

# FLOOD INSURANCE STUDY

## FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 2



## SALINE COUNTY, ARKANSAS AND INCORPORATED AREAS

| COMMUNITY NAME                          | COMMUNITY NUMBER |
|---|------------------|
| ALEXANDER, TOWN OF                      | 050377           |
| BAUXITE, TOWN OF                        | 050527           |
| BENTON, CITY OF                         | 050192           |
| BRYANT, CITY OF                         | 050308           |
| HASKELL, CITY OF                        | 050416           |
| SALINE COUNTY<br>(UNINCORPORATED AREAS) | 050191           |
| SHANNON HILLS, CITY OF                  | 050573           |
| TRASKWOOD, CITY OF                      | 050294           |



# FEMA

**PRELIMINARY**  
**03/29/2016**

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FLOOD INSURANCE STUDY NUMBER  
**05125CV001B**

Version Number 2.3.3.2

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**Volume 2**  
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| Fourche Creek                | 15 P         |
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**Published Separately**

Flood Insurance Rate Map (FIRM)

# FLOOD INSURANCE STUDY REPORT SALINE COUNTY, ARKANSAS

## SECTION 1.0 – INTRODUCTION

### 1.1 The National Flood Insurance Program

The National Flood Insurance Program (NFIP) is a voluntary Federal program that enables property owners in participating communities to purchase insurance protection against losses from flooding. This insurance is designed to provide an alternative to disaster assistance to meet the escalating costs of repairing damage to buildings and their contents caused by floods.

For decades, the national response to flood disasters was generally limited to constructing flood-control works such as dams, levees, sea-walls, and the like, and providing disaster relief to flood victims. This approach did not reduce losses nor did it discourage unwise development. In some instances, it may have actually encouraged additional development. To compound the problem, the public generally could not buy flood coverage from insurance companies, and building techniques to reduce flood damage were often overlooked.

In the face of mounting flood losses and escalating costs of disaster relief to the general taxpayers, the U.S. Congress created the NFIP. The intent was to reduce future flood damage through community floodplain management ordinances, and provide protection for property owners against potential losses through an insurance mechanism that requires a premium to be paid for the protection.

The U.S. Congress established the NFIP on August 1, 1968, with the passage of the National Flood Insurance Act of 1968. The NFIP was broadened and modified with the passage of the Flood Disaster Protection Act of 1973 and other legislative measures. It was further modified by the National Flood Insurance Reform Act of 1994 and the Flood Insurance Reform Act of 2004. The NFIP is administered by the Federal Emergency Management Agency (FEMA), which is a component of the Department of Homeland Security (DHS).

Participation in the NFIP is based on an agreement between local communities and the Federal Government. If a community adopts and enforces floodplain management regulations to reduce future flood risks to new construction and substantially improved structures in Special Flood Hazard Areas (SFHAs), the Federal Government will make flood insurance available within the community as a financial protection against flood losses. The community's floodplain management regulations must meet or exceed criteria established in accordance with Title 44 Code of Federal Regulations (CFR) Part 60.3, *Criteria for Land Management and Use*.

SFHAs are delineated on the community's Flood Insurance Rate Maps (FIRMs). Under the NFIP, buildings that were built before the flood hazard was identified on the community's FIRMs are generally referred to as "Pre-FIRM" buildings. When the NFIP was created, the U.S. Congress recognized that insurance for Pre-FIRM buildings would be prohibitively expensive if the premiums were not subsidized by the Federal Government. Congress also recognized that most of these floodprone buildings were built by individuals who did not have sufficient knowledge of the flood hazard to make informed decisions. The NFIP requires that full actuarial rates reflecting the complete flood risk be charged on all buildings constructed or substantially improved on or after the effective date of the initial FIRM for the community or after December 31, 1974, whichever is later. These buildings are generally referred to as "Post-FIRM" buildings.

## 1.2 Purpose of this Flood Insurance Study Report

This Flood Insurance Study (FIS) Report revises and updates information on the existence and severity of flood hazards for the study area. The studies described in this report developed flood hazard data that will be used to establish actuarial flood insurance rates and to assist communities in efforts to implement sound floodplain management.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive than the minimum Federal requirements. Contact your State NFIP Coordinator to ensure that any higher State standards are included in the community's regulations.

## 1.3 Jurisdictions Included in the Flood Insurance Study Project

This FIS Report covers the entire geographic area of Saline County, Arkansas.

The jurisdictions that are included in this project area, along with the Community Identification Number (CID) for each community and the 8-digit Hydrologic Unit Codes (HUC-8) sub-basins affecting each, are shown in Table 1. The Flood Insurance Rate Map (FIRM) panel numbers that affect each community are listed. If the flood hazard data for the community is not included in this FIS Report, the location of that data is identified.

The location of flood hazard data for participating communities in multiple jurisdictions is also indicated in the table.

Jurisdictions that have no identified SFHAs as of the effective date of this study are indicated in the table. Changed conditions in these communities (such as urbanization or annexation) or the availability of new scientific or technical data about flood hazards could make it necessary to determine SFHAs in these jurisdictions in the future.

**Table 1: Listing of NFIP Jurisdictions**

| Community          | CID    | HUC-8 Sub-Basin(s)   | Located on FIRM Panel(s)   | If Not Included, Location of Flood Hazard Data |
|--------------------|--------|----------------------|--|--|
| Alexander, Town of | 050377 | 11110207             | 05125C0240E<br>05125C0250E<br>05125C0380E  |  |
| Bauxite, Town of   | 050527 | 08040203             | 05125C0360E<br>05125C0370E<br>05125C0380E<br>05125C0400E                               |  |
| Benton, City of    | 050192 | 08040203             | 05125C0225E<br>05125C0350E<br>05125C0355E<br>05125C0360E<br>05125C0365E<br>05125C0370E |  |
| Bryant, City of    | 050308 | 11110207<br>08040203 | 05125C0225E<br>05125C0240E<br>05125C0360E<br>05125C0380E                               |  |

**Table 1: Listing of NFIP Jurisdictions (Continued)**

| Community                               | CID    | HUC-8 Sub-Basin(s)   | Located on FIRM Panel(s)  | If Not Included, Location of Flood Hazard Data |
|---|--------|----------------------|---|--|
| Haskell, City of                        | 050416 | 08040203             | 05125C0350E<br>05125C0365E<br>05125C0475E<br>05125C0500E  |  |
| Saline County<br>(Unincorporated Areas) | 050191 | 11110207<br>08040203 | 05125C0050E<br>05125C0075E<br>05125C0100E<br>05125C0125E <sup>1</sup><br>05125C0150E<br>05125C0175E<br>05125C0200E<br>05125C0225E<br>05125C0240E<br>05125C0250E<br>05125C0275E <sup>2</sup><br>05125C0300E<br>05125C0325E<br>05125C0350E<br>05125C0355E<br>05125C0360E<br>05125C0365E<br>05125C0370E<br>05125C0380E<br>05125C0400E<br>05125C0425E<br>05125C0450E<br>05125C0475E<br>05125C0500E<br>05125C0525E<br>05125C0550E <sup>2</sup><br>05125C0575E <sup>2</sup> |  |
| Shannon Hills, City of                  | 050573 | 11110207             | 05125C0240E<br>05125C0250E<br>05125C0380E<br>05125C0400E  |  |
| Traskwood, City of                      | 050294 | 08040203             | 05125C0475E   |  |

<sup>1</sup> No Special Flood Hazard Areas Identified

<sup>2</sup> Panel Not Printed

## 1.4 Considerations for using this Flood Insurance Study Report

The NFIP encourages State and local governments to implement sound floodplain management programs. To assist in this endeavor, each FIS Report provides floodplain data, which may include a combination of the following: 10-, 4-, 2-, 1-, and 0.2-percent annual chance flood elevations (the 1% annual chance flood elevation is also referred to as the Base Flood Elevation (BFE)); delineations of the 1% annual chance and 0.2% annual chance floodplains; and 1% annual chance floodway. This information is presented on the FIRM and/or in many components of the FIS Report, including Flood Profiles, Floodway Data tables, Summary of Non-Coastal Stillwater Elevations tables, and Coastal Transect Parameters tables (not all components may be provided for a specific FIS).

This section presents important considerations for using the information contained in this FIS Report and the FIRM, including changes in format and content. Figures 1, 2, and 3 present information that applies to using the FIRM with the FIS Report.

- Part or all of this FIS Report may be revised and republished at any time. In addition, part of this FIS Report may be revised by a Letter of Map Revision (LOMR), which does not involve republication or redistribution of the FIS Report. Refer to Section 6.5 of this FIS Report for information about the process to revise the FIS Report and/or FIRM.

It is, therefore, the responsibility of the user to consult with community officials by contacting the community repository to obtain the most current FIS Report components. Communities participating in the NFIP have established repositories of flood hazard data for floodplain management and flood insurance purposes. Community map repository addresses are provided in Table 31, “Map Repositories,” within this FIS Report.

- New FIS Reports are frequently developed for multiple communities, such as entire counties. A countywide FIS Report incorporates previous FIS Reports for individual communities and the unincorporated area of the county (if not jurisdictional) into a single document and supersedes those documents for the purposes of the NFIP.

The initial Countywide FIS Report for Saline County became effective on June 19, 2012. Refer to Table 28 for information about subsequent revisions to the FIRMs.

- Selected FIRM panels for the community may contain information (such as floodways and cross sections) that was previously shown separately on the corresponding Flood Boundary and Floodway Map panels. In addition, former flood hazard zone designations have been changed as follows:

| <u>Old Zone</u> | <u>New Zone</u> |
|-----------------|-----------------|
| A1 through A30  | AE              |
| V1 through V30  | VE              |
| B               | X (shaded)      |
| C               | X (unshaded)    |

- FEMA does not impose floodplain management requirements or special insurance ratings based on Limit of Moderate Wave Action (LiMWA) delineations at this time. The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. If the LiMWA is shown on the FIRM, it is being provided by FEMA as information only. For communities that do adopt Zone VE building standards in the area defined by the LiMWA, additional

Community Rating System (CRS) credits are available. Refer to Section 2.5.4 for additional information about the LiMWA.

