, Fort Smith, and Greenwood	Dam Failure, Flooding	Strengthen existing roads and bridges and other critical infrastructure near dams	County Judge and OEM, Mayors and Public Works Dept		5 year	Unknown	County and Cities, ARDOT
City of Fort Smith	Drought	Acquire low-flow faucets and fixtures for new or existing buildings and/or for public facilities	Mayor, Public Works Dept.	None	Until all faucets and fixtures are replaced	Minimal	City funds

Actions Selected for Implementation in 2023 Plan Update

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The term "All Hazards" refers to Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Thunderstorm, Landslide, Winter Storm, Tornado, and Wildfire.

Implementing Participating Jurisdiction	Hazard	Action	Jurisdiction's Responsible Department or Personnel	Required Outside Resources	Length of Project	Cost Estimate (if avail.)	Funding
Cities of Fort Smith, Barling, Mansfield, Hackett, Huntington, and Lavaca	Drought	Upgrade existing water delivery systems to eliminate breaks and leaks	Mayors and Public Works Depts.	Engineering, ANRC and USDA for funding	5 years	Unknown	USDA and ANRC
City of Barling	Drought	Rehabilitate reservoirs to operate at design capacity	Mayor, City Administrator, Public Works Department	ANRC, NRCS, Engineering,	5 years	Unknown	ANRC, NRCS, USDA, County
Cities of Barling and Lavaca	Drought	Educate agricultural interests, general public, and business/commercial entities on water rights and water use policies	Mayors	Cooperative Extension Service	Implement within 1 year and continue in perpetuity	Minimal	Cites, Cooperative Extension Service
Sebastian County, Cities of Barling, Bonanza, Central City, Fort Smith, Greenwood, Hartford, Lavaca, Mansfield, Midland, and the School Districts of Fort Smith, Greenwood, Future School, Hackett, Lavaca, Mansfield, ACHE, & UAFS	Drought	Develop a countywide drought emergency and communication plan	County Judge, Mayors, Public School Superintendents, UAFS Chancellor	FEMA, ADEM	1 year	None	None required
Cities of Barling, Central City, Greenwood, Hackett, Hartford,	Drought	Design and implement leak detection programs	Mayors, Public Works Departments and Superintendent, Maintenance Staff	None	Implement within 1 year and continue in perpetuity	Minimal	Cities and Schools

Actions Selected for Implementation in 2023 Plan Update

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The term "All Hazards" refers to Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Thunderstorm, Landslide, Winter Storm, Tornado, and Wildfire.

Implementing Participating Jurisdiction	Hazard	Action	Jurisdiction's Responsible Department or Personnel	Required Outside Resources	Length of Project	Cost Estimate (if avail.)	Funding
Lavaca, Midland, and Fort Smith School District							
Sebastian County, Cities of Barling, Bonanza, Greenwood, and Mansfield	Drought	Establish MOU with adjacent communities designed to source additional sources of water	County Judge and OEM, Mayors	Rural Water Associations	3 years	Minimal	County, Cities, Rural Water Associations
Sebastian County, Pubic School Districts of Fort Smith, Hackett, Mansfield, and Lavaca, UAFS	All Hazards	Establish a school/county survey procedure and guidance document to inventory structural and non- structural hazards in and around buildings.	Superintendents and Maintenance Staff, UAFS Chancellor and Maintenance Staff	ADEM, FEMA	Begin within 1 year and update as needed	Minimal	County, Schools
Cities of Lavaca, Bonanza, Hartford, and Midland and Public School Districts of Fort Smith, Hackett, Lavaca and Mansfield, and UAFS	Drought	Collect rainwater/install rain capturing devices for watering at public facilities	Mayor and Public Works Dept. Superintendent, Maintenance Staff, Teachers	None	Implement within 1 year and continue until devices are placed at all public facilities	Minimal	City and School
Sebastian County and City of Barling	Drought	Form partnership with Cooperative Extension Service and AR Natural Resources Commission to promote awareness of drought and maintain better records of local events and losses	County Judge and OEM, Mayors	Cooperative Extension Service, ANRC	Begin within 1 year	Minimal	County, Cities, Cooperative Extension Service, ANRC
Cities of Fort Smith, Barling, and Lavaca	Earthquake	Adopt and enforce updated building code provisions to reduce earthquake damage	Mayors, City Councils, Building Inspectors	None	Adopt ordinance withing 1 year	Minimal	Cities

Actions Selected for Implementation in 2023 Plan Update

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The term "All Hazards" refers to Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Thunderstorm, Landslide, Winter Storm, Tornado, and Wildfire.

Implementing Participating Jurisdiction	Hazard	Action	Jurisdiction's Responsible Department or Personnel	Required Outside Resources	Length of Project	Cost Estimate (if avail.)	Funding
Cities of Barling, Bonanza, Central City, Greenwood, Hackett, Hartford, Huntington, Lavaca, Mansfield, Midland, and the School Districts of Fort Smith, Hackett, Lavaca, and UAFS	All Hazards	Use GIS to map hazard areas, at-risk structures and associated hazards to assess high risk areas	County Judge and OEM, Mayors and Public Works Depts., Public School Superintendents and Maintenance Staff, UAFS Chancellor and Maintenance Staff	WAPDD	Begin within 1 year and updated as needed	Minimal	County, Cities, Schools
Cities of Barling, Bonanza, Central City, Fort Smith, Greenwood, Hartford, Huntington, and Mansfield, School Districts of Future School, Hackett and Lavaca, UAFS, & ACHE	Earthquake, Tornado, Winter Storm, Thunder-storm	Purchase and install emergency back-up generators in all public buildings.	, Mayors and Public Works Depts., Superintendents and Maintenance Staff	ADEM, FEMA, Engineering, WAPDD	5 years	Unknown	County, Cities, Schools, FEMA, AEDC-CDBG, AEDC-Rural Services, USDA
All Jurisdictions	Earthquake, Tornado, Thunder-storm, Wildfire	Apply window film to windows at public schools and public buildings as able to prevent shattering.	County Judge and OEM, Mayors and Public Works Depts., Superintendents and Maintenance Staff	None required	5 years	Unknown	County, Cities, Schools
Fort Smith Schools	Earthquake, Tornado, Thunder-storms	Require bracing of generators, elevators, and other vital equipment and anchoring of rooftop equipment	Superintendent and Maintenance Staff	None	Until all vital equipment is secured	Minimal	School

Actions Selected for Implementation in 2023 Plan Update

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The term "All Hazards" refers to Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Thunderstorm, Landslide, Winter Storm, Tornado, and Wildfire.

Implementing Participating Jurisdiction	Hazard	Action	Jurisdiction's Responsible Department or Personnel	Required Outside Resources	Length of Project	Cost Estimate (if avail.)	Funding
School Districts of Fort Smith, Greenwood, Hackett, Lavaca, and UAFS	Wildfire, Drought, Landslide	Develop reseeding plans for losses due to hazard events	Superintendents and Grounds Maintenance Staff, UAFS Chancellor and Maintenance Staff	None	Implement within 1 year and continue as needed following events	Minimal	Schools
All Jurisdictions	Flood	Modify existing structures and make improvements to allow proper draining of excess rainwater away from the facility, such as installing a French Drain	County Judge and OEM, Mayors and Public Works Depts., Public School, UAFS Chancellor and Maintenance Staff	Contractors	5 years	Unknown	County, Cities, Schools
Cities of Barling, Bonanza, Central City, Fort Smith, Greenwood, Hackett, Hartford, Lavaca, Mansfield, Midland, and the School Districts of Hackett, Lavaca, and UAFS	All Hazards	Notifying property owners located in high-risk areas	County Judge and OEM, Mayors and Public Works Dept, Superintendents of Public Schools, UAFS Chancellor	Rural Fire Districts	Implement within 1 year and continue as property ownership changes	Minimal	County, Cities, Rural Fire Districts
City of Fort Smith and School Districts of Fort Smith, and Hackett	Extreme Heat	Increase tree plantings around buildings to shade parking lots and along public rights-of-way	Mayors and Superintendents	Arkansas Forestry Commission, Arbor Foundation	Implement within 1 year and continue until all public facilities have been addressed	Minimal	City and Schools, Arkansas Forestry Commission, Arbor Foundation
City of Barling	Extreme Heat	Install green roofs which provide shade and remove heat from roof surface and surrounding air	Mayor, Superintendent	Engineering	Begin within 1 year, continue	Unknown	City, School

Actions Selected for Implementation in 2023 Plan Update

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The term "All Hazards" refers to Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Thunderstorm, Landslide, Winter Storm, Tornado, and Wildfire.

Implementing Participating Jurisdiction	Hazard	Action	Jurisdiction's Responsible Department or Personnel	Required Outside Resources	Length of Project	Cost Estimate (if avail.)	Funding
					until all roofs have been replaced		
Cities of Barling, Bonanza, Central City, Fort Smith, Greenwood, Hartford, Huntington, Lavaca, Mansfield, and the School Districts of Fort Smith, Hackett, Lavaca, Mansfield, and UAFS	Extreme Heat and Winter Storm	Establish and promote accessible heating/cooling centers/shelters for vulnerable, special-needs, and at risk population	County Judge and OEM, Mayors, Superintendents of Public Schools, UAFS Chancellor	Area Churches	Begin within 1 year and update as local populations increase/ decrease	Minimal	County, Cities, Schools
Cities of Barling, Bonanza, Central City, Fort Smith, Hackett, Hartford, Huntington, Lavaca, Mansfield, Midland, and the School Districts of Hackett, Lavaca, and UAFS	Extreme Heat and Winter Storm	Create a database to track those individuals at high risk of death, such as the elderly, homeless, and sickly, etc.	County Judge and OEM, Mayors, Superintendents of Public Schools, UAFS Chancellor	Area Churches, Home-health agencies	Begin within 1 year and update as needed for perpetuity	Minimal	County, Cities, Schools
School Districts of Hackett, Greenwood, Fort Smith, Mansfield	Flood, Winter Storm	Include safety strategies for severe weather in driver education classes and materials	County Judge and Sheriff, Mayor and Police Dept., Superintendent,	Arkansas State Police	Begin within 1 year and continue as needed	Minimal	County, City and School

Actions Selected for Implementation in 2023 Plan Update

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The term "All Hazards" refers to Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Thunderstorm, Landslide, Winter Storm, Tornado, and Wildfire.

Implementing Participating Jurisdiction	Hazard	Action	Jurisdiction's Responsible Department or Personnel	Required Outside Resources	Length of Project	Cost Estimate (if avail.)	Funding
			Drivers Ed. instructor				
Sebastian County, City of Lavaca	Flood	Adopt ordinance to elevate all new public buildings above the 0.2% or 500-year flood level	Mayors, Building Inspectors, Superintendent	None	Implement within 1 year	Unknown	City
Cities of Barling, Bonanza, Central City, Fort Smith, Greenwood, Hackett, Hartford, Lavaca, Mansfield, Midland, and the School Districts of Hackett, Lavaca, Mansfield, and UAFS	All Hazards	Provide emergency preparedness information and resource for extreme weather conditions through an active education outreach program with specific plans and procedures for at-risk population	County Judge, Mayors, Superintendents of Public Schools, UAFS Chancellor	FEMA, Red Cross, Firewise	Begin within 1 year and continue as needed	Minimal	County, Cities, Schools
City of Lavaca	Flood	Setting the design flood elevation at or about the historical high-water mark if it is above the mapped base flood elevation.	Mayor, Building Inspector, Planning Dept.	ADEM, FEMA	5 years	Unknown	City
City of Barling	Flood	Adopt ordinance requiring the separation of storm and sanitary sewage systems as well as higher engineering standards for drain and sewer capacity	Mayor, City Council	Engineering	Adopt within 1 year	Unknown	Cities
Sebastian County, City Mansfield	Flood	Adopt a land use plan with zoning and development restrictions that require floodplains to be kept as open space and prohibit fill in floodplains to protect residents from hazardous floodways	Mayor, City Council	WAPDD	3 years	Minimal	City

Actions Selected for Implementation in 2023 Plan Update

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The term "All Hazards" refers to Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Thunderstorm, Landslide, Winter Storm, Tornado, and Wildfire.

Implementing Participating Jurisdiction	Hazard	Action	Jurisdiction's Responsible Department or Personnel	Required Outside Resources	Length of Project	Cost Estimate (if avail.)	Funding
City of Barling	Flood and Dam Failure	Develop a stream buffer ordinance to protect water resources and limit flood impacts	Mayor, City Council	Conservation District	1 year	Minimal	City
Sebastian County, City of Lavaca	Flood	Implement and retrofit construction plans to modify low water bridges in the area that are susceptible to flooding	County Judge, OEM, and Road Department	Engineering	5 years	Varies for each bridge	County, FEMA, AEDC
City of Fort Smith	Flood	Prepare and adopt a stormwater drainage plan	Mayor, Public Works Department	Engineering	1 year	Minimal	County, Cities
City of Lavaca	Flood	Require drainage study with new development and/or develop engineering guidelines for drainage from new development	Mayor and City Council, Building Inspector and Planning Dept.	Engineering	Implement within 1 year and continue in perpetuity as needed	Minimal	Cities
Cities of Barling and Lavaca	Flood and Landslide	Regulate development in upland areas to reduce stormwater run-off; examples of such erosion control techniques that may be employed within a watershed are include proper bank stabilization with sloping or grading techniques, planting vegetation on slopes, terracing hillsides, or installing riprap boulders or geotextile fabric	Mayor and Planning Depts.	Engineering	Implement within 1 year and continue in perpetuity as needed	Unknown	City
Sebastian County and City of Hackett	Flood	Increase the sizing of all culverts when upgrading roads, bridges, and similar infrastructure	County Judge, Road Department and Mayor, Street Dept.	Engineering	Begin within 1 year and continue until all culverts have been upgraded	Varies for each project	County, Cities
City of Lavaca	Flood	Increase drainage capacity at Holt Street and North River Road	Mayor and Street Department	Engineering	1 year	Unknown	ADEM, FEMA, City
City of Hackett	Flood	Henderson Street Bridge Replacement	Mayor and Street Department	Engineering	3 years	Unknown	ADEM, FEMA, City

Actions Selected for Implementation in 2023 Plan Update

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The term "All Hazards" refers to Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Thunderstorm, Landslide, Winter Storm, Tornado, and Wildfire.

Implementing Participating Jurisdiction	Hazard	Action	Jurisdiction's Responsible Department or Personnel	Required Outside Resources	Length of Project	Cost Estimate (if avail.)	Funding
City of Barling	Flood	Strozier Lane Culvert Replacement	Mayor and Street Department	Engineering	1 year	Unknown	ADEM, FEMA, City
Sebastian County	Flood	Raise low lying bridges	County Judge and Road Department	Engineering	Begin within 1 year and continue until all low lying bridges have been raised	Varies for bridge	County, ADEM
Sebastian County, City of Hackett	Flood	Develop/adopt schedule for routinely cleaning debris from support bracing underneath low water bridges	County Judge and Road Department, Mayor and Street Departments	None	Implement within 1 year	Minimal	County and Cities
Sebastian County, Cities of Barling, Bonanza, Fort Smith, Greenwood, Hackett, Hartford, Lavaca, Mansfield, Midland	Flood	Acquire/relocate and/or acquire/demolish structures built within the floodplain	County Judge and County Floodplain Administrator; Mayors and City Floodplain Administrators/ Building Inspectors/ Code Enforcement	WAPDD; ADEM; FEMA	Ongoing	Varies by structure	County, Cities, BRIC and FMA funding
Sebastian County and City of Lavaca	Flood	Develop/adopt schedule for routinely cleaning and repairing stormwater drains	County Judge and Road Department, Mayors and Street Department	None	Implement within 1 year	Minimal County and City	
City of Hackett	Flood	Adopt a higher standard of road elevation and culvert sizing on city roads and school drives.	Mayor and Street Department	Engineering	Implement within 1 year	Varies for project	City
City of Barling	Flood	Prohibit any fill in floodplain areas.	Mayor, City Council, Planning Dept.	None	Ordinance in place, enforcement continues in perpetuity	Unknown	City

Actions Selected for Implementation in 2023 Plan Update

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The term "All Hazards" refers to Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Thunderstorm, Landslide, Winter Storm, Tornado, and Wildfire.

Implementing Participating Jurisdiction	Hazard	Action	Jurisdiction's Responsible Department or Personnel	Required Outside Resources	Length of Project	Cost Estimate (if avail.)	Funding
City of Barling	Flood	Determine and enforce acceptable land uses to alleviate the risk of damage by limiting exposure in flood hazard areas	Mayor and Planning Department	WAPDD	Implement within 1 year and continue in perpetuity as needed	Unknown	City
Sebastian County and City of Barling	Flood	Conduct NFIP community workshops to provide information for property owners to acquire flood insurance	County Judge and OEM, Mayors, Floodplain Managers	NFIP, Insurance Agents	Begin within 1 year and continue as needed	None	County and Cities
Sebastian County	Flood	Install warning signs at all low water bridges	County Judge and OEM	None	5 years	Minimal	County
City of Barling	Flood	Develop and adopt early warning system for flooding using existing or new storm sirens	Public Works Dept.	None	Implement within 1 year	Minimal	City
City of Barling	Landslide	Define steep slope/high risk areas in land use and comprehensive plans and create guidelines on restricting new development in those areas	Mayor, Planning Department	AHTD	1 year	Minimal	City
Sebastian County	Landslide	Study areas where riparian landslides may occur	County Judge and OEM	Engineering, Consultant	3 years	Unknown	County
City of Barling	Landslide	Restrict or limit industrial activity that would strip slopes of essential top soil	Mayor, City Council, Planning Dept.	None	Implement within 1 year and continue in perpetuity	Unknown	City
City of Barling	Landslide	Install catch-fall nets for rocks at steep slopes near roadways	Mayor, Street Dept.	AHTD	3 years	Varies	City, AHTD
All Jurisdictions	Landslide	Apply soil stabilization measure, such as planting soil stabilizing vegetation on steep, publicly owned slopes	Mayors, Street Depts., and Public Works Depts. County Judge and OEM	None	5 years	Unknown	Cities, County
City of Lavaca	Landslide, Wildfire	Assess vegetation in wildfire-prone areas to prevent landslides after fires (e.g. encourage plants with strong root systems).	Mayor, Public Works, Fire Department	Firewise, US Forestry	Implement within 1 year and continue in perpetuity as needed	Unknown	County, Cities

Actions Selected for Implementation in 2023 Plan Update

Note: The term "All Jurisdictions" refers to Sebastian County, Cities of Barling, Bonanza, Central City, Fort Smith, Greenwood, Hackett, Hartford, Huntington, Lavaca, Mansfield, Midland, and the School Districts of Fort Smith, Greenwood, Hackett, Lavaca, Mansfield, and University of Arkansas-Fort Smith.
The term "All Hazards" refers to Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Thunderstorm, Landslide, Winter Storm, Tornado, and Wildfire.

Implementing Participating Jurisdiction	Hazard	Action	Jurisdiction's Responsible Department or Personnel	Required Outside Resources	Length of Project	Cost Estimate (if avail.)	Funding
Sebastian County and Cities of Fort Smith, and School Districts of Fort Smith and Hackett	Thunder-storm	Install and maintain lightning protection devices and surge protectors at critical facilities	County Judge, Mayors, Superintendents	None	1 year	Varies	County, Cites, Schools
All Jurisdictions	Thunder-storm, Tornado, Extreme Heat	Post warning signs at public parks and recreation facilities and other outdoor venues about weather related hazards and dangers of remaining outdoors during hazardous events.	Mayor and County Judge/Parks Dept., Superintendent and Maintenance Staff	None	1 year	Minimal	Cities, County, School
School Districts of Fort Smith, Greenwood, Hackett, Mansfield, Lavaca	Thunder-storm	Teach school children about the dangers of lightning and how to take safety precautions	Superintendent and Science Teachers	None	1 year	None	Schools
Fort Smith Schools	Thunder-storm	Install hail resistant roofing and window coverings, shutter laminated glass in windowpanes with a focus on critical infrastructure.	Superintendent and Maintenance Staff	None	5 years	Unknown	School
Pubic School Districts of Fort Smith, Greenwood, Hackett, and Lavaca, UAFS	Thunder-storm, Winter Storm	Install covered walkways between existing school buildings	Superintendents and Maintenance Staff, UAFS Chancellor and Maintenance Staff	None	3-5 years	Unknown	School Districts, UAFS
City of Barling	Tornado, Thunder-storm,	Require tie-downs with anchors and ground anchors for manufactured homes	Mayor and City Council, Building Inspectors	None	Ordinance in place, enforcement continues in perpetuity	None	None
Cities of Fort Smith and Lavaca	Earthquake, Tornado, Thunder-storm,	Adopt the International Building Code (IBC) and International Residential Code (IRC)	Mayor and City Council, Building Inspectors	None	1 year	None	None

Actions Selected for Implementation in 2023 Plan Update

Note: The term "All Jurisdictions" refers to Sebastian County, Cities of Barling, Bonanza, Central City, Fort Smith, Greenwood, Hackett, Hartford, Huntington, Lavaca, Mansfield, Midland, and the School Districts of Fort Smith, Greenwood, Hackett, Lavaca, Mansfield, and University of Arkansas-Fort Smith.
The term "All Hazards" refers to Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Thunderstorm, Landslide, Winter Storm, Tornado, and Wildfire.

Implementing Participating Jurisdiction	Hazard	Action	Jurisdiction's Responsible Department or Personnel	Required Outside Resources	Length of Project	Cost Estimate (if avail.)	Funding
Cities of Barling and Lavaca	Winter Storm, Tornado, Thunder-storm	Establish standards for all utilities regarding tree pruning around power lines	Mayors	Utility Companies	3-5 years to implement with all utilities	None	None
City of Barling and School Districts of Hackett, Fort Smith, and Greenwood	Winter Storm, Tornado, Thunder-storm	Inspect utility poles to ensure they meet specifications and are wind resistant and for signs of rot	Mayor, and Superintendents	Utility Companies	Implement within 1 year and continue in perpetuity as needed	None	None
Cities of Barling, Bonanza, Fort Smith, Greenwood, Hartford, Lavaca, Midland, and the School Districts of Greenwood, Hackett, Lavaca, and UAFS	Tornado and Thunder-storm	Construct free standing saferooms and/or saferooms within new and existing public buildings	County Judge, Mayors, Superintendents, UAFS Chancellor	FEMA, Engineering, WAPDD	5 years	$1M per saferoom	FEMA, AEDC, County, Cities, Schools
Cities of Barling, Fort Smith, Bonanza, Central City, Greenwood, Hartford, Midland	Wildfire	Regulate development in wildfire hazard areas through land use planning and address density and quantity of development, as well as emergency access, landscaping and water supply.	Mayor and Planning Department	None	Implement within 1 year and continue in perpetuity as needed	Minimal	City
Sebastian County and Cities of Barling, Bonanza, Central City, Fort Smith, Hackett,	Wildfire	Expand Firewise program to include more communities	County Judge and OEM, Mayor and Fire Department	Firewise	3- 5 years	Minimal	County, City

Actions Selected for Implementation in 2023 Plan Update

Note: The term "All Jurisdictions" refers to Sebastian County, Cities of Barling, Bonanza, Central City, Fort Smith, Greenwood, Hackett, Hartford, Huntington, Lavaca, Mansfield, Midland, and the School Districts of Fort Smith, Greenwood, Hackett, Lavaca, Mansfield, and University of Arkansas-Fort Smith.
The term "All Hazards" refers to Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Thunderstorm, Landslide, Winter Storm, Tornado, and Wildfire.

Implementing Participating Jurisdiction	Hazard	Action	Jurisdiction's Responsible Department or Personnel	Required Outside Resources	Length of Project	Cost Estimate (if avail.)	Funding
Hartford, Huntington, Mansfield, Midland							
Sebastian County	Wildfire	Educate public on dangers of wildfire and how to prevent them by providing free technical assistance brochures and pamphlets from FEMA, Firewise, and ADEM on potential mitigation activities for homeowners	County Judge and OEM, Mayor, Community Development Department	Firewise, US Forestry, Rural Fire Departments	Begin within 1 year, then continue in perpetuity	Minimal	County
Cities of Bonanza, Central City, Greenwood, Hackett, Hartford, Mansfield, Midland	Wildfire	Perform arson prevention cleanup activities in areas of abandoned or collapsed structures, accumulated trash or debris, and with a history of storing flammable materials where spills or dumping may have occurred	Mayor, Fire Department	Fort Smith Housing Authority, WAPDD, EPA Brownfields	Implement within 1 year and continue in perpetuity as needed	Varies	City, EPA
Cites of Greenwood and Lavaca	Wildfire	Employee the use of goats to reduce the amounts of underbrush in wildfire-prone areas.	Mayor, Public Works	Cooperative Extension Services, 4H, FFA	5 years	Minimal	City
Cities of Fort Smith and Lavaca	Wildfire	Create a defensible space around public buildings by reducing the amount of brush near buildings, and also by using fire-friendly vegetation.	Mayors, Public Works Depts. Fire Departments,	Firewise, US Forestry, Rural Fire Departments	Begin within 1 year and continue until all public buildings are addressed	Minimal	Cities, School
City of Lavaca	Wildfire	Schedule prescribed burning to reduce fuel loads that threaten public safety and property	Mayor, Fire Department	US Forestry, Rural Fire Departments	Begin within 1 year, then continue in perpetuity	Minimal	City, Rural Fire
Cities of Fort Smith, Hackett, Lavaca, and Midland, and Fort Smith Schools	Winter Storm	Ensure the adoption and enforcement of building codes for roof snow loads	Mayor, Building Inspector, Superintendent	None	1 year for adoption	Minimal	City, School

Actions Selected for Implementation in 2023 Plan Update

Note: The term "All Jurisdictions" refers to Sebastian County, Cities of Barling, Bonanza, Central City, Fort Smith, Greenwood, Hackett, Hartford, Huntington, Lavaca, Mansfield, Midland, and the School Districts of Fort Smith, Greenwood, Hackett, Lavaca, Mansfield, and University of Arkansas-Fort Smith.
The term "All Hazards" refers to Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Thunderstorm, Landslide, Winter Storm, Tornado, and Wildfire.

Implementing Participating Jurisdiction	Hazard	Action	Jurisdiction's Responsible Department or Personnel	Required Outside Resources	Length of Project	Cost Estimate (if avail.)	Funding
Sebastian County, Cities of Mansfield and Lavaca	Thunder-storm, Tornado, Winter Storm	Plan for and maintain adequate road and debris clearing capabilities	County Judge and OEM, Mayors	None	Begin within 1 year, then continue in perpetuity	Minimal	County, City,
Sebastian County	Winter Storm	Educate citizens that all fuel burning equipment should be vented to the outside	County Judge and OEM	Firewise	Begin within 1 year, then continue in perpetuity	Minimal	County
City of Barling	Winter Storm	Using designed-failure mode for power line design to allow line to fall or fail in small sections rather than as a complete system to enable faster repairs.	Mayor, City Administrator, Public Works Dept.	Local Utilities	Begin within 1 year, then continue until all lines are replaced	Unknown	City, Utilities
Cities of Barling and Lavaca	Winter Storm	Offer carbon monoxide monitors and alarms through local fire departments	Mayors, Fire Departments	FEMA	Begin within 1 year, then continue in perpetuity	Minimal	Cities, FEMA
City of Barling	All Hazards	Prepare and adopt an Outdoor Warning Sirens Plan.	Mayors	ADEM	1 year for adoption	Unknown	Cities
Cities of Barling and Lavaca, and Fort Smith Schools, and Sebastian County	Thunder-storm, Tornado, Winter Storm	Burying or otherwise protecting electric and other utility lines or prevent disruption by protecting lines from ice, wind, or snow damage.	Mayors, Public Works, Superintendent, County Judge	Local Utilities	Begin within 1 year, then continue in perpetuity	Unknown	Cities, School, Utilities, County
All Jurisdictions	All Hazards	Establish resiliency hubs throughout the county and cities.	County Judge, Mayors, and Superintendents	WAPDD	5 years	Unknown	FEMA, CDBG, EDA
Cities of Barling, Bonanza, Central City, Fort Smith, Greenwood, Hackett, Hartford,	All Hazards	Install NOAA weather radios in all public buildings where large numbers of people congregate	County Judge and OEM, Mayors, Superintendents	FEMA	Begin within 1 year, then continue in perpetuity	Unknown	County, Cities, Schools, FEMA

Actions Selected for Implementation in 2023 Plan Update

Note: The term "All Jurisdictions" refers to Sebastian County, Cities of Barling, Bonanza, Central City, Fort Smith, Greenwood, Hackett, Hartford, Huntington, Lavaca, Mansfield, Midland, and the School Districts of Fort Smith, Greenwood, Hackett, Lavaca, Mansfield, and University of Arkansas-Fort Smith.
The term "All Hazards" refers to Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Thunderstorm, Landslide, Winter Storm, Tornado, and Wildfire.

Implementing Participating Jurisdiction	Hazard	Action	Jurisdiction's Responsible Department or Personnel	Required Outside Resources	Length of Project	Cost Estimate (if avail.)	Funding
Lavaca, Mansfield, Midland, and the School Districts of Hackett, Lavaca							
Sebastian County, Cities of Barling, Bonanza, Central City, Fort Smith, Greenwood, Hackett, Hartford, Lavaca, Mansfield, Midland, and the School Districts of Fort Smith, Hackett, Lavaca, Mansfield, and UAFS	All Hazards	Use newspapers, local radio stations and websites to promote the use of Weather Apps for cell phones.	County Judge and OEM, Mayors, Superintendents, UAFS Chancellor,	Local Newspapers and radio stations	Begin within 1 year, then continue in perpetuity	Minimal	County, Cities, Schools, UAFS,

Section Four: Plan Maintenance

4.1: Continuous Public Involvement

Sebastian County is dedicated to involving the public directly in the continual reshaping and updating of the Sebastian County Hazard Mitigation Plan. The Sebastian County Judge and Office of Emergency Management are responsible for the annual monitoring, evaluation, and update of the plan. Although they represent the public to some extent, the public will be able to directly comment on and provide feedback about the plan.

Copies of the FEMA approved Sebastian County Hazard Mitigation Plan will be available in digital and print formats through each of the participating jurisdictions and WAPDD. Contained in the plan are the address, phone number, and e-mail address of the Director of the Sebastian County Office of Emergency Management, the primary point of contact for the plan.

Public comment will be solicited via the Sebastian County and WAPDD websites/social media accounts and through public notice prior to any plan maintenance or plan updates.

Public notice regarding the plans availability and opportunities to participate in maintenance and implementation activities will be posted in local post offices and libraries in addition to the county courthouses and city halls. Notices will also be published in the Times Record, Greenwood Democrat, and Mansfield Citizen newspapers.

Sebastian County and WAPDD will also ask the public to report any impacts from natural hazards after events occur so that the Sebastian County Hazard Mitigation plan may be updated with any new data that may affect future updates or future mitigation actions.

4.2: Monitoring, Evaluating, and Updating the Plan

Although FEMA regulations require a plan update within five years, Sebastian County has a method to ensure that monitoring, evaluation, and updating of the Sebastian County Hazard Mitigation Plan occurs annually or as needed. The plan will be submitted to FEMA within five years for review.

The responsible party for overseeing and assuring plan updates is the Sebastian County Judge and Sebastian County Office of Emergency Management. At this time, the monitoring procedures for the Mitigation Plan will be conducted at a yearly meeting of all the participating jurisdictions and WAPDD. Each participating jurisdiction will be responsible for monitoring and evaluating the progress of the mitigation strategies in the plan. The jurisdiction's representative will monitor the plan by providing a mitigation planning update at the annual meeting.

A list of public officials will be maintained so that when there is a change in leadership, new officials can be informed of the plan and the planning process. County, city, and school officials will be asked to provide updated staff information on an annual basis. New staff will then be informed of the plan, planning process, and their role in the process.

The County, with assistance from WAPDD, will conduct an annual monitoring of the Plan utilizing FEMA's Plan Update Evaluation Worksheet. Each participating jurisdiction will be asked to participate in the annual monitoring by providing an update on the progress of each mitigation action item as it pertains to their jurisdiction. WAPDD also developed a progress report and an evaluation form to assist the participating jurisdictions in not only updating the progress of the mitigation actions, but also for reporting any damages or new data that could impact the Sebastian County Hazard Mitigation Plan. The planning team will be asked to evaluate the monitoring and evaluation process to determine how it can be improved.

During the annual meeting, the participating jurisdictions and WAPDD will meet to monitor and evaluate each goal and objective to determine their relevance to changing situations in Sebastian County, as well as changes in State or Federal policy, and to ensure that they are addressing current and expected conditions.

The participating jurisdictions will also review and evaluate the risk assessment portion of the plan to determine if this information should be updated or modified. The parties or agencies responsible for the various implementation actions (identified in Section 3) will report on the status of their projects and will evaluate which implementation processes worked well, any difficulties encountered, how coordination efforts were proceeding, and which strategies should be revised.

Participating jurisdictions will also be asked to report on the status of other planning mechanisms so that any changes can be incorporated into the Hazard Mitigation Plan. Capabilities and critical infrastructure will also be reassessed so that any changes can be reflected and addressed in the plan update.

Should a participating jurisdiction fail to participate in the annual meeting or otherwise fail to provide the required information in a timely manner, they will be notified that they are at risk of being removed from the plan.

Following the annual meeting, the Sebastian County Office of Emergency Management and WAPDD will then have three months to update and make changes to the plan before submitting to the participating jurisdictions and the State Hazard Mitigation Officer for review. If no changes are necessary, the State Hazard Mitigation Officer will be given justification for this determination. Comments and recommendations offered by participating jurisdictions and the State Hazard Mitigation Officer will be incorporated into the plan update.

The planning team will make every attempt to ensure the public will be able to directly comment on and provide feedback about the Plan by posting meeting information throughout the participating jurisdictions, in local newspapers, local websites, and social media. Public participation will be altered as needed to address new threats such as COVID-19. Virtual meetings and online engagement will be more prevalent than in previous years. This process will also inform the county citizens of any changes or revisions of the Sebastian County Hazard Mitigation Plan.

4.3: Integration of the Plan Into Other Planning Mechanisms

The Sebastian County Hazard Mitigation Plan will be integrated into other plans.

All participating jurisdictions currently use state laws pertaining to compliance with the National Flood Insurance Program, if applicable, as well as state fire codes, to encourage compliance with its hazard mitigation programs. These existing mechanisms have hazard mitigation strategies integrated into them. Sebastian County, like every other county in the State, has a current Emergency Operations Plan. The Hazard Mitigation Plan will become an annex of the EOP for future submissions.

All participating jurisdictions will be integrating the approved Hazard Mitigation Plan into their existing plans that are relevant to Hazard Mitigation. After passage of the Sebastian County Hazard Mitigation Plan in 2018, participating jurisdictions integrated the Plan into their budget to plan for future mitigation actions and into disaster response plans, and floodplain management programs for those jurisdictions participating in NFIP, the same will be done with the passage of this update.

Table 29 - Plan Integration

	Planning Mechanism and Integration of Hazard Mitigation Plan
Sebastian County	**Plans**: The HMP will be annexed into the County's EOP, COOP, and Comprehensive Master Plan. **Budget**: The Mitigation Strategy will guide budgeting for funding hazard mitigation goals and objectives. **Ongoing Public Education or Information Program**: Current educational programs will continue, and the risk assessment will guide decisions made regarding additional or expanded programs.
Barling	**Plans**: The HMP will be annexed into the City's EOP and COOP. **Budget**: The Mitigation Strategy will guide budgeting for funding hazard mitigation goals and objectives. **Maintenance Programs to Reduce Risk**: Current maintenance programs will continue, and the risk assessment will guide decisions made regarding additional or expanded programs. **Building Codes**: The risk assessment will identify the type, frequency, and intensity of hazards present in specific geographic areas. The building codes will in turn use this information to develop and regulate construction standards in order to increase the structure's resiliency to the specified hazards. **Planning and Zoning**: The risk assessment will provide an opportunity to account for the natural hazards prior to the development of land.
Bonanza	**Budget**: The Mitigation Strategy will guide budgeting for funding hazard mitigation goals and objectives. **Maintenance Programs to Reduce Risk**: Current maintenance programs will continue, and the risk assessment will guide decisions made regarding additional or expanded programs.