The CRS is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. Visit the FEMA Web site at [www.fema.gov/national-flood-insurance-program-community-rating-system](http://www.fema.gov/national-flood-insurance-program-community-rating-system) or contact your appropriate FEMA Regional Office for more information about this program.

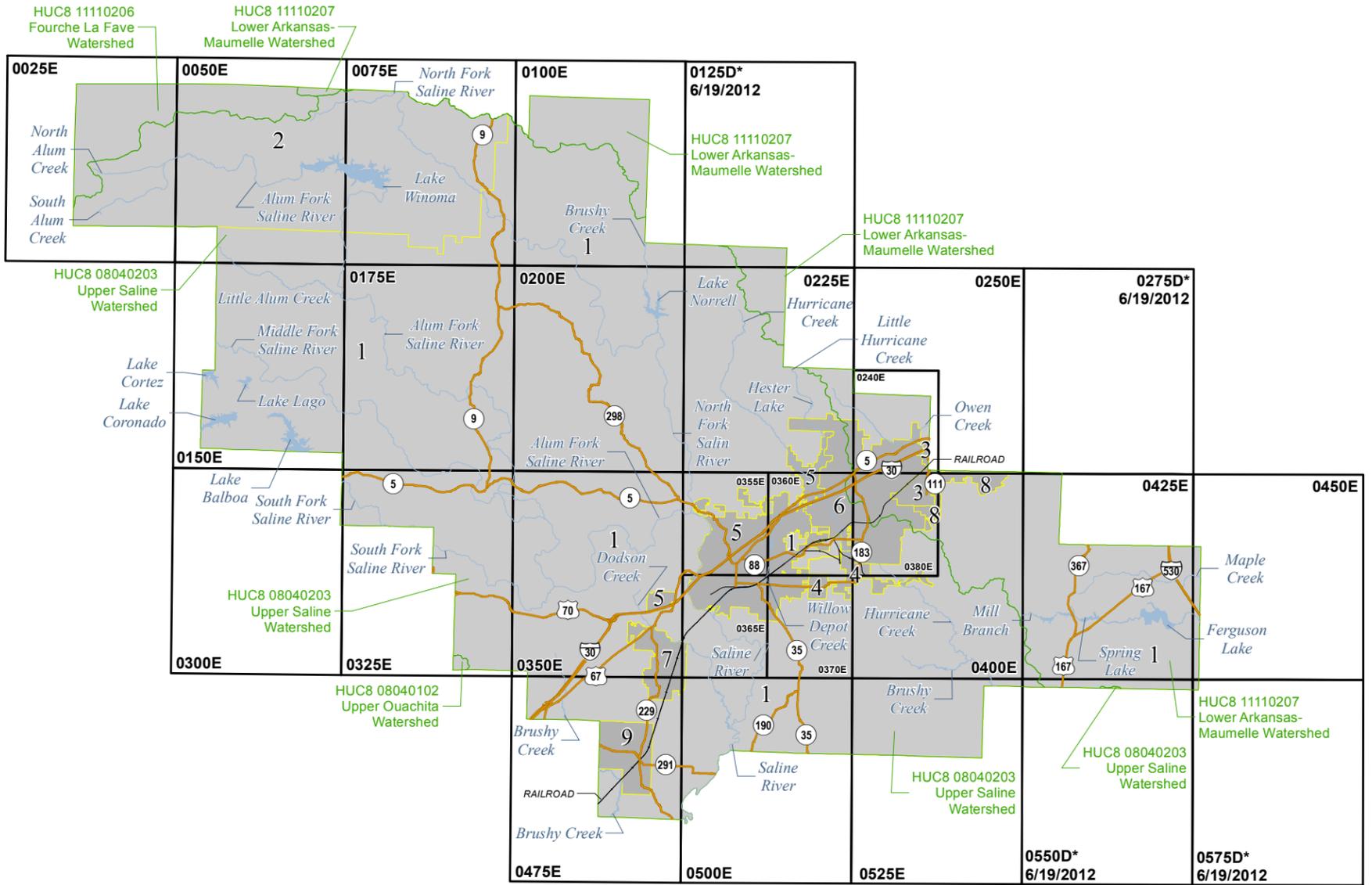
- Previous FIS Reports and FIRMs may have included levees that were accredited as reducing the risk associated with the 1% annual chance flood based on the information available and the mapping standards of the NFIP at that time. For FEMA to continue to accredit the identified levees, the levees must meet the criteria of the Code of Federal Regulations, Title 44, Section 65.10 (44 CFR 65.10), titled “Mapping of Areas Protected by Levee Systems.”

Since the status of levees is subject to change at any time, the user should contact the appropriate agency for the latest information regarding levees presented in Table 9 of this FIS Report. For levees owned or operated by the U.S. Army Corps of Engineers (USACE), information may be obtained from the USACE national levee database ([nld.usace.army.mil](http://nld.usace.army.mil)). For all other levees, the user is encouraged to contact the appropriate local community.

- FEMA has developed a *Guide to Flood Maps* (FEMA 258) and online tutorials to assist users in accessing the information contained on the FIRM. These include how to read panels and step-by-step instructions to obtain specific information. To obtain this guide and other assistance in using the FIRM, visit the FEMA Web site at [www.fema.gov/online-tutorials](http://www.fema.gov/online-tutorials).

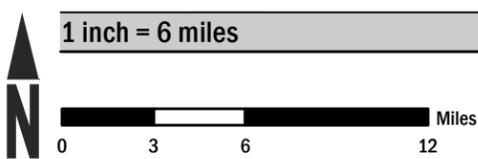
The FIRM Index in Figure 1 shows the overall FIRM panel layout within Saline County and also displays the panel number and effective date for each FIRM panel in the county. Other information shown on the FIRM Index includes community boundaries, flooding sources, watershed boundaries, and United States Geological Survey (USGS) Hydrologic Unit Code – 8 (HUC-8) codes.

Figure 1: FIRM Panel Index



**ATTENTION:** The corporate limits shown on this FIRM Index was based on the best information available at the time of publication. As such, they may be more current than those shown on FIRM panels issued before [date].

| KEY TO COMMUNITY NAMES & CID |  |        |
|------------------------------|--|--------|
| KEY NUMBER                   | COMMUNITY NAME                                   | CID    |
| 1                            | SALINE COUNTY, UNINCORPORATED AREAS              | 050191 |
| 2                            | SALINE COUNTY, UNINCORPORATED AREAS FEDERAL PARK | 050191 |
| 3                            | ALEXANDER, TOWN OF                               | 050377 |
| 4                            | BAUXITE, TOWN OF                                 | 050527 |
| 5                            | BENTON, CITY OF                                  | 050192 |
| 6                            | BRYANT, CITY OF                                  | 050308 |
| 7                            | HASKELL, CITY OF                                 | 050416 |
| 8                            | SHANNON HILLS, CITY OF                           | 050573 |
| 9                            | TRASKWOOD, CITY OF                               | 050294 |



Map Projection:  
State Plane Arkansas South FIPS 0302  
North American Datum of 1983

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

[HTTP://MSC.FEMA.GOV](http://MSC.FEMA.GOV)

SEE FIS REPORT FOR ADDITIONAL INFORMATION

\* PANEL NOT PRINTED - NO SPECIAL FLOOD HAZARD AREAS

COUNTY LOCATOR



NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX

SALINE COUNTY, ARKANSAS AND INCORPORATED AREAS

PANELS PRINTED:

0025, 0050, 0075, 0100, 0150, 0175, 0200, 0225, 0240, 0250, 0300, 0325, 0350, 0355, 0360, 0365, 0370, 0380, 0400, 0425, 0450, 0475, 0500, 0525



FEMA

PRELIMINARY  
03/29/2016

MAP NUMBER  
05125CIND0B

MAP REVISED  
DATE

Each FIRM panel may contain specific notes to the user that provide additional information regarding the flood hazard data shown on that map. However, the FIRM panel does not contain enough space to show all the notes that may be relevant in helping to better understand the information on the panel. Figure 2 contains the full list of these notes.

**Figure 2: FIRM Notes to Users**

## **NOTES TO USERS**

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products, or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at [msc.fema.gov](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 website. Users may determine the current map date for each FIRM panel by visiting the FEMA Flood Map Service Center website or by calling the FEMA Map Information eXchange.

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 Flood Map Service Center at the number listed above.

For community and countywide map dates, refer to Table 28 in this FIS Report.

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

**PRELIMINARY FIS REPORT:** FEMA maintains information about map features, such as street locations and names, in or near designated flood hazard areas. Requests to revise information in or near designated flood hazard areas may be provided to FEMA during the community review period, at the final Consultation Coordination Officer's meeting, or during the statutory 90-day appeal period. Approved requests for changes will be shown on the final printed FIRM.

The map is for use in administering the NFIP. It may not identify all areas subject to flooding, particularly from local drainage sources of small size. Consult the community map repository to find updated or additional flood hazard information.

**BASE FLOOD ELEVATIONS:** For more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, consult the Flood Profiles and Floodway Data and/or Summary of Non-Coastal Stillwater Elevations tables within this FIS Report. Use the flood elevation data within the FIS Report in conjunction with the FIRM for construction and/or floodplain management.

**FLOODWAY INFORMATION:** 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 FIS Report for this jurisdiction.

**FLOOD CONTROL STRUCTURE INFORMATION:** Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 4.3 "Non-Levee Flood Protection Measures" of this FIS Report for information on flood control structures for this jurisdiction.

## Figure 2: Map Legend for FIRM

**PROJECTION INFORMATION:** The projection used in the preparation of the map was State Plane South FIPS 0302 Feet. The horizontal datum was **NAD83, GRS1980 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 the FIRM.

**ELEVATION DATUM:** Flood elevations on the FIRM 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 [www.ngs.noaa.gov/](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*

Local vertical monuments may have been used to create the map. To obtain current monument information, please contact the appropriate local community listed in Table 31 of this FIS Report.

**BASE MAP INFORMATION:** Base map information shown on the FIRM was derived from U.S. Census Bureau TIGER files, dated 2015, and digital data provided by the Arkansas Geographic Information Office, dated 2015. For information about base maps, refer to Section 6.2 "Base Map" in this FIS Report.

The 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 may reflect stream channel distances that differ from what is shown on the map.

Corporate limits shown on the 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 the map was published, map users should contact appropriate community officials to verify current corporate limit locations.

**Figure 2: Map Legend for FIRM**

**NOTES FOR FIRM INDEX**

**REVISIONS TO INDEX:** As new studies are performed and FIRM panels are updated within **Saline County, AR**, corresponding revisions to the FIRM Index will be incorporated within the FIS Report to reflect the effective dates of those panels. Please refer to Table 28 of this FIS Report to determine the most recent FIRM revision date for each community. The most recent FIRM panel effective date will correspond to the most recent index date.

**FLOOD RISK REPORT:** A Flood Risk Report (FRR) may be available for many of the flooding sources and communities referenced in this FIS Report. The FRR is provided to increase public awareness of flood risk by helping communities identify the areas within their jurisdictions that have the greatest risks. Although non-regulatory, the information provided within the FRR can assist communities in assessing and evaluating mitigation opportunities to reduce these risks. It can also be used by communities developing or updating flood risk mitigation plans. These plans allow communities to identify and evaluate opportunities to reduce potential loss of life and property. However, the FRR is not intended to be the final authoritative source of all flood risk data for a project area; rather, it should be used with other data sources to paint a comprehensive picture of flood risk.

## Figure 2: Map Legend for FIRM

Each FIRM panel contains an abbreviated legend for the features shown on the maps. However, the FIRM panel does not contain enough space to show the legend for all map features. Figure 3 shows the full legend of all map features. Note that not all of these features may appear on the FIRM panels in Saline County.

## Figure 3: Map Legend for FIRM

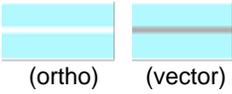
**SPECIAL FLOOD HAZARD AREAS:** *The 1% annual chance flood, also known as the base flood or 100-year flood, has a 1% chance of happening or being exceeded each year. Special Flood Hazard Areas are subject to flooding by the 1% annual chance flood. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood. 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. See note for specific types. If the floodway is too narrow to be shown, a note is shown.*



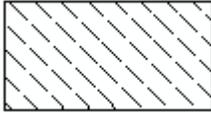
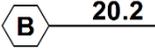
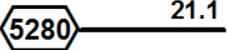
Special Flood Hazard Areas subject to inundation by the 1% annual chance flood (Zones A, AE, AH, AO, AR, A99, V and VE)

- Zone A The flood insurance rate zone that corresponds to the 1% annual chance floodplains. No base (1% annual chance) flood elevations (BFEs) or depths are shown within this zone.
- Zone AE The flood insurance rate zone that corresponds to the 1% annual chance floodplains. Base flood elevations derived from the hydraulic analyses are shown within this zone.
- Zone AH The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot BFEs derived from the hydraulic analyses are shown at selected intervals within this zone.
- Zone AO The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the hydraulic analyses are shown within this zone.
- Zone AR The flood insurance rate zone that corresponds to areas that were 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 The flood insurance rate zone that corresponds to areas of the 1% annual chance floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No base flood elevations or flood depths are shown within this zone.
- Zone V The flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations are not shown within this zone.
- Zone VE Zone VE is the flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations derived from the coastal analyses are shown within this zone as static whole-foot elevations that apply throughout the zone.

**Figure 2: Map Legend for FIRM**

|  |  |
|--|--|
|   | <p>Regulatory Floodway determined in Zone AE.</p>  |
| <br> <p>FLOOD INSURANCE IS NOT AVAILABLE FOR STRUCTURES NEWLY BUILT OR SUBSTANTIALLY IMPROVED ON OR AFTER APRIL 8, 1987, IN THE DESIGNATED COLORADO RIVER FLOODWAY</p> | <p><b>Non-encroachment zone (see Section 2.4 of this FIS Report for more information)</b></p> <p><b>The Colorado River Floodway was established by Congress in the Colorado River Floodway Protection Act of 1986, Public Law 99-450 (100 Statute 1129). The Act imposes certain restrictions within the Floodway.</b></p> |
| <p><b>OTHER AREAS OF FLOOD HAZARD</b></p>  |  |
|   | <p>Shaded Zone X: Areas of 0.2% annual chance flood hazards and areas of 1% annual chance flood hazards with average depths of less than 1 foot or with drainage areas less than 1 square mile.</p>  |
|   | <p>Future Conditions 1% Annual Chance Flood Hazard – Zone X: The flood insurance rate zone that corresponds to the 1% annual chance floodplains that are determined based on future-conditions hydrology. No base flood elevations or flood depths are shown within this zone.</p>   |
|   | <p>Area with Reduced Flood Risk due to Levee: Areas where an accredited levee, dike, or other flood control structure has reduced the flood risk from the 1% annual chance flood. See Notes to Users for important information.</p>  |
| <p><b>OTHER AREAS</b></p>  |  |
|   | <p>Zone D (Areas of Undetermined Flood Hazard): The flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.</p>  |
|   | <p>Unshaded Zone X: Areas of minimal flood hazard.</p>   |
| <p><b>FLOOD HAZARD AND OTHER BOUNDARY LINES</b></p>  |  |
|   | <p>Flood Zone Boundary (white line on ortho-photography-based mapping; gray line on vector-based mapping)</p>  |
|   | <p>Limit of Study</p>  |
|   | <p>Jurisdiction Boundary</p>   |
|   | <p>Limit of Moderate Wave Action (LiMWA): Indicates the inland limit of the area affected by waves greater than 1.5 feet</p>   |

**Figure 2: Map Legend for FIRM**

|   |   |
|---|---|
| <b>GENERAL STRUCTURES</b>   |   |
| <br><i>Aqueduct</i><br><i>Channel</i><br><i>Culvert</i><br><i>Storm Sewer</i>  | Channel, Culvert, Aqueduct, or Storm Sewer  |
| <br><i>Dam</i><br><i>Jetty</i><br><i>Weir</i>  | Dam, Jetty, Weir  |
|    | Levee, Dike, or Floodwall   |
| <br><i>Bridge</i>  | Bridge  |
| <b>COASTAL BARRIER RESOURCES SYSTEM (CBRS) AND OTHERWISE PROTECTED AREAS (OPA):</b> <i>CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas. See Notes to Users for important information.</i> |   |
| <br><b>CBRS AREA</b><br><b>09/30/2009</b>   | Coastal Barrier Resources System Area: Labels are shown to clarify where this area shares a boundary with an incorporated area or overlaps with the floodway. |
| <br><b>OTHERWISE PROTECTED AREA</b><br><b>09/30/2009</b>   | Otherwise Protected Area  |
| <b>REFERENCE MARKERS</b>  |   |
| <br><b>22.0</b>  | River mile Markers  |
| <b>CROSS SECTION &amp; TRANSECT INFORMATION</b>   |   |
|    | Lettered Cross Section with Regulatory Water Surface Elevation (BFE)  |
|    | Numbered Cross Section with Regulatory Water Surface Elevation (BFE)  |
|    | Unlettered Cross Section with Regulatory Water Surface Elevation (BFE)  |
|    | Coastal Transect  |

**Figure 2: Map Legend for FIRM**

|   |  |
|---|--|
|    | Profile Baseline: Indicates the modeled flow path of a stream and is shown on FIRM panels for all valid studies with profiles or otherwise established base flood elevation.                           |
|    | Coastal Transect Baseline: Used in the coastal flood hazard model to represent the 0.0-foot elevation contour and the starting point for the transect and the measuring point for the coastal mapping. |
|    | Base Flood Elevation Line  |
| <b>ZONE AE<br/>(EL 16)</b>  | Static Base Flood Elevation value (shown under zone label)   |
| <b>ZONE AO<br/>(DEPTH 2)</b>  | Zone designation with Depth  |
| <b>ZONE AO<br/>(DEPTH 2)<br/>(VEL 15 FPS)</b>                                       | Zone designation with Depth and Velocity   |
| <b>BASE MAP FEATURES</b>  |  |
|    | River, Stream or Other Hydrographic Feature  |
|    | Interstate Highway   |
|  | U.S. Highway   |
|  | State Highway  |
|  | County Highway   |
|  | Street, Road, Avenue Name, or Private Drive if shown on Flood Profile  |
|  | Railroad   |
|  | Horizontal Reference Grid Line   |
|  | Horizontal Reference Grid Ticks  |
|  | Secondary Grid Crosshairs  |
| <b>Land Grant</b>   | Name of Land Grant   |
| <b>7</b>  | Section Number   |
| <b>R. 43 W. T. 22 N.</b>  | Range, Township Number   |
| <b>4276<sup>000m</sup>E</b>   | Horizontal Reference Grid Coordinates (UTM)  |
| <b>365000 FT</b>  | Horizontal Reference Grid Coordinates (State Plane)  |
| <b>80° 16' 52.5"</b>  | Corner Coordinates (Latitude, Longitude)   |

## SECTION 2.0 – FLOODPLAIN MANAGEMENT APPLICATIONS

### 2.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1% annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2% annual chance (500-year) flood is employed to indicate additional areas of flood hazard in the community.

Each flooding source included in the project scope has been studied and mapped using professional engineering and mapping methodologies that were agreed upon by FEMA and Saline County as appropriate to the risk level. Flood risk is evaluated based on factors such as known flood hazards and projected impact on the built environment. Engineering analyses were performed for each studied flooding source to calculate its 1% annual chance flood elevations; elevations corresponding to other floods (e.g. 10-, 4-, 2-, 0.2-percent annual chance, etc.) may have also been computed for certain flooding sources. Engineering models and methods are described in detail in Section 5.0 of this FIS Report. The modeled elevations at cross sections were used to delineate the floodplain boundaries on the FIRM; between cross sections, the boundaries were interpolated using elevation data from various sources. More information on specific mapping methods is provided in Section 6.0 of this FIS Report.