	Building Codes: The risk assessment will identify the type, frequency, and intensity of hazards present in specific geographic areas. The building codes will in turn use this information to develop and regulate construction standards in order to increase the structure's resiliency to the specified hazards. **Planning and Zoning**: The risk assessment will provide an opportunity to account for the natural hazards prior to the development of land.
Central City	**Budget**: The Mitigation Strategy will guide budgeting for funding hazard mitigation goals and objectives. **Building Codes**: The risk assessment will identify the type, frequency, and intensity of hazards present in specific geographic areas. The building codes will in turn use this information to develop and regulate construction standards in order to increase the structure's resiliency to the specified hazards.
Fort Smith	**Plans**: The HMP will be annexed into the City's EOP, Comprehensive Master Plan, Capital Improvement Plan and Economic Development Plan. **Budget**: The Mitigation Strategy will guide budgeting for funding hazard mitigation goals and objectives. **Maintenance Programs to Reduce Risk**: Current maintenance programs will continue, and the risk assessment will guide decisions made regarding additional or expanded programs. **Building Codes**: The risk assessment will identify the type, frequency, and intensity of hazards present in specific geographic areas. The building codes will in turn use this information to develop and regulate construction standards in order to increase the structure's resiliency to the specified hazards. **Planning and Zoning**: The risk assessment will provide an opportunity to account for the natural hazards prior to the development of land.
Greenwood	**Plans**: The HMP will be annexed into the City's EOP, Comprehensive Master Plan, Capital Improvement Plan and Economic Development Plan. **Budget**: The Mitigation Strategy will guide budgeting for funding hazard mitigation goals and objectives. **Maintenance Programs to Reduce Risk**: Current maintenance programs will continue, and the risk assessment will guide decisions made regarding additional or expanded programs. **Building Codes**: The risk assessment will identify the type, frequency, and intensity of hazards present in specific geographic areas. The building codes will in turn use this information to develop and regulate construction standards in order to increase the structure's resiliency to the specified hazards. Planning and Zoning: The risk assessment will provide an opportunity to account for the natural hazards prior to the development of land.
Hackett	**Budget**: The Mitigation Strategy will guide budgeting for funding hazard mitigation goals and objectives.

Hartford	Plans: The HMP will be annexed into the City's EOP, COOP, and Economic Development Plan. **Budget**: The Mitigation Strategy will guide budgeting for funding hazard mitigation goals and objectives. **Maintenance Programs to Reduce Risk**: Current maintenance programs will continue, and the risk assessment will guide decisions made regarding additional or expanded programs.
Huntington	**Budget**: The Mitigation Strategy will guide budgeting for funding hazard mitigation goals and objectives.
Lavaca	Plans: The HMP will be annexed into the City's EOP. **Budget**: The Mitigation Strategy will guide budgeting for funding hazard mitigation goals and objectives. **Building Codes**: The risk assessment will identify the type, frequency, and intensity of hazards present in specific geographic areas. The building codes will in turn use this information to develop and regulate construction standards in order to increase the structure's resiliency to the specified hazards. **Planning and Zoning**: The risk assessment will provide an opportunity to account for the natural hazards prior to the development of land.
Mansfield	**Plans**: The HMP will be annexed into the City's EOP, COOP, Comprehensive Master Plan, and Economic Development Plan. **Budget**: The Mitigation Strategy will guide budgeting for funding hazard mitigation goals and objectives. **Maintenance Programs to Reduce Risk**: Current maintenance programs will continue, and the risk assessment will guide decisions made regarding additional or expanded programs. **Building Codes**: The risk assessment will identify the type, frequency, and intensity of hazards present in specific geographic areas. The building codes will in turn use this information to develop and regulate construction standards in order to increase the structure's resiliency to the specified hazards. Planning and Zoning: The risk assessment will provide an opportunity to account for the natural hazards prior to the development of land.
Midland	**Budget**: The Mitigation Strategy will guide budgeting for funding hazard mitigation goals and objectives. **Maintenance Programs to Reduce Risk**: Current maintenance programs will continue, and the risk assessment will guide decisions made regarding additional or expanded programs.
Fort Smith Schools	**Budget**: The Mitigation Strategy will guide budgeting for funding hazard mitigation goals and objectives. Plans: The HMP will be annexed into the School's Comprehensive Master Plan, Capital Improvements Plan, and School Emergency Plan.
Future School of Fort Smith	**Budget**: The Mitigation Strategy will guide budgeting for funding hazard mitigation goals and objectives. **Plans**: The HMP will be annexed into the School's Comprehensive Master Plan, Capital Improvements Plan, and School Emergency Plan.

Greenwood Schools	**Budget**: The Mitigation Strategy will guide budgeting for funding hazard mitigation goals and objectives. **Plans**: The HMP will be annexed into the School's Comprehensive Master Plan, Capital Improvements Plan, and School Emergency Plan.
Hackett Schools	**Budget**: The Mitigation Strategy will guide budgeting for funding hazard mitigation goals and objectives. **Plans**: The HMP will be annexed into the School's Comprehensive Master Plan, Capital Improvements Plan, and School Emergency Plan.
Lavaca Schools	**Budget**: The Mitigation Strategy will guide budgeting for funding hazard mitigation goals and objectives. **Plans**: The HMP will be annexed into the School's Comprehensive Master Plan, Capital Improvements Plan, and School Emergency Plan.
Mansfield Schools	**Budget**: The Mitigation Strategy will guide budgeting for funding hazard mitigation goals and objectives. **Plans**: The HMP will be annexed into the School's Comprehensive Master Plan, Capital Improvements Plan, and School Emergency Plan.
Arkansas Colleges of Health Education	**Budget**: The Mitigation Strategy will guide budgeting for funding hazard mitigation goals and objectives. **Plans**: The HMP will be annexed into the School's Comprehensive Master Plan, Capital Improvements Plan, and School Emergency Plan.
University of Arkansas-Fort Smith	**Budget**: The Mitigation Strategy will guide budgeting for funding hazard mitigation goals and objectives. **Plans**: The HMP will be annexed into the School's Comprehensive Master Plan, Capital Improvements Plan, and School Emergency Plan.

Table 30 - Plan Adoption/Integration Process

Local Jurisdiction's Adoption/Integration Process			
Jurisdiction	Role	Authority	Process Mechanism
Sebastian County	Local Government	Quorum Court	Voting
Barling	Local Government	City Council	Voting
Bonanza	Local Government	City Council	Voting
Central City	Local Government	City Council	Voting
Fort Smith	Local Government	City Council	Voting
Greenwood	Local Government	City Council	Voting
Hackett	Local Government	City Council	Voting
Hartford	Local Government	City Council	Voting
Huntington	Local Government	City Council	Voting
Lavaca	Local Government	City Council	Voting
Mansfield	Local Government	City Council	Voting
Midland	Local Government	City Council	Voting
Fort Smith Schools	School Administration	School Board	Voting
Future School of Fort Smith	School Administration	School Board	Voting
Greenwood Schools	School Administration	School Board	Voting
Hackett Schools	School Administration	School Board	Voting
Lavaca Schools	School Administration	School Board	Voting
Mansfield Schools	School Administration	School Board	Voting
Arkansas Colleges of Health Education	School Administration	Board of Directors	Voting
University of Arkansas-Fort Smith	School Administration	Board of Directors	Voting

Section Five: Plan Update

5.1: Changes in Development

The following table shows the changes in population and housing units for Sebastian County based on the 2010 Census and the 2020 Census:

Table 31 - Updated Census Information

	Population		Housing Units	
	2010 Census	2020 Census	2010 Census	2020 Census
Sebastian County	125,744	127,799	54,651	56,749
Barling	4,649	4,782	2,061	2,113
Bonanza	575	587	Unavailable	248
Central City	502	461	237	215
Fort Smith	86,209	89,142	37,899	40,327
Greenwood	8,952	9,516	3,535	3,735
Hackett	812	784	345	341
Hartford	642	499	310	264
Huntington	635	490	315	254
Lavaca	2,289	2,450	930	996
Mansfield	1,139	1,053	532	474
Midland	325	227	140	109

The number of farms in Sebastian County has been declining, but the average size of the farms has gotten larger:

Table 32 - Agricultural Changes

Sebastian County			
Year	2007	2012	2017
Number of Farms	931	770	706
Land in Farms (acres)	104,459	118,855	100,790
Ave. Size of Farm (acres)	112	154	143

Table 33 - Business Development

Major New Business Locations/Expansions, 2017-2021			
Business	Location	Announcement	Investment & Number of New Jobs
Intelcase Co.	Fort Smith	2017 new warehouse	
Silgan Holdings Inc.	Fort Smith	2017 new plant 100,000 sf	$38 mil., 150 jobs
188th Fighter Wing	Fort Smith	2018 expansion 40,000 sf building and flight line	$14 mil.
Applied Process Inc.	Fort Smith	2018 new plant 51,000 sf	30 jobs
Mars Petcare	Fort Smith	2018 expansion	$2.4 mil
Sykes Enterprises	Fort Smith	2019 expansion	200 jobs
First Star Bank	Fort Smith	2019 new bank	$3.5 mil., 20 jobs
Mars Petcare	Fort Smith	2021 expansion	$145 mil., 120 jobs
Hytrol	Fort Smith	2021 new business	$20 mil., 250 new
Owens Corning	Fort Smith	2021 expansion	$100 mil., 5 jobs
Harry G. Barr & Co.	Fort Smith	2021 expansion	$10 mil., 100 jobs
Mercy Hospital	Fort Smith	2021 expansion	$162 million

These changes in development have not impacted the community's vulnerability.

5.2: Progress in Mitigation Efforts

The following table indicates the status of previously identified mitigation action items. All actions relating to expansive soil have been deemed no longer a priority as expansive soil has been removed from the current Hazard Mitigation Plan Update. Some actions relating to dam failure have been removed upon determining certain jurisdictions were not at risk. Any actions indicated as being Still Interested, Keep in Plan, Ongoing, or In Progress have been moved to the current list of mitigation actions to be undertaken by the jurisdictions.

Table 34 - Progress in Mitigation Efforts

Table Key:

C – Completed
IC - Incomplete
NLP – No Longer Priority, Remove
NF – Not Feasible, Remove
SI – Still Interested, Keep in Plan
OG – Ongoing
IP – In Progress

- Action not chosen by jurisdiction.

Mitigation Item	Sebastian County	City of Barling	City of Bonanza	City of Central City	City of Fort Smith	City of Greenwood	City of Hackett	City of Hartford	City of Huntington	City of Lavaca	City of Mansfield	Town of Midland	Fort Smith Schools	Greenwood Schools	Hackett Schools	Lavaca Schools	Mansfield Schools	Future School (FS)	UAFS	ACHE
Conduct inspections, maintenance and enforce programs on dams to ensure structural integrity.	OG	SI			SI	OG	NLP	NLP			NLP									
Coordinate with dam owners/ operators on preparation and maintenance of Emergency Action Plans.	C	SI			SI	OG	NLP	NLP			NLP									
Complete a detailed flood inundation study for all current dam locations.	NF	SI	NLP	NLP	SI	OG	NLP	NLP	NLP	NLP	NLP	NLP	NLP	NLP	NLP	NLP	NLP		NLP	
Educate public and developers regarding flooding caused by dam failure.	SI	SI	NLP	NLP	SI	SI	NLP	NLP	NLP	NLP	NLP	NLP	NLP	NLP	NLP	NLP	NLP		NLP	
Pass ordinances to prioritize or control water, particularly for emergency situations.										C										
Acquire low-flow faucets/fixtures for public facilities.					IC															
Develop a countywide drought emergency communication plan.	SI	SI	SI	SI	SI	SI	SI	SI	NLP	SI	OG	SI	NF	NLP	NLP	SI	NLP		OG	

Mitigation Item	Sebastian County	City of Barling	City of Bonanza	City of Central City	City of Fort Smith	City of Greenwood	City of Hackett	City of Hartford	City of Huntington	City of Lavaca	City of Mansfield	Town of Midland	Fort Smith Schools	Greenwood Schools	Hackett Schools	Lavaca Schools	Mansfield Schools	Future School (FS)	UAFS	ACHE
Upgrade existing water delivery systems to eliminate breaks and leaks.		OG			OG		SI			OG	OG									
Rehabilitate reservoirs to operate at design capacity.		SI																		
Design and implement leak detection programs.	NF	OG		SI	C	OG	SI	SI		OG		SI	OG							
Establish MOU with adjacent communities designed to source additional sources of water.	SI	SI	SI						NLP	C	IP									
Collect rainwater/ install rain capturing devices for watering at public facilities.			SI	NF		NLP		SI		SI		SI	SI	NLP	NLP	SI	NLP		IC	
Educate population on water rights and water use policies.		SI								OG										
Form partnership with UAEX Services and ANRC to promote awareness of drought and maintain better records of local events and losses.	SI	SI																		
Establish a school/county survey to inventory structural and non-structural hazards in an around buildings.	SI												SI	C	C	SI	OG		OG	

Mitigation Item	Sebastian County	City of Barling	City of Bonanza	City of Central City	City of Fort Smith	City of Greenwood	City of Hackett	City of Hartford	City of Huntington	City of Lavaca	City of Mansfield	Town of Midland	Fort Smith Schools	Greenwood Schools	Hackett Schools	Lavaca Schools	Mansfield Schools	Future School (FS)	UAFS	ACHE
Adopt and enforce updated building code provisions to reduce earthquake damage.		SI			IC					SI										
Use GIS to map hazard areas, at-risk structures to assess high risk areas.	C	SI	SI	SI	C	SI	OG	SI	SI	SI	IC	SI	OG	NLP	NLP	SI	NLP		SI	
Purchase and install emergency back-up generators in all public buildings.	C	OG	SI	SI	IP	IP	C	SI	SI	C	OG	C	C	NLP	NLP	SI	C		OG	
Apply window film to prevent shattering.			SI	SI		SI	SI	SI	NLP	SI		SI	OG	SI	OG	SI	IC		SI	
Require bracing of generators, elevators, and other vital equipment and anchoring of rooftop equipment.													SI							
Participate in mapping studies to determine extent of expansive soils.	NLP	NLP	NLP	NLP	NLP	NLP	NLP	NLP	NLP	NLP	NLP	NLP	NLP	NLP	NLP	NLP	NLP	NLP	NLP	NLP
Develop reseeding plans for losses due to hazard events.													SI	OG	SI	SI	NLP		SI	
Develop a brochure describing risk and potential mitigation techniques.	NLP	NLP	NLP	NLP	NLP	NLP	NLP	NLP	NLP	NLP	NLP	NLP								
Modify existing structures and make improvements to allow proper draining of excess rainwater.	NF	SI	SI	SI	SI	OG	SI	SI	NLP	SI	OG	SI	OG	NLP	SI	SI	NLP		IP	

Mitigation Item	Sebastian County	City of Barling	City of Bonanza	City of Central City	City of Fort Smith	City of Greenwood	City of Hackett	City of Hartford	City of Huntington	City of Lavaca	City of Mansfield	Town of Midland	Fort Smith Schools	Greenwood Schools	Hackett Schools	Lavaca Schools	Mansfield Schools	Future School (FS)	UAFS	ACHE
Notifying property owners located in high-risk areas.	C	SI	SI	SI	SI	SI	IC	SI	NLP	SI	IC	SI	NF	NLP	NLP	SI	NLP		SI	
Increase tree plantings around buildings and along public rights-of-way.					IP								SI		SI					
Establish and promote accessible heating/cooling centers/shelters.	C	SI	SI	SI	SI	OG	C	SI	SI	SI	IP	C	SI	NLP	NLP	SI	OG		SI	
Create a database to track those individuals at high risk.	NF	SI	SI	SI	SI	NF	IC	SI	SI	SI	IC	SI	NF	NLP	NLP	SI	NLP		SI	
Provide emergency preparedness information through an active education outreach program.	C	SI	SI	SI	IP	OG	IC	SI	C	SI	SI	SI	NF	NLP	SI	SI	OG		OG	
Include safety strategies for severe weather in driver education classes and materials.													NF	OG	SI					
Install green roofs on public buildings.		SI																		
Enact ordinance requiring one extra foot of freeboard for any building proposed in the floodplain or inundation area.	C	C								C										

Mitigation Item	Sebastian County	City of Barling	City of Bonanza	City of Central City	City of Fort Smith	City of Greenwood	City of Hackett	City of Hartford	City of Huntington	City of Lavaca	City of Mansfield	Town of Midland	Fort Smith Schools	Greenwood Schools	Hackett Schools	Lavaca Schools	Mansfield Schools	Future School (FS)	UAFS	ACHE
Setting the design flood elevation at or about the historical high-water mark if it is above the mapped base flood elevation.										SI										
Enact ordinance requiring the separation of storm and sanitary sewage systems as well as higher engineering standards for drain and sewer capacity.		OG								C										
Adopt a land use plan with zoning and development restrictions that require floodplains to be kept as open space and prohibit fill in floodplains.		C									IP									
Elevate all new public buildings above the 0.2% or 500yr flood level.		C								SI										
Implement and retrofit construction plans to modify and/or raise low water bridges.	OG																			
Enact an ordinance prohibiting dumping in streams and ditches.	C	C			C					C										

Mitigation Item	Sebastian County	City of Barling	City of Bonanza	City of Central City	City of Fort Smith	City of Greenwood	City of Hackett	City of Hartford	City of Huntington	City of Lavaca	City of Mansfield	Town of Midland	Fort Smith Schools	Greenwood Schools	Hackett Schools	Lavaca Schools	Mansfield Schools	Future School (FS)	UAFS	ACHE
Enact ordinance governing large scale commercial development to include a retention/ detention pond to mitigate effects of water run-off during flash floods.					C															
Prepare and adopt a stormwater drainage plan.					C															
Require drainage study with new development and/or develop engineering guidelines for drainage from new development.					C					IP										
Regulate development in upland areas to reduce stormwater run-off.		OG								SI										
Acquire and relocate/demolish structures within the floodplain	SI	SI	SI		SI	SI	SI	SI		SI	SI	SI								
For critical facilities and public buildings, keep water out by strengthening walls, sealing openings, and/or using waterproof compounds or plastic sheeting on walls.	NF												NF							

Mitigation Item	Sebastian County	City of Barling	City of Bonanza	City of Central City	City of Fort Smith	City of Greenwood	City of Hackett	City of Hartford	City of Huntington	City of Lavaca	City of Mansfield	Town of Midland	Fort Smith Schools	Greenwood Schools	Hackett Schools	Lavaca Schools	Mansfield Schools	Future School (FS)	UAFS	ACHE
Increase the sizing of all culverts when upgrading roads, bridges, and similar infrastructure.	OG						SI													
Retrofit or elevate utilities built within the floodplain or inundation area.										C										
Develop a stream buffer ordinance.		OG																		
Floodproof water/wastewater treatment facilities located in flood hazards.										C										
Routinely clean debris from support bracing underneath low water bridges.	OG						OG			NLP										
Routinely clean/repair stormwater drains.	OG									SI										
Determine and enforce acceptable land uses to alleviate the risk of damage by limiting exposure in flood hazard areas.		OG								C										
Conduct NFIP community workshops to provide information for property owners to acquire flood insurance.	SI	SI																		

Mitigation Item	Sebastian County	City of Barling	City of Bonanza	City of Central City	City of Fort Smith	City of Greenwood	City of Hackett	City of Hartford	City of Huntington	City of Lavaca	City of Mansfield	Town of Midland	Fort Smith Schools	Greenwood Schools	Hackett Schools	Lavaca Schools	Mansfield Schools	Future School (FS)	UAFS	ACHE
Install warning signs at all low water bridges.	OG																			
Develop early warning system for flooding using existing or new storm sirens.		OG																		
Define steep slope/high risk areas in plans and create guidelines on new development in those areas.		SI																		
Study areas where riparian landslides may occur.	OG																			
Restricting or limiting industrial activity that would strip slopes of essential topsoil.		OG									NLP									
Install catch-fall nets for rocks at steep slopes near roadways.		OG																		
Apply soil stabilization measure.		OG	C	NF	IP	OG	OG	SI	NLP	SI	NF	SI	NF	OG	SI	SI	NLP		OG	
Assess vegetation in wildfire-prone area to prevent landslides after fires.										SI										

Mitigation Item	Sebastian County	City of Barling	City of Bonanza	City of Central City	City of Fort Smith	City of Greenwood	City of Hackett	City of Hartford	City of Huntington	City of Lavaca	City of Mansfield	Town of Midland	Fort Smith Schools	Greenwood Schools	Hackett Schools	Lavaca Schools	Mansfield Schools	Future School (FS)	UAFS	ACHE
Install and maintain lightning protection devices and surge protectors at critical facilities.	OG				IP					C	C		OG	C	SI					
Post warning signs at public parks and recreation facilities and other outdoor venues about dangers of remaining outdoors during hazardous events.					IP						C				NLP					
Teach school children about the dangers of lightning and how to take safety precautions.													SI	OG	OG	SI	OG			
Install hail resistant roofing and window coverings, shatterproof glass with a focus on critical infrastructure.													SI							
Install carports or other coverings for parking of publicly owned vehicles.							C						NF							
Install covered walkways between school buildings.													SI	OG	OG	SI	C		IP	

Mitigation Item	Sebastian County	City of Barling	City of Bonanza	City of Central City	City of Fort Smith	City of Greenwood	City of Hackett	City of Hartford	City of Huntington	City of Lavaca	City of Mansfield	Town of Midland	Fort Smith Schools	Greenwood Schools	Hackett Schools	Lavaca Schools	Mansfield Schools	Future School (FS)	UAFS	ACHE
Require tie-downs and ground anchors for manufactured homes.		SI								C	C									
Adopt IBC and IRC codes.					SI					SI										
Construct free standing saferooms and/or saferooms within new and existing public buildings.	C	OG	SI	NF	IP	SI	NF	SI	NF	SI	C	SI	C	SI	SI	SI	C		SI	
Install warning sirens across planning area.	NLP				C						C									
Establish standards for all utilities regarding tree pruning around power lines.		OG								SI										
Inspect utility poles to ensure they meet specifications.		OG											SI		NLP					
Expand Firewise program.	OG										OG									
Mitigate futures losses by regulating development in wildfire hazard areas.		OG	SI	SI	IP	OG	NLP	SI	NF		C	SI								
Educate public on dangers of wildfire and how to prevent them by providing free technical assistance.	SI				C															

Mitigation Item	Sebastian County	City of Barling	City of Bonanza	City of Central City	City of Fort Smith	City of Greenwood	City of Hackett	City of Hartford	City of Huntington	City of Lavaca	City of Mansfield	Town of Midland	Fort Smith Schools	Greenwood Schools	Hackett Schools	Lavaca Schools	Mansfield Schools	Future School (FS)	UAFS	ACHE
Perform arson prevention cleanup activities.			IP	SI	C	OG	OG	SI	NF		OG	SI								
Employ the use of goats to reduce the amounts of underbrush in wildfire-prone areas.										SI										
Create a defensible space around public buildings by reduce the amount of brush near buildings.					IP					SI										
Schedule prescribed burning to reduce fuel loads that threaten public safety and property.										SI										
Ensure the development and enforcement of building codes for roof snow loads.					IP								SI							
Install NOAA weather radios in all public buildings.	NF	SI	SI	SI	SI	SI	IC	SI	NF	SI	OG	SI	NLP	C	SI	SI	C		C	
Educate citizens that all fuel burning equipment should be vented to the outside.	SI																			

Mitigation Item	Sebastian County	City of Barling	City of Bonanza	City of Central City	City of Fort Smith	City of Greenwood	City of Hackett	City of Hartford	City of Huntington	City of Lavaca	City of Mansfield	Town of Midland	Fort Smith Schools	Greenwood Schools	Hackett Schools	Lavaca Schools	Mansfield Schools	Future School (FS)	UAFS	ACHE
Using designed-failure mode for power line design to allow line to fall or fail in small sections rather than as a complete system to enable faster repairs.		SI																		
Plan for and maintain adequate road and debris clearing capabilities.	C									OG	OG									
Prepare and adopt an Outdoor Warning Sirens Plan.		OG									C									
Implement Code RED Weather Warning early telephone warning system.	C																			
Bury or otherwise protect electric and other utility lines to prevent disruption.		SI								SI			OG							
Use local media to promote the use of Weather Apps.	IP	OG	SI	SI	SI	SI	IC	SI	C	SI	IC	SI	SI	NLP	SI	SI	OG		IP	
Offer Carbon Monoxide Alarms through the Fire Departments.		SI								SI	C									

5.3: Changes in Priorities

As demonstrated in the previous table, some mitigation action items have been removed from the Sebastian County Hazard Mitigation Plan due to a change in priorities.

Section Six: Plan Adoption

6.1: Resolutions

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RESOLUTION NO. 2023 - 10

"BE IT RESOLVED BY THE QUORUM COURT OF THE COUNTY OF SEBASTIAN, STATE OF ARKANSAS:"

A RESOLUTION ADOPTING THE SEBASTIAN COUNTY HAZARD MITIGATION PLAN FOR SEBASTIAN COUNTY, ARKANSAS AND FOR OTHER PURPOSES.

WHEREAS, certain areas of Sebastian County, Arkansas are subject to periodic flooding and other natural and man-caused hazards with the potential to cause damages to people's properties with the area; and

WHEREAS, Sebastian County desires to prepare and mitigate for such circumstances; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) required that local jurisdictions have in place a FEMA-approved Hazard Mitigation Action Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, to assist cities and counties in meeting this requirement, Sebastian County, with the assistance of Western Arkansas Planning and Development District (WAPDD), initiated development of a county wide, multi-jurisdiction Hazard Mitigation Plan for the county and all jurisdictions in the county, specifically the cities and school districts.

NOW, THEREFORE, BE IT RESOLVED BY THE QUORUM COURT OF SEBASTIAN COUNTY, ARKANSAS:

That Sebastian County, Arkansas hereby adopts those portions of the Plan relating to and protecting its jurisdictional area against all hazards and appoints the Emergency Management Director to assure that the Hazard Mitigation Plan be reviewed at least annually and that any needed adjustment to the Hazard Mitigation Plan be developed and presented to the governing board for consideration; and

Agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

APPROVED and ADOPTED on this 19th day of December 2023.

DATED: 12-19-23 APPROVED: _____
County Judge

ATTEST: _____
County Clerk

RESOLUTION # 23-13

A RESOLUTION ADOPTING THE SEBASTIAN COUNTY HAZARD MITIGATION PLAN

WHEREAS, certain areas of The City of Barling are subject to periodic flooding and other natural and man-caused hazards with the potential to cause damages to people's properties with the area; and

WHEREAS, The City of Barling desires to prepare and mitigate for such circumstances; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) required that local jurisdictions have in place a FEMA-approved Hazard Mitigation Action Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, to assist cities and counties in meeting this requirement, Sebastian County, with the assistance of Western Arkansas Planning and Development District (WAPDD), initiated development of county wide, multi-jurisdiction Hazard Mitigation Plan the county and all jurisdictions in the county, specifically the cities and school districts;

NOW, THEREFORE, BE IT RESOLVED BY the Board of Directors of The City of Barling,

That The City of Barling, Arkansas adopts those portions of the Plan relating to and protecting its jurisdictional area against all hazards and appoints the Sebastian County Emergency Management Department to assure that the Hazard Mitigation Plan be reviewed at least annually and that any needed adjustment to the Hazard Mitigation Plan be developed and presented to the governing board for consideration; and

Agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

APPROVED and ADOPTED on this 19th day of December, 2023.

APPROVED:

Greg Murray,
Mayor

CITY OF BARLING, AR
OFFICIAL
SEAL
INCORPORATED 1956

ATTEST:

Florene Brown, City Clerk

RESOLUTION # 12122023

A RESOLUTION ADOPTING THE SEBASTIAN COUNTY HAZARD MITIGATION PLAN

WHEREAS, certain areas of BONANZA are subject to periodic flooding and other natural and man-caused hazards with the potential to cause damages to people's properties with the area; and

WHEREAS, BONANZA desires to prepare and mitigate for such circumstances; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) required that local jurisdictions have in place a FEMA-approved Hazard Mitigation Action Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, to assist cities and counties in meeting this requirement, SEBASTIAN County, with the assistance of Western Arkansas Planning and Development District (WAPDD), initiated development of county wide, multi-jurisdiction Hazard Mitigation Plan the county and all jurisdictions in the county, specifically the cities and school districts;

NOW, THEREFORE, BE IT RESOLVED BY the City Council of BONANZA,

That BONANZA, Arkansas adopts those portions of the Plan relating to and protecting its jurisdictional area against all hazards and appoints the SEBASTIAN County Emergency Management Department to assure that the Hazard Mitigation Plan be reviewed at least annually and that any needed adjustment to the Hazard Mitigation Plan be developed and presented to the governing board for consideration; and

Agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

APPROVED and ADOPTED on this 12 day of December, 2023.

APPROVED:

Mayor

ATTEST:

Mitigation Fact Sheet

What is Mitigation Planning?
Mitigation planning is a process through which communities assess risks and identify actions to reduce vulnerability to hazards through hazard mitigation.

What is a Mitigation Plan?
A Mitigation Plan is a community-driven, living document that communities use to reduce their vulnerability to hazards.

Why assess and plan for risk?
The plan and its process show the link between land-use decisions and vulnerability. It serves as a tool to be used by planners or other officials to advise and inform decision makers.

What is the Stafford Act?
The Robert T. Stafford Disaster Relief and Emergency Assistance Act (Public Law 93-288), as amended by the Disaster Mitigation Act of 2000, provides the legal basis for State, local, and Indian Tribal governments to undertake a risk-based approach to reducing risks to natural hazards through mitigation planning.

Why have a Mitigation Plan?
Communities must have a plan to apply for or receive a Mitigation Grant. These grants can augment local mitigation activities already being done. Ultimately, these actions reduce vulnerability, and communities are able to recover more quickly from disasters.

Mitigation Grant Programs

State, Indian Tribal, and local governments are required to develop hazard mitigation plans as a condition for receiving certain types of non-emergency disaster assistance. Grant programs with mitigation plan requirements include:

- Stafford Act Grant Programs
  - Hazard Mitigation Grant Program (HMGP)
  - Building Resilient Infrastructure and Communities (BRIC)
  - Public Assistance (PA) Grant Program
  - Fire Management Assistance Grants (FMAG) Program
- National Flood Insurance Act Grant Programs
  - Flood Mitigation Assistance (FMA) Program
  - Repetitive Flood Claims (RFC) Program
  - Severe Repetitive Loss (SRL) Program

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  - Fire Management Assistance Grants (FMAG) Program
- National Flood Insurance Act Grant Programs
  - Flood Mitigation Assistance (FMA) Program
  - Repetitive Flood Claims (RFC) Program
  - Severe Repetitive Loss (SRL) Program

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RESOLUTION NO. R-253-23

RESOLUTION ADOPTING THE SEBASTIAN COUNTY
HAZARD MITIGATION PLAN

WHEREAS, certain areas of the City of Fort Smith are subject to periodic flooding and other natural and man-caused hazards with the potential to cause damages to people's properties with the area; and

WHEREAS, the City of Fort Smith desires to prepare and mitigate for such circumstances; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) required that local jurisdictions have in place a FEMA-approved Hazard Mitigation Action Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, to assist cities and counties in meeting this requirement, Sebastian County, with the assistance of Western Arkansas Planning and Development District (WAPDD), initiated development of county wide, multi-jurisdiction Hazard Mitigation Plan for the county and all jurisdictions in the county, specifically including the cities and school districts.

NOW, THEREFORE, BE IT RESOLVED BY the Board of Directors of the City of Fort Smith, Arkansas that the City adopts those portions of the Hazard Mitigation Action Plan relating to and protecting its jurisdictional area against all hazards and appoints the Sebastian County Emergency Management Department to assure that the Hazard Mitigation Action Plan be reviewed at least annually and that any needed adjustment to the Hazard Mitigation Action Plan be developed and presented to the governing body for consideration; and

BE IT FURTHER RESOLVED that the City of Fort Smith agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Action Plan.

APPROVED and ADOPTED on this 19th day of December, 2023.

APPROVED:

Vice Mayor

ATTEST:

City Clerk

Approved as to Form:

City Attorney, NPR

RESOLUTION # 124-01

A RESOLUTION ADOPTING THE SEBASTIAN COUNTY HAZARD MITIGATION PLAN

WHEREAS, certain areas of GREENWOOD are subject to periodic flooding and other natural and man-caused hazards with the potential to cause damages to people's properties with the area; and

WHEREAS, GREENWOOD desires to prepare and mitigate for such circumstances; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) required that local jurisdictions have in place a FEMA-approved Hazard Mitigation Action Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, to assist cities and counties in meeting this requirement, SEBASTIAN County, with the assistance of Western Arkansas Planning and Development District (WAPDD), initiated development of county wide, multi-jurisdiction Hazard Mitigation Plan the county and all jurisdictions in the county, specifically the cities and school districts;

NOW, THEREFORE, BE IT RESOLVED BY the City Council of GREENWOOD,

That GREENWOOD, Arkansas adopts those portions of the Plan relating to and protecting its jurisdictional area against all hazards and appoints the SEBASTIAN County Emergency Management Department to assure that the Hazard Mitigation Plan be reviewed at least annually and that any needed adjustment to the Hazard Mitigation Plan be developed and presented to the governing board for consideration; and

Agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

APPROVED and ADOPTED on this 8th day of January, 2024.

APPROVED:

Mayor

ATTEST:

City Clerk/Treasurer

CITY OF GREENWOOD SEAL GREENWOOD, ARKANSAS

RESOLUTION #_____

A RESOLUTION ADOPTING THE SEBASTIAN COUNTY HAZARD MITIGATION PLAN

WHEREAS, certain areas of SEBASTIAN COUNTY are subject to periodic flooding and other natural and man-caused hazards with the potential to cause damages to people's properties with the area; and

WHEREAS, the GREENWOOD School District desires to prepare and mitigate for such circumstances; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) required that local jurisdictions have in place a FEMA-approved Hazard Mitigation Action Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, to assist cities and counties in meeting this requirement, SEBASTIAN County, with the assistance of Western Arkansas Planning and Development District (WAPDD), initiated development of county wide, multi-jurisdiction Hazard Mitigation Plan the county and all jurisdictions in the county, specifically the cities and school districts;

NOW, THEREFORE, BE IT RESOLVED BY the School Board of the GREENWOOD School District.

That the GREENWOOD School District adopts those portions of the Plan relating to and protecting its jurisdictional area against all hazards and

Appoints the SEBASTIAN County Emergency Management Department to assure that the Hazard Mitigation Plan be reviewed at least annually and that any needed adjustment to the Hazard Mitigation Plan be developed and presented to the governing board for consideration; and agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

APPROVED and ADOPTED on this 14th day of December, 2023.

APPROVED:

_____

ATTEST:

BJ

_____

RESOLUTION #2023-05

A RESOLUTION ADOPTING THE SEBASTIAN COUNTY HAZARD MITIGATION PLAN

WHEREAS, certain areas of HACKETT are subject to periodic flooding and other natural and man-caused hazards with the potential to cause damages to people's properties with the area; and

WHEREAS, HACKETT desires to prepare and mitigate for such circumstances; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) required that local jurisdictions have in place a FEMA-approved Hazard Mitigation Action Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, to assist cities and counties in meeting this requirement, SEBASTIAN County, with the assistance of Western Arkansas Planning and Development District (WAPDD), initiated development of county wide, multi-jurisdiction Hazard Mitigation Plan the county and all jurisdictions in the county, specifically the cities and school districts;

NOW, THEREFORE, BE IT RESOLVED BY the City Council of HACKETT,

That HACKETT, Arkansas adopts those portions of the Plan relating to and protecting its jurisdictional area against all hazards and appoints the SEBASTIAN County Emergency Management Department to assure that the Hazard Mitigation Plan be reviewed at least annually and that any needed adjustment to the Hazard Mitigation Plan be developed and presented to the governing board for consideration; and

Agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

APPROVED and ADOPTED on this 21st day of December, 2023.

APPROVED:

Mayor

ATTEST:

*Makes the city eligible for FEMA funding

RESOLUTION # 2023-12-19

A RESOLUTION ADOPTING THE SEBASTIAN COUNTY HAZARD MITIGATION PLAN

WHEREAS, certain areas of HARTFORD are subject to periodic flooding and other natural and man-caused hazards with the potential to cause damages to people's properties with the area; and

WHEREAS, HARTFORD desires to prepare and mitigate for such circumstances; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) required that local jurisdictions have in place a FEMA-approved Hazard Mitigation Action Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, to assist cities and counties in meeting this requirement, SEBASTIAN County, with the assistance of Western Arkansas Planning and Development District (WAPDD), initiated development of county wide, multi-jurisdiction Hazard Mitigation Plan the county and all jurisdictions in the county, specifically the cities and school districts;

NOW, THEREFORE, BE IT RESOLVED BY the City Council of HARTFORD,

That HARTFORD, Arkansas adopts those portions of the Plan relating to and protecting its jurisdictional area against all hazards and appoints the SEBASTIAN County Emergency Management Department to assure that the Hazard Mitigation Plan be reviewed at least annually and that any needed adjustment to the Hazard Mitigation Plan be developed and presented to the governing board for consideration; and

Agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

APPROVED and ADOPTED on this 19th day of December, 2023.

APPROVED: 6-0

Mayor

ATTEST:

RESOLUTION # 2023-16

A RESOLUTION ADOPTING THE SEBASTIAN COUNTY HAZARD MITIGATION PLAN

WHEREAS, certain areas of MANSFIELD are subject to periodic flooding and other natural and man-caused hazards with the potential to cause damages to people's properties with the area; and

WHEREAS, MANSFIELD desires to prepare and mitigate for such circumstances; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) required that local jurisdictions have in place a FEMA-approved Hazard Mitigation Action Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, to assist cities and counties in meeting this requirement, SEBASTIAN County, with the assistance of Western Arkansas Planning and Development District (WAPDD), initiated development of county wide, multi-jurisdiction Hazard Mitigation Plan the county and all jurisdictions in the county, specifically the cities and school districts;

NOW, THEREFORE, BE IT RESOLVED BY the City Council of MANSFIELD,

That MANSFIELD, Arkansas adopts those portions of the Plan relating to and protecting its jurisdictional area against all hazards and appoints the SEBASTIAN County Emergency Management Department to assure that the Hazard Mitigation Plan be reviewed at least annually and that any needed adjustment to the Hazard Mitigation Plan be developed and presented to the governing board for consideration; and

Agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

APPROVED and ADOPTED on this 14 day of December, 2023.

APPROVED:

Buddy Blair
Mayor

ATTEST:

Becky Walker

RESOLUTION # 2023-3

A RESOLUTION ADOPTING THE SEBASTIAN COUNTY HAZARD MITIGATION PLAN

WHEREAS, certain areas of MIDLAND are subject to periodic flooding and other natural and man-caused hazards with the potential to cause damages to people's properties with the area; and

WHEREAS, MIDLAND desires to prepare and mitigate for such circumstances; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) required that local jurisdictions have in place a FEMA-approved Hazard Mitigation Action Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, to assist cities and counties in meeting this requirement, SEBASTIAN County, with the assistance of Western Arkansas Planning and Development District (WAPDD), initiated development of county wide, multi-jurisdiction Hazard Mitigation Plan the county and all jurisdictions in the county, specifically the cities and school districts;

NOW, THEREFORE, BE IT RESOLVED BY the City Council of MIDLAND,

That MIDLAND, Arkansas adopts those portions of the Plan relating to and protecting its jurisdictional area against all hazards and appoints the SEBASTIAN County Emergency Management Department to assure that the Hazard Mitigation Plan be reviewed at least annually and that any needed adjustment to the Hazard Mitigation Plan be developed and presented to the governing board for consideration; and

Agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

APPROVED and ADOPTED on this 12th day of December, 2023.

APPROVED:

Mayor

ATTEST:

Judy Thompson

Section Seven: Appendices

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Appendix A: Acronyms

ADA	Average Daily Attendance
ADEM	Arkansas Department of Emergency Management
BCA	Benefit-Cost Analysis
BMPs	Best Management Practices
SCOEM	Sebastian County Office of Emergency Management
SCOES	Sebastian County Office of Emergency Services
CFR	Code of Regulations
CRS	Community Rating System
DMA 2000	Disaster Mitigation Act of 2000
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
GIS	Geographic Information System
HMC	Hazard Mitigation Committee
HMGP	Hazard Mitigation Grant Program
IBC	Internal Building Code
IFR	Interim Final Rule
LEPC	Local Emergency Planning Committee
MOU	Memorandum of Understanding
NFIP	National Flood Insurance Program
PDM	Pre-Disaster Mitigation Program
PGA	Peak Ground Acceleration
SHMO	State Hazard Mitigation Officer
STAPLEE	Social, Technical, Administrative, Political, Legal, Economic
UCC	Uniform Construction Code
WUI	Wildland Urban Interface

Appendix B: Dam Location Maps

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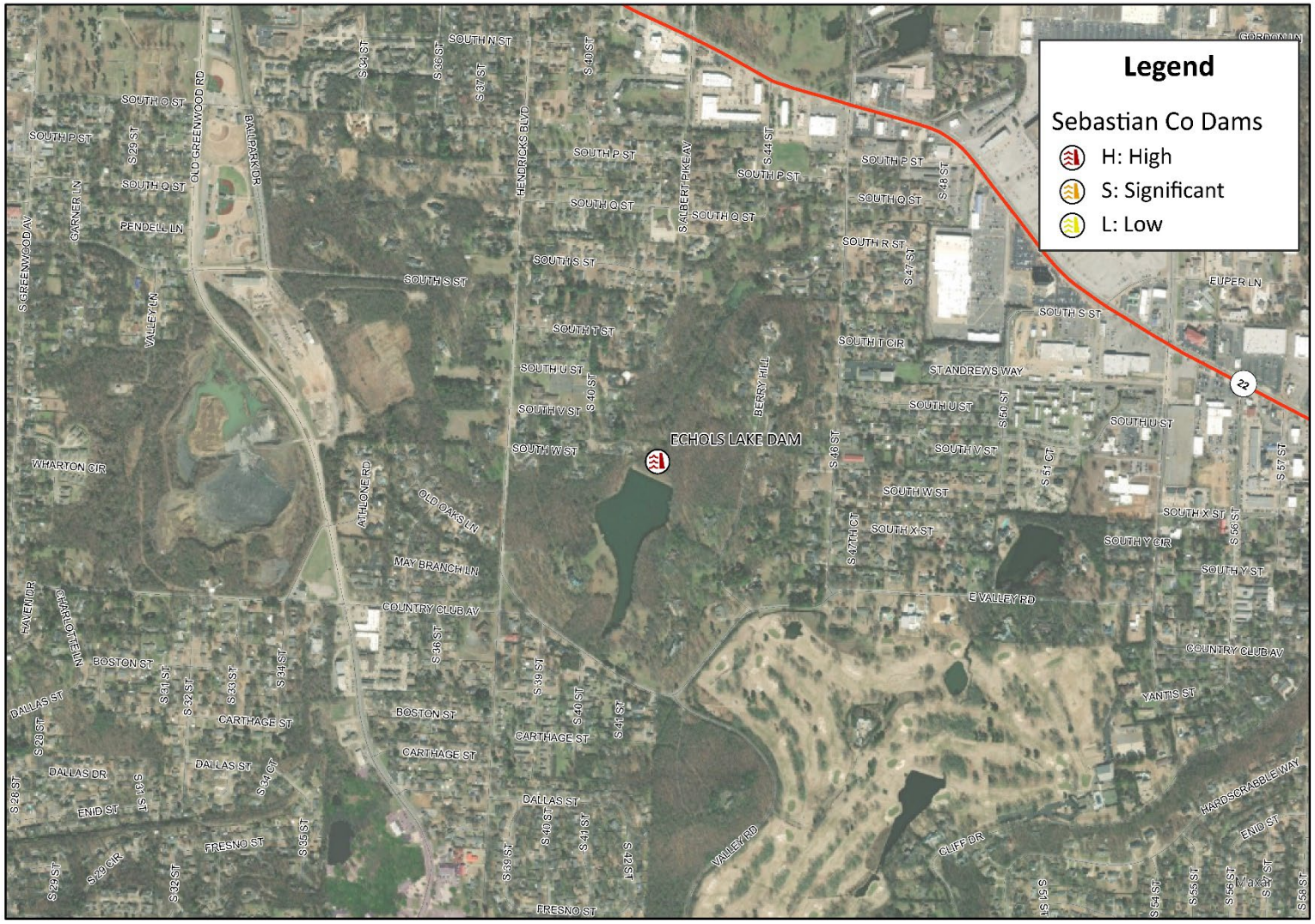
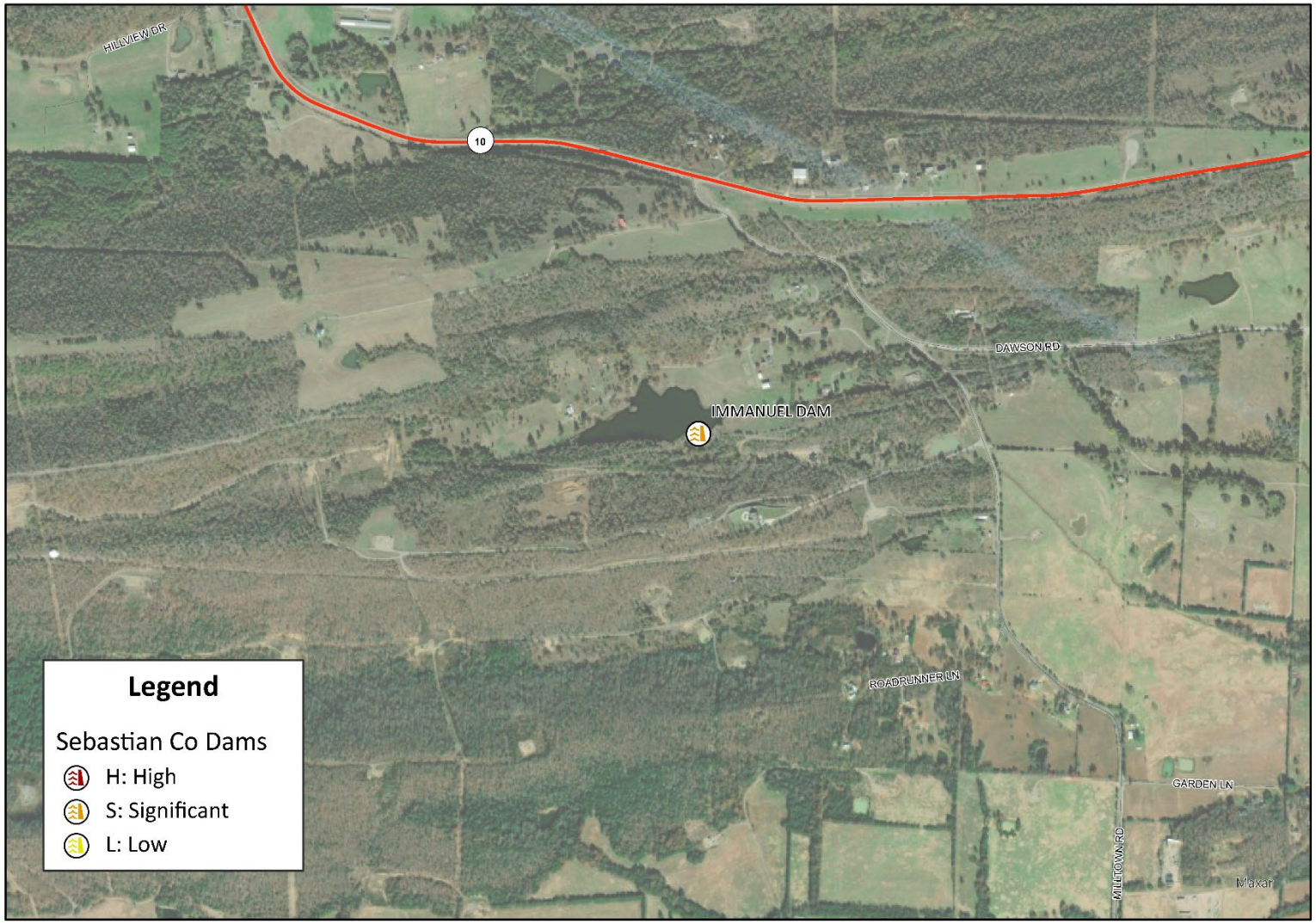
CAROL ANN CROSS DAM **SEBASTIAN COUNTY, ARKANSAS**	Western Arkansas Planning & Development District, Inc 1109 S 16th St, Fort Smith, AR 72901 479-785-2651 www.wapdd.org	N	1 inch equals 1,000 feet 0 500 1,000 Feet

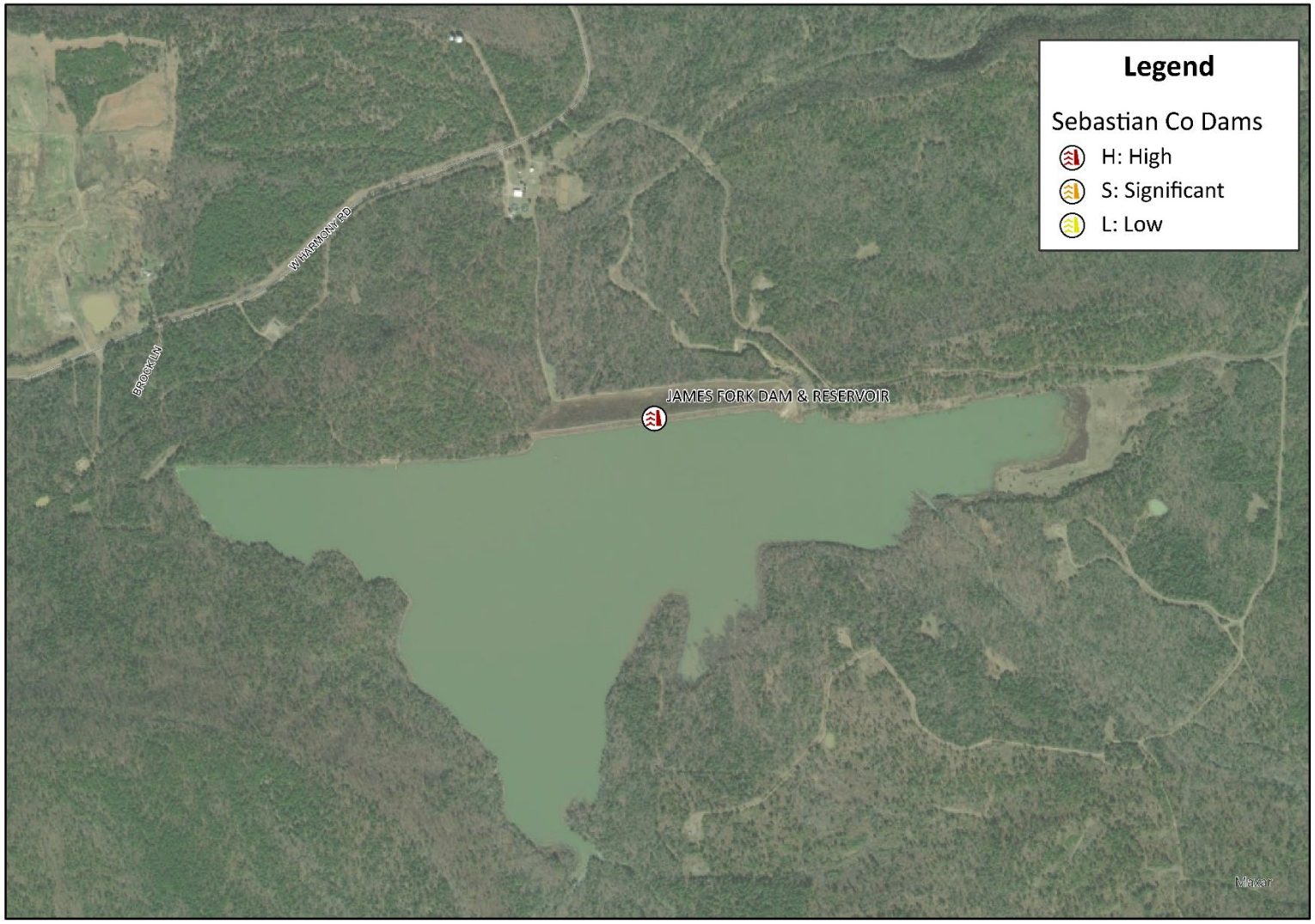


ECHOLS LAKE DAM SEBASTIAN COUNTY, ARKANSAS	Western Arkansas Planning & Development District, Inc 1109 S 16th St, Fort Smith, AR 72901 479-785-2651 www.wapdd.org	N	1 inch equals 1,000 feet 0 500 1,000 Feet

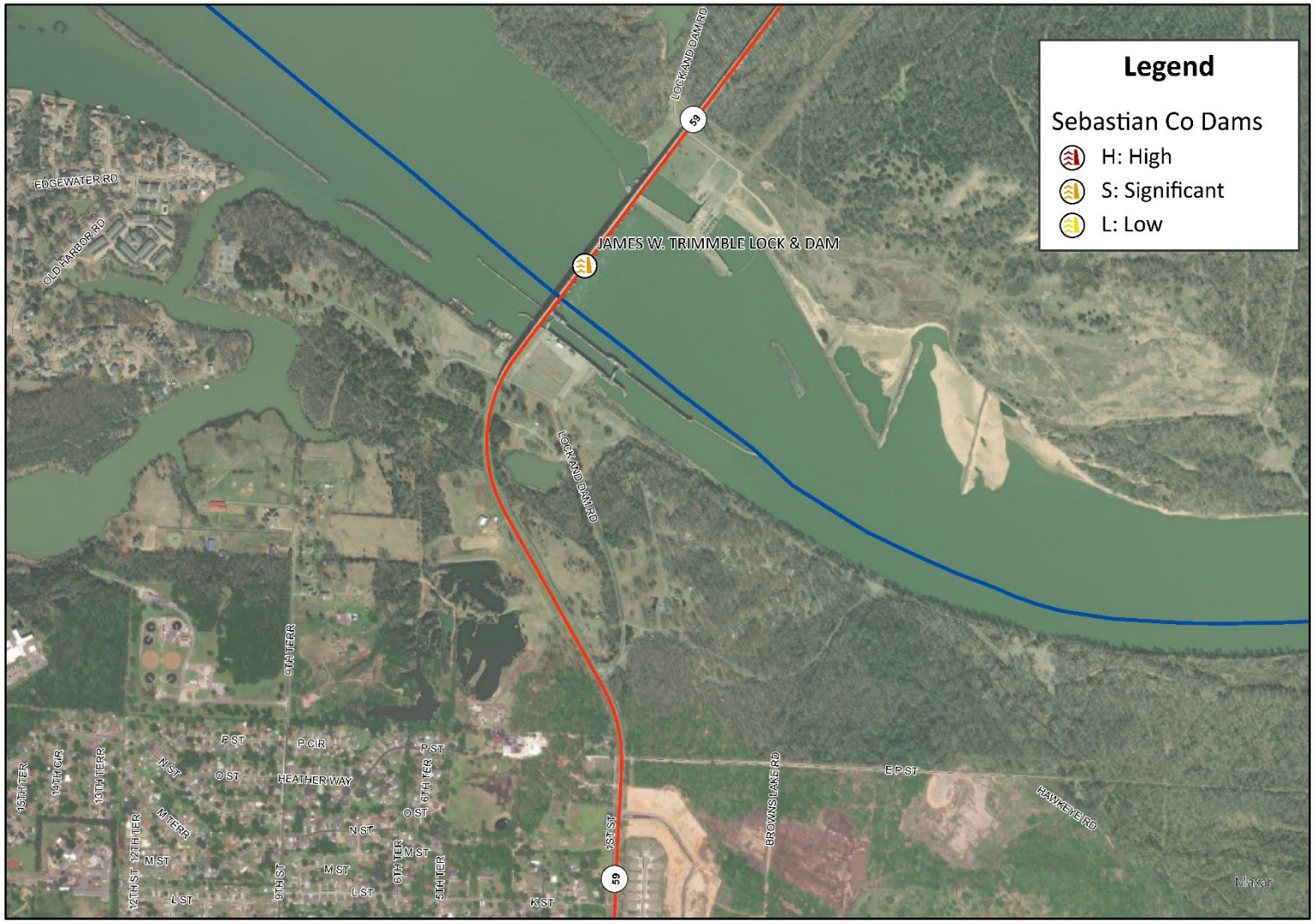


IMMANUEL DAM SEBASTIAN COUNTY, ARKANSAS	Western Arkansas Planning & Development District, Inc 1109 S 16th St, Fort Smith, AR 72901 479-785-2651 www.wapdd.org	N	1 inch equals 1,000 feet 0 500 1,000 Feet

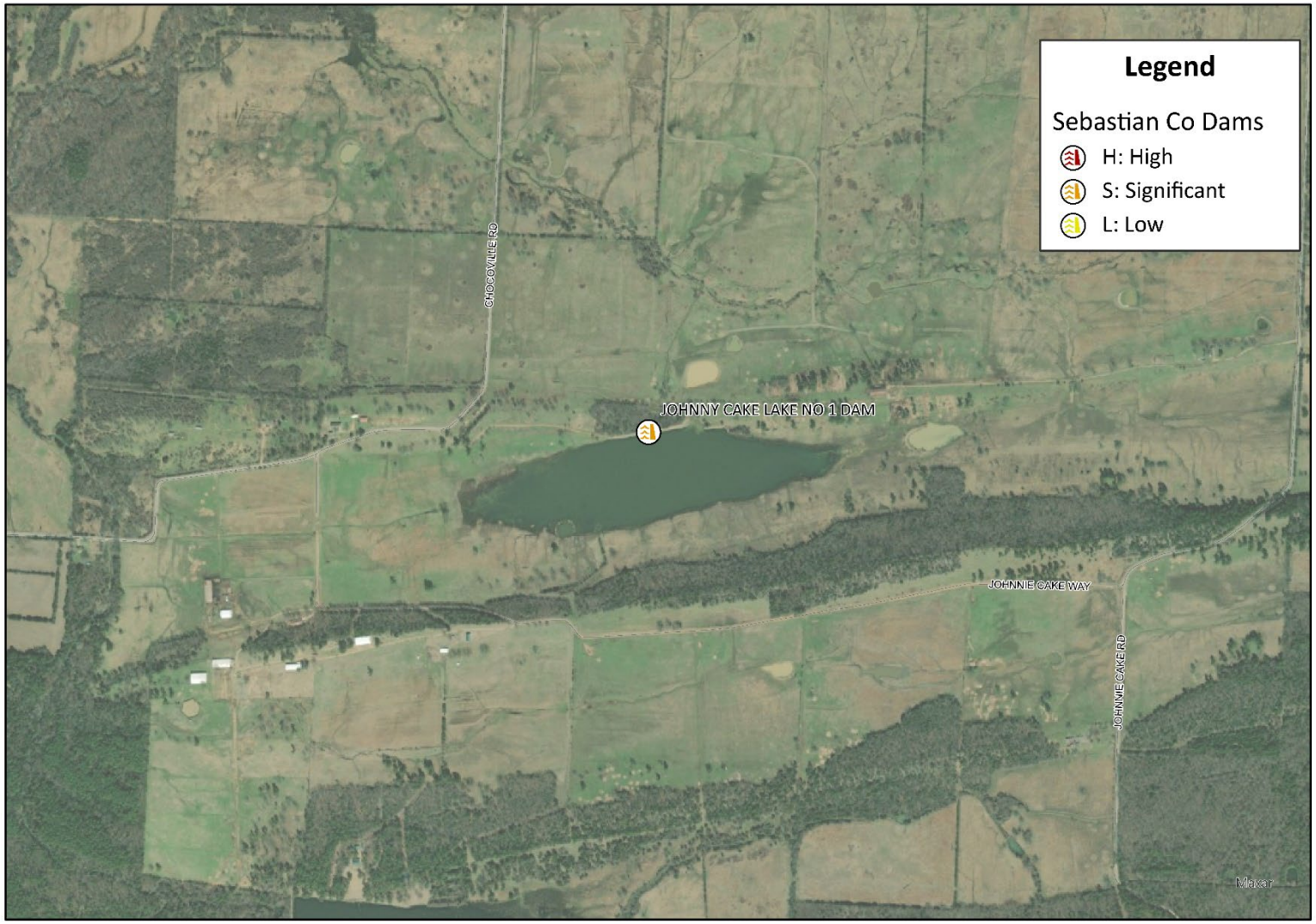
JACK NOLEN LAKE DAM **SEBASTIAN COUNTY, ARKANSAS**	Western Arkansas Planning & Development District, Inc 1109 S 16th St, Fort Smith, AR 72901 479-785-2651 www.wapdd.org	N	1 inch equals 1,000 feet 0 500 1,000 Feet



JAMES FORK DAM & RESERVOIR SEBASTIAN COUNTY, ARKANSAS	Western Arkansas Planning & Development District, Inc 1109 S 16th St, Fort Smith, AR 72901 479-785-2651 www.wapdd.org	N	1 inch equals 1,000 feet 0 500 1,000 Feet



JAMES W TRIMBLE DAM (L&D 13) SEBASTIAN COUNTY, ARKANSAS	Western Arkansas Planning & Development District, Inc 1109 S 16th St, Fort Smith, AR 72901 479-785-2651 www.wapdd.org	N	1 inch equals 1,000 feet 0 500 1,000 Feet



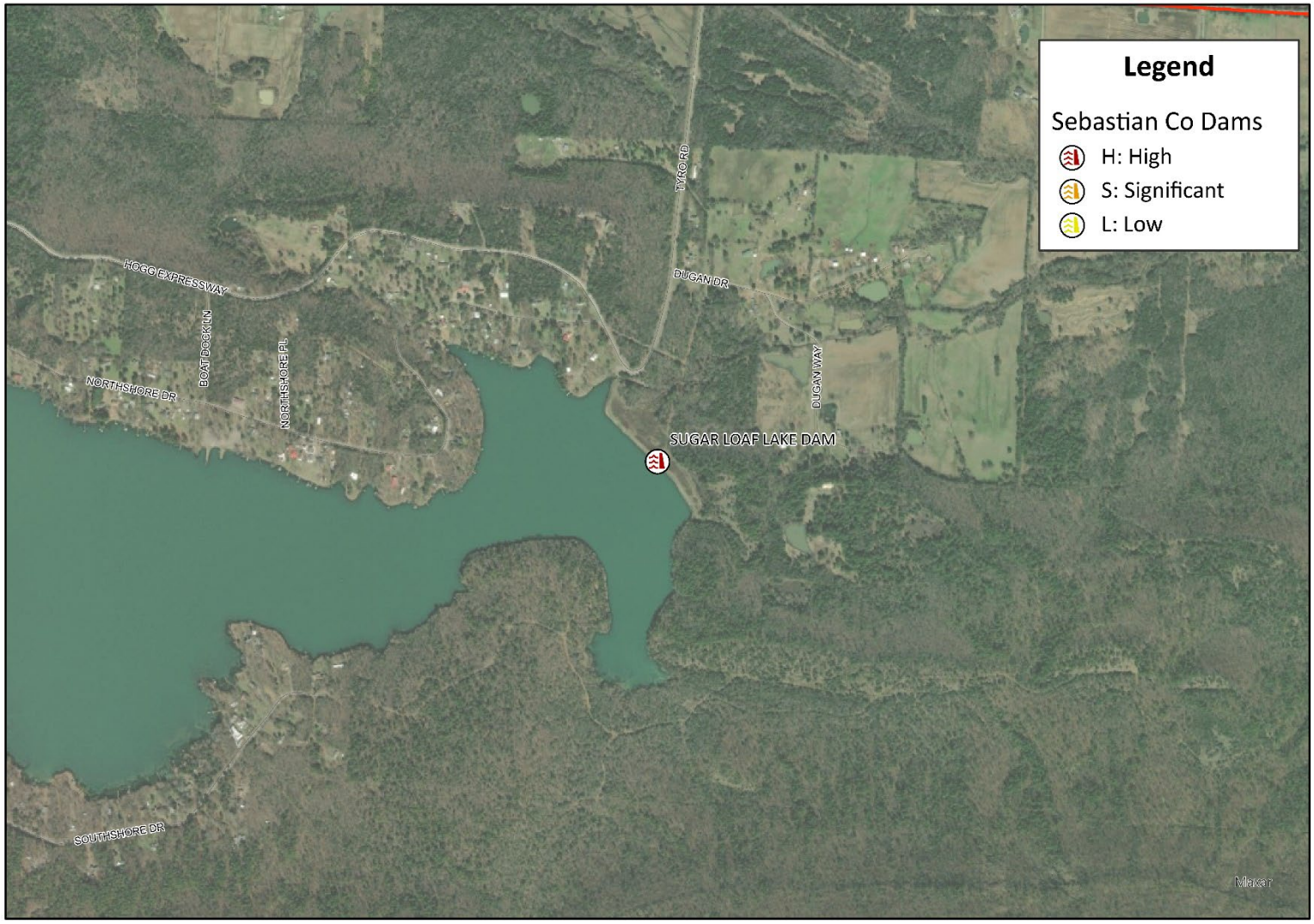
JOHNNY CAKE LAKE DAM SEBASTIAN COUNTY, ARKANSAS	Western Arkansas Planning & Development District, Inc 1109 S 16th St, Fort Smith, AR 72901 479-785-2651 www.wapdd.org	N	1 inch equals 1,000 feet 0 500 1,000 Feet

McMAHAN LAKE DAM **SEBASTIAN COUNTY, ARKANSAS**	Western Arkansas Planning & Development District, Inc 1109 S 16th St, Fort Smith, AR 72901 479-785-2651 www.wapdd.org	N	1 inch equals 1,000 feet 0 500 1,000 Feet

McMAHAN LAKE DAM **SEBASTIAN COUNTY, ARKANSAS**	Western Arkansas Planning & Development District, Inc 1109 S 16th St, Fort Smith, AR 72901 479-785-2651 www.wapdd.org	N	1 inch equals 1,000 feet 0 500 1,000 Feet

SEBASTIAN LAKE DAM SEBASTIAN COUNTY, ARKANSAS	Western Arkansas Planning & Development District, Inc 1109 S 16th St, Fort Smith, AR 72901 479-785-2651 www.wapdd.org	N	1 inch equals 1,000 feet 0 500 1,000 Feet

SHADOW LAKE DAM **SEBASTIAN COUNTY, ARKANSAS**	Western Arkansas Planning & Development District, Inc 1109 S 16th St, Fort Smith, AR 72901 479-785-2651 www.wapdd.org	N	1 inch equals 1,000 feet 0 500 1,000 Feet



SUGAR LOAF LAKE DAM **SEBASTIAN COUNTY, ARKANSAS**	Western Arkansas Planning & Development District, Inc 1109 S 16th St, Fort Smith, AR 72901 479-785-2651 www.wapdd.org	N	1 inch equals 1,000 feet 0 500 1,000 Feet

VACHE GRASSE CREEK DAM **SEBASTIAN COUNTY, ARKANSAS**	Western Arkansas Planning & Development District, Inc 1109 S 16th St, Fort Smith, AR 72901 479-785-2651 www.wapdd.org	N	1 inch equals 1,000 feet 0 500 1,000 Feet

Appendix C: Effective FIRM Panels

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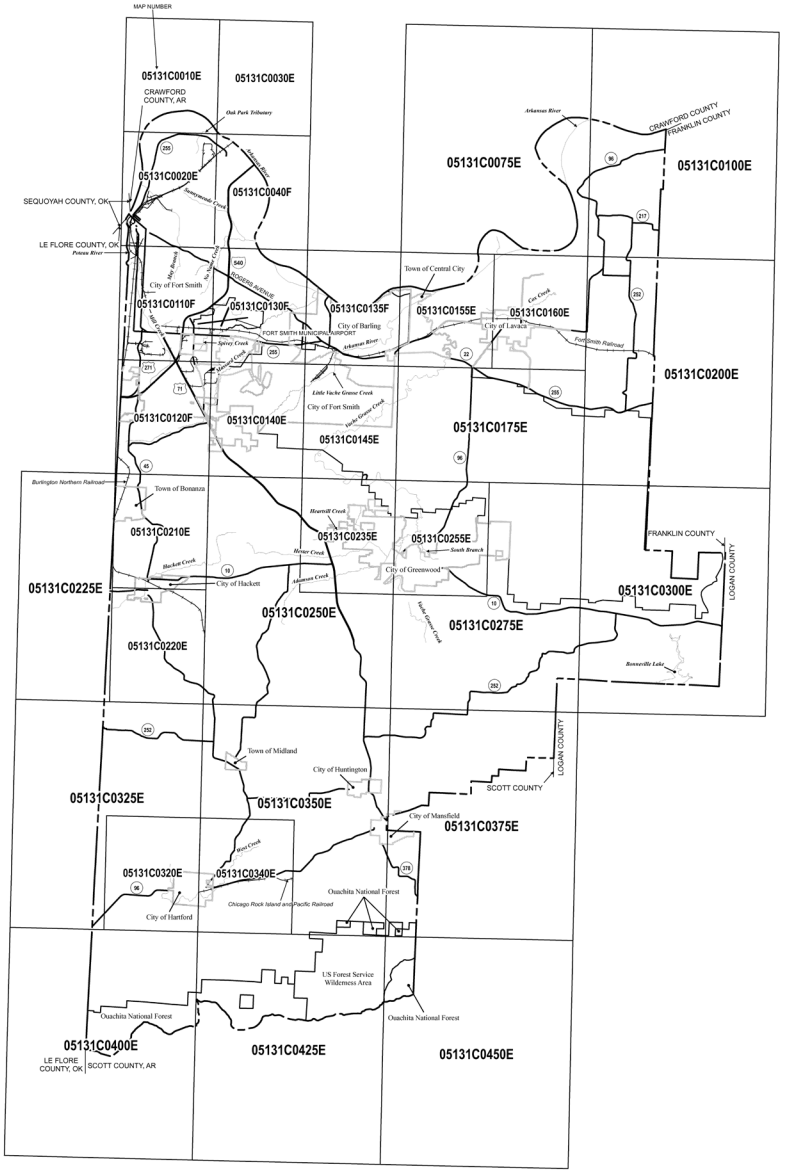


MAP REPOSITORIES

(Maps available for reference only, not for distribution.)

BARLING, CITY OF:
Sebastian County Courthouse
35 South 6th Street
Fort Smith, Arkansas, 72901

BONANZA, TOWN OF:
Sebastian County Courthouse
35 South 6th Street
Fort Smith, Arkansas, 72901

CENTRAL CITY, TOWN OF:
Central City Town Hall
1101 Highway 255
Central City, Arkansas, 72941

FORT SMITH, CITY OF:
City of Fort Smith Engineering Department
623 Garrison Avenue
Room 409
Fort Smith, Arkansas, 72902

GREENWOOD, CITY OF:
Sebastian County Courthouse
35 South 6th Street
Fort Smith, Arkansas, 72901

HACKETT, CITY OF:
Sebastian County Courthouse
35 South 6th Street
Fort Smith, Arkansas, 72901

HARTFORD, CITY OF:
Sebastian County Courthouse
35 South 6th Street
Fort Smith, Arkansas, 72901

HUNTINGTON, CITY OF:
Huntington City Hall
223 East Broadway
Huntington, Arkansas, 72940

LAVACA, CITY OF:
Sebastian County Courthouse
35 South 6th Street
Fort Smith, Arkansas, 72901

MANSFIELD, CITY OF:
Mansfield City Hall
200 North Sebascott Street
Mansfield, Arkansas, 72944

MIDLAND, TOWN OF:
Sebastian County Courthouse
35 South 6th Street
Fort Smith, Arkansas, 72901

SEBASTIAN COUNTY (UNINCORPORATED AREAS) :
Sebastian County Courthouse
35 South 6th Street
Fort Smith, Arkansas, 72901

LISTING OF COMMUNITIES

COMMUNITY NAME	COMMUNITY NUMBER	LOCATED ON PANELS	INITIAL ID DATE	INITIAL NFIP MAP DATE	INITIAL FIRM DATE	MOST RECENT FIRM PANEL DATE
BARLING, CITY OF	050305	0130,0135,0145,0155	February 14, 1975	February 14, 1975	May 20,2010	March 2, 2012
BONANZA, TOWN OF	050292	0210,0220	August 15, 1975	August 15, 1975	May 20, 2010	May 20, 2010
CENTRAL CITY, TOWN OF	050601	0135,0155	March 16, 1998	March 16, 1998	March 16, 1998	March 2, 2012
FORT SMITH, CITY OF	050013	0010,0020,0030,0040,0110,0120, 0130,0135,0140,0160	August 28, 1971	August 28, 1971	August 28, 1971	March 2, 2012
GREENWOOD, CITY OF	050198	0235,0255,0275	June 14, 1974	June 14, 1974	April 15, 1981	May 20, 2010
HACKETT, CITY OF	050199	0210,0220	October 18, 1974	October 18, 1974	March 15, 1982	May 20, 2010
HARTFORD, CITY OF	050200	0320,0340	March 8, 1974	March 8, 1974	March 15, 1982	May 20, 2010
HUNTINGTON, CITY OF	050334	0350	May 7, 2001	May 7, 2001	May 7, 2001	May 20, 2010
LAVACA, CITY OF	050201	0155,0160,0175	May 10, 1974	May 10, 1974	March 15, 1982	May 20, 2010
MANSFIELD, CITY OF	050202	0350,0375	March 15, 1974	March 15, 1974	June 18, 1987	May 20, 2010
MIDLAND, TOWN OF	050203	0350	August 16, 1974	August 16, 1974	June 1, 1987	May 20, 2010
SEBASTIAN COUNTY (UNINCORPORATED AREAS)	050462	0075, 0100, 0110, 0120, 0130, 0135, 0140, 0145, 0155, 0160, 0175, 0200, 0210, 0220, 0225, 0235, 0255, 0260, 0275, 0300, 0320, 0325, 0340, 0350, 0375, 0400, 0425, 0450	May 31, 1977	May 31, 1977	April 1, 1988	March 2, 2012

FIRM Panel Dates For Printed Panels of Sebastian County, AR and Incorporated Areas

Panel	Effective Date	Panel	Effective Date	Panel	Effective Date
0010 E	MAY 20, 2010	0145 E	MAY 20, 2010	0275 E	MAY 20, 2010
0020 E	MAY 20, 2010	0155 E	MAY 20, 2010	0300 E	MAY 20, 2010
0030 E	MAY 20, 2010	0160 E	MAY 20, 2010	0320 E	MAY 20, 2010
0040 F	MARCH 2, 2012	0175 E	MAY 20, 2010	0325 E	MAY 20, 2010
0075 E	MAY 20, 2010	0200 E	MAY 20, 2010	0340 E	MAY 20, 2010
0100 E	MAY 20, 2010	0210 E	MAY 20, 2010	0350 E	MAY 20, 2010
0110 F	MARCH 2, 2012	0220 E	MAY 20, 2010	0375 E	MAY 20, 2010
0120 F	MARCH 2, 2012	0225 E	MAY 20, 2010	0400 E	MAY 20, 2010
0130 F	MARCH 2, 2012	0235 E	MAY 20, 2010	0425 E	MAY 20, 2010
0135 F	MARCH 2, 2012	0250 E	MAY 20, 2010	0450 E	MAY 20, 2010
0140 E	MAY 20, 2010	0255 E	MAY 20, 2010		

NOTE TO USER

Future revisions to this FIRM Index will only be issued to communities that are located on FIRM panels being revised. This FIRM Index therefore remains valid for FIRM panels dated March 2, 2012 or earlier. Please refer to the "MOST RECENT FIRM PANEL DATE" column in the Listing of Communities table to determine the most recent FIRM Index date for each community.