Depending on the accuracy of available topographic data (Table 23), study methodologies employed (Section 5.0), and flood risk, certain flooding sources may be mapped to show both the 1% and 0.2% annual chance floodplain boundaries, regulatory water surface elevations (BFEs), and/or a regulatory floodway. Similarly, other flooding sources may be mapped to show only the 1% annual chance floodplain boundary on the FIRM, without published water surface elevations. In cases where the 1% and 0.2% annual chance floodplain boundaries are close together, only the 1% annual chance floodplain boundary is shown on the FIRM. Each FIRM panel contains an abbreviated legend for the features shown on the maps. However, the FIRM panel does not contain enough space to show the legend for all map features. Figure 3, “Map Legend for FIRM”, shows the full legend of all map features and describes the flood zones that are used on the FIRMs to account for the varying levels of flood risk that exist along flooding sources within the project area. Note that not all of these features may appear on the FIRM panels in Saline County. Table 2 and Table 3 indicate the flood zone designations for each flooding source and each community within Saline County, AR, respectively.

Table 2, “Flooding Sources Included in this FIS Report,” lists each flooding source, including its study limits, affected communities, mapped zone on the FIRM, and the completion date of its engineering analysis from which the flood elevations on the FIRM and in the FIS Report were derived. Descriptions and dates for the latest hydrologic and hydraulic analyses of the flooding sources are shown in Table 13. Floodplain boundaries for these flooding sources are shown on the FIRM (published separately) using the symbology described in Figure 3. On the map, the 1% annual chance floodplain corresponds to the SFHAs. The 0.2% annual chance floodplain shows areas that, although out of the regulatory floodplain, are still subject to flood hazards.

Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data. The procedures to remove these areas from the SFHA are described in Section 6.5 of this FIS Report.

**Table 2: Flooding Sources Included in this FIS Report**

| Flooding Source         | Community                           | Downstream Limit  | Upstream Limit  | HUC-8 Sub-Basin(s) | Length (mi) (streams or coastlines) | Area (mi <sup>2</sup> ) (estuaries or ponding) | Floodway (Y/N) | Zone shown on FIRM | Date of Analysis  |
|-------------------------|-------------------------------------|---|---|--------------------|-------------------------------------|--|----------------|--------------------|-------------------|
| Alum Fork Saline River  | Saline County                       | Confluence with North Fork Saline River and Saline River        | Approximately 8,460 feet above confluence with North Fork Saline River and Saline River | 08040203           | 1.60                                |  | Y              | AE                 | May 17, 1982      |
| Boswell Creek           | City of Bryant                      | Confluence with Hurricane Creek                                 | Approximately 5,080 feet above confluence with Hurricane Creek                          | 08040203           | 0.96                                |  | N              | AE                 | November 13, 2014 |
| Bryant Tributary        | City of Bryant                      | Confluence with Crooked Creek                                   | Approximately 5,148 feet above confluence with Crooked Creek                            | 11110207           | 0.98                                |  | Y              | AE                 | January 19, 1996  |
| Cedar Creek             | Saline County                       | Lake Balboa County Boundary                                     | Lake Coronado County Boundary   | 08040203           | 7.93                                |  | Y              | AE                 | May 17, 1982      |
| Clear Creek             | Saline County                       | Approximately 8.14 miles above confluence with Pennington Bayou | Approximately 9.27 miles above confluence with Pennington Bayou                         | 11110207           | 1.13                                |  | Y              | AE                 | April 2, 2003     |
| Crooked Creek           | City of Bryant<br>Town of Alexander | At State Highway 111  | Approximately 744 feet upstream of Reynolds Road  | 11110207           | 4.67                                |  | Y              | AE                 | January 19, 1996  |
| Crooked Creek Tributary | City of Bryant                      | Confluence with Crooked Creek                                   | Approximately 2,270 feet above confluence with Crooked Creek                            | 11110207           | 0.43                                |  | Y              | AE                 | 2003              |

**Table 2: Flooding Sources Included in this FIS Report (Continued)**

| Flooding Source              | Community   | Downstream Limit   | Upstream Limit  | HUC-8 Sub-Basin(s) | Length (mi) (streams or coastlines) | Area (mi <sup>2</sup> ) (estuaries or ponding) | Floodway (Y/N) | Zone shown on FIRM | Date of Analysis  |
|------------------------------|---|--|---|--------------------|-------------------------------------|--|----------------|--------------------|-------------------|
| Duck Creek                   | Saline County                                     | Confluence with Clear Creek                                  | Approximately 560 feet upstream of U.S. Highway 167             | 11110207           | 2.91                                |  | Y              | AE                 | April 2, 2003     |
| Fourche Creek                | Saline County                                     | At county boundary   | Approximately 164 feet upstream of Colonel Glenn Road           | 11110207           | 3.25                                |  | Y              | AE                 | May 17, 1982      |
| Hope Branch                  | Saline County                                     | Confluence with Lorraine Creek                               | Approximately 187 feet upstream of Dena Drive                   | 11110207           |                                     |  | N              | AE                 | April 2, 2003     |
| Hurricane Creek              | City of Benton<br>City of Bryant<br>Saline County | Approximately 61.3 miles above confluence with Saline River  | Approximately 68.1 miles above confluence with Saline River     | 08040203           | 6.70                                |  | Y              | AE                 | November 13, 2014 |
| Hurricane Creek Tributary 1  | City of Benton<br>City of Bryant<br>Saline County | Confluence with Hurricane Creek                              | Approximately 2.93 miles above confluence with Hurricane Creek  | 08040203           | 2.93                                |  | N              | AE                 | November 13, 2014 |
| Hurricane Creek Tributary 1A | City of Benton                                    | Confluence with Hurricane Creek Tributary 1                  | Approximately 265 feet upstream of Bay Meadow Drive             | 08040203           | 0.36                                |  | N              | AE                 | November 13, 2014 |
| Little Hurricane Creek       | City of Benton<br>City of Bryant<br>Saline County | Confluence with Hurricane Creek                              | Approximately 12,000 feet above confluence with Hurricane Creek | 08040203           | 2.27                                |  | Y              | AE                 | November 13, 2014 |
| Lorraine and Dry Creeks      | Saline County                                     | Approximately 9.0 miles above confluence with Arkansas River | Approximately 20.2 miles above confluence with Arkansas River   | 11110207           | 11.2                                |  | Y              | AE                 | May 17, 1982      |

**Table 2: Flooding Sources Included in this FIS Report (Continued)**

| Flooding Source          | Community      | Downstream Limit   | Upstream Limit   | HUC-8 Sub-Basin(s) | Length (mi) (streams or coastlines) | Area (mi <sup>2</sup> ) (estuaries or ponding) | Floodway (Y/N) | Zone shown on FIRM | Date of Analysis |
|--------------------------|----------------|--|--|--------------------|-------------------------------------|--|----------------|--------------------|------------------|
| Maple Creek              | Saline County  | Approximately 7,000 feet above confluence with Lorange Creek | Approximately 38,000 feet above confluence with Lorange Creek          | 11110207           | 5.87                                |  | Y              | AE                 | April 2, 2003    |
| Maple Creek Tributary    | Saline County  | Confluence with Maple Creek                                  | Approximately 4,650 feet above confluence with Maple Creek             | 11110207           | 0.88                                |  | Y              | AE                 | April 2, 2003    |
| McCright Branch          | Saline County  | Confluence with Hope Branch                                  | Approximately 8,125 feet above confluence with Hope Branch             | 11110207           | 1.53                                |  | Y              | AE                 | April 2, 2003    |
| McNeil Branch            | City of Benton | Confluence with Saline River                                 | Approximately 9,980 feet above confluence with Saline River            | 08040203           | 1.89                                |  | Y              | AE                 | June 15, 1981    |
| Middle Fork Saline River | Saline County  | Confluence with Saline River                                 | Approximately 7.1 miles above confluence with Saline River             | 08040203           | 7.1                                 |  | Y              | AE                 | May 17, 1982     |
| Mill Creek               | Saline County  | Confluence with Middle Fork Saline River                     | Approximately 2.2 miles above confluence with Middle Fork Saline River | 08040203           | 2.2                                 |  | Y              | AE                 | May 17, 1982     |
| North Fork Saline River  | Saline County  | Confluence with Alum Fork Saline River                       | Approximately 1.95 miles above confluence with North Fork Saline River | 08040203           | 1.95                                |  | Y              | AE                 | May 17, 1982     |

**Table 2: Flooding Sources Included in this FIS Report (Continued)**

| Flooding Source         | Community  | Downstream Limit  | Upstream Limit  | HUC-8 Sub-Basin(s) | Length (mi) (streams or coastlines) | Area (mi <sup>2</sup> ) (estuaries or ponding) | Floodway (Y/N) | Zone shown on FIRM | Date of Analysis |
|-------------------------|--|---|---|--------------------|-------------------------------------|--|----------------|--------------------|------------------|
| Otter Creek             | City of Shannon Hills<br>Saline County             | Approximately 4.8 miles above confluence with Fourche Creek | Approximately 7.2 miles above confluence with Fourche Creek           | 11110207           | 2.4                                 |  | Y              | AE                 | August 15, 1989  |
| Otter Creek Tributary   | Saline County                                      | Confluence with Otter Creek                                 | Approximately 0.6 miles above confluence with Otter Creek             | 11110207           | 0.6                                 |  | Y              | AE                 | August 15, 1989  |
| Owen Creek              | City of Bryant<br>Saline County                    | At county boundary  | Approximately 1,000 feet upstream of Hilldale Road                    | 11110207           | 4.0                                 |  | Y              | AE                 | April 2, 2003    |
| Saline River            | City of Benton<br>City of Haskell<br>Saline County | At county boundary  | At confluence with Alum Fork Saline River and North Fork Saline River | 08040203           | 22.7                                |  | Y              | AE                 | May 17, 1982     |
| Salt Creek              | City of Benton                                     | Confluence with Saline River                                | Approximately 2,305 feet upstream of Shenandoah Road                  | 08040203           | 2.7                                 |  | Y              | AE                 | 1981             |
| Shannon Hills Tributary | City of Shannon Hills                              | Confluence with Otter Creek                                 | Approximately 1,454 feet upstream of Joan Drive                       | 11110207           | 0.7                                 |  | Y              | AE                 | August 15, 1989  |
| Trailer Park Ditch      | City of Bryant<br>Town of Alexander                | Confluence with Crooked Creek                               | At diversion with Crooked Creek                                       | 11110207           | 0.6                                 |  | N              | AE                 | January 19, 1996 |
| Trace Creek             | City of Haskell<br>Saline County                   | At the confluence of Unnamed Tributary to Trace Creek 1     | Approximately 350 feet upstream of U.S. Highway 67                    | 08040203           | 3.5                                 |  | Y              | AE                 | November 1, 2015 |