MAP DATES

This FIRM Index displays the map date for each FIRM panel at the time that this Index was printed. Because this Index may not be distributed to unaffected communities in subsequent revisions, users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center (MSC) website at http://msc.fema.gov, or by calling the FEMA Map Information eXchange (FMIX) at 1-877-336-2627.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index.These may be ordered directly from the Map Service Center at the number listed above.

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

MAP INDEX

FIRM

FLOOD INSURANCE RATE MAP
SEBASTIAN COUNTY, ARKANSAS
AND INCORPORATED AREAS

MAP INDEX

PANELS PRINTED: 10,20,30,40,75,100, 110, 120, 130, 135, 140, 145, 155, 160, 175, 200, 210, 220, 225, 235, 250, 255, 275, 300, 320, 325, 340, 350, 375, 400, 425, 450

MAP NUMBER
05131CIND0B
MAP REVISED
MARCH 2, 2012

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Arkansas North State Plane Coordinate System. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was provided in digital format by the Arkansas Geographic Information Office (AGIO).

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables *in the Flood Insurance Study report (which contains authoritative hydraulic data)* may reflect stream channel distances that differ from what is shown on this map.

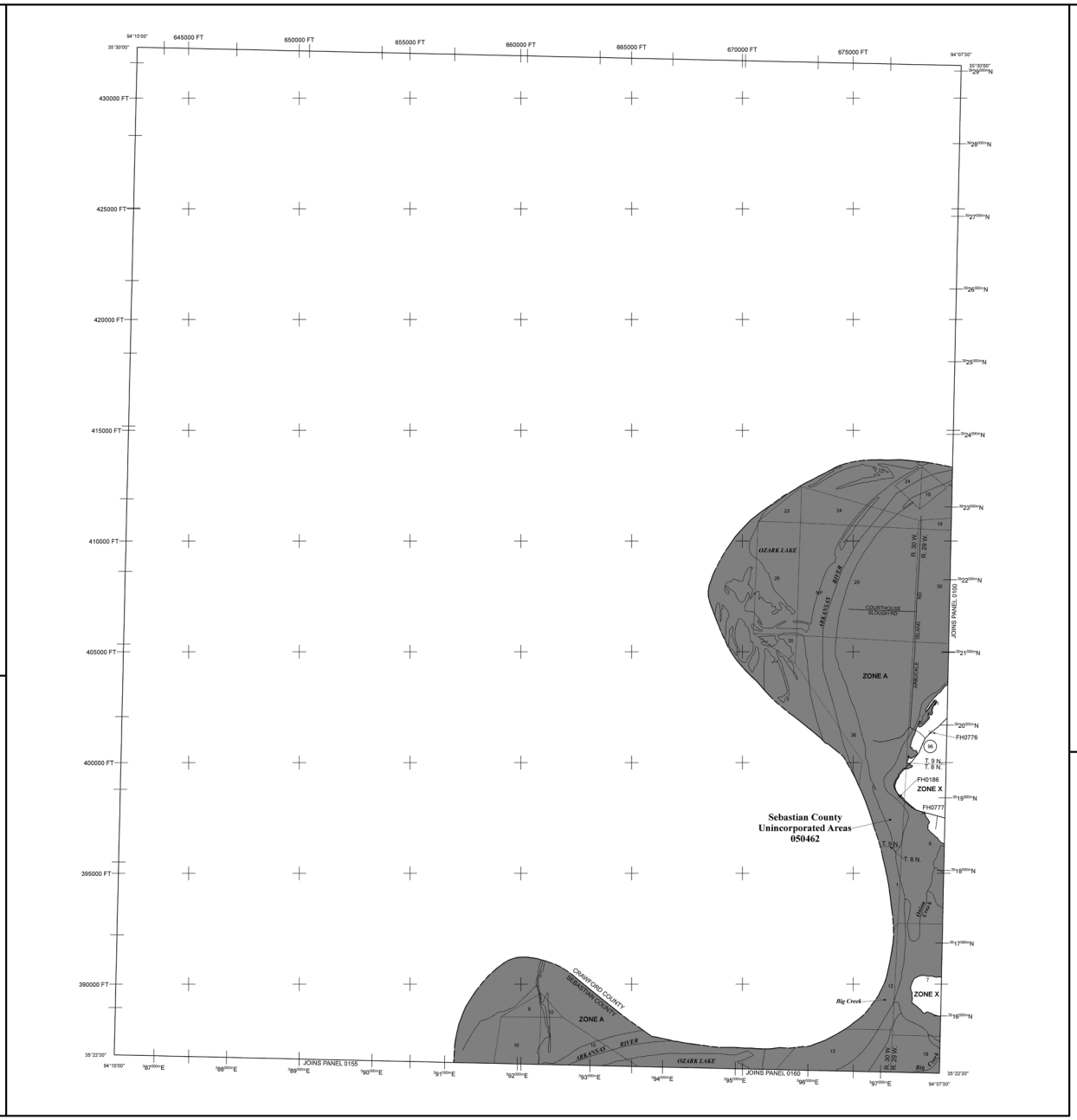
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, *a Flood Insurance Study report*, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip/.

The "profile base lines" depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the "profile base line", in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- **ZONE A** — No Base Flood Elevations determined.
- **ZONE AE** — Base Flood Elevations determined.
- **ZONE AH** — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- **ZONE AO** — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE AR** — Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- **ZONE A99** — Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
- **ZONE V** — Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- **ZONE VE** — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** — Areas determined to be outside the 0.2% annual chance floodplain.
- **ZONE D** — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
- 513 (EL 987) — Base Flood Elevation line and value; elevation in feet*
- Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- A — A — Cross section line
- 23 — 23 — Transect line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4775000 FT — 1000-meter Universal Transverse Mercator grid ticks, zone 15
- 6000000 FT — 5000-foot grid values: Arkansas State Plane coordinate system, North Zone (FIPSZONE = 301), Lambert projection
- DX5510 • M1.5 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
MAY 20, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 2000'

1,000 0 1,000 2,000 3,000 4,000 FEET
500 0 500 1,000 METERS

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0075E

FIRM

FLOOD INSURANCE RATE MAP

SEBASTIAN COUNTY, ARKANSAS AND INCORPORATED AREAS

PANEL 75 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SEBASTIAN COUNTY (UNINCORPORATED AREAS)	050462	0075	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
05131C0075E

EFFECTIVE DATE
MAY 20, 2010

Federal Emergency Management Agency

NOTES TO USERS

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NGS Information Services
NOAA, NINGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
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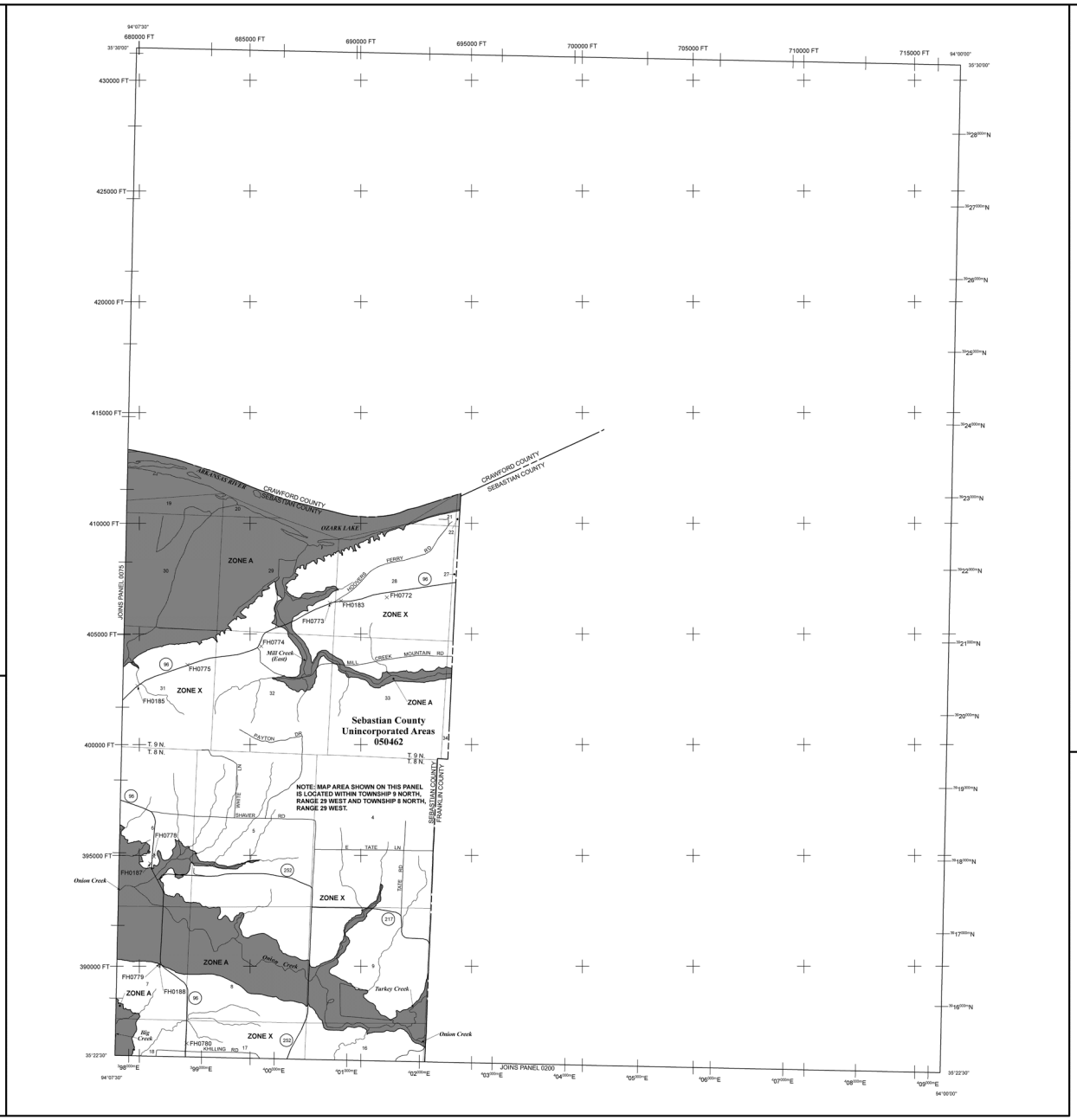
Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, *a Flood Insurance Study report*, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip/.

The "profile base lines" depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the "profile base line", in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
- 513 (EL 987) — Base Flood Elevation line and value; elevation in feet*
- Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- A — A — Cross section line
- 23 — 23 — Transect line
- 87°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4775000 FT — 1000-meter Universal Transverse Mercator grid ticks, zone 15
- 6000000 FT — 5000-foot grid values: Arkansas State Plane coordinate system, North Zone (FIPSZONE = 301), Lambert projection
- DX5510 • M1.5 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
MAY 20, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 2000'

1,000 0 1,000 2,000 3,000 4,000 FEET
500 0 500 1,000 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0100E

FIRM

FLOOD INSURANCE RATE MAP

SEBASTIAN COUNTY, ARKANSAS AND INCORPORATED AREAS

PANEL 100 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SEBASTIAN COUNTY (UNINCORPORATED AREAS)	050462	0100	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
05131C0100E

EFFECTIVE DATE
MAY 20, 2010

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0 North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Arkansas North State Plane zone (FIPSZONE 0301), Feet. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, NNGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was provided by the Arkansas Geographic Information Office (AGIO), City of Fort Smith Information Technology Department, and the Western Arkansas Planning and Development District (WAPDD) at a scale of 1:12,000.

Based on updated topographic information, this map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map. Also, the road to floodplain relationships for unrevised streams may differ from what is shown on previous maps.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

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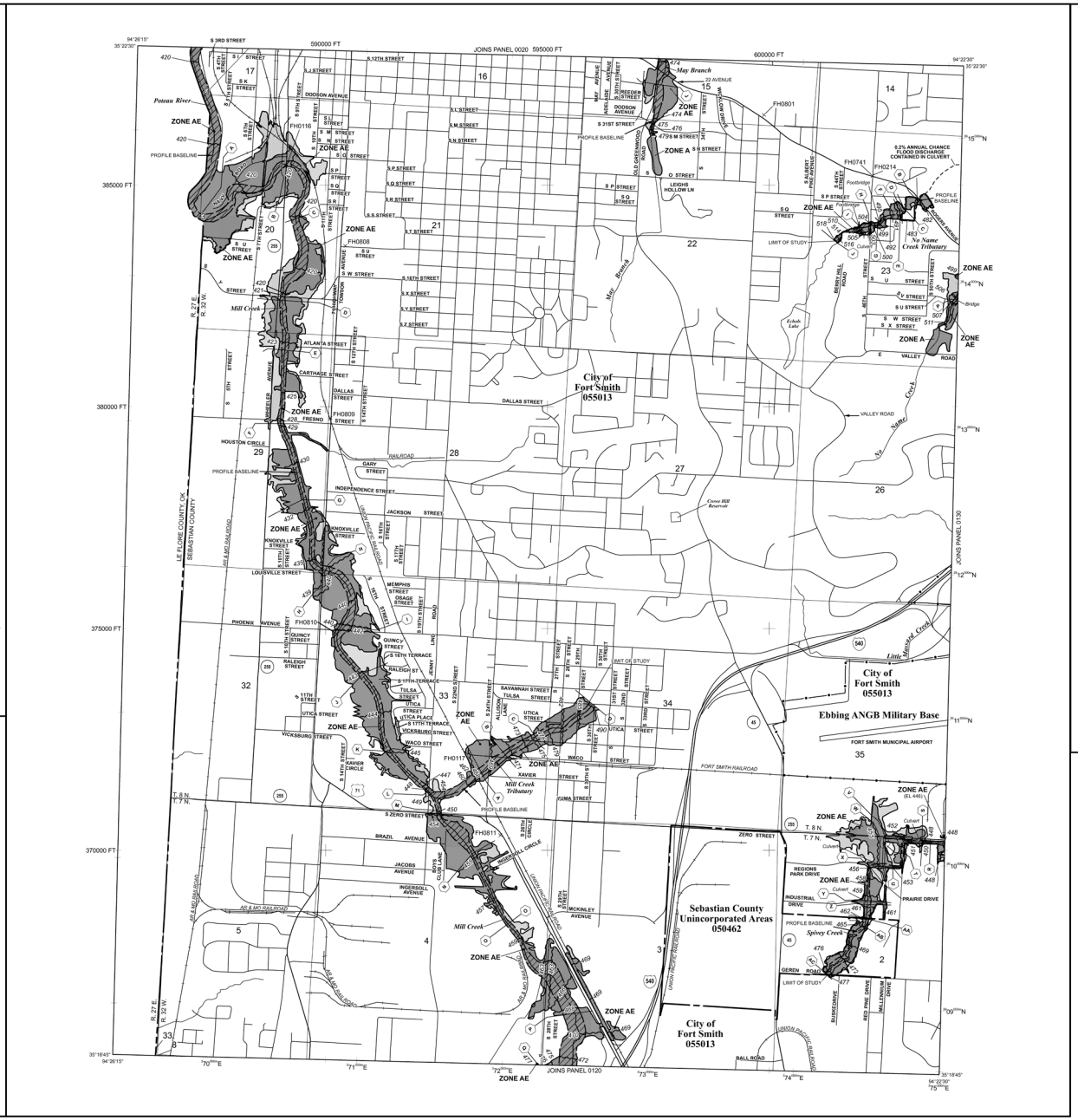

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the watersurface elevation of the 1% annual chance flood.

- **ZONE A** No Base Flood Elevations determined.
- **ZONE AE** Base Flood Elevations determined.
- **ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- **ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- **ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- **ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- **ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increase in flood heights.

OTHER FLOOD AREAS

- **ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- **ZONE D** Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- Limit of Moderate Wave Action
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- Cross section line
- Transect line
- Culvert, Flume, Penstock or Aqueduct
- Road or Railroad Bridge
- Footbridge
- 87°07'45", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 3776000 mN — 1000-meter Universal Transverse Mercator grid values, zone 15
- 600000 FT — 5000-foot grid values: Arkansas State Plane coordinate system, North zone (FIPSZONE 0301), Lambert Conformal Conic projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
May 20, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
March 2, 2012 - to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas and to add roads and road names.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET
300 0 300 600 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0110F

FIRM

FLOOD INSURANCE RATE MAP

SEBASTIAN COUNTY, ARKANSAS
AND INCORPORATED AREAS

PANEL 110 OF 450
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FORT SMITH, CITY OF	050013	0110	F
SEBASTIAN COUNTY	050462	0110	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
05131C0110F

MAP REVISED
MARCH 2, 2012

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

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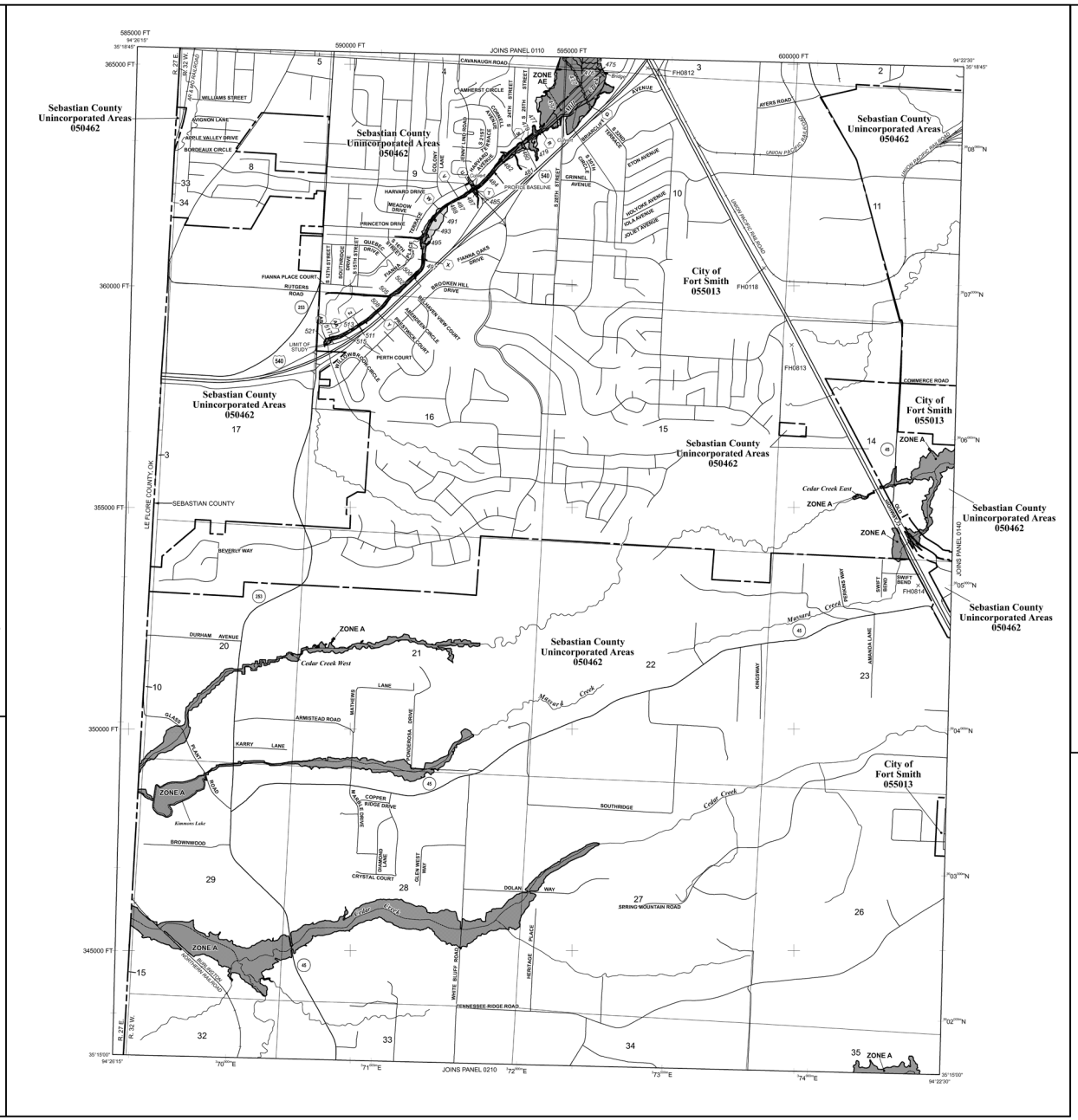

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

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- **ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- **ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- **ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

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OTHER FLOOD AREAS

- **ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

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COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

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- Limit of Moderate Wave Action
- 513 Base Flood Elevation line and value; elevation in feet*
- (EL 987) Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- Cross section line
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- Culvert, Flume, Penstock or Aqueduct
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- DX5510 Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
May 20, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
March 2, 2012 - to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas and to add roads and road names.

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MAP SCALE 1" = 1000'

500 0 1000 2000 FEET
300 0 300 600 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0120F

FIRM

FLOOD INSURANCE RATE MAP

SEBASTIAN COUNTY, ARKANSAS AND INCORPORATED AREAS

PANEL 120 OF 450
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FORT SMITH, CITY OF	055013	0120	F
SEBASTIAN COUNTY	050462	0120	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER 05131C0120F

MAP REVISED MARCH 2, 2012

Federal Emergency Management Agency

NOTES TO USERS

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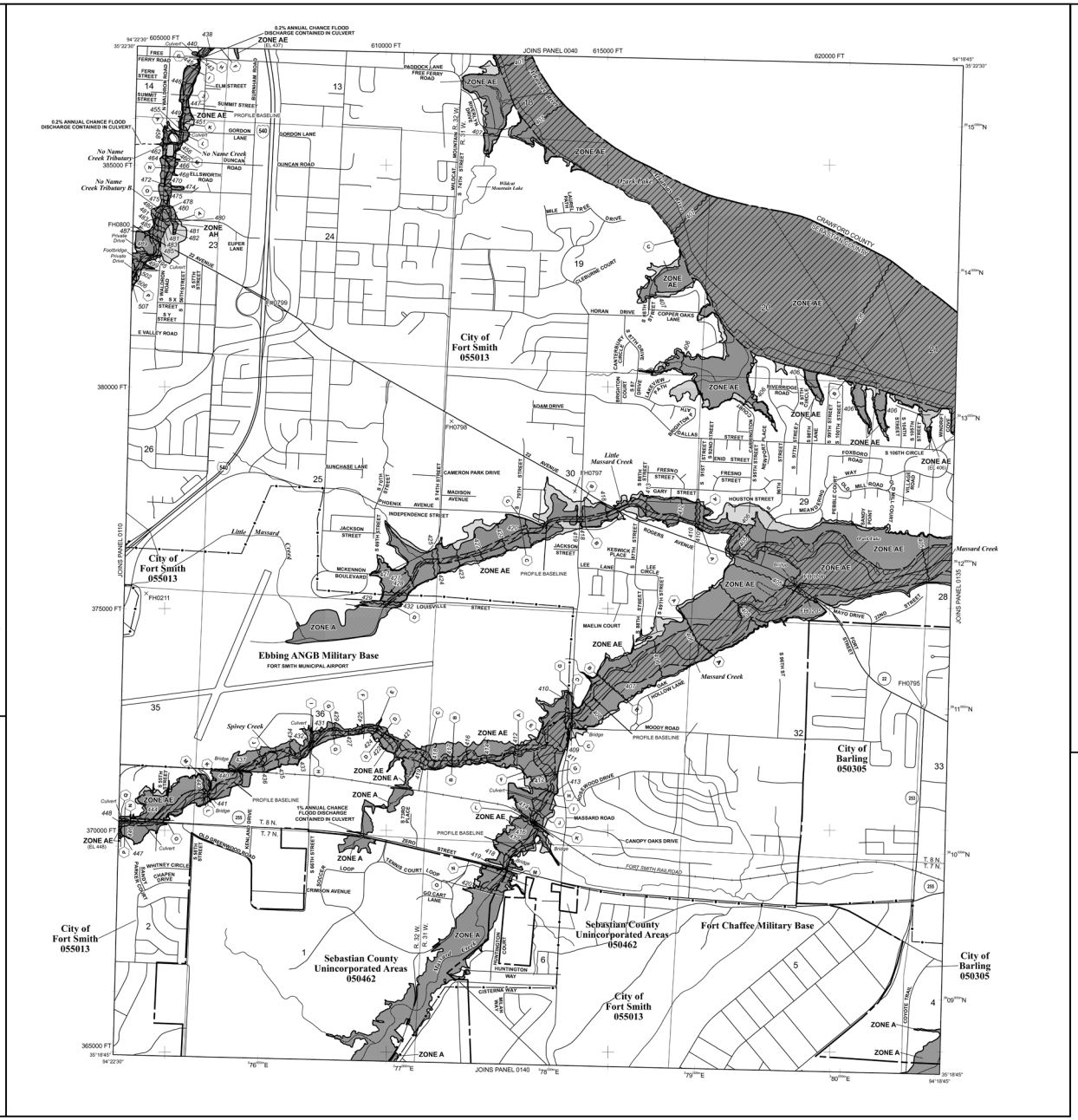


LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the watersurface elevation of the 1% annual chance flood.

- **ZONE A** — No Base Flood Elevations determined.
- **ZONE AE** — Base Flood Elevations determined.
- **ZONE AH** — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- **ZONE AO** — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE AR** — Special Flood Hazard Area formally protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- **ZONE A99** — Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- **ZONE V** — Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- **ZONE VE** — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increase in flood heights.

OTHER FLOOD AREAS

- **ZONE X** — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** — Areas determined to be outside the 0.2% annual chance floodplain.
- **ZONE D** — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- Limit of Moderate Wave Action
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*
- * Referenced to the North American Vertical Datum of 1988
- Cross section line
- Transect line
- Culvert, Flume, Penstock or Aqueduct
- Road or Railroad Bridge
- Footbridge
- 87°07'45", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 3776000 m N — 1000-meter Universal Transverse Mercator grid values, zone 15
- 600000 FT — 5000-foot grid values: Arkansas State Plane coordinate system, North zone (FIPSZONE 0301), Lambert Conformal Conic projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
May 20, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
March 2, 2012 - to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas and to add roads and road names.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0130F

FIRM
FLOOD INSURANCE RATE MAP

SEBASTIAN COUNTY, ARKANSAS
AND INCORPORATED AREAS

PANEL 130 OF 450
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BARLING, CITY OF	050305	0130	F
FORT SMITH, CITY OF	055013	0130	F
SEBASTIAN COUNTY	050462	0130	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
05131C0130F

MAP REVISED
MARCH 2, 2012

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0 North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Arkansas North State Plane zone (FIPSZONE 0301), Feet. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was provided by the Arkansas Geographic Information Office (AGIO), City of Fort Smith Information Technology Department, and the Western Arkansas Planning and Development District (WAPDD) at a scale of 1:12,000.

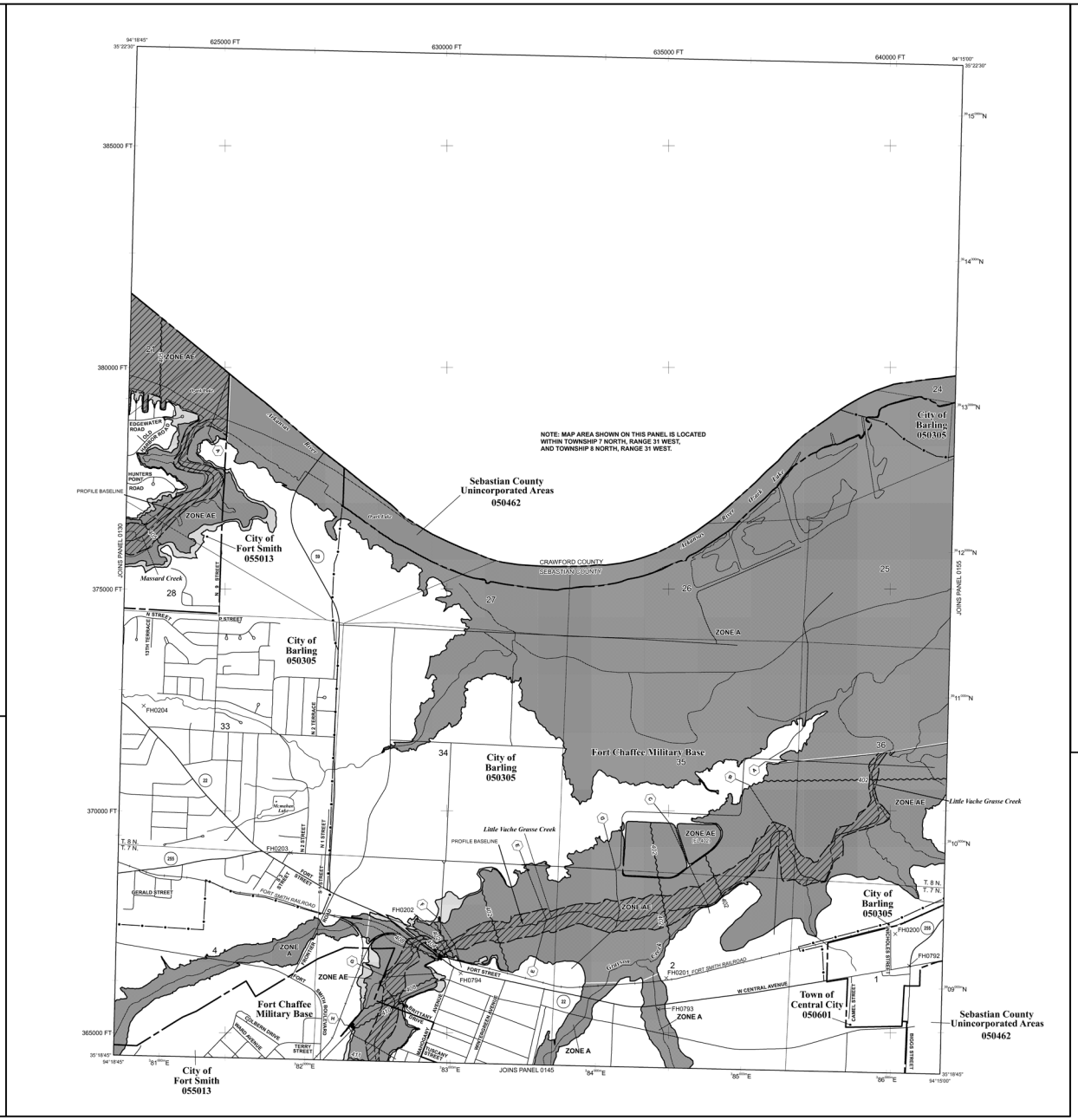
Based on updated topographic information, this map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map. Also, the road to floodplain relationships for unrevised streams may differ from what is shown on previous maps.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information on available products associated with this FIRM visit the **Map Service Center (MSC)** website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

If you have **questions about this map**, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange (FMIX) at **1-877-FEMA-MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the watersurface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than1 square mile; and areas protected by levees from 1% annual chanceflood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- Limit of Moderate Wave Action
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- Cross section line
- Transect line
- Culvert, Flume, Penstock or Aqueduct
- Road or Railroad Bridge
- Footbridge
- 87°07'45", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 3976000 FT N — 1000-meter Universal Transverse Mercator grid values, zone 15
- 600000 FT — 5000-foot grid values: Arkansas State Plane coordinate system, North zone (FIPSZONE 0301), Lambert Conformal Conic projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
May 20, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
March 2, 2012 - to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas and to add roads and road names.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0135F

FIRM

FLOOD INSURANCE RATE MAP

SEBASTIAN COUNTY, ARKANSAS AND INCORPORATED AREAS

PANEL 135 OF 450
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BARLING, CITY OF	050305	0135	F
CENTRAL CITY, TOWN OF	050601	0135	F
FORT SMITH, CITY OF	055013	0135	F
SEBASTIAN COUNTY	050462	0135	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER 05131C0135F

MAP REVISED MARCH 2, 2012

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Arkansas North State Plane Coordinate System. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, NINGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242** or visit its website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was provided in digital format by the Arkansas Geographic Information Office (AGIO).

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables *in the Flood Insurance Study report (which contains authoritative hydraulic data)* may reflect stream channel distances that differ from what is shown on this map.

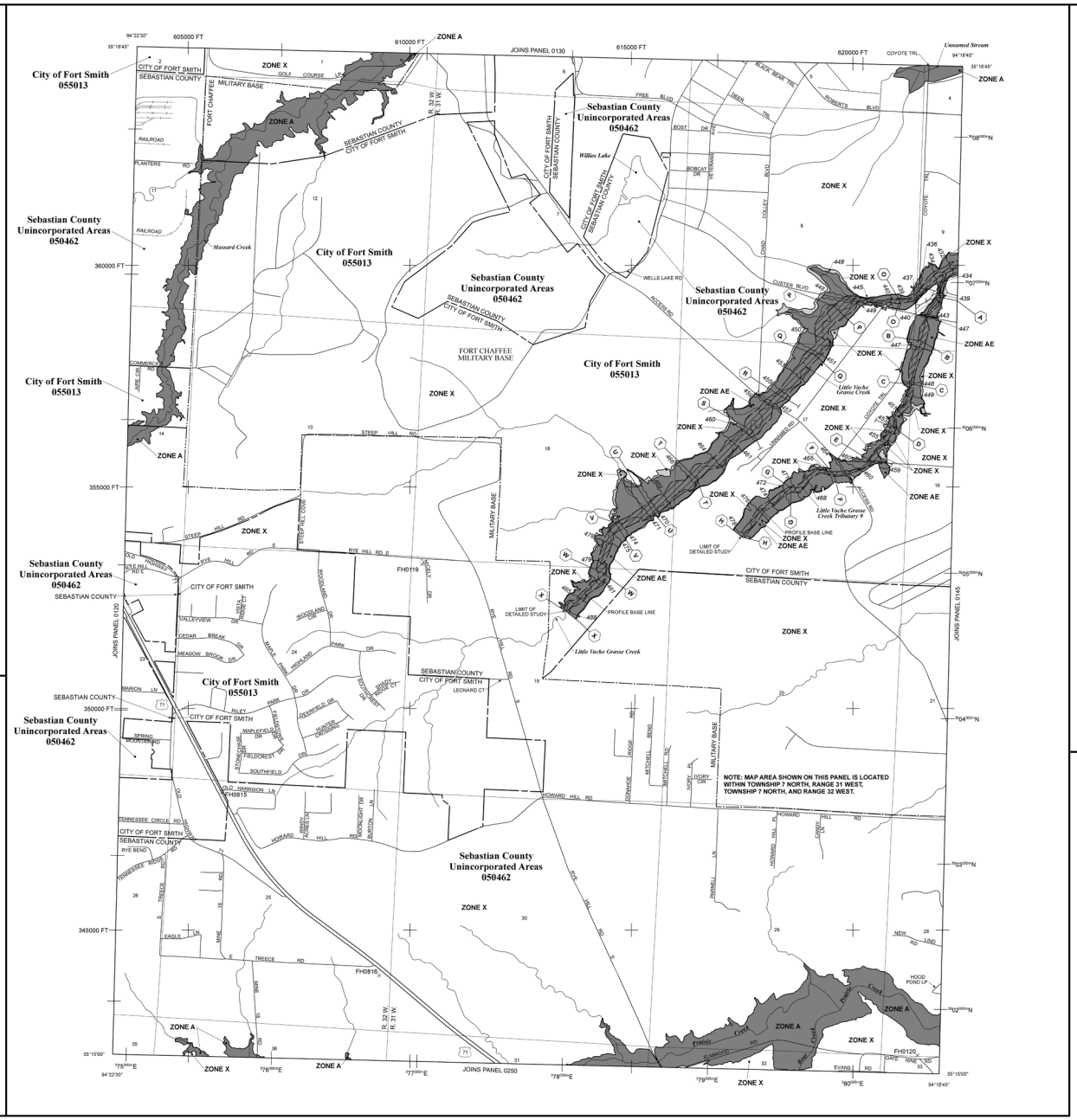
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, *a Flood Insurance Study report*, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip/.

The "profile base lines" depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the "profile base line", in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- **ZONE A** No Base Flood Elevations determined.
- **ZONE AE** Base Flood Elevations determined.
- **ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- **ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- **ZONE A99** Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
- **ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- **ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- **ZONE D** Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
- 513 (EL 987) Base Flood Elevation line and value; elevation in feet*
- Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- A–A Cross section line
- 23–23 Transect line
- 97°07'30", 32°22'30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4775000mE 6000000 FT 1000-meter Universal Transverse Mercator grid ticks, zone 15
- 5000-foot grid values: Arkansas State Plane coordinate system, North Zone (FIPSZONE = 301), Lambert projection
- DX5510 Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
MAY 20, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 500 1,000 1,500 2,000 FEET
150 0 150 300 600 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0140E

FIRM

FLOOD INSURANCE RATE MAP

SEBASTIAN COUNTY, ARKANSAS AND INCORPORATED AREAS

PANEL 140 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FORT SMITH, CITY OF	055013	0140	E
SEBASTIAN COUNTY (UNINCORPORATED AREAS)	050462	0140	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
05131C0140E

EFFECTIVE DATE
MAY 20, 2010

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Arkansas North State Plane Coordinate System. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
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1315 East-West Highway
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Base map information shown on this FIRM was provided in digital format by the Arkansas Geographic Information Office (AGIO).

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables *in the Flood Insurance Study report (which contains authoritative hydraulic data)* may reflect stream channel distances that differ from what is shown on this map.

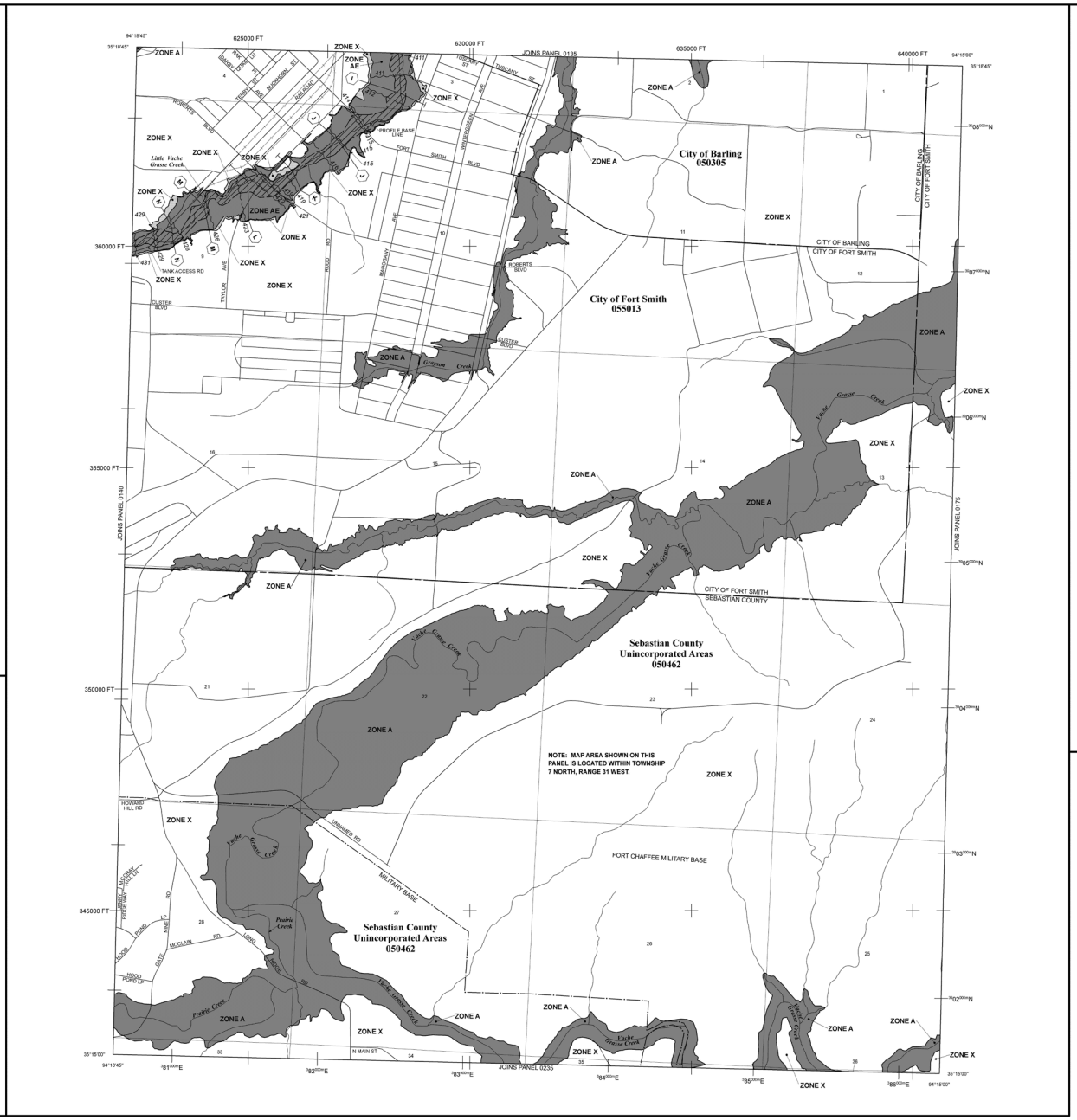
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, *a Flood Insurance Study report*, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip/.

The "profile base lines" depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the "profile base line", in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- **ZONE A** — No Base Flood Elevations determined.
- **ZONE AE** — Base Flood Elevations determined.
- **ZONE AH** — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- **ZONE AO** — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE AR** — Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- **ZONE A99** — Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
- **ZONE V** — Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- **ZONE VE** — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** — Areas determined to be outside the 0.2% annual chance floodplain.
- **ZONE D** — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
- 513 (EL 987) — Base Flood Elevation line and value; elevation in feet*
- Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- A–A — Cross section line
- 23–23 — Transect line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4775000mE — 1000-meter Universal Transverse Mercator grid ticks, zone 15
- 6000000 FT — 5000-foot grid values: Arkansas State Plane coordinate system, North Zone (FIPSZONE = 301), Lambert projection
- DX5510 • M1.5 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
MAY 20, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 500 1,000 1,500 2,000 FEET
150 0 150 300 METERS

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0145E

FIRM

FLOOD INSURANCE RATE MAP

SEBASTIAN COUNTY, ARKANSAS AND INCORPORATED AREAS

PANEL 145 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BARLING, CITY OF	050305	0145	E
FORT SMITH, CITY OF	050213	0145	E
SEBASTIAN COUNTY (UNINCORPORATED AREAS)	050462	0145	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
05131C0145E

EFFECTIVE DATE
MAY 20, 2010

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Arkansas North State Plane Coordinate System. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was provided in digital format by the Arkansas Geographic Information Office (AGIO).

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables *in the Flood Insurance Study report (which contains authoritative hydraulic data)* may reflect stream channel distances that differ from what is shown on this map.

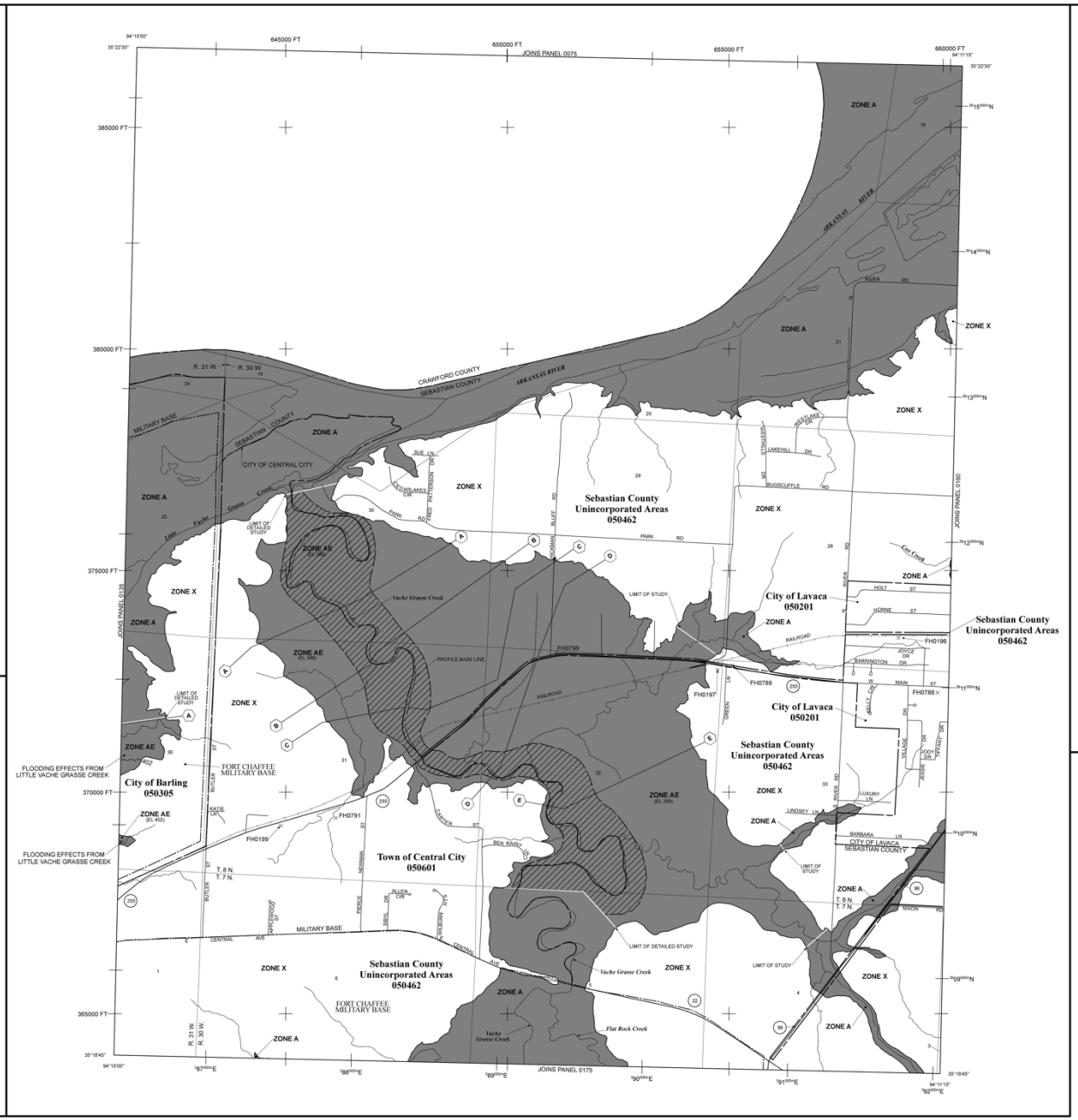
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, *a Flood Insurance Study report*, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip/.

The "profile base lines" depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the "profile base line", in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- **ZONE A** No Base Flood Elevations determined.
- **ZONE AE** Base Flood Elevations determined.
- **ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- **ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- **ZONE A99** Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
- **ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- **ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- **ZONE D** Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
- 513 (EL 987) Base Flood Elevation line and value; elevation in feet*
- Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- A–A Cross section line
- 23–23 Transect line
- 97°07'30", 32°22'30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4275000mE 1000-meter Universal Transverse Mercator grid ticks, zone 15
- 6000000 FT 5000-foot grid values: Arkansas State Plane coordinate system, North Zone (FIPSZONE = 301), Lambert projection
- DX5510 Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
MAY 20, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1,000 2,000 FEET
150 0 300 600 METERS

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0155E

FIRM

FLOOD INSURANCE RATE MAP
SEBASTIAN COUNTY, ARKANSAS
AND INCORPORATED AREAS

PANEL 155 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BARLING, CITY OF	050305	0155	E
CENTRAL CITY, TOWN OF	050601	0155	E
LAVACA, CITY OF	050201	0155	E
SEBASTIAN COUNTY (UNINCORPORATED AREAS)	050462	0155	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
05131C0155E

EFFECTIVE DATE
MAY 20, 2010

Federal Emergency Management Agency

NOTES TO USERS

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Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

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The **projection** used in the preparation of this map was Arkansas North State Plane Coordinate System. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

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National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

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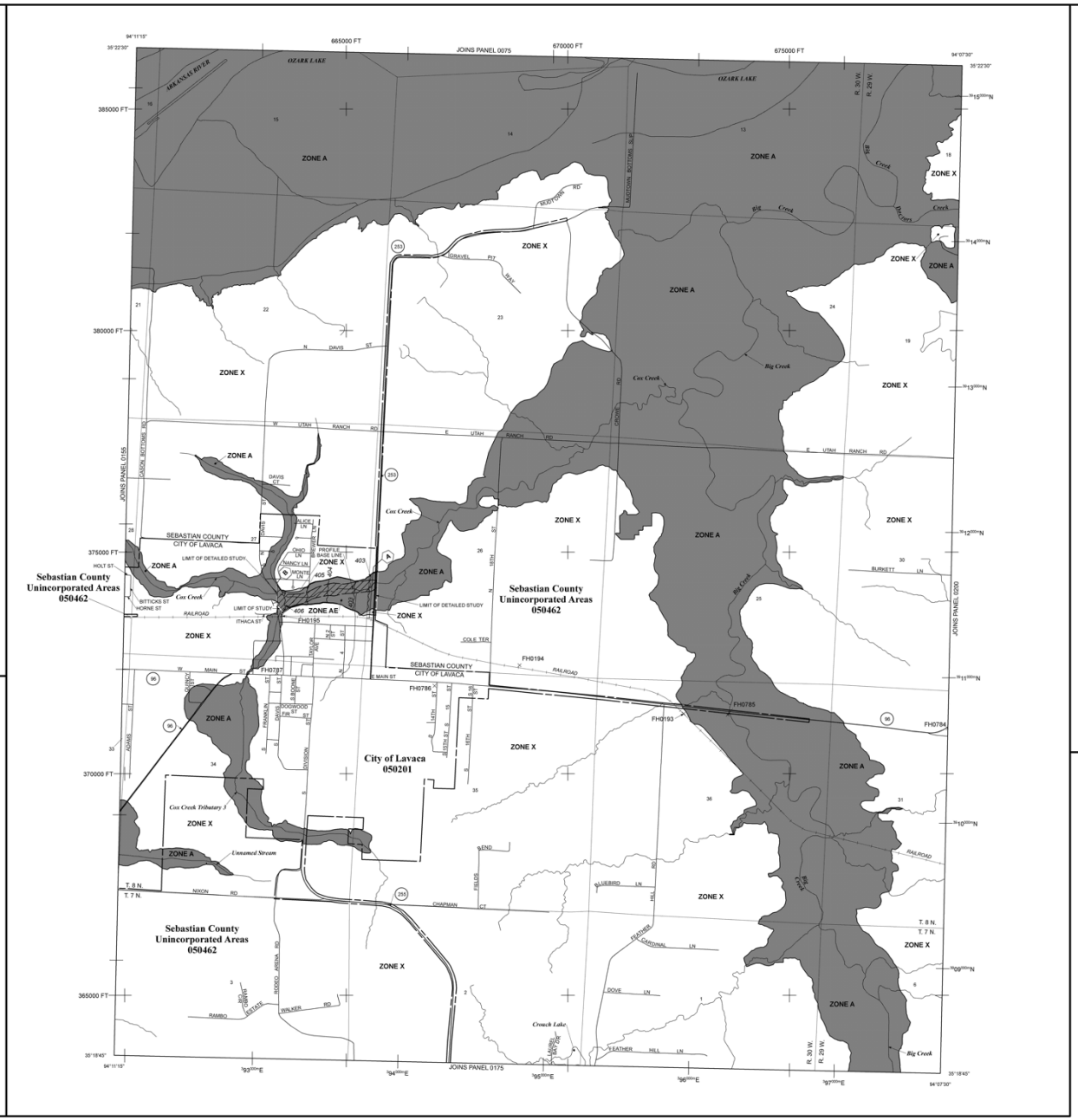

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- **ZONE A** — No Base Flood Elevations determined.
- **ZONE AE** — Base Flood Elevations determined.
- **ZONE AH** — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
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FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** — Areas determined to be outside the 0.2% annual chance floodplain.
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COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

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- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
- 513 (EL 987) — Base Flood Elevation line and value; elevation in feet*
- Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- A–A — Cross section line
- 23–23 — Transect line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4275000 FT — 1000-meter Universal Transverse Mercator grid ticks, zone 15
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- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
MAY 20, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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MAP SCALE 1" = 1500'

500 0 500 1,000 2,000 FEET
150 0 150 300 600 METERS

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0160E

FIRM

FLOOD INSURANCE RATE MAP
SEBASTIAN COUNTY, ARKANSAS
AND INCORPORATED AREAS

PANEL 160 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LAVACA, CITY OF	050201	0160	E
SEBASTIAN COUNTY (UNINCORPORATED AREAS)	050462	0160	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
05131C0160E

EFFECTIVE DATE
MAY 20, 2010

Federal Emergency Management Agency

NOTES TO USERS

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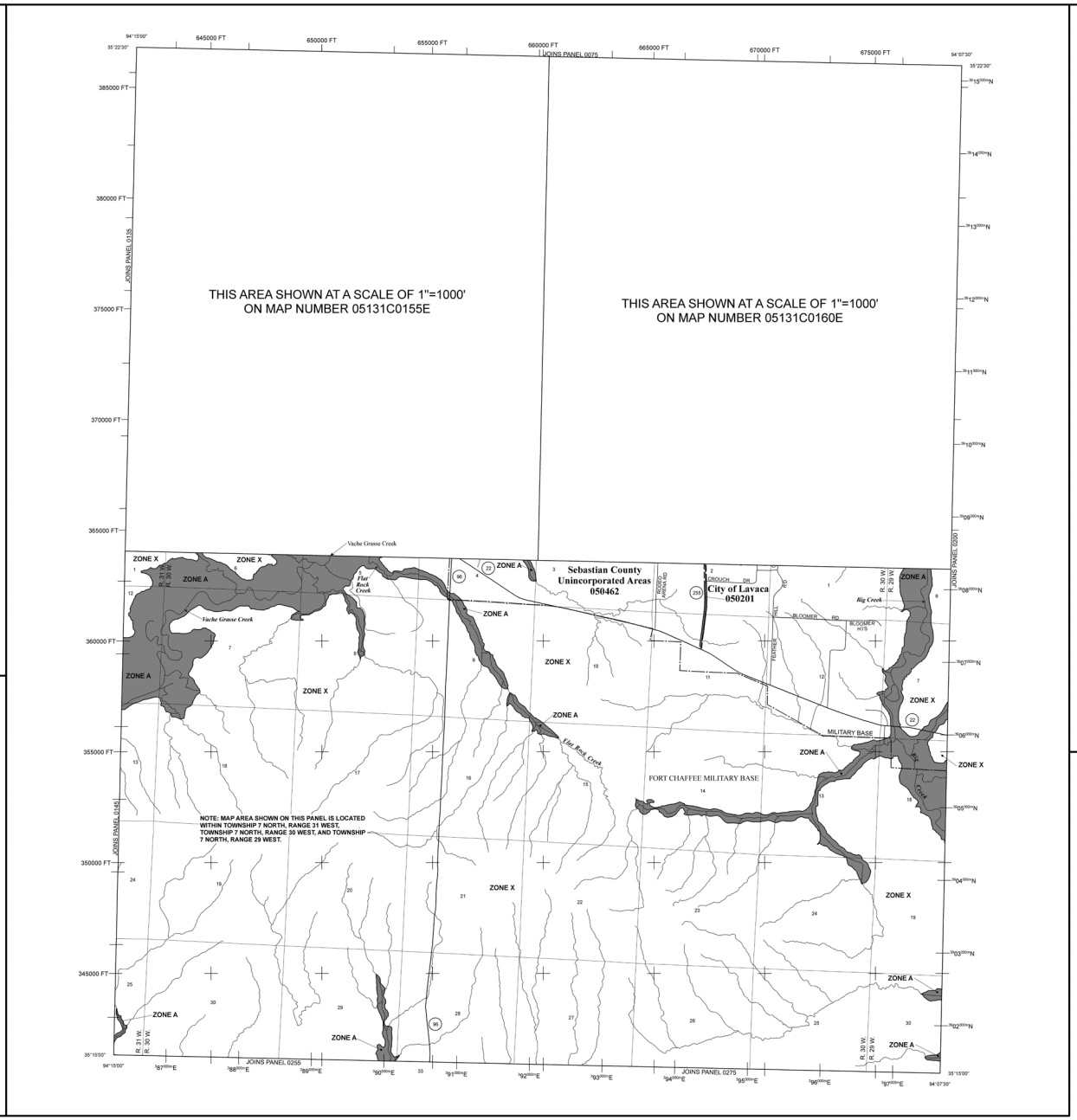

LEGEND

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FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** — Areas determined to be outside the 0.2% annual chance floodplain.
- **ZONE D** — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
- 513 (EL 987) — Base Flood Elevation line and value; elevation in feet*
- Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- Cross section line
- Transect line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4775000 FT E — 1000-meter Universal Transverse Mercator grid ticks, zone 15
- 6000000 FT N — 5000-foot grid values: Arkansas State Plane coordinate system, North Zone (FIPSZONE = 301), Lambert projection
- DX5510 ● M1.5 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
MAY 20, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 2000'
1,000 0 1,000 2,000 3,000 4,000 FEET
500 0 500 1,000 METERS

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0175E

FIRM

FLOOD INSURANCE RATE MAP

SEBASTIAN COUNTY,
ARKANSAS
AND INCORPORATED AREAS

PANEL 175 OF 450
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LAVACA, CITY OF	050201	0175	E
SEBASTIAN COUNTY (UNINCORPORATED AREAS)	050462	0175	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
05131C0175E

EFFECTIVE DATE
MAY 20, 2010

Federal Emergency Management Agency

NOTES TO USERS

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Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Arkansas North State Plane Coordinate System. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

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NGS Information Services
NOAA, NINGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov/.

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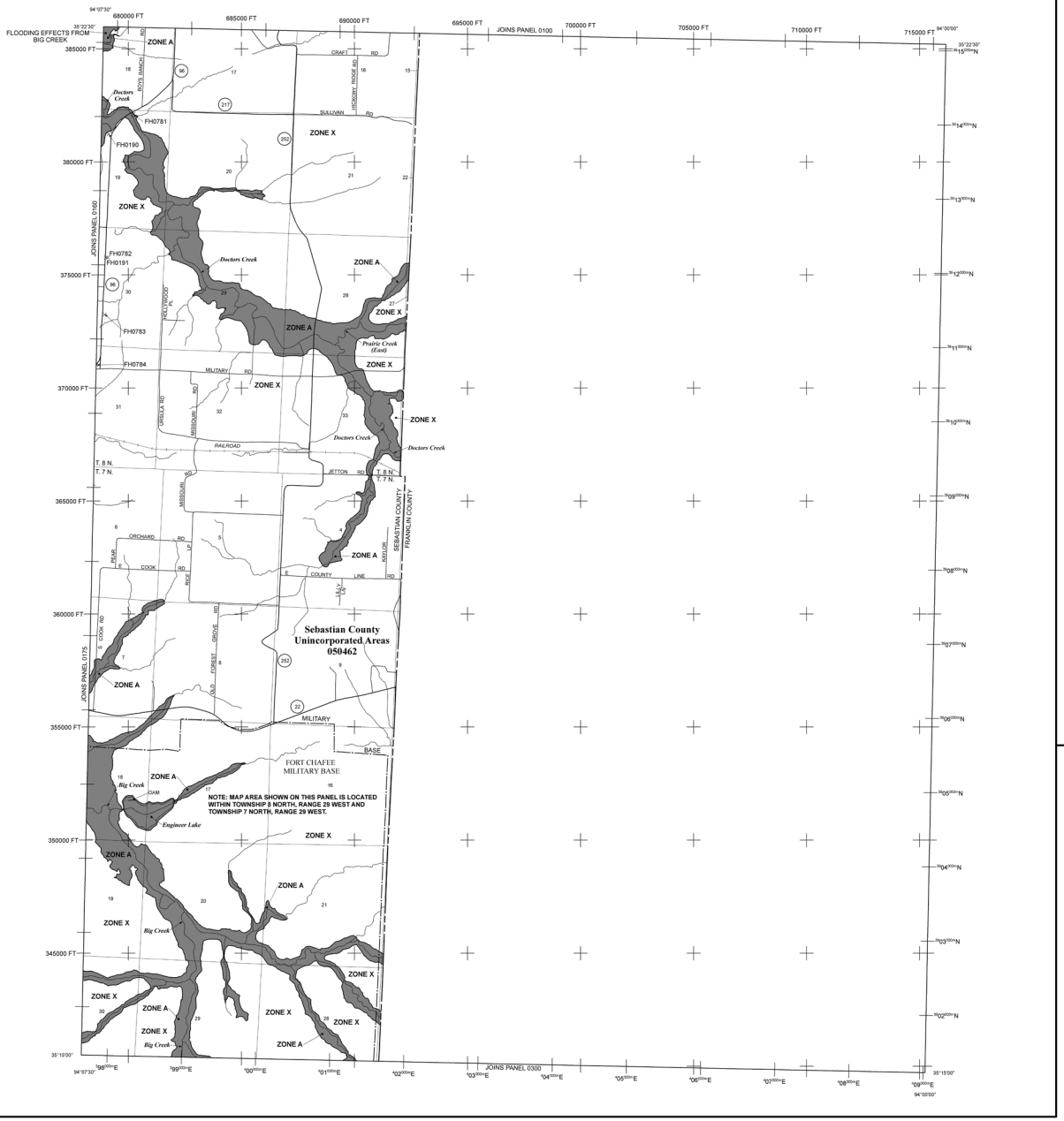
The "profile base lines" depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the "profile base line", in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- **ZONE A** — No Base Flood Elevations determined.
- **ZONE AE** — Base Flood Elevations determined.
- **ZONE AH** — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
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- **ZONE AR** — Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- **ZONE A99** — Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
- **ZONE V** — Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- **ZONE VE** — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** — Areas determined to be outside the 0.2% annual chance floodplain.
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COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
- 513 (EL 987) — Base Flood Elevation line and value; elevation in feet* / Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- A–A — Cross section line
- 23–23 — Transect line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
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- 6000000 FT — 5000-foot grid values: Arkansas State Plane coordinate system, North Zone (FIPSZONE = 301), Lambert projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
MAY 20, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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MAP SCALE 1" = 2000'

1,000 0 1,000 2,000 3,000 4,000 FEET
500 0 500 1,000 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0200E

FIRM

FLOOD INSURANCE RATE MAP

SEBASTIAN COUNTY, ARKANSAS
AND INCORPORATED AREAS

PANEL 200 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SEBASTIAN COUNTY (UNINCORPORATED AREAS)	050462	0200	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
05131C0200E

EFFECTIVE DATE
MAY 20, 2010

Federal Emergency Management Agency

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NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
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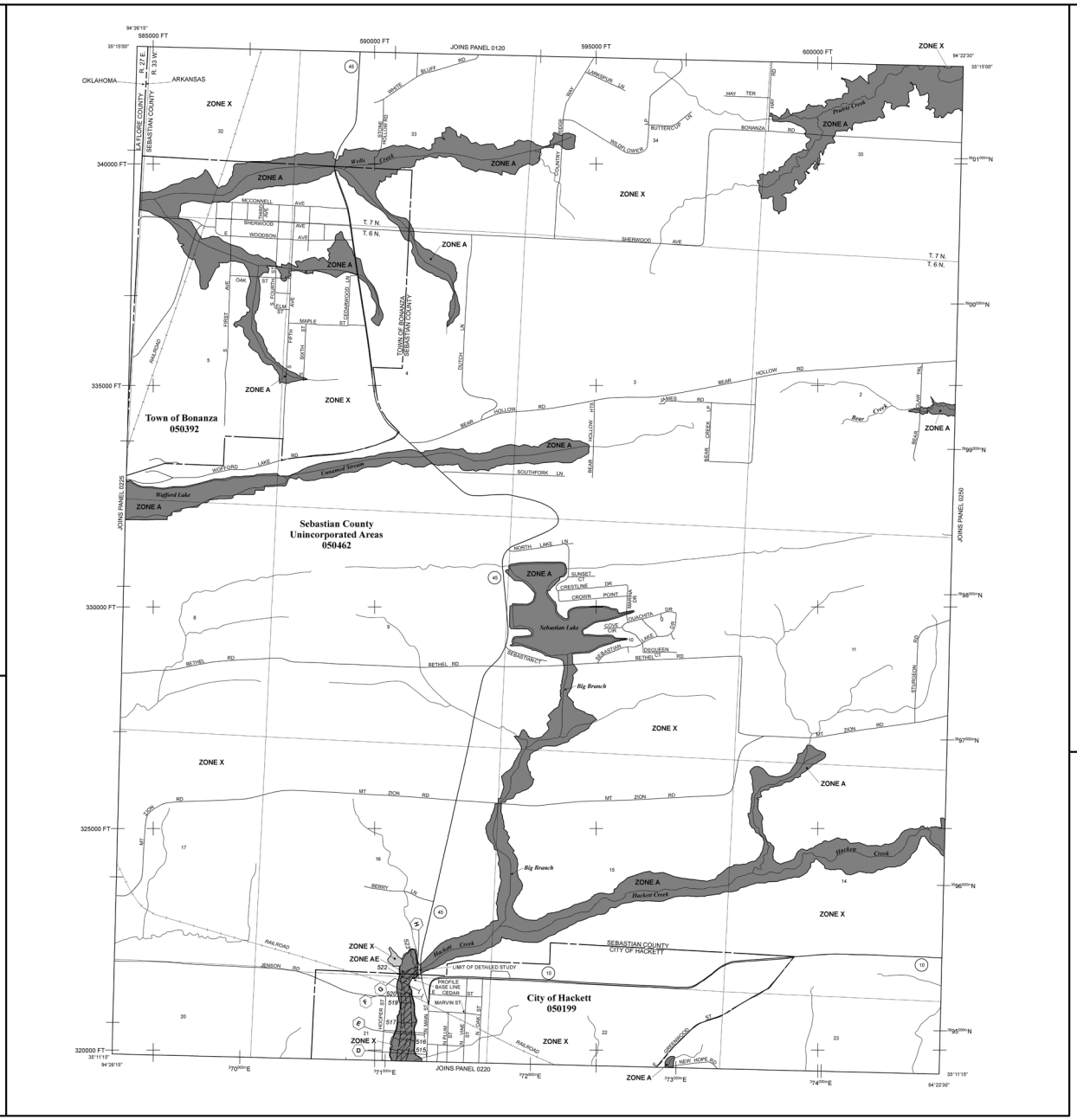

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

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FLOODWAY AREAS IN ZONE AE

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OTHER FLOOD AREAS

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OTHER AREAS

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COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

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* Referenced to the North American Vertical Datum of 1988

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MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
MAY 20, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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MAP SCALE 1" = 1000'

500 0 500 1,000 1,500 2,000 FEET
300 0 300 600 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0210E

FIRM

FLOOD INSURANCE RATE MAP

SEBASTIAN COUNTY, ARKANSAS

AND INCORPORATED AREAS

PANEL 210 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BONANZA, TOWN OF	050392	0210	E
HACKETT, CITY OF	050199	0210	E
SEBASTIAN COUNTY (UNINCORPORATED AREAS)	050462	0210	E

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MAP NUMBER
05131C0210E

EFFECTIVE DATE
MAY 20, 2010

Federal Emergency Management Agency

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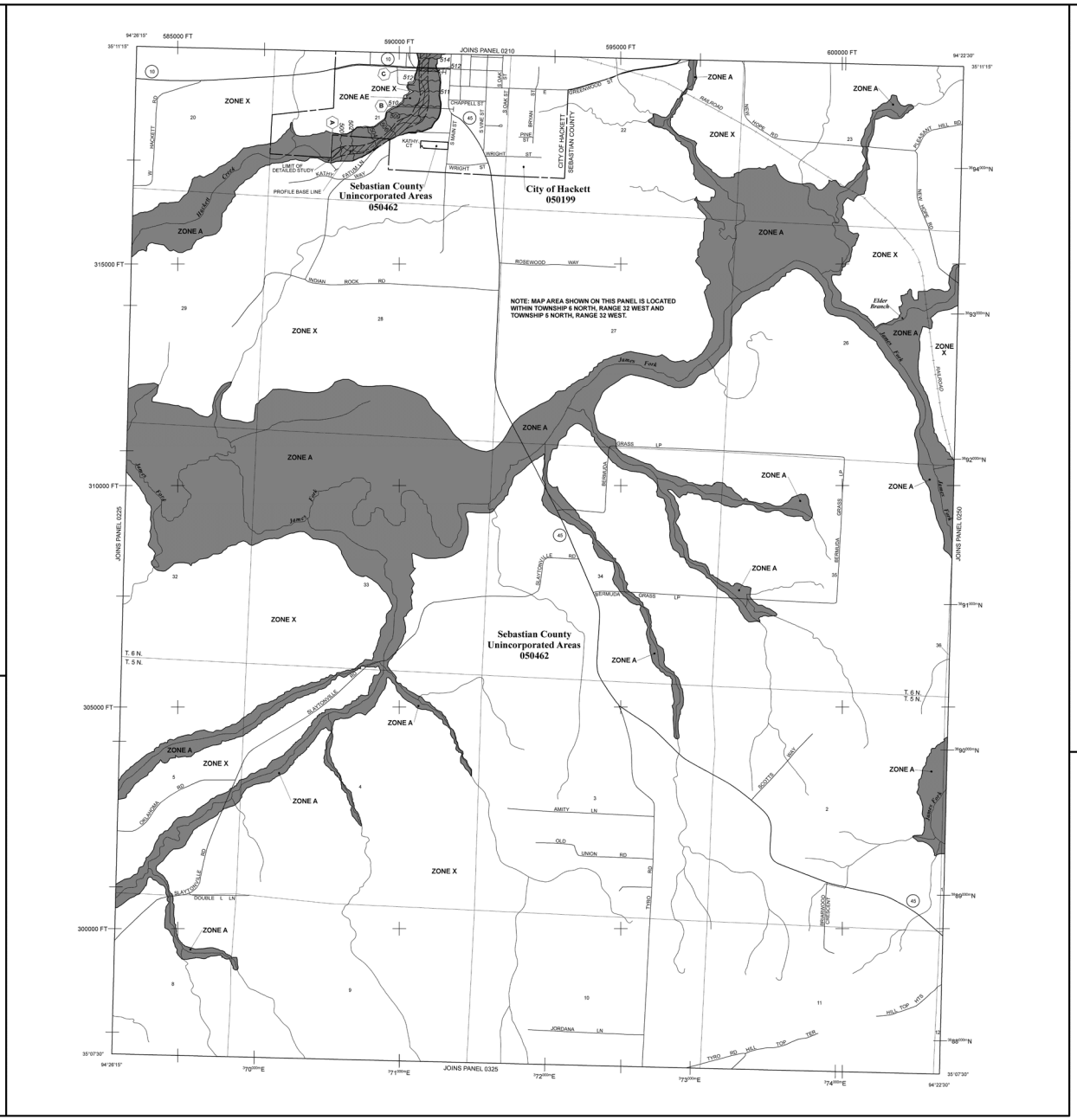

LEGEND

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FLOODWAY AREAS IN ZONE AE

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OTHERWISE PROTECTED AREAS (OPAs)

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- A — A — Cross section line
- 23 — 23 — Transect line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4775000mE — 1000-meter Universal Transverse Mercator grid ticks, zone 15
- 6000000 FT — 5000-foot grid values: Arkansas State Plane coordinate system, North Zone (FIPSZONE = 301), Lambert projection
- DX5510 • M1.5 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
MAY 20, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 500 1,000 1,500 2,000 FEET
150 0 150 300 450 METERS

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0220E

FIRM

FLOOD INSURANCE RATE MAP

SEBASTIAN COUNTY, ARKANSAS AND INCORPORATED AREAS

PANEL 220 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HACKETT, CITY OF	050199	0220	E
SEBASTIAN COUNTY (UNINCORPORATED AREAS)	050462	0220	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
05131C0220E

EFFECTIVE DATE
MAY 20, 2010

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Arkansas North State Plane Coordinate System. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, NINGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was provided in digital format by the Arkansas Geographic Information Office (AGIO).