**Table 2: Flooding Sources Included in this FIS Report (Continued)**

| Flooding Source                | Community                       | Downstream Limit                   | Upstream Limit  | HUC-8 Sub-Basin(s) | Length (mi) (streams or coastlines) | Area (mi <sup>2</sup> ) (estuaries or ponding) | Floodway (Y/N) | Zone shown on FIRM | Date of Analysis |
|--------------------------------|---------------------------------|------------------------------------|---|--------------------|-------------------------------------|--|----------------|--------------------|------------------|
| Upper Depot Creek              | City of Benton                  | Confluence with Willow Depot Creek | Approximately 5,330 feet above confluence with Willow Depot Creek | 08040203           | 1.0                                 |  | N              | AE                 | June 15, 1981    |
| Willow Depot Creek             | City of Benton<br>Saline County | Confluence with Saline River       | Approximately 815 feet upstream of Gary Drive                     | 08040203           | 4.7                                 |  | N              | AE                 | 1981             |
| All previously studied streams | Saline County                   |                                    |   | 08040203           |                                     |  | Y              | AE                 | March 2009       |

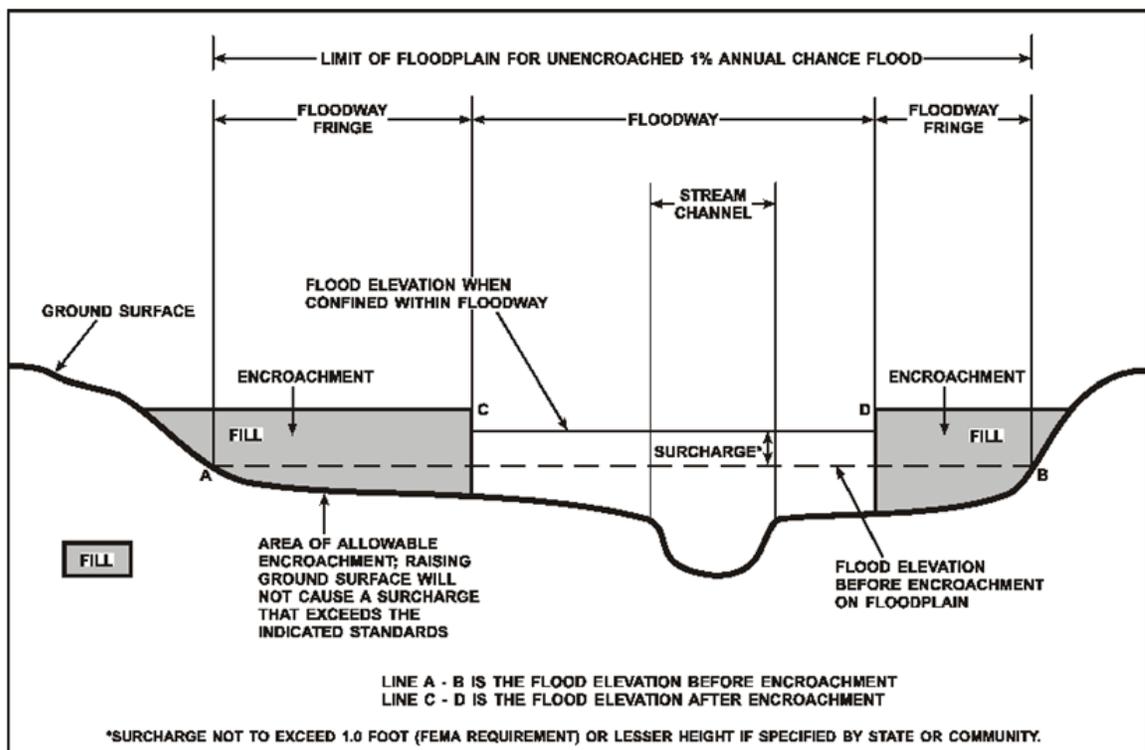
## 2.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard.

For purposes of the NFIP, a floodway is used as a tool to assist local communities in balancing floodplain development against increasing flood hazard. With this approach, the area of the 1% annual chance floodplain on a river is divided into a floodway and a floodway fringe based on hydraulic modeling. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment in order to carry the 1% annual chance flood. The floodway fringe is the area between the floodway and the 1% annual chance floodplain boundaries where encroachment is permitted. The floodway must be wide enough so that the floodway fringe could be completely obstructed without increasing the water surface elevation of the 1% annual chance flood more than 1 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 4.

To participate in the NFIP, Federal regulations require communities to limit increases caused by encroachment to 1.0 foot, provided that hazardous velocities are not produced. Regulations for State require communities in Saline County to limit increases caused by encroachment to 0.5 foot and several communities have adopted additional restrictions. The floodways in this project are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway projects.

Figure 4: Floodway Schematic



Floodway widths presented in this FIS Report and on the FIRM were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. For certain stream segments, floodways were adjusted so that the amount of floodwaters conveyed on each side of the floodplain would be reduced equally. The results of the floodway computations have been tabulated for selected cross sections and are shown in Table 24 , “Floodway Data.”

All floodways that were developed for this Flood Risk Project are shown on the FIRM using the symbology described in Figure 3. In cases where the floodway and 1% annual chance floodplain boundaries are either close together or collinear, only the floodway boundary has been shown on the FIRM. For information about the delineation of floodways on the FIRM, refer to Section 6.3.

### **2.3 Base Flood Elevations**

The hydraulic characteristics of flooding sources were analyzed to provide estimates of the elevations of floods of the selected recurrence intervals. The Base Flood Elevation (BFE) is the elevation of the 1% annual chance flood. These BFEs are most commonly rounded to the whole foot, as shown on the FIRM, but in certain circumstances or locations they may be rounded to 0.1 foot. Cross section lines shown on the FIRM may also be labeled with the BFE rounded to 0.1 foot. Whole-foot BFEs derived from engineering analyses that apply to coastal areas, areas of ponding, or other static areas with little elevation change may also be shown at selected intervals on the FIRM.

Cross sections with BFEs shown on the FIRM correspond to the cross sections shown in the Floodway Data table and Flood Profiles in this FIS Report. BFEs are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM.

### **2.4 Non-Encroachment Zones**

Some States and communities use non-encroachment zones to manage floodplain development. For flooding sources with medium flood risk, field surveys are often not collected and surveyed bridge and culvert geometry is not developed. Standard hydrologic and hydraulic analyses are still performed to determine BFEs in these areas. However, floodways are not typically determined, since specific channel profiles are not developed. To assist communities with managing floodplain development in these areas, a “non-encroachment zone” may be provided. While not a FEMA designated floodway, the non-encroachment zone represents that area around the stream that should be reserved to convey the 1% annual chance flood event. As with a floodway, all surcharges must fall within the acceptable range in the non-encroachment zone.

General setbacks can be used in areas of lower risk (e.g. unnumbered Zone A), but these are not considered sufficient where unnumbered Zone A is replaced by Zone AE. The NFIP requires communities to ensure that any development in a non-encroachment area causes no increase in BFEs. Communities must generally prohibit development within the area defined by the non-encroachment width to meet the NFIP requirement. Regulations for State require communities in Saline County to limit increases caused by encroachment to 0.5 foot and several communities have adopted additional restrictions for non-encroachment areas.

Non-encroachment determinations may be delineated where it is not possible to delineate floodways because specific channel profiles with bridge and culvert geometry were not developed. Any non-encroachment determinations for this Flood Risk Project have been tabulated for selected cross sections and are shown in Table 25 , “Flood Hazard and Non-Encroachment Data for Selected Streams.” Areas for which non-encroachment zones are provided show BFEs and the 1% annual chance floodplain boundaries mapped as zone AE on the FIRM but no floodways.

## **2.5 Coastal Flood Hazard Areas**

This section is not applicable to this Flood Risk Project.

### **2.5.1 Water Elevations and the Effects of Waves**

This section is not applicable to this Flood Risk Project.

#### **Figure 5: Wave Runup Transect Schematic**

[Not Applicable to This Flood Risk Project]

### **2.5.2 Floodplain Boundaries and BFEs for Coastal Areas**

This section is not applicable to this Flood Risk Project.

### **2.5.3 Coastal High Hazard Areas**

This section is not applicable to this Flood Risk Project.

#### **Figure 6: Coastal Transect Schematic**

[Not Applicable to This Flood Risk Project]

### **2.5.4 Limit of Moderate Wave Action**

This section is not applicable to this Flood Risk Project.

## **SECTION 3.0 – INSURANCE APPLICATIONS**

### **3.1 National Flood Insurance Program Insurance Zones**

For flood insurance applications, the FIRM designates flood insurance rate zones as described in Each FIRM panel contains an abbreviated legend for the features shown on the maps. However, the FIRM panel does not contain enough space to show the legend for all map features. Figure 3 shows the full legend of all map features. Note that not all of these features may appear on the FIRM panels in Saline County.