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables *in the Flood Insurance Study report (which contains authoritative hydraulic data)* may reflect stream channel distances that differ from what is shown on this map.

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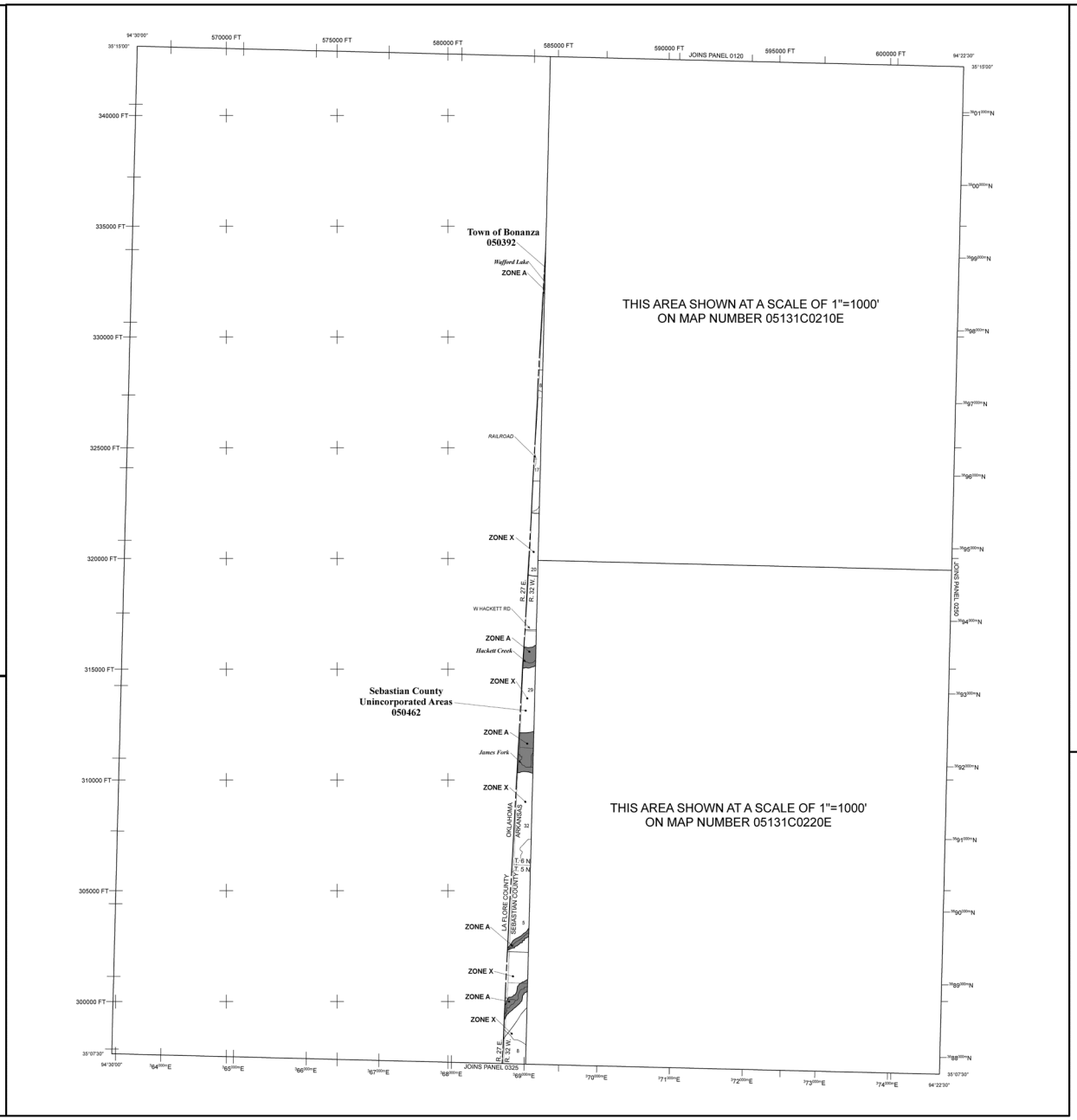
The "profile base lines" depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the "profile base line", in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
- 513 (EL 987) — Base Flood Elevation line and value; elevation in feet* / Base Flood Elevation value where uniform within zone; elevation in feet*
- * Referenced to the North American Vertical Datum of 1988
- A–A — Cross section line
- 23–23 — Transect line
- 87°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4775000mE — 1000-meter Universal Transverse Mercator grid ticks, zone 15
- 6000000 FT — 5000-foot grid values: Arkansas State Plane coordinate system, North Zone (FIPSZONE = 301), Lambert projection
- DX5510 X — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
MAY 20, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

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MAP SCALE 1" = 2000'

1,000 0 1,000 2,000 3,000 4,000 FEET
300 0 300 600 1,200 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0225E

FIRM

FLOOD INSURANCE RATE MAP

SEBASTIAN COUNTY, ARKANSAS

AND INCORPORATED AREAS

PANEL 225 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BONANZA, TOWN OF	050392	0225	E
SEBASTIAN COUNTY (UNINCORPORATED AREAS)	050462	0225	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
05131C0225E

EFFECTIVE DATE
MAY 20, 2010

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Arkansas North State Plane Coordinate System. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

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NOAA, NINGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

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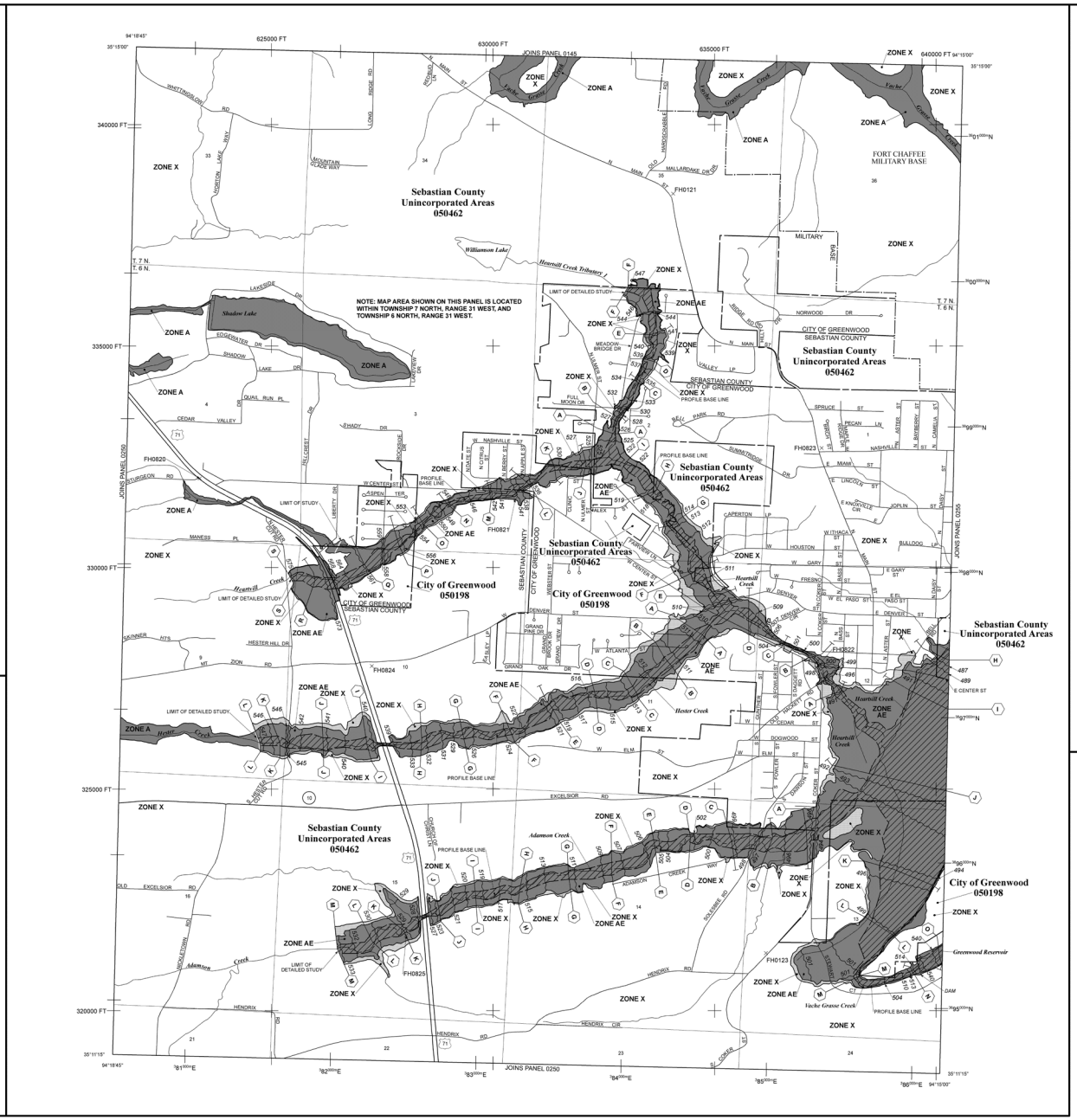

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- **ZONE A** No Base Flood Elevations determined.
- **ZONE AE** Base Flood Elevations determined.
- **ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- **ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- **ZONE A99** Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
- **ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- **ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- **ZONE D** Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
- 513 (EL 987) Base Flood Elevation line and value; elevation in feet*
- Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- A–A Cross section line
- 23–23 Transect line
- 97°07'30", 32°22'30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
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- 6000000 FT 5000-foot grid values: Arkansas State Plane coordinate system, North Zone (FIPSZONE = 301), Lambert projection
- DX5510 Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
MAY 20, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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MAP SCALE 1" = 1000'

500 0 500 1,000 2,000 FEET
150 0 300 600 METERS

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0235E

FIRM

FLOOD INSURANCE RATE MAP

SEBASTIAN COUNTY, ARKANSAS AND INCORPORATED AREAS

PANEL 235 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
GREENWOOD, CITY OF	050198	0235	E
SEBASTIAN COUNTY (UNINCORPORATED AREAS)	050462	0235	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
05131C0235E

EFFECTIVE DATE
MAY 20, 2010

Federal Emergency Management Agency

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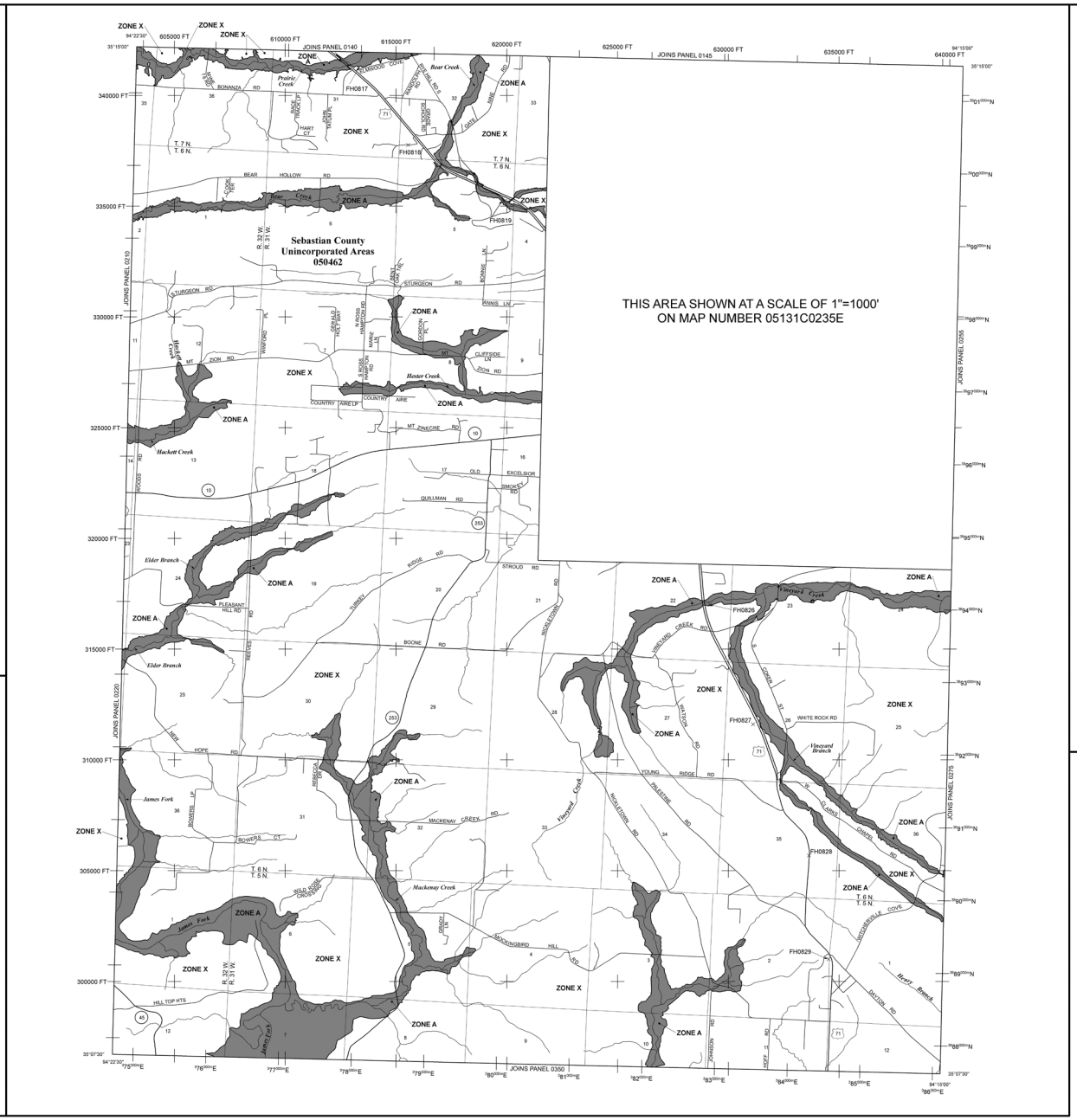

LEGEND

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FLOODWAY AREAS IN ZONE AE

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OTHER FLOOD AREAS

- **ZONE X** — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** — Areas determined to be outside the 0.2% annual chance floodplain.
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COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

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- Cross section line
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MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
MAY 20, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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MAP SCALE 1" = 2000'
1,000 0 1,000 2,000 3,000 4,000 FEET
500 0 500 1,000 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0250E

FIRM

FLOOD INSURANCE RATE MAP

SEBASTIAN COUNTY, ARKANSAS
AND INCORPORATED AREAS

PANEL 250 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SEBASTIAN COUNTY (UNINCORPORATED AREAS)	050462	0250	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
05131C0250E

EFFECTIVE DATE
MAY 20, 2010

Federal Emergency Management Agency

NOTES TO USERS

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Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

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NGS Information Services
NOAA, NINGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

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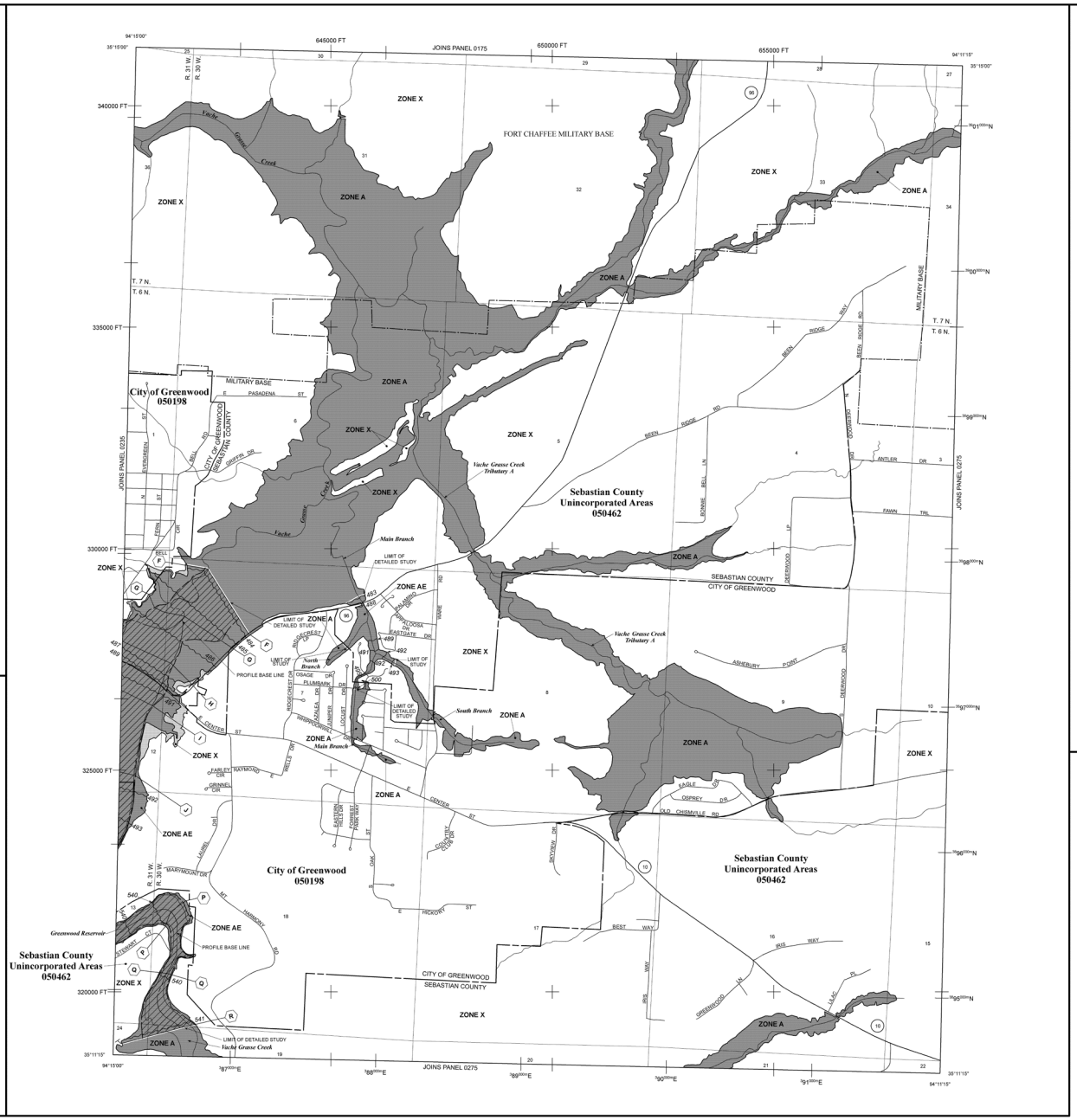

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- **ZONE A** — No Base Flood Elevations determined.
- **ZONE AE** — Base Flood Elevations determined.
- **ZONE AH** — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- **ZONE AO** — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE AR** — Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- **ZONE A99** — Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
- **ZONE V** — Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- **ZONE VE** — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** — Areas determined to be outside the 0.2% annual chance floodplain.
- **ZONE D** — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
- 513 (EL 987) — Base Flood Elevation line and value; elevation in feet*
- Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- A — A — Cross section line
- 23 — 23 — Transect line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4775000 FE — 1000-meter Universal Transverse Mercator grid ticks, zone 15
- 6000000 FN — 5000-foot grid values: Arkansas State Plane coordinate system, North Zone (FIPSZONE = 301), Lambert projection
- DX5510 • M1.5 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
MAY 20, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 500 1,000 1,500 2,000 FEET
150 0 150 300 450 600 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0255E

FIRM

FLOOD INSURANCE RATE MAP

SEBASTIAN COUNTY, ARKANSAS AND INCORPORATED AREAS

PANEL 255 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
GREENWOOD, CITY OF	050198	0255	E
SEBASTIAN COUNTY (UNINCORPORATED AREAS)	050462	0255	E

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MAP NUMBER
05131C0255E

EFFECTIVE DATE
MAY 20, 2010

Federal Emergency Management Agency

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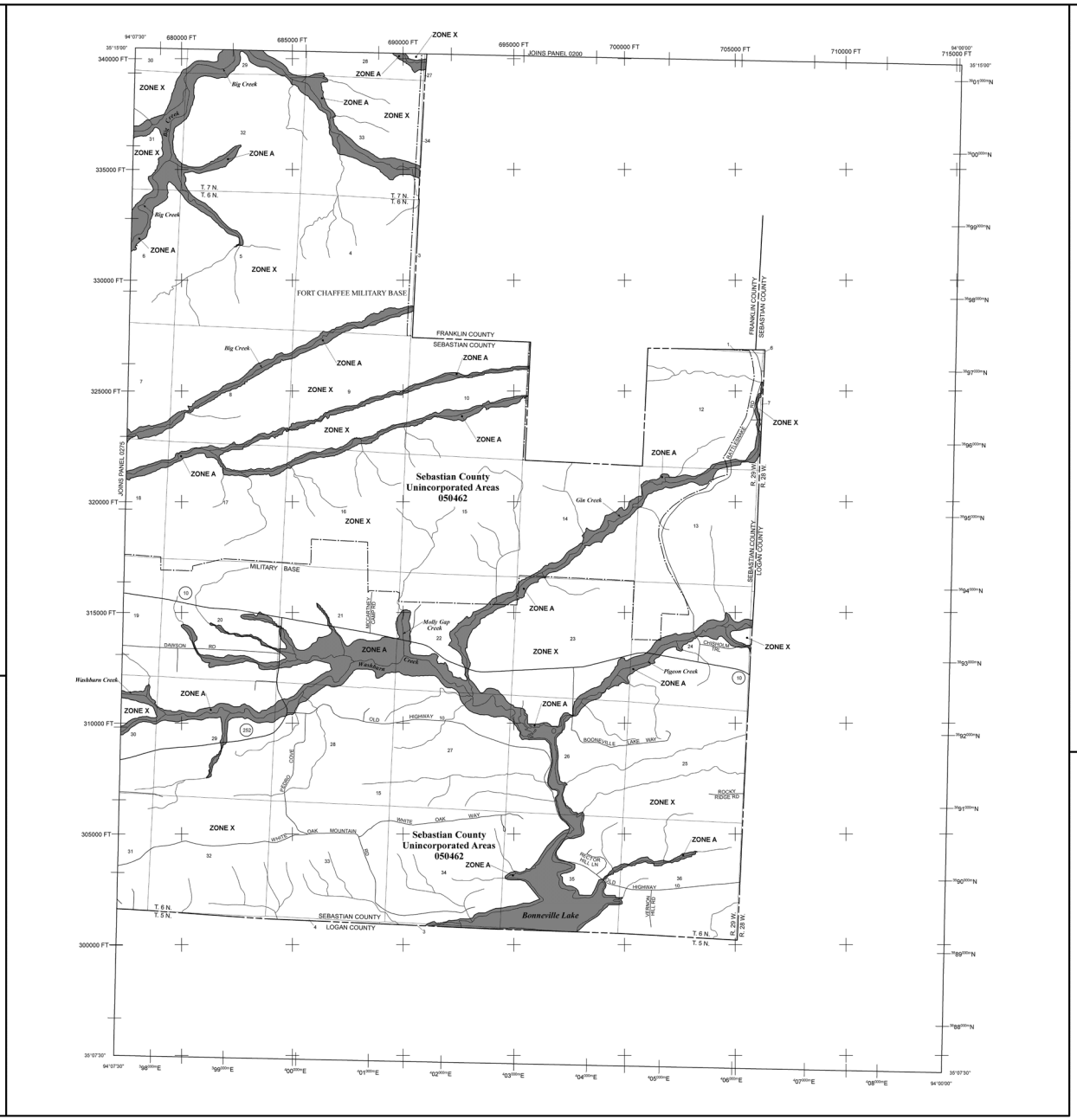

LEGEND

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MAP REPOSITORIES
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EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
MAY 20, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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1,000 0 1,000 2,000 3,000 4,000 FEET
500 0 500 1,000 METERS

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0300E

FIRM

FLOOD INSURANCE RATE MAP

SEBASTIAN COUNTY, ARKANSAS AND INCORPORATED AREAS

PANEL 300 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SEBASTIAN COUNTY (UNINCORPORATED AREAS)	050462	0300	E

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MAP NUMBER
05131C0300E

EFFECTIVE DATE
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Federal Emergency Management Agency

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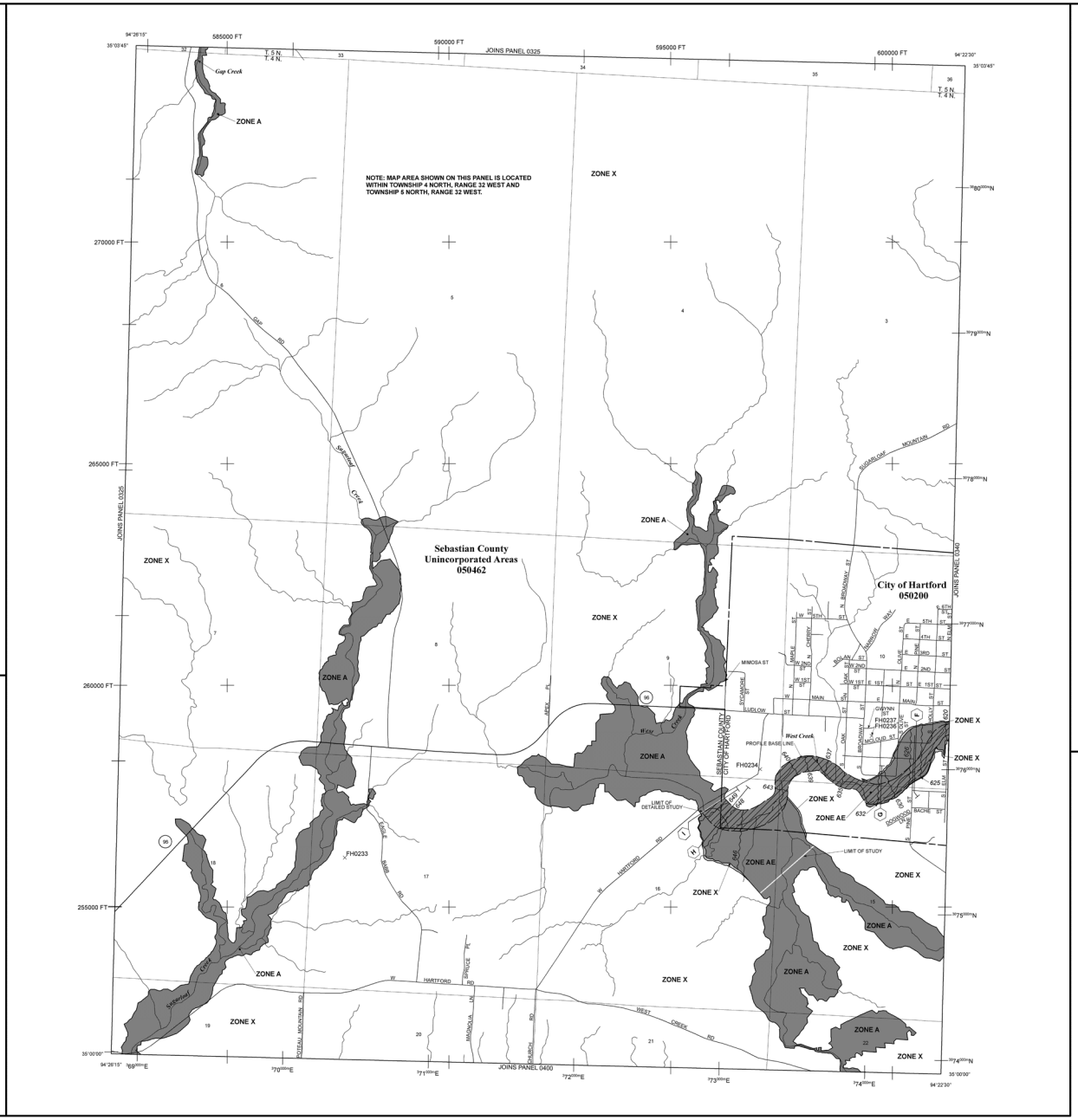

LEGEND

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OTHER FLOOD AREAS

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EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
MAY 20, 2010

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500 0 500 1,000 1,500 2,000 FEET
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NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0320E

FIRM

FLOOD INSURANCE RATE MAP

SEBASTIAN COUNTY, ARKANSAS AND INCORPORATED AREAS

PANEL 320 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HARTFORD, CITY OF	050200	0320	E
SEBASTIAN COUNTY (UNINCORPORATED AREAS)	050462	0320	E

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Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

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NGS Information Services
NOAA, NINGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

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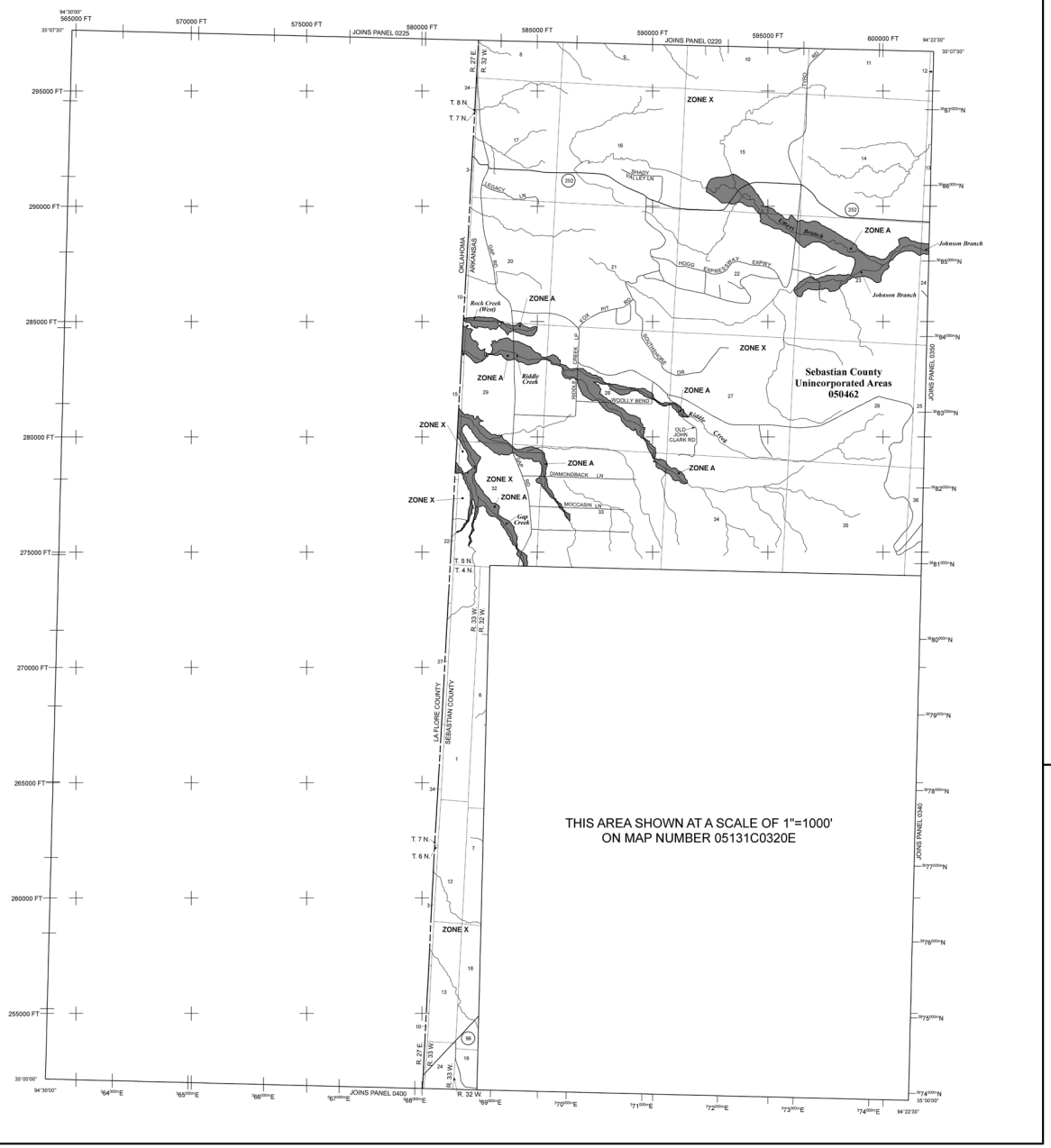

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- **ZONE A** — No Base Flood Elevations determined.
- **ZONE AE** — Base Flood Elevations determined.
- **ZONE AH** — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- **ZONE AO** — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE AR** — Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- **ZONE A99** — Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
- **ZONE V** — Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- **ZONE VE** — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** — Areas determined to be outside the 0.2% annual chance floodplain.
- **ZONE D** — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- A — A — Cross section line
- 23 — 23 — Transect line
- 87°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4775000 FT — 1000-meter Universal Transverse Mercator grid ticks, zone 15
- 6000000 FT — 5000-foot grid values: Arkansas State Plane coordinate system, North Zone (FIPSZONE = 301), Lambert projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
MAY 20, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 2000'

1,000 0 1,000 2,000 3,000 4,000 FEET
500 0 500 1,000 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0325E

FIRM

FLOOD INSURANCE RATE MAP

SEBASTIAN COUNTY, ARKANSAS

AND INCORPORATED AREAS

PANEL 325 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SEBASTIAN COUNTY (UNINCORPORATED AREAS)	050462	0325	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
05131C0325E

EFFECTIVE DATE
MAY 20, 2010

Federal Emergency Management Agency

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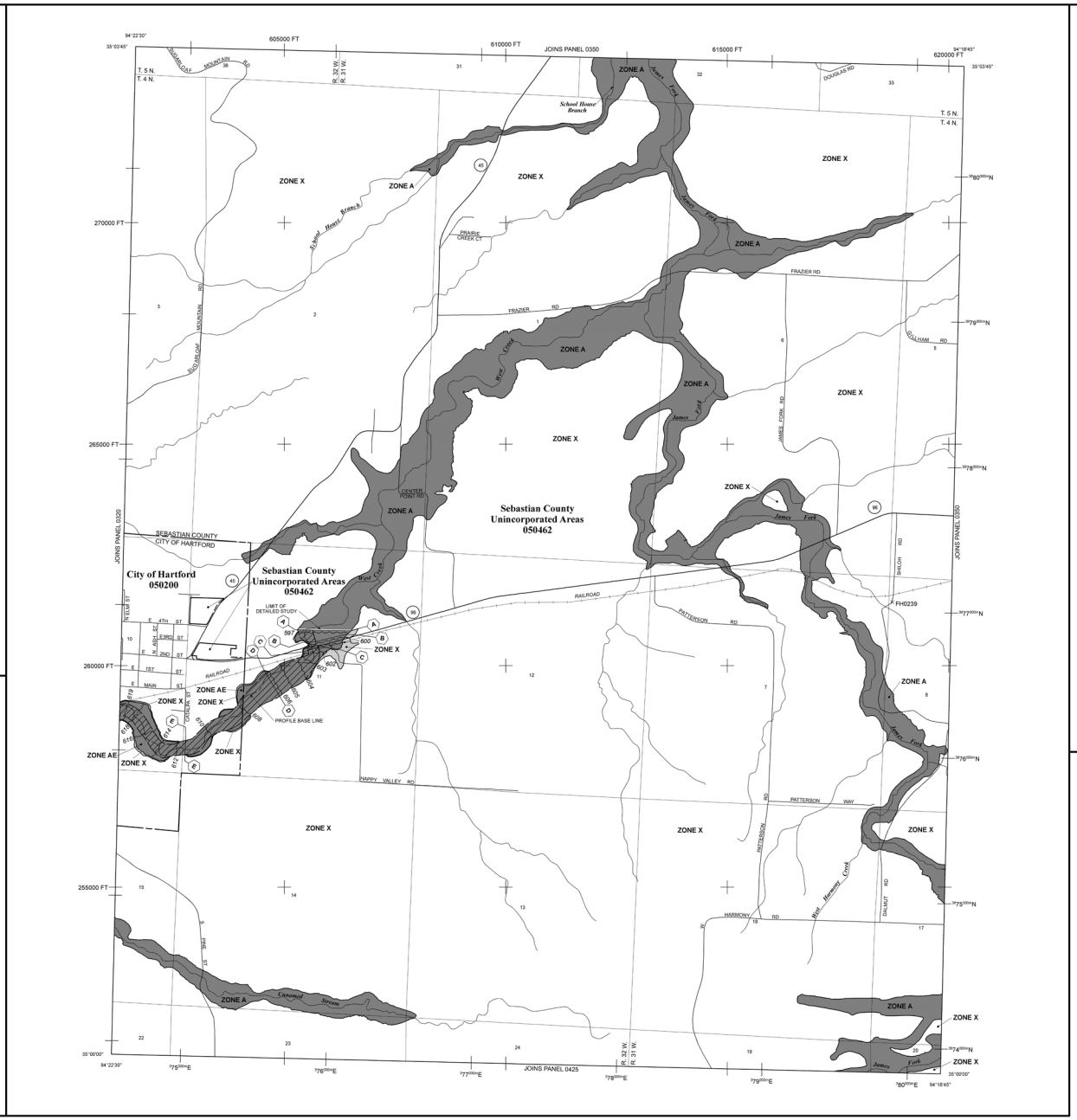

LEGEND

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FLOODWAY AREAS IN ZONE AE

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- River Mile

MAP REPOSITORIES
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EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
MAY 20, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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500 0 500 1,000 1,500 2,000 FEET
150 0 150 300 450 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0340E

FIRM

FLOOD INSURANCE RATE MAP

SEBASTIAN COUNTY, ARKANSAS AND INCORPORATED AREAS

PANEL 340 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HARTFORD, CITY OF	050200	0340	E
SEBASTIAN COUNTY (UNINCORPORATED AREAS)	050462	0340	E

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MAP NUMBER
05131C0340E

EFFECTIVE DATE
MAY 20, 2010

Federal Emergency Management Agency

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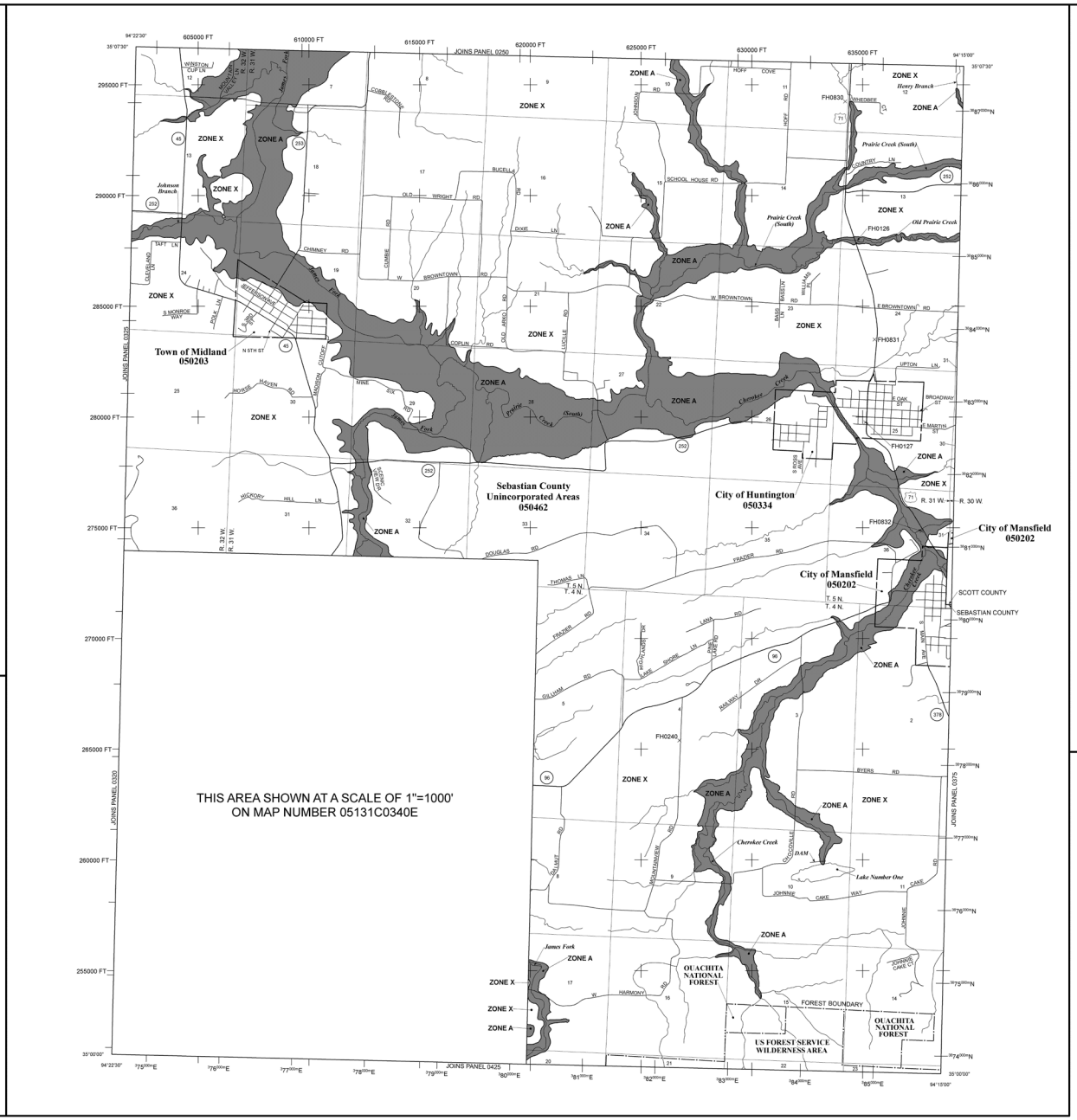

LEGEND

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FLOODWAY AREAS IN ZONE AE

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OTHER FLOOD AREAS

- **ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
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COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

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MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
MAY 20, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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1,000 0 1,000 2,000 3,000 4,000 FEET
0 500 1,000 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0350E

FIRM

FLOOD INSURANCE RATE MAP

SEBASTIAN COUNTY, ARKANSAS
AND INCORPORATED AREAS

PANEL 350 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HUNTINGTON, CITY OF	050334	0350	E
MANSFIELD, CITY OF	050202	0350	E
MIDLAND, TOWN OF	050203	0350	E
SEBASTIAN COUNTY (UNINCORPORATED AREAS)	050462	0350	E

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MAP NUMBER
05131C0350E

EFFECTIVE DATE
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Federal Emergency Management Agency

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Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

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NGS Information Services
NOAA, NINGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov/.

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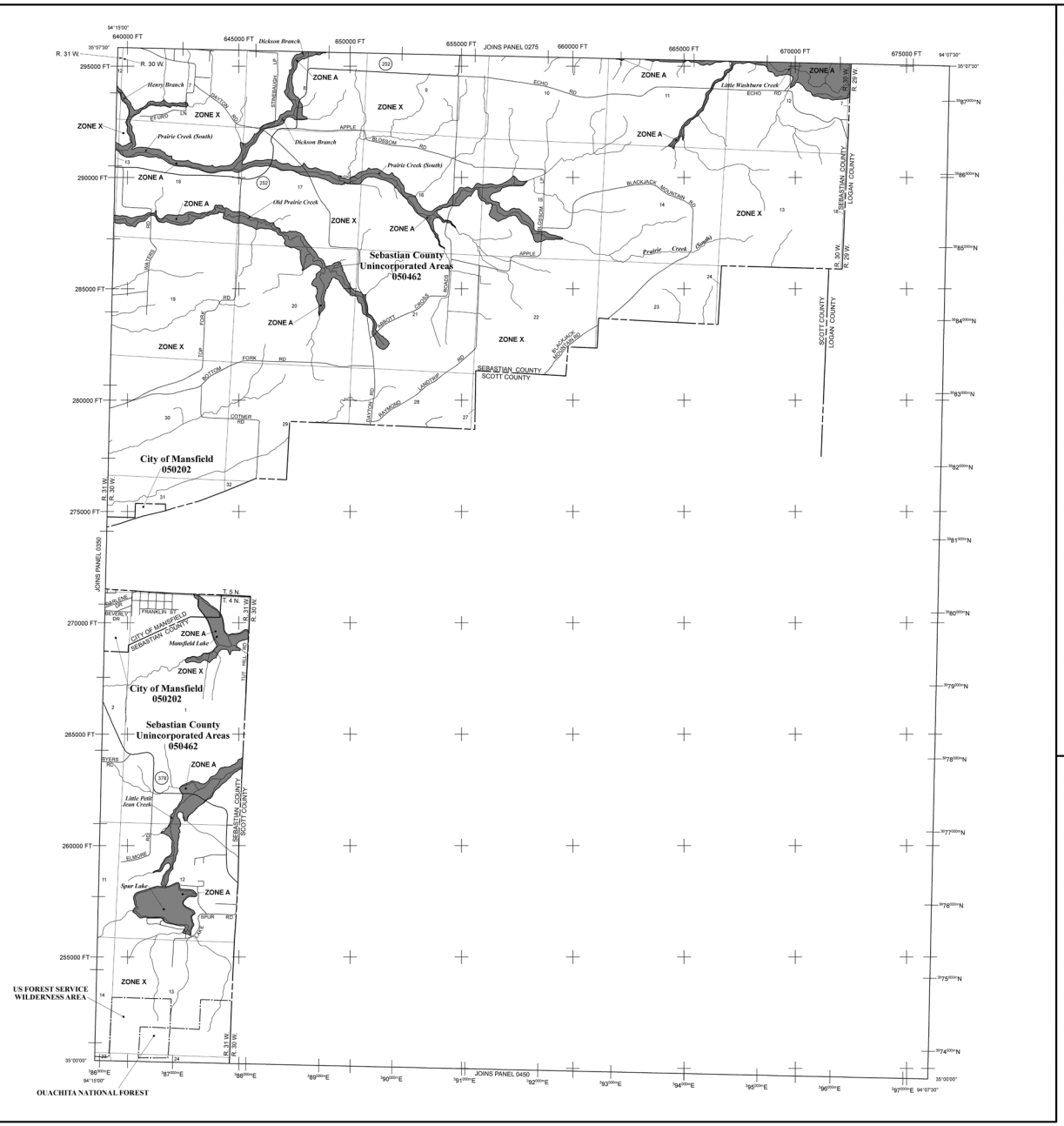
The "profile base lines" depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the "profile base line", in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
- 513 (EL 987) — Base Flood Elevation line and value; elevation in feet* / Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- A–A — Cross section line
- 23–23 — Transect line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4275000 mE / 6000000 FT — 1000-meter Universal Transverse Mercator grid ticks, zone 15 / 5000-foot grid values: Arkansas State Plane coordinate system, North Zone (FIPSZONE = 301), Lambert projection
- DX5510 ● M1.5 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
MAY 20, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 2000'

1,000 0 1,000 2,000 3,000 4,000 FEET
500 0 600 1,200 METERS

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0375E

FIRM

FLOOD INSURANCE RATE MAP

SEBASTIAN COUNTY, ARKANSAS AND INCORPORATED AREAS

PANEL 375 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MANSFIELD, CITY OF	050202	0375	E
SEBASTIAN COUNTY (UNINCORPORATED AREAS)	050462	0375	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
05131C0375E

EFFECTIVE DATE
MAY 20, 2010

Federal Emergency Management Agency

NOTES TO USERS

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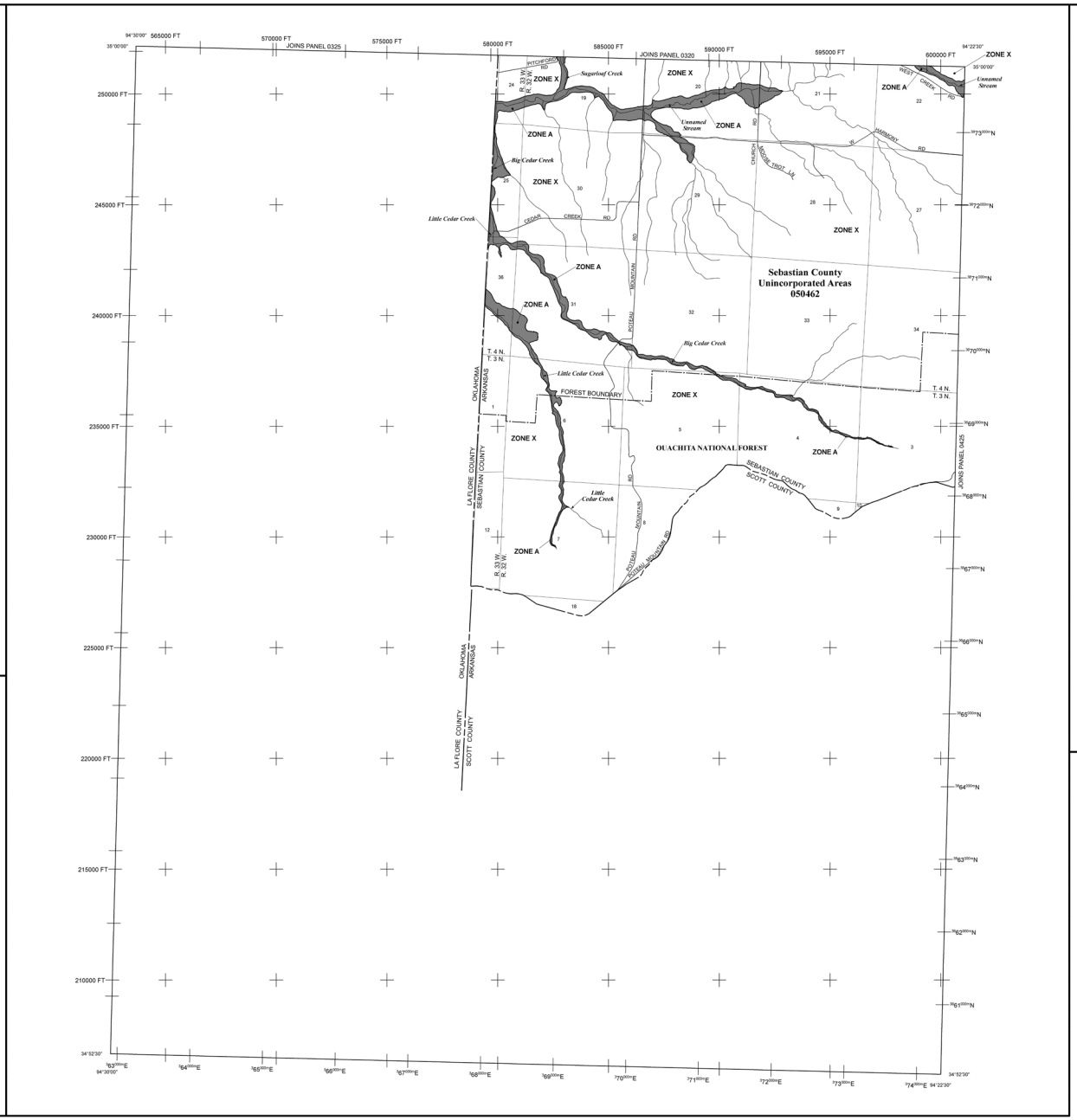

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

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- **ZONE A** No Base Flood Elevations determined.
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- **ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- **ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- **ZONE D** Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
- 513 (EL 987) Base Flood Elevation line and value; elevation in feet*
- Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- A–A Cross section line
- 23–23 Transect line
- 97°07'30", 32°22'30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4775000 FT 1000-meter Universal Transverse Mercator grid ticks, zone 15
- 6000000 FT 5000-foot grid values: Arkansas State Plane coordinate system, North Zone (FIPSZONE = 301), Lambert projection
- DX5510 Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 River Mile

MAP REPOSITORIES
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EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
MAY 20, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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MAP SCALE 1" = 2000'

1,000 0 1,000 2,000 3,000 4,000 FEET
500 0 500 1,000 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0400E

FIRM

FLOOD INSURANCE RATE MAP

SEBASTIAN COUNTY, ARKANSAS AND INCORPORATED AREAS

PANEL 400 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SEBASTIAN COUNTY (UNINCORPORATED AREAS)	050462	0400	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
05131C0400E

EFFECTIVE DATE
MAY 20, 2010

Federal Emergency Management Agency

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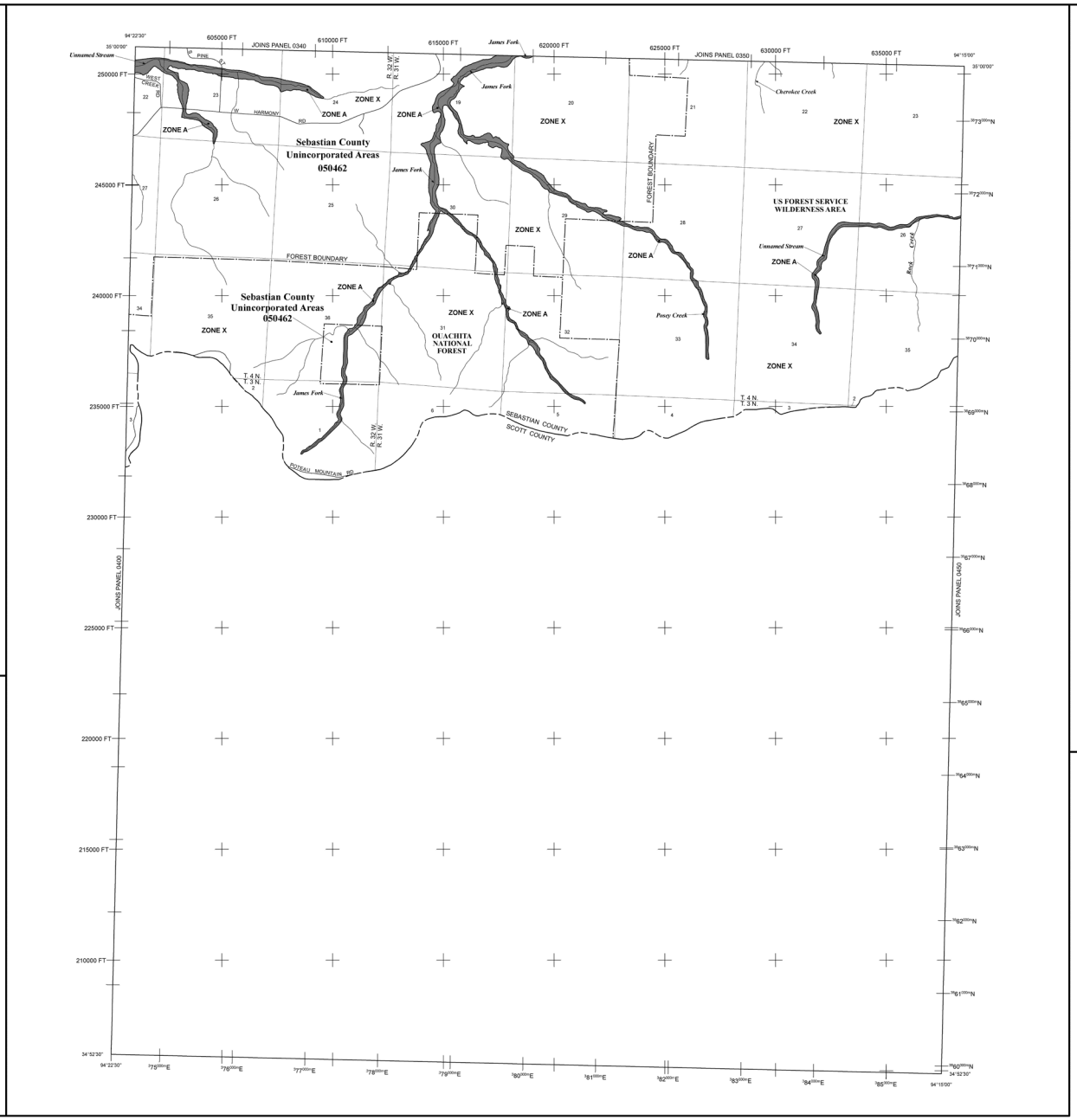

LEGEND

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ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
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- A — A — Cross section line
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MAP REPOSITORIES
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EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
MAY 20, 2010

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1,000 0 1,000 2,000 3,000 4,000 FEET
500 0 500 1,000 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0425E

FIRM

FLOOD INSURANCE RATE MAP

SEBASTIAN COUNTY, ARKANSAS AND INCORPORATED AREAS

PANEL 425 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SEBASTIAN COUNTY (UNINCORPORATED AREAS)	050462	0425	E

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MAP NUMBER
05131C0425E

EFFECTIVE DATE
MAY 20, 2010

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Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Arkansas North State Plane Coordinate System. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, NINGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was provided in digital format by the Arkansas Geographic Information Office (AGIO).

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables *in the Flood Insurance Study report (which contains authoritative hydraulic data)* may reflect stream channel distances that differ from what is shown on this map.

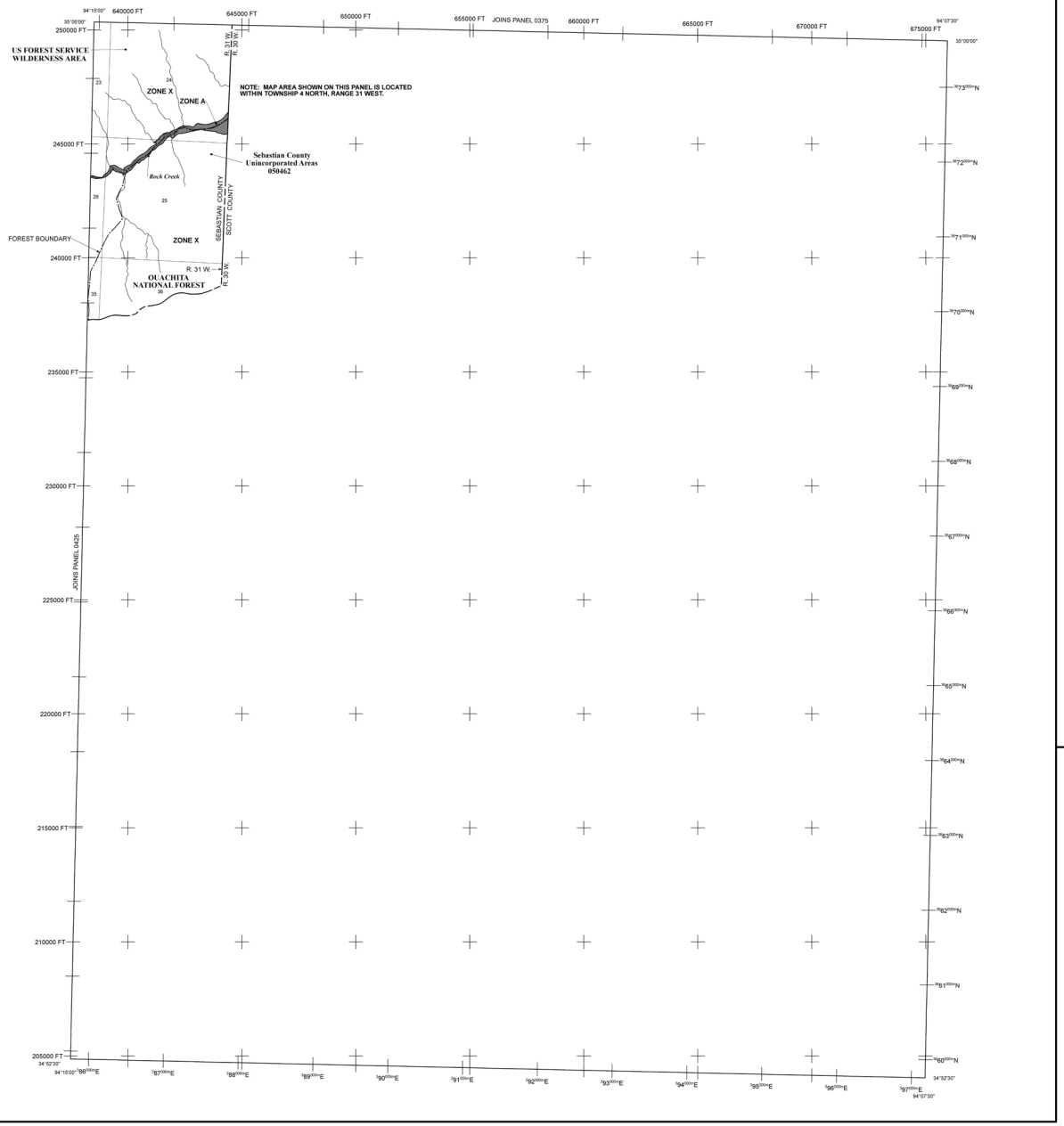
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, *a Flood Insurance Study report*, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip/.

The "profile base lines" depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the "profile base line", in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AE, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
513 (EL 987)	Base Flood Elevation line and value; elevation in feet*
	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

A A	Cross section line
23 23	Transect line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
4275000 FT	1000-meter Universal Transverse Mercator grid ticks, zone 15
6000000 FT	5000-foot grid values: Arkansas State Plane coordinate system, North Zone (FIPSZONE = 301), Lambert projection
DX5510 X M1.5	Bench mark (see explanation in Notes to Users section of this FIRM panel)
	River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
MAY 20, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 2000'

1,000 0 1,000 2,000 3,000 4,000 FEET
300 0 300 600 1,200 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0450E

FIRM

FLOOD INSURANCE RATE MAP

SEBASTIAN COUNTY, ARKANSAS
AND INCORPORATED AREAS

PANEL 450 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SEBASTIAN COUNTY (UNINCORPORATED AREAS)	050462	0450	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
05131C0450E

EFFECTIVE DATE
MAY 20, 2010

Federal Emergency Management Agency

Appendix D: Wildfire Location Maps

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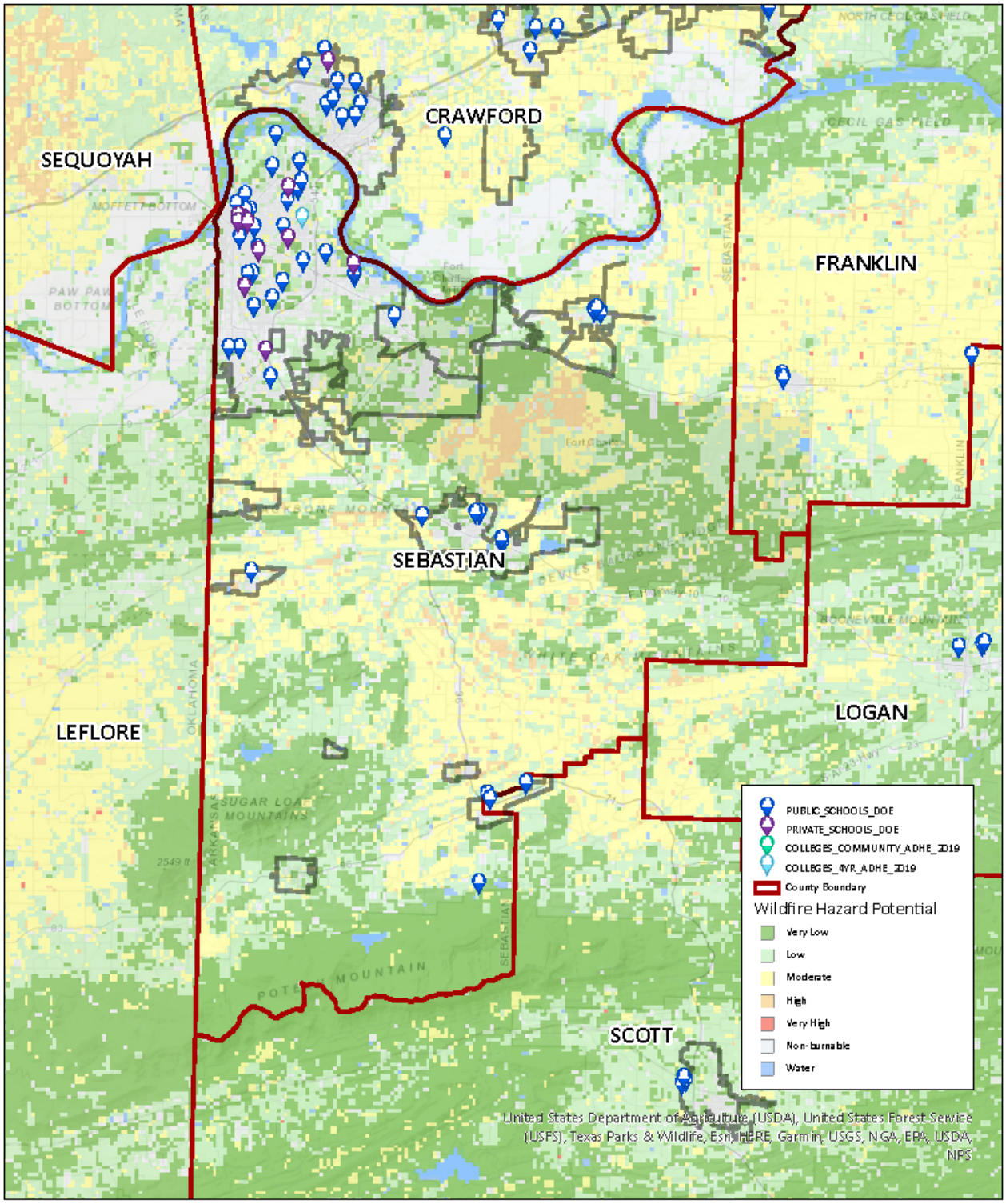
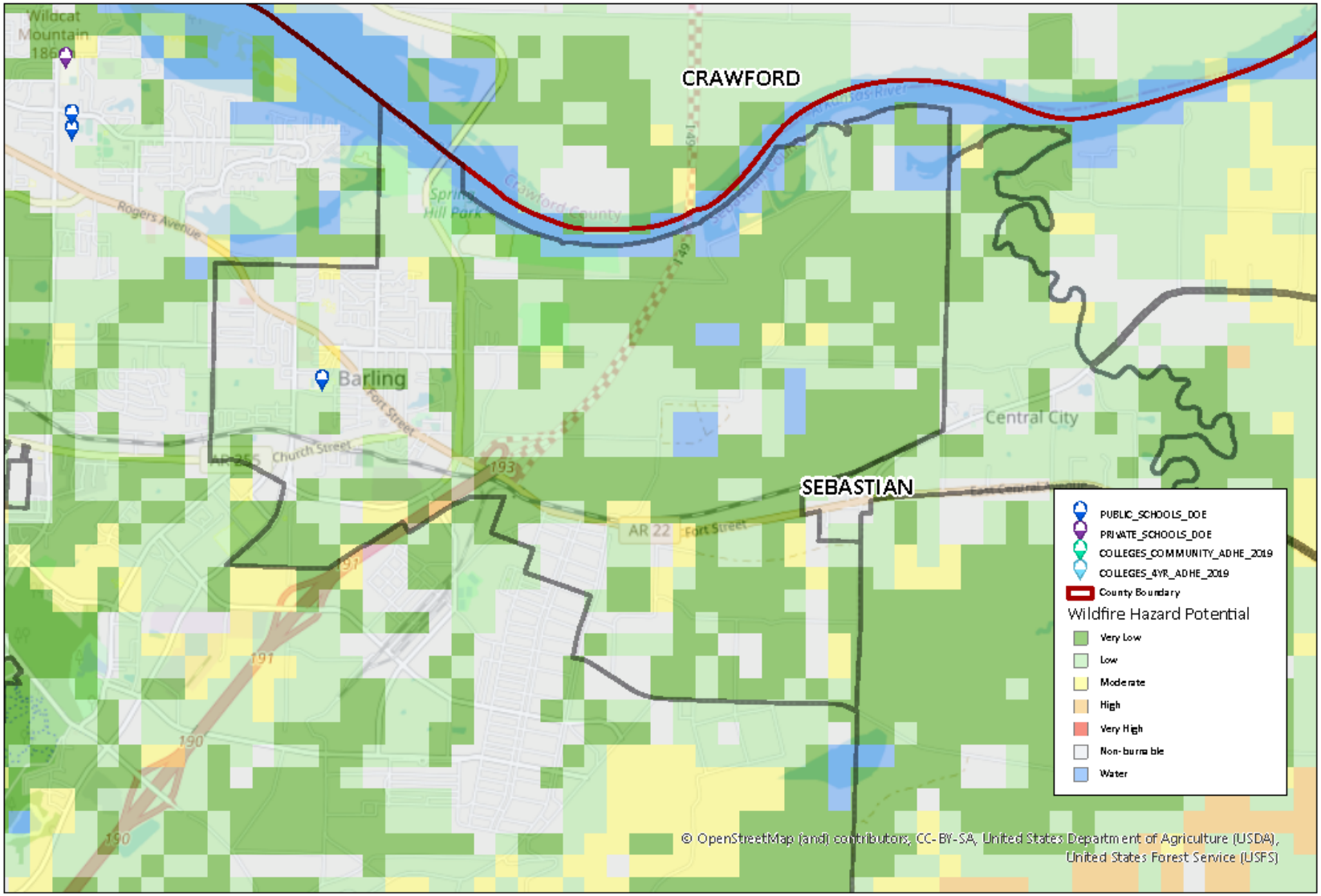
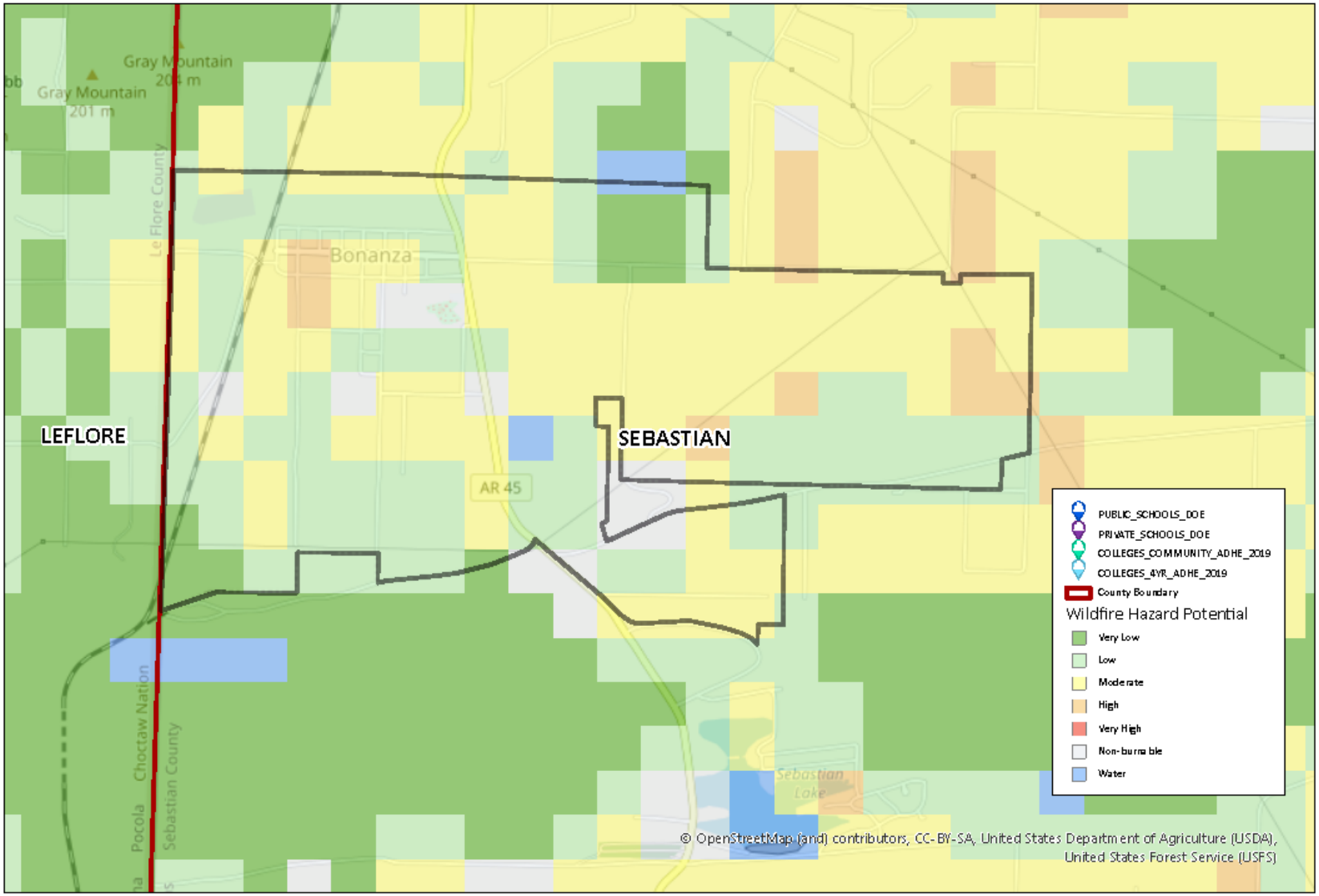