Figure 3, “Map Legend for FIRM.” Flood insurance zone designations are assigned to flooding sources based on the results of the hydraulic or coastal analyses. Insurance agents use the zones shown on the FIRM and depths and base flood elevations in this FIS Report in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

The 1% annual chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (e.g. Zones A, AE, V, VE, etc.), and the 0.2% annual chance floodplain boundary corresponds to the boundary of areas of additional flood hazards.

Table 3 lists the flood insurance zones within Saline County.

**Table 3: Flood Zone Designations by Community**

| Community                          | Flood Zone(s) |
|------------------------------------|---------------|
| Alexander, Town of                 | AE, X         |
| Bauxite, Town of                   | A, AE, X      |
| Benton, City of                    | A, AE, X      |
| Bryant, City of                    | A, AE, X      |
| Haskell, City of                   | A, AE, X      |
| Saline County Unincorporated Areas | A, AE, X      |
| Shannon Hills, City of             | AE, X         |
| Traskwood, City of                 | A, X          |

### 3.2 Coastal Barrier Resources System

This section is not applicable to this Flood Risk Project.

**Table 4: Coastal Barrier Resources System Information**

[Not Applicable to This Flood Risk Project]

## SECTION 4.0 – AREA STUDIED

### 4.1 Basin Description

Table 5 contains a description of the characteristics of the HUC-8 sub-basins within which each community falls. The table includes the main flooding sources within each basin, a brief description of the basin, and its drainage area.

**Table 5: Basin Characteristics**

| HUC-8 Sub-Basin Name    | HUC-8 Sub-Basin Number | Primary Flooding Source | Description of Affected Area                                    | Drainage Area (square miles) |
|-------------------------|------------------------|-------------------------|---|------------------------------|
| Upper Saline            | 08040203               | Saline River            | Extends northwest affecting most of Saline County               | 1,714.1                      |
| Lower Arkansas-Maumelle | 11110207               | Arkansas River          | Extends northwest affecting the northeast edge of Saline County | 1,126.1                      |

**Table 5: Basin Characteristics (Continued)**

| HUC-8 Sub-Basin Name | HUC-8 Sub-Basin Number | Primary Flooding Source | Description of Affected Area  | Drainage Area (square miles) |
|----------------------|------------------------|-------------------------|---|------------------------------|
| Fourche La Fave      | 11110206               | Fourche La Fave River   | Affects only the northwestern corner of Saline County                 | 1,113.9                      |
| Upper Ouachita       | 08040102               | Ouachita River          | Affects only a small area of the southwestern corner of Saline County | 1,751.8                      |

#### 4.2 Principal Flood Problems

Table 6 contains a description of the principal flood problems that have been noted for Saline County by flooding source.

**Table 6: Principal Flood Problems**

| Flooding Source | Description of Flood Problems                                    |
|-----------------|--|
| All sources     |  |
| Saline River    | Flood event in April of 1927 with a discharge of 110,000 cfs.    |
| Saline River    | Flood event in April of 1939 with a discharge of 67,000 cfs.     |
| Saline River    | Flood event in April of 1944 with a discharge of 58,000 cfs.     |
| Saline River    | Flood event in December of 1953 with a discharge of 49,500 cfs.  |
| Saline River    | Flood event in May of 1954 with a discharge of 48,000 cfs.       |
| Saline River    | Flood event in May of 1968 with a discharge of 66,000 cfs.       |
| Saline River    | Flood event in January of 1969 with a discharge of 100,000 cfs.  |
| Saline River    | Flood event in September of 1978 with a discharge of 34,000 cfs. |
| Saline River    | Flood event in December of 1982 with a discharge of 64,700 cfs.  |
| Saline River    | Flood event in October of 1984 with a discharge of 52,500 cfs.   |
| Saline River    | Flood event in November of 1988 with a discharge of 50,600 cfs.  |
| Saline River    | Flood event in March of 1990 with a discharge of 63,600 cfs.     |
| Saline River    | Flood event in December of 1993 with a discharge of 42,300 cfs.  |
| Saline River    | Flood event in February of 1998 with a discharge of 40,600 cfs.  |
| Saline River    | Flood event in September of 2008 with a discharge of 94,800 cfs. |
| Saline River    | Flood event in December of 2009 with a discharge of 77,200 cfs.  |
| Saline River    | Flood event in November of 2011 with a discharge of 44,400 cfs.  |

Table 7 contains information about historic flood elevations in the communities within Saline County.

**Table 7: Historic Flooding Elevations**

| Flooding Source | Location      | Historic Peak (Feet NAVD88) | Event Date | Approximate Recurrence Interval (years) | Source of Data           |
|-----------------|---------------|-----------------------------|------------|---|--------------------------|
| Saline River    | Saline County | 29.27                       | 2008       | N/A                                     | National Weather Service |
| Saline River    | Saline County | 29.68                       | 1969       | N/A                                     | National Weather Service |
| Saline River    | Saline County | 30.50                       | 1927       | N/A                                     | National Weather Service |

#### 4.3 Non-Levee Flood Protection Measures

Table 8 contains information about non-levee flood protection measures within Saline County such as dams, jetties, and or dikes. Levees are addressed in Section 4.4 of this FIS Report.

**Table 8: Non-Levee Flood Protection Measures**

| Flooding Source        | Structure Name     | Type of Measure | Location  | Description of Measure  |
|------------------------|--------------------|-----------------|---|---|
| Alum Fork Saline River | N/A                | Aqueduct        | At confluence of North Fork Saline River and Saline River |   |
| Bryant Tributary       | Yvonne Dam         | Dam             | Approximately 120 feet upstream from Mills Park Road      | Maintained by Bloomfield Hills P.O.A.                         |
| Cedar Creek            | Coronado Dam       | Dam             | Approximately 2,300 feet upstream of Minorca Road         | Maintained by Hot Springs Village Property Owners Association |
| Hurricane Creek        | Hurricane Lake Dam | Dam             | Approximately 2,300 feet upstream of State Highway 5      | Maintained by Hurricane Lake Estates Development Company      |
| Maple Creek            | N/A                | Dam             | Approximately 1,000 feet downstream of Cole Road          |   |

**Table 8: Non-Levee Flood Protection Measures (Continued)**

| Flooding Source    | Structure Name | Type of Measure | Location  | Description of Measure |
|--------------------|----------------|-----------------|---|------------------------|
| Willow Depot Creek | N/A            | Canal           | Approximately 3,000 feet upstream of confluence with Saline River |                        |

**4.4 Levees**

This section is not applicable to this Flood Risk Project.

**Table 9 : Levees**

[Not Applicable to This Flood Risk Project]

## SECTION 5.0 – ENGINEERING METHODS

For the flooding sources in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that are expected to be equaled or exceeded at least once on the average during any 10-, 25-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 25-, 50-, 100-, and 500-year floods, have a 10-, 4-, 2-, 1-, and 0.2% annual chance, respectively, of being equaled or exceeded during any year.

Although the recurrence interval represents the long-term, average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 100-year flood (1-percent chance of annual exceedance) during the term of a 30-year mortgage is approximately 26 percent (about 3 in 10); for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

In addition to these flood events, the “1-percent-plus”, or “1%+”, annual chance flood elevation has been modeled and included on the flood profile for certain flooding sources in this FIS Report. While not used for regulatory or insurance purposes, this flood event has been calculated to help illustrate the variability range that exists between the regulatory 1% annual chance flood elevation and a 1% annual chance elevation that has taken into account an additional amount of uncertainty in the flood discharges (thus, the 1% “plus”). For flooding sources whose discharges were estimated using regression equations, the 1%+ flood elevations are derived by taking the 1% annual chance flood discharges and increasing the modeled discharges by a percentage equal to the average predictive error for the regression equation. For flooding sources with gage- or rainfall-runoff-based discharge estimates, the upper 84-percent confidence limit of the discharges is used to compute the 1%+ flood elevations.

The engineering analyses described here incorporate the results of previously issued Letters of Map Change (LOMCs) listed in Table 27, “Incorporated Letters of Map Change”, which include Letters of Map Revision (LOMRs). For more information about LOMRs, refer to Section 6.5, “FIRM Revisions.”

### 5.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak elevation-frequency relationships for floods of the selected recurrence intervals for each flooding source studied. Hydrologic analyses are typically performed at the watershed level. Depending on factors such as watershed size and shape, land use and urbanization, and natural or man-made storage, various models or methodologies may be applied. A summary of the hydrologic methods applied to develop the discharges used in the hydraulic analyses for each stream is provided in Table 13. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation. The analyses reported herein reflect flooding potentials based on conditions existing in the

community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

In the FIS for the City of Benton dated June 15, 1981, peak discharges were determined based on drainage areas and topographic information obtained from topographic maps at a scale of 1:24,000 with a contour interval of 10 feet (FEMA 2012).

Synthetic storms were computed to define the discharge-frequency data for McNeil Creek, and Upper Depot Creeks in Benton. Rainfall distributions for the 10-, 2-, and 1-percent-annual-chance frequencies were computed from rainfall-frequency data contained in the National Weather Service Technical Paper No. 40 (FEMA 2012). Snyder's coefficients were used to compute unit hydrographs for the stream. The hydrographs and rainfall distributions were used to compute synthetic storms of the desired frequencies from which the peak discharges were obtained. A Log-Probability relationship of the lower frequency peak discharges was used to compute each of the 0.2-percent-annual chance peak discharges. Recorded gage data for the Saline River was provided by USACE-SWL. In order to obtain the peak flows for the Saline River, an Annual Series Peak Discharge Frequency Curve was drawn using USACE Southwestern Division (SWD) historically weighted skew factors (FEMA 2012).

Hydrologic data for Salt Creek and Willow Depot Creek for the 10-, 2-, 1-, and 0.2-percent-annual-chance frequency flows, were obtained from the Salt Creek, Saline County, Arkansas, and Willow Depot Creek, Saline County, Arkansas Detailed Project Reports (DPR). The DPRs were provided by USACE Vicksburg District (MVK) (FEMA 2012).

In the FIS for the City of Bryant (FEMA 2012), dated January 19, 1996, the peak discharges were calculated using HEC-1 Flood Hydrograph Package program (FEMA 2012) to determine runoff in each stream studied by detailed methods. Precipitation-depth-frequency information for the city was taken from National Weather Service Publications TP-40 (FEMA 2012), TP-49 (FEMA 2012), and Hydro-35 (FEMA 2012)

In the FIS for the City of Shannon Hills (FEMA 2012), dated August 15, 1989, discharges along Otter Creek and Shannon Hills Tributary were determined using unit hydrographs along with appropriate design storms. The design storms were developed from US Weather Bureau Technical Papers 40 and 49 (FEMA 2012). The 0.2-percent-annual-chance discharges were obtained by extrapolating curves obtained from the 10-, 2-, and 1-percent-annual-chance flood discharges. In the 1989 revision of the studies the US Weather Bureau Technical Paper No. 40 rainfall frequency amounts were applied to the HEC-1 model to compute peak runoff. The peak discharge probability values derived from the runoff computations were adjusted for expected probability assuming a 40-year period of record in accordance with a letter from USACE-SWD (letter SWDED-WR dated March 18, 1982; "Expected Probability Adjustments – Synthetic Frequency Curves"). Depth-area-duration studies were conducted for the Otter Creek watershed to determine the critical storm occurrence, and rainfall depths to produce the synthetic peak discharges were obtained from applying rainfall to the HEC-1 model.

For the original FIS for the unincorporated areas of Saline County (FEMA 2012), dated May 17, 1982, peak flood discharges for the Saline River were obtained from streamflow records at the US Geological Survey gage at Benton dating from July 1938. Discharges on the other streams studied in detail were determined by use of unit hydrographs developed at various locations on those streams along with appropriate design storms. The design storms were developed from the US

Weather Bureau Technical Papers Nos. 40 and 49 (FEMA 2012). The 0.2-percent-annual-chance discharges were obtained by extrapolating the curves obtained from 10-, 2-, and 1-percent-annual-chance flood discharges. Gaged data and high water marks were used as guides in determining the design profiles.

In the first revision of the Saline County Unincorporated Areas FIS, dated January 19, 1996, no new hydrologic determinations were made. The discharges were obtained from the original FIS completed by USACE-SWL. Discharges in the split-flow portion of Crooked Creek and Trailer Park Ditch were determined by assuming coincident peaks and summing rating curves at the split points (FEMA 2012)

In the second revision of the Saline County Unincorporated Areas FIS, dated April 2, 2003, the HEC-1 computer program (FEMA 2012) was used to model the rainfall-runoff process and compute discharge hydrographs at index points along the respective stream reaches. Hypothetical design storms having a triangular, or “balanced,” distribution were developed based on depth-duration-frequency data from National Weather Service publications. Rainfall losses due to infiltration were accounted for with the Natural Resources Conservation Service (NRCS) Runoff Curve Number methodology developed by the US Department of Agriculture-NRCS. The Snyder unit hydrograph methodology was utilized to transform the rainfall excess into surface runoff and to generate the discharge hydrographs. Since historical precipitation and streamflow data were unavailable for the respective watersheds and streams analyzed in this study, computed flood flows were assumed to have the same frequency of occurrence as the hypothetical design storm events from which they were generated (FEMA 2012).

The Saline County PMR includes revisions based on detailed and limited detailed studies completed by the Arkansas Natural Resources Commission (ANRC) as a FEMA Cooperating Technical Partner (CTP). The following updates only include data revised as a result of the following projects: Hurricane Creek Watershed study (CTP FY13 Risk MAP study) and the Saline County Restudy (CTP FY14 Risk MAP study).

The hydrologic and hydraulic analyses for portions of Hurricane Creek, Little Hurricane Creek, Boswell Creek, Hurricane Creek Tributary 1, and Hurricane Creek Tributary 1A (CTP FY13 Risk MAP study) were performed by the ANRC for FEMA, under Contract No. EMT-2013-CA-0012, Case No. 13-06-1179S. The work was completed in December 2014.

Additional hydrologic and hydraulic analyses for portions of Trace Creek and the approximate flood zones within Saline County (CTP FY14 Risk MAP study) were performed by the ANRC for FEMA, under Contract No. EMW-2014-CA-0163-S01, Case No. 13-06-1179S. The work was completed in December 2015.

Discharges for all reaches in this study were based on design storms computed using the Hydrologic Engineering Center (HEC) – Hydrologic Modeling System (HMS) computer program (Version 3.5).

The SCS Curve Number method, the SCS Unit Hydrograph method, and the Modified Puls routing method were used to determine the loss-rate, transform rainfall excess into surface runoff, and route the flow through the channel for steady-state simulations. Hydrologic parameters for the models used in this study were obtained from the following sources:

The terrain data used for this study was the 2014 LiDAR topographical data. This terrain data, along with general storm sewer information, survey data, and current aerial photography, were used to generate the sub-basin delineations.

Soil data for this study was obtained from the NRCS SSURGO database for Saline County, dated September 2008.

Rainfall data for this analysis were developed using NOAA HYDRO-35 (for 5min to 60 min intensities), TP-40 (for 0.25 hr to 24 hr intensities), and the published City of Bryant, Storm Water Management Manual dated July 12, 2008.

Discharges for Trace Creek were based on previous hydrologic modeling performed for the City of Haskell as part of an existing project. The study was developed by Flood Plain Services as part of an application for a Letter of Map Revision in 2011. Discharges were based on design storms computed using the Hydrologic Engineering Center (HEC) - Hydrologic Modeling System (HMS) computer program (Version 2.0).

Initial and constant losses, the Snyder's Unit Hydrograph method, and the Lag method were used to determine the loss-rate, transform rainfall excess into surface runoff, and route the flow through the channel for steady state simulations.

Rainfall data for this analysis were developed using NOAA Atlas 14.

Peak discharges for all approximate reaches, except a portion of the Alum Fork Saline River, in this study were computed using the USGS Regional Regression Equations. Arkansas is divided into four hydrologic regions, which are based on drainage boundaries and physiography. Saline County contains portions of hydrologic Regions A, B, and D.

The terrain data used for this study was the 2014 LIDAR topographical data.

For the Alum Fork Saline River, a gage analysis was performed on USGS Gage 07362587. This gage station has a sufficient period of record (25 years) to perform a flow frequency analysis. A station skew coefficient of -0.52 was developed and utilized in a weighted skew calculation using methods described within USGS Bulletin 17B. Applying the USGS regression calculation at the gage location results in a flow of approximately 18,000 cfs, or within 13% of the gage calculated flow. From this analysis, discharges were interpolated downstream to Lake Winona using a simple drainage area-to-flow ratio.

A summary of the discharges is provided in Table 10. Frequency Discharge-Drainage Area Curves used to develop the hydrologic models may also be shown in Figure 7 for selected flooding sources. A summary of stillwater elevations developed for non-coastal flooding sources is provided in Table 11. (Coastal stillwater elevations are discussed in Section 5.3 and shown in Table 17.) Stream gage information is provided in Table 12.

**Table 10: Summary of Discharges**

| Flooding Source                   | Location  | Drainage Area (Square Miles) | Peak Discharge (cfs) |                  |                  |                           |                       |                    |
|-----------------------------------|---|------------------------------|----------------------|------------------|------------------|---------------------------|-----------------------|--------------------|
|                                   |   |                              | 10% Annual Chance    | 4% Annual Chance | 2% Annual Chance | 1% Annual Chance Existing | 1% Plus Annual Chance | 0.2% Annual Chance |
| Bryant Tributary to Crooked Creek | At River Mile 0.05                                    | 1.03                         | *                    | *                | *                | 2,170                     | *                     | *                  |
| Cedar Creek                       | At River Mile 1.87                                    | 12.9                         | 7,560                | *                | 9,780            | 10,690                    | *                     | 12,800             |
| Clear Creek                       | Approximately 435 feet upstream of U.S. Highway 167   | 14.29                        | 6,506                | *                | 10,384           | 11,999                    | *                     | 16,5495            |
|                                   | Approximately 425 feet upstream of U.S. Highway 167   | 4.19                         | 2,163                | *                | 2,974            | 3,336                     | *                     | 4,369              |
| Crooked Creek                     | At River Mile 4.51                                    | 3.21                         | *                    | *                | *                | 6,100                     | *                     | *                  |
|                                   | At State Highway 111                                  | *                            | 9,300                | *                | 12,000           | 13,400                    | *                     | 19,000             |
| Crooked Creek Tributary           | At confluence with Crooked Creek                      | 0.31                         | *                    | *                | *                | 770                       | *                     | *                  |
| Duck Creek                        | Approximately 150 feet upstream of Spring Lake Road   | 6.40                         | 4,227                | *                | 6,120            | 6,907                     | *                     | 9,094              |
|                                   | Approximately 300 feet downstream of U.S. Highway 167 | *                            | 3,762                | *                | 5,116            | 5,718                     | *                     | 7,382              |
| Fourche Creek                     | At River Mile 29.0                                    | 12.2                         | 6,400                | *                | 8,900            | 9,825                     | *                     | 12,000             |

**Table 10: Summary of Discharges (Continued)**

| Flooding Source        | Location   | Drainage Area (Square Miles) | Peak Discharge (cfs) |                  |                  |                           |                       |                    |
|------------------------|--|------------------------------|----------------------|------------------|------------------|---------------------------|-----------------------|--------------------|
|                        |  |                              | 10% Annual Chance    | 4% Annual Chance | 2% Annual Chance | 1% Annual Chance Existing | 1% Plus Annual Chance | 0.2% Annual Chance |
| Hope Branch            | At confluence with McCright Branch                                       | 3.19                         | 3,552                | *                | 5,071            | 5,774                     | *                     | 7,801              |
|                        | Approximately 200 feet downstream of Honey Suckle Road                   | 4.08                         | 3,486                | *                | 4,991            | 5,722                     | *                     | 7,843              |
| Hurricane Creek        | At State Highway 183   | 25.8                         | 8,060                | *                | 10,880           | 12,220                    | *                     | 15,200             |
|                        | Just downstream of Hurricane Dam   | 24.6                         | 8,523                | *                | 11,557           | 13,257                    | *                     | 16,252             |
|                        | Just upstream of the confluence of Hurricane Dam                         | 17.78                        | 6,573                | *                | 8,862            | 10,075                    | *                     | 12,354             |
|                        | Approximately 8,670 feet upstream of Hurricane Dam                       | 15.44                        | 6,634                | *                | 8,901            | 9,990                     | *                     | 12,245             |
| Little Hurricane Creek | At confluence with Hurricane Creek                                       | 6.82                         | 2,798                | *                | 3,908            | 4,415                     | *                     | 5,544              |
|                        | Approximately 6,600 feet upstream of the confluence with Hurricane Creek | 6.22                         | 3,653                | *                | 4,931            | 5,538                     | *                     | 6,823              |
| Lorance and Dry Creeks | At County Road 215 (Arch Street Pike)                                    | 25.5                         | 8,400                | *                | 11,000           | 12,400                    | *                     | 14,500             |

**Table 10: Summary of Discharges (Continued)**

| Flooding Source       | Location  | Drainage Area (Square Miles) | Peak Discharge (cfs) |                  |                  |                           |                       |                    |
|-----------------------|---|------------------------------|----------------------|------------------|------------------|---------------------------|-----------------------|--------------------|
|                       |   |                              | 10% Annual Chance    | 4% Annual Chance | 2% Annual Chance | 1% Annual Chance Existing | 1% Plus Annual Chance | 0.2% Annual Chance |
| Maple Creek           | Approximately 2,400 feet downstream of Maple Creek Road               | 5.79                         | 1,908                | *                | 2,531            | 2,807                     | *                     | 3,566              |
|                       | Approximately 200 feet downstream of confluence Maple Creek Tributary | 4.53                         | 1,562                | *                | 2,057            | 2,277                     | *                     | 2,870              |
| Maple Creek           | Approximately 60 feet upstream of Spring Lake Road                    | 0.79                         | 982                  | *                | 1,349            | 1,511                     | *                     | 1,963              |
| Maple Creek Tributary | Approximately 2,200 feet upstream of limit of study                   | 1.76                         | 695                  | *                | 924              | 1,026                     | *                     | 1,287              |
|                       | Approximately 100 feet upstream of U.S. Highway 167                   | 1.37                         | 531                  | *                | 688              | 761                       | *                     | 951                |
| McCright Branch       | Approximately 120 feet upstream of Pear Orchard Driver                | 1.28                         | 863                  | *                | 1,371            | 1,603                     | *                     | 2,294              |
|                       | Approximately 540 feet upstream of Dena Road                          | 0.32                         | 578                  | *                | 790              | 882                       | *                     | 1,141              |

**Table 10: Summary of Discharges (Continued)**

| Flooding Source          | Location   | Drainage Area (Square Miles) | Peak Discharge (cfs) |                  |                  |                           |                       |                    |
|--------------------------|--|------------------------------|----------------------|------------------|------------------|---------------------------|-----------------------|--------------------|
|                          |  |                              | 10% Annual Chance    | 4% Annual Chance | 2% Annual Chance | 1% Annual Chance Existing | 1% Plus Annual Chance | 0.2% Annual Chance |
| McNeil Creek             | At confluence with Saline River                                | 2.60                         | 2,919                | *                | 3,725            | 4,113                     | *                     | 4,700              |
|                          | At Woodland Drive  | 1.77                         | 2,135                | *                | 2,730            | 3,005                     | *                     | 3,420              |
|                          | Approximately 240 feet downstream of Interstate 30 Access Road | 1.45                         | 1,835                | *                | 2,330            | 2,575                     | *                     | 2,925              |
|                          | At downstream side of Main Street                              | 1.05                         | 1,467                | *                | 1,851            | 2,038                     | *                     | 2,300              |
| Middle Fork Saline River | At County Road 189   | 71.9                         | 19,700               | *                | 25,600           | 28,550                    | *                     | 34,700             |
| Mill Creek               | At confluence with Alum Fork Saline River                      | 10.7                         | 3,100                | *                | 4,450            | 5,080                     | *                     | 6,600              |
| North Fork Saline River  | At confluence with Alum Fork Saline River and Saline River     | 139.2                        | 22,330               | *                | 29,450           | 33,000                    | *                     | 40,100             |
| Otter Creek              | At County Line   | 7.9                          | 5,900                | *                | 7,475            | 8,500                     | *                     | 11,350             |
| Otter Creek Tributary    | At confluence with Otter Creek                                 | 1.3                          | 1,420                | *                | 1,7525           | 1,960                     | *                     | 2,825              |

**Table 10: Summary of Discharges (Continued)**

| Flooding Source         | Location  | Drainage Area (Square Miles) | Peak Discharge (cfs) |                  |                  |                           |                       |                    |
|-------------------------|---|------------------------------|----------------------|------------------|------------------|---------------------------|-----------------------|--------------------|
|                         |   |                              | 10% Annual Chance    | 4% Annual Chance | 2% Annual Chance | 1% Annual Chance Existing | 1% Plus Annual Chance | 0.2% Annual Chance |
| Owen Creek              | Approximately 1,750 feet downstream of Midland Road | 5.72                         | 4,450                | *                | 6,143            | 7,044                     | *                     | 9,223              |
|                         | Approximately 100 feet upstream of Hilldale Road    | 4.45                         | 4,364                | *                | 5,993            | 6,789                     | *                     | 8,915              |
|                         | Approximately 70 feet upstream of Midland Road      | 2.62                         | 2,925                | *                | 3,994            | 4,473                     | *                     | 5,868              |
| Saline River            | Gage at Benton – River Mile 198.5                   | 569.0                        | 64,600               | *                | 93,000           | 104,500                   | *                     | 130,100            |
| Salt Creek              | At confluence with Saline River                     | 3.50                         | 3,145                | *                | 4,014            | 4,438                     | *                     | 5,688              |
|                         | At State Highway 5                                  | 2.69                         | 3,546                | *                | 4,521            | 4,991                     | *                     | 5,724              |
|                         | At Shenandoah Road                                  | 1.58                         | 2,326                | *                | 2,961            | 3,273                     | *                     | 3,685              |
| Shannon Hills Tributary | At confluence with Otter Creek                      | 1.01                         | 660                  | *                | 1,200            | 1,550                     | *                     | 2,900              |
| Trace Creek             | Railroad  | 3.67                         | 1,840                | 2,190            | 2,510            | 2,810                     | 3,650                 | 3,490              |
|                         | State Highway 229                                   | 3.15                         | 1,780                | 2,120            | 2,420            | 2,700                     | 3,470                 | 3,300              |
|                         | US Highway 67                                       | 2.06                         | 1,630                | 1,900            | 2,130            | 2,340                     | 3,070                 | 2,860              |
| Trailer Park Ditch      | At River Mile 0.18                                  | *                            | *                    | *                | *                | 1,200                     | *                     | *                  |
| Upper Depot Creek       | At confluence with Willow Depot Creek               | 1.54                         | 1,703                | *                | 2,179            | 2,399                     | *                     | 2,700              |

**Table 10: Summary of Discharges (Continued)**

| Flooding Source    | Location  | Drainage Area (Square Miles) | Peak Discharge (cfs) |                  |                  |                           |                       |                    |
|--------------------|---|------------------------------|----------------------|------------------|------------------|---------------------------|-----------------------|--------------------|
|                    |   |                              | 10% Annual Chance    | 4% Annual Chance | 2% Annual Chance | 1% Annual Chance Existing | 1% Plus Annual Chance | 0.2% Annual Chance |
| Willow Depot Creek | At confluence with Saline River                 | 8.93                         | 4,995                | *                | 5,986            | 6,474                     | *                     | 9,017              |
| Willow Depot Creek | At Cross-Section V – Missouri Pacific Railroad  | 7.09                         | 5,435                | *                | 6,943            | 7,718                     | *                     | 10,490             |
|                    | At Edison Avenue                                | 5.78                         | 5,250                | *                | 6,752            | 7,455                     | *                     | 9,537              |
|                    | At Cross-Section AH – Missouri Pacific Railroad | 2.86                         | 2,589                | *                | 3,351            | 3,721                     | *                     | 4,754              |

\*Not calculated for this Flood Risk Project

**Figure 7: Frequency Discharge-Drainage Area Curves**

[Not Applicable to This Flood Risk Project]

**Table 11: Summary of Non-Coastal Stillwater Elevations**

| Flooding Source | Location      | Elevations (feet NAVD88) |                  |                  |                  |                    |
|-----------------|---------------|--------------------------|------------------|------------------|------------------|--------------------|
|                 |               | 10% Annual Chance        | 4% Annual Chance | 2% Annual Chance | 1% Annual Chance | 0.2% Annual Chance |
| Ferguson Lake   | Saline County | 246.7                    | 247.8            | 248.5            | 249.2            | 250.6              |
| Lake Balboa     | Saline County | 536.9                    | 537.6            | 538.1            | 538.6            | 539.3              |
| Lake Coronado   | Saline County | 645.5                    | 646.9            | 647.3            | 647.6            | 648.5              |
| Lake Cortez     | Saline County | 633.0                    | 633.8            | 634.6            | 635.3            | 637.3              |
| Lake Norrell    | Saline County | 422.4                    | 423.2            | 423.9            | 424.5            | 426.3              |
| Lake Winona     | Saline County | 742.8                    | 743.6            | 744.2            | 744.9            | 746.6              |

**Table 12: Stream Gage Information used to Determine Discharges**

| Flooding Source        | Gage Identifier | Agency that Maintains Gage | Site Name                              | Drainage Area (Square Miles) | Period of Record |      |
|------------------------|-----------------|----------------------------|--|------------------------------|------------------|------|
|                        |                 |                            |  |                              | From