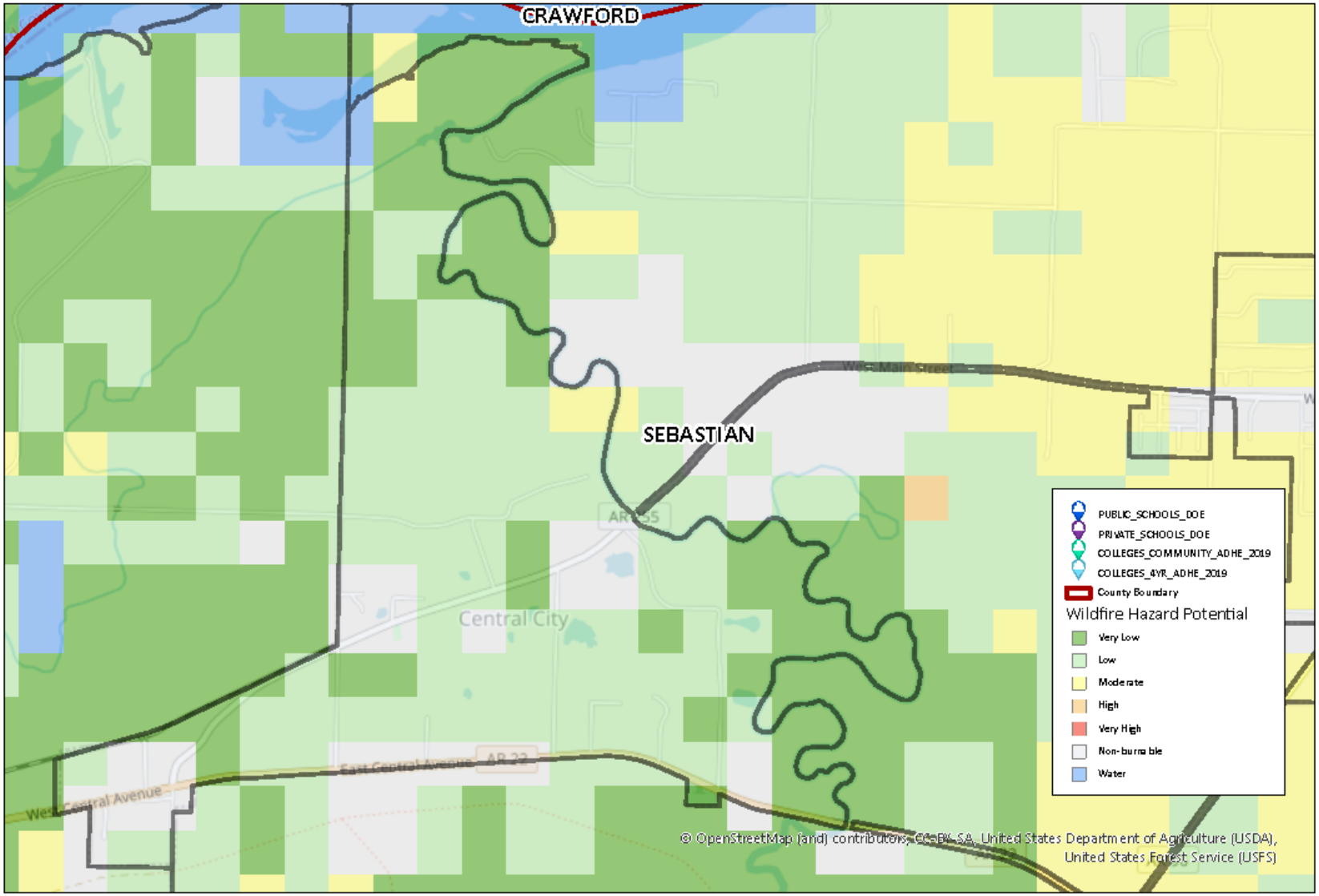
Sebastian County Wildfire Map	Western Arkansas Planning & Development District, Inc	1 inch = 6 miles	
SEBASTIAN COUNTY ARKANSAS	1109 S 16th ST ~ Fort Smith, AR 72901 479-785-2651 ~Fax 479-785-1964	0 1.5 3 Miles	N W E S



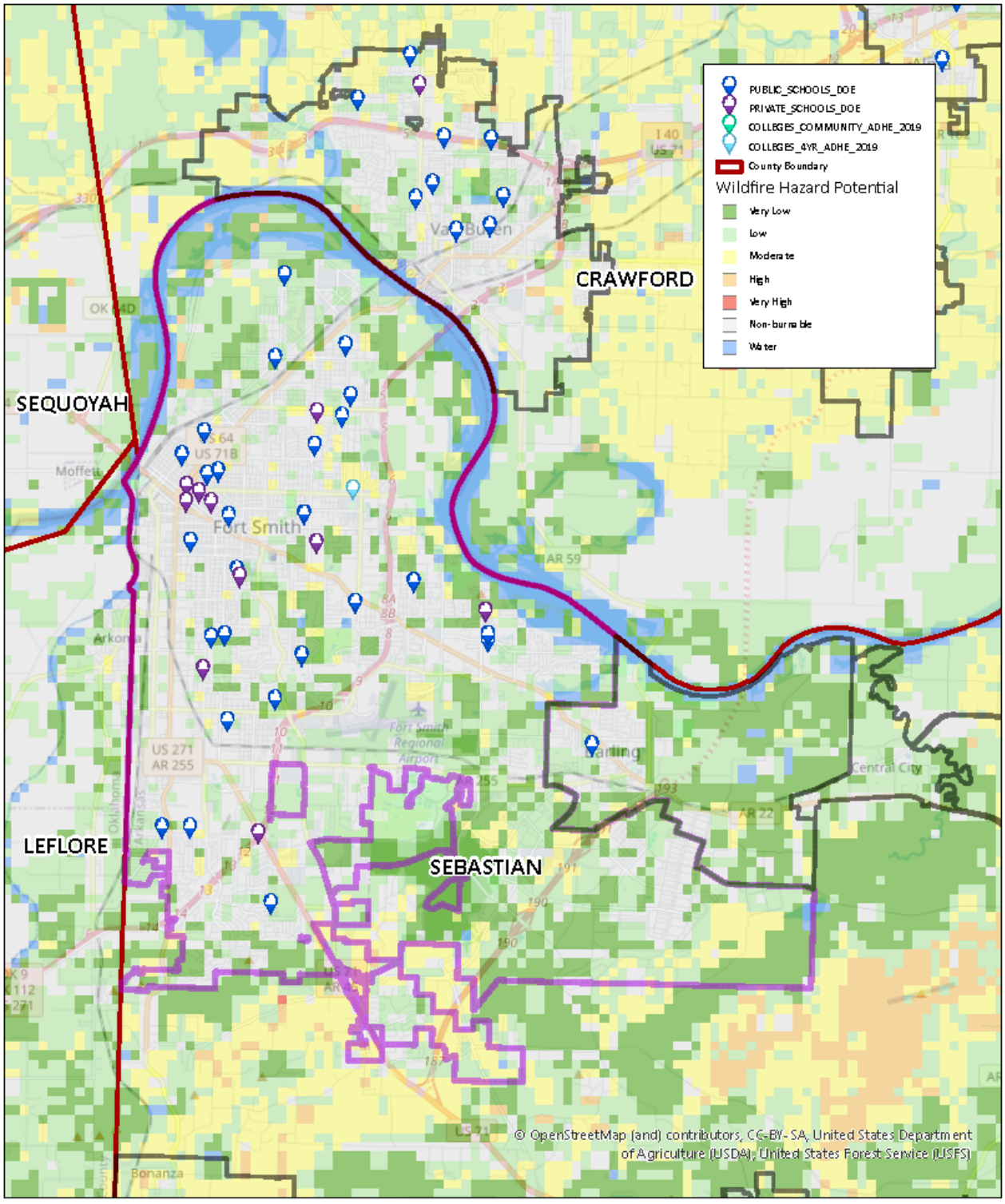
City of Barling Wildfire Map SEBASTIAN COUNTY ARKANSAS	**Western Arkansas Planning & Development District, Inc** 1109 S 16th ST ~ Fort Smith, AR 72901 479-785-2651 ~ Fax 479-785-1964	1 inch = 5,000 feet 0 2,500 5,000 Feet	N W E S



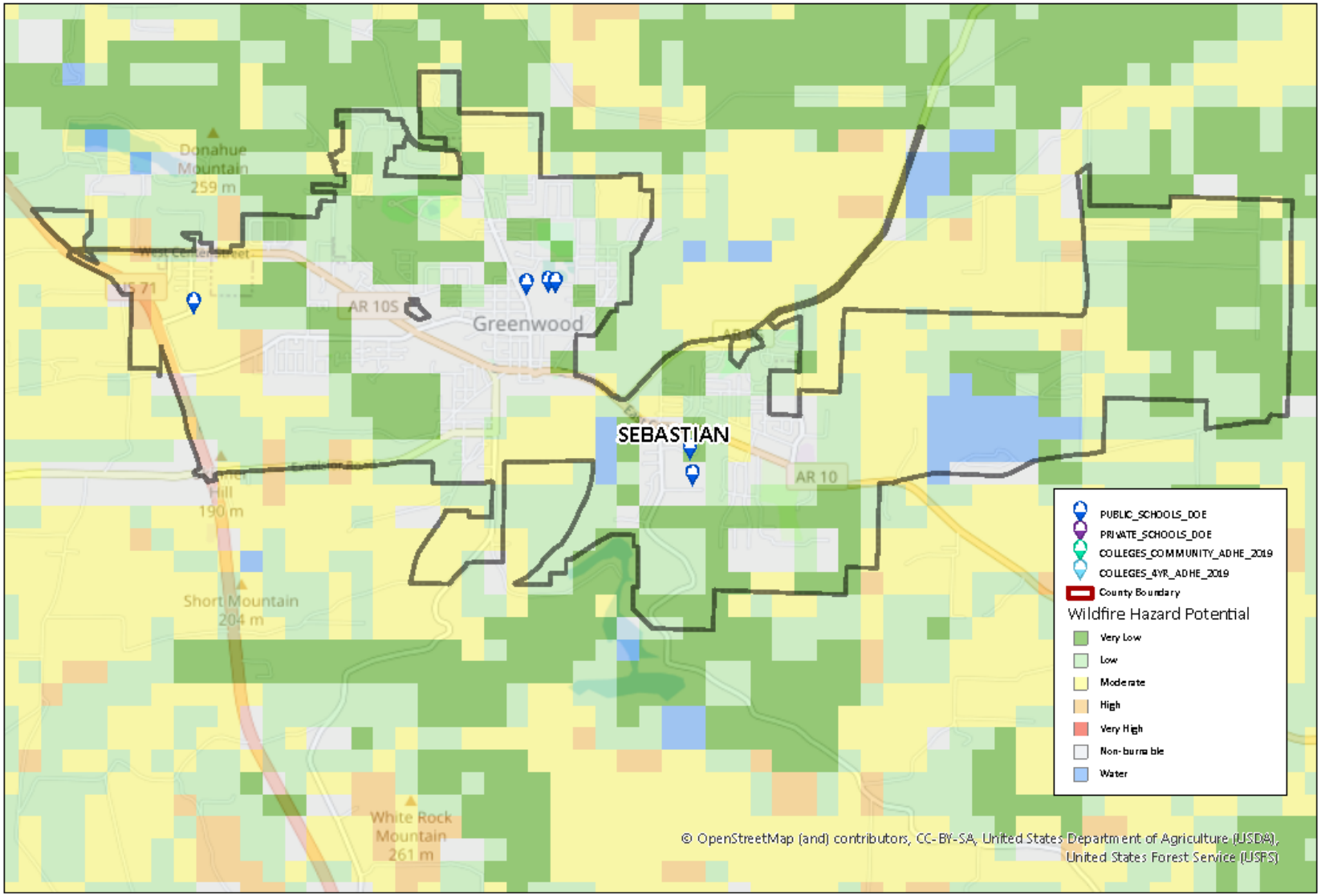
City of Bonanza Wildfire Map SEBASTIAN COUNTY ARKANSAS	**Western Arkansas Planning & Development District, Inc** 1109 S 16th ST ~ Fort Smith, AR 72901 479-785-2651 ~ Fax 479-785-1964	1 inch = 2,500 feet 0 1,250 2,500 Feet	N W E S



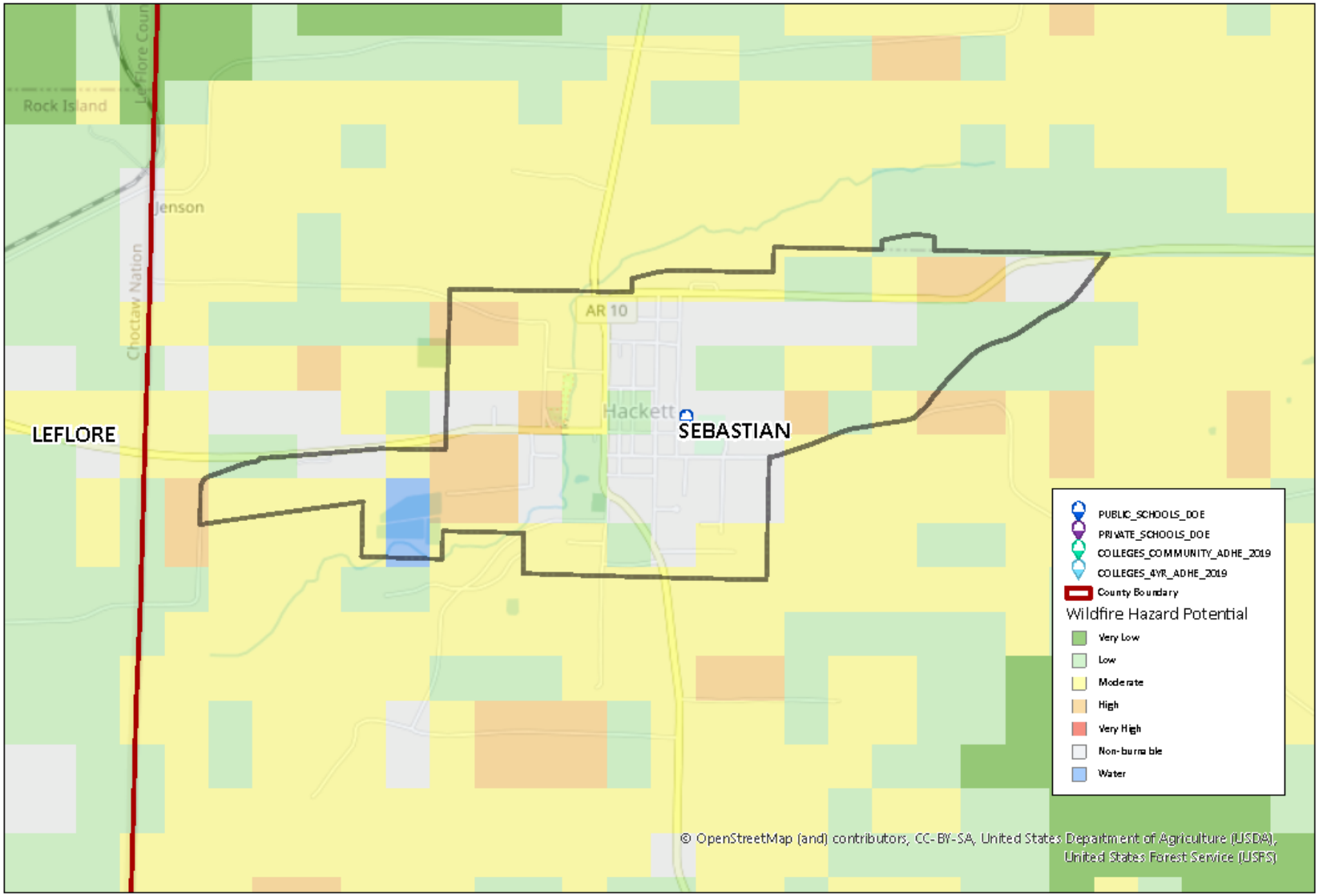
Central City Wildfire Map SEBASTIAN COUNTY ARKANSAS	**Western Arkansas Planning & Development District, Inc** 1109 S 16th ST ~ Fort Smith, AR 72901 479-785-2651 ~ Fax 479-785-1964	1 inch = 2,500 feet 0 1,250 2,500 Feet	N W E S



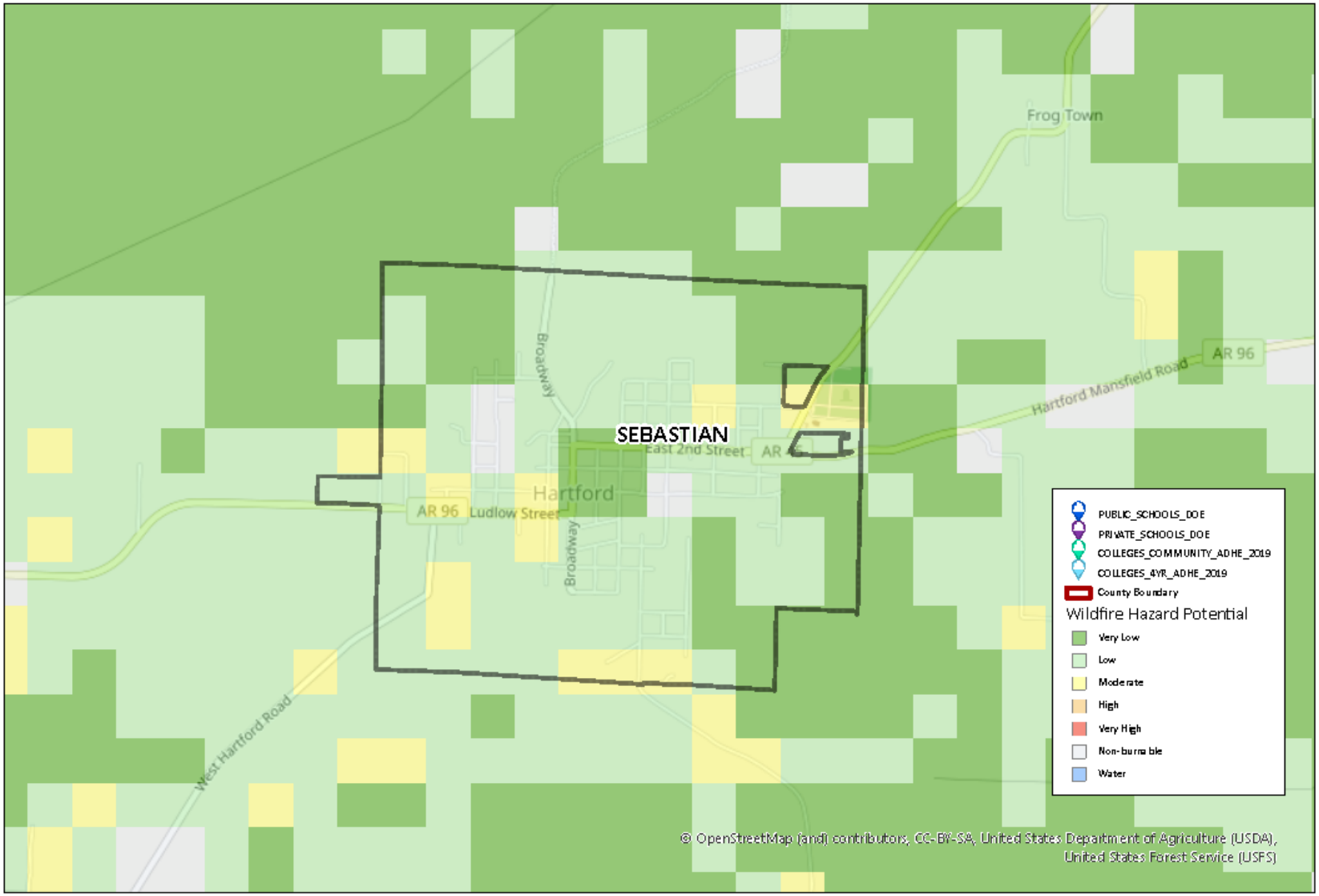
City of Fort Smith Wildfire Map SEBASTIAN COUNTY ARKANSAS	Western Arkansas Planning & Development District, Inc 1109 S 16th ST ~ Fort Smith, AR 72901 479-785-2651 ~Fax 479-785-1964	1 inch = 12,000 feet 0 6,000 12,000 Feet	N W E S



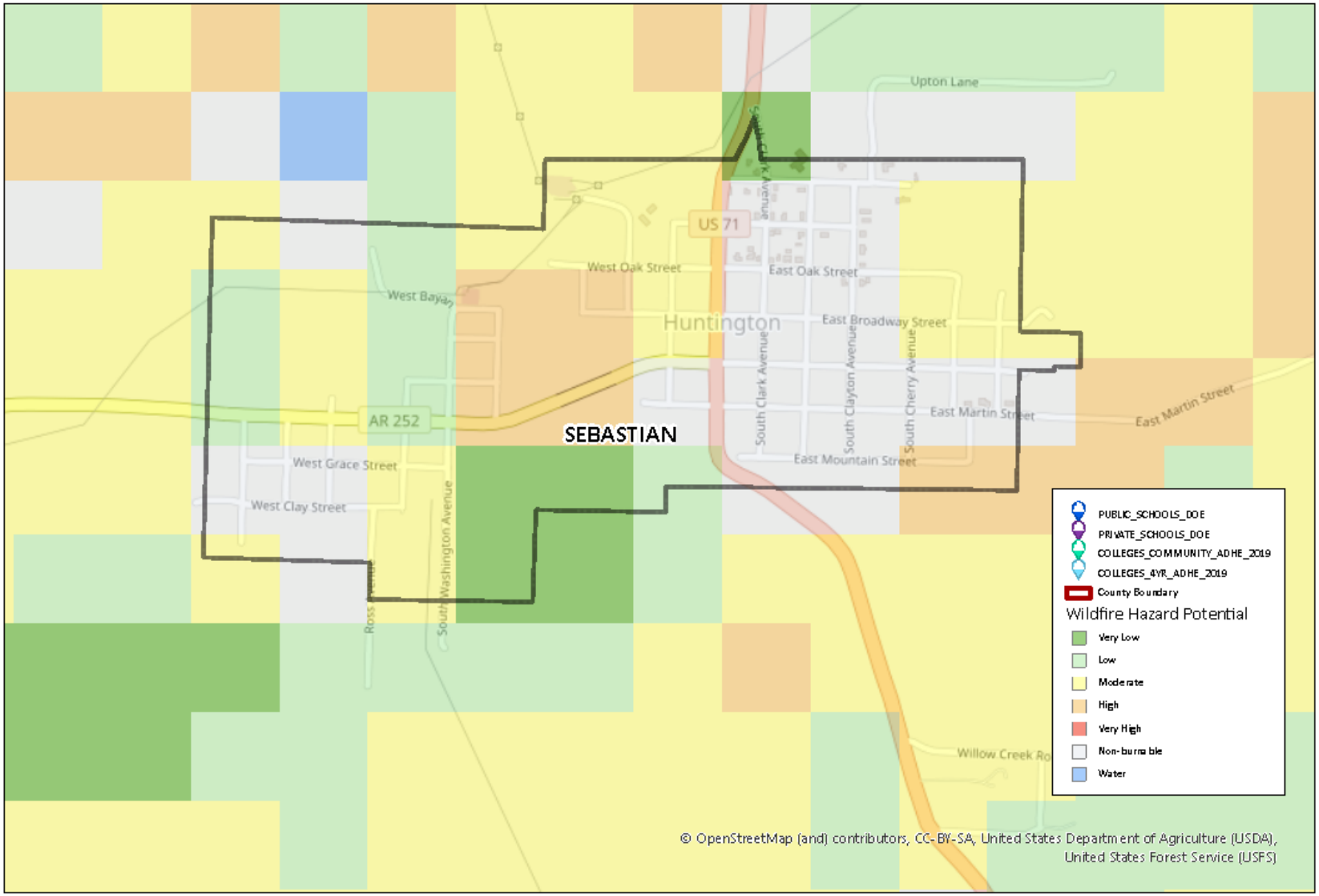
City of Greenwood Wildfire Map SEBASTIAN COUNTY ARKANSAS	Western Arkansas Planning & Development District, Inc 1109 S 16th ST ~ Fort Smith, AR 72901 479-785-2651 ~ Fax 479-785-1964	1 inch = 5,000 feet 0 1,250 2,500 5,000 Feet	N W E S



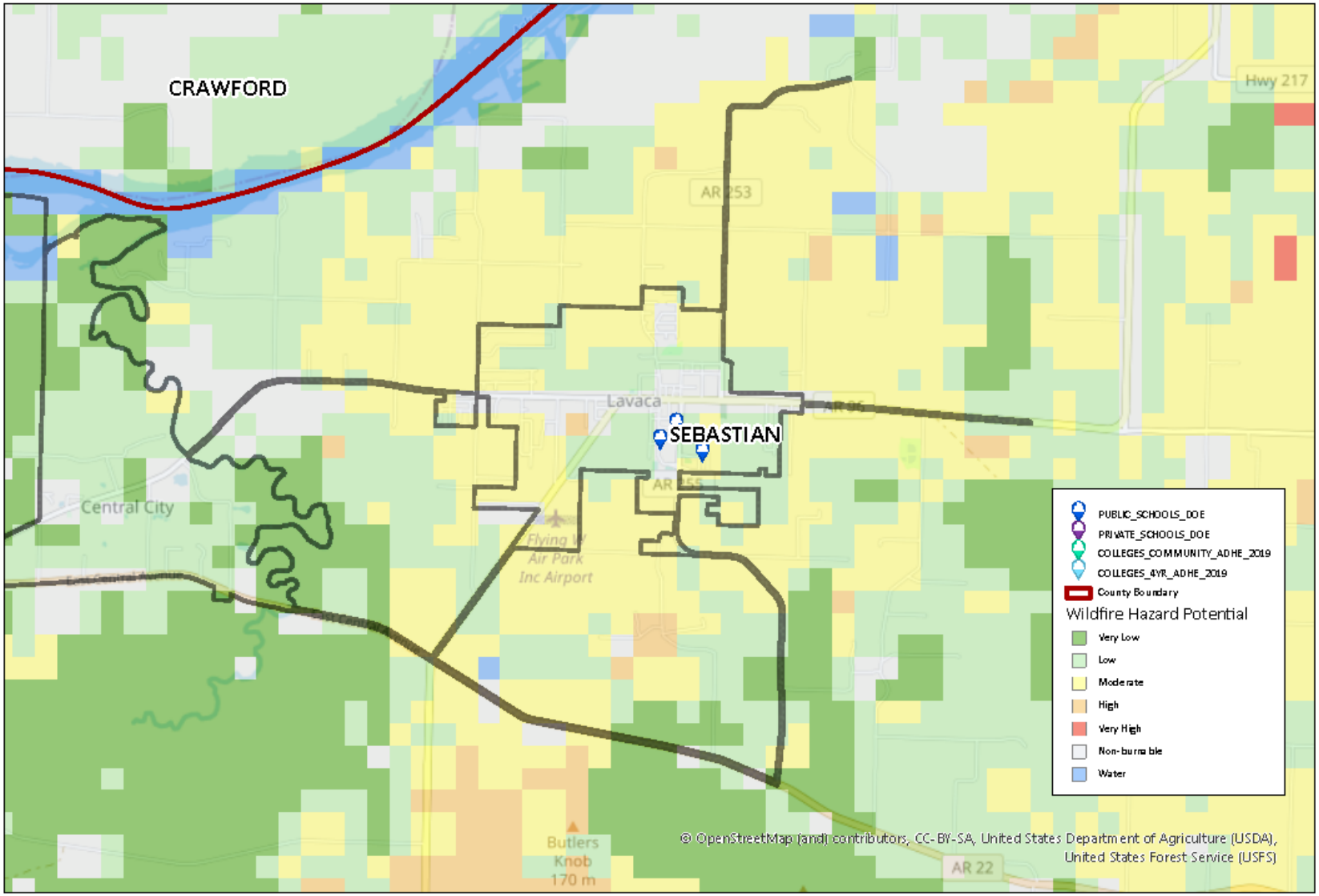
City of Hackett Wildfire Map SEBASTIAN COUNTY ARKANSAS	**Western Arkansas Planning & Development District, Inc** 1109 S 16th ST ~ Fort Smith, AR 72901 479-785-2651 ~ Fax 479-785-1964	1 inch = 2,500 feet 0 1,250 2,500 Feet	N W E S



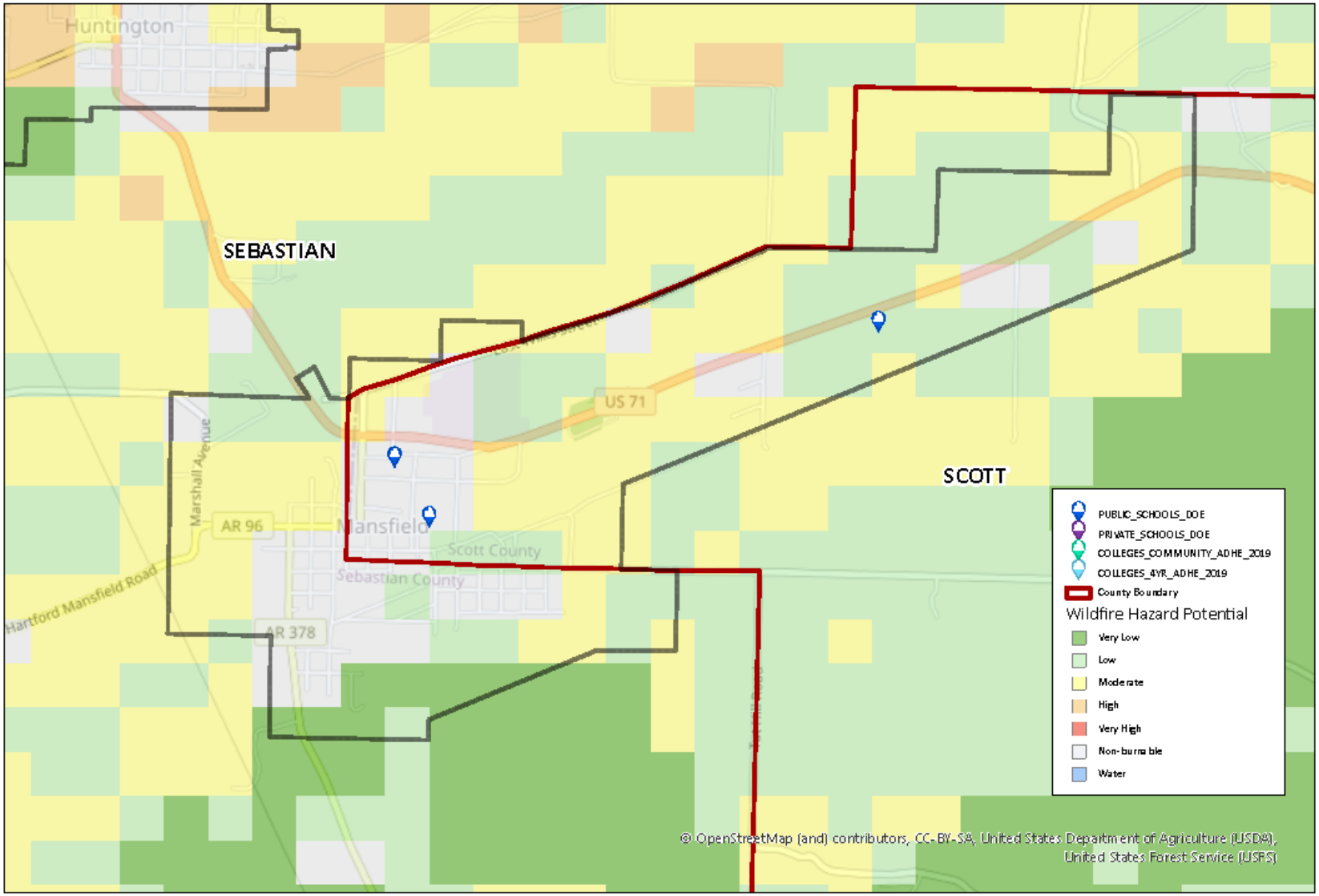
City of Hartford Wildfire Map SEBASTIAN COUNTY ARKANSAS	**Western Arkansas Planning & Development District, Inc** 1109 S 16th ST ~ Fort Smith, AR 72901 479-785-2651 ~ Fax 479-785-1964	1 inch = 2,500 feet 0 1,250 2,500 Feet	N W E S



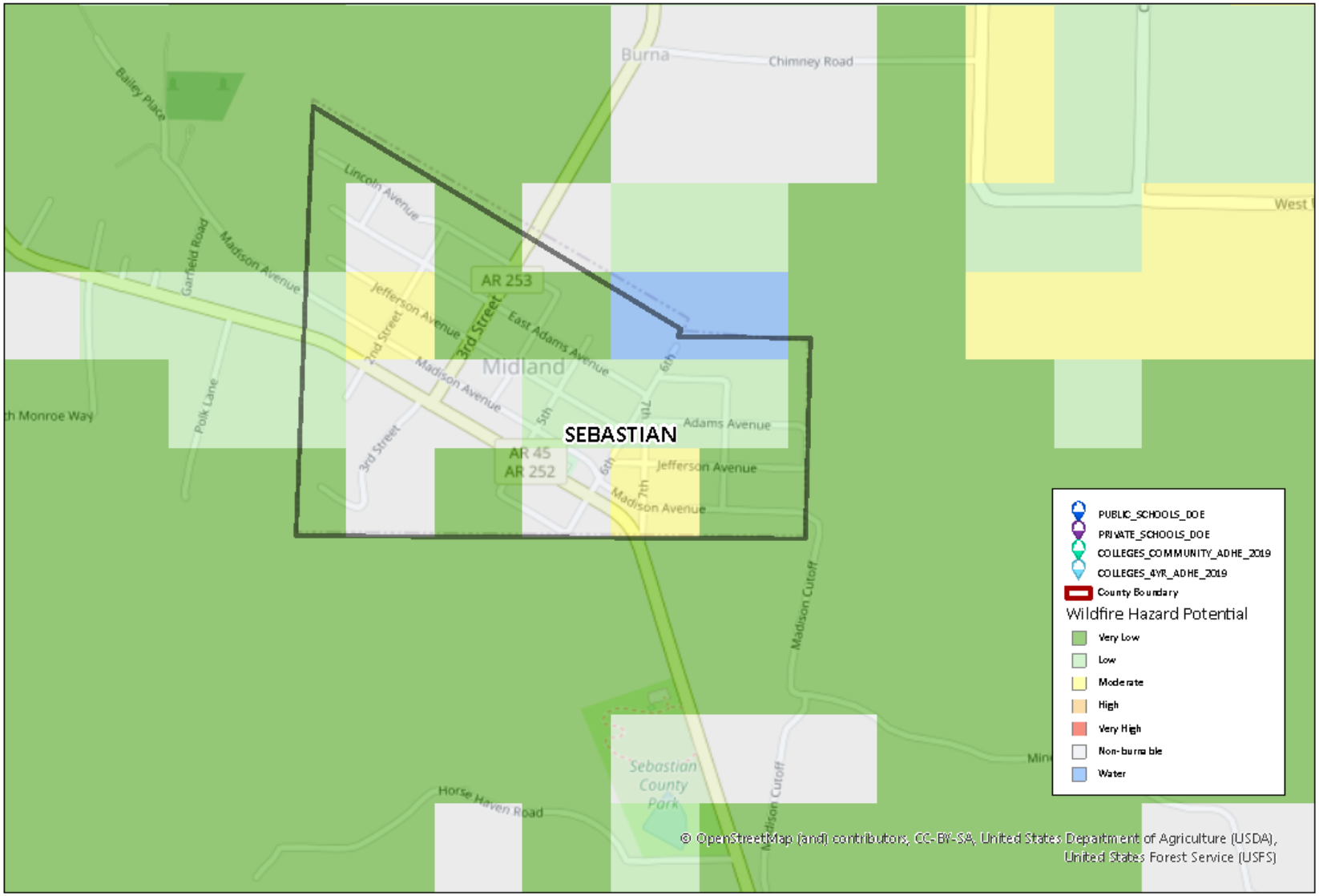
City of Huntington Wildfire Map SEBASTIAN COUNTY ARKANSAS	**Western Arkansas Planning & Development District, Inc** 1109 S 16th ST ~ Fort Smith, AR 72901 479-785-2651 ~ Fax 479-785-1964	1 inch = 1,250 feet 0 625 1,250 Feet	N W E S



City of Lavaca Wildfire Map SEBASTIAN COUNTY ARKANSAS	**Western Arkansas Planning & Development District, Inc** 1109 S 16th ST ~ Fort Smith, AR 72901 479-785-2651 ~ Fax 479-785-1964	1 inch = 5,000 feet 0 2,500 5,000 Feet	N W E S



City of Mansfield Wildfire Map SEBASTIAN COUNTY ARKANSAS	**Western Arkansas Planning & Development District, Inc** 1109 S 16th ST ~ Fort Smith, AR 72901 479-785-2651 ~ Fax 479-785-1964	1 inch = 2,500 feet 0 625 1,250 2,500 Feet	N W E S



Midland, AR **Wildfire Map** SEBASTIAN COUNTY ARKANSAS	**Western Arkansas Planning & Development District, Inc** 1109 S 16th ST ~ Fort Smith, AR 72901 479-785-2651 ~ Fax 479-785-1964	1 inch = 1,250 feet 0 625 1,250 Feet	N W E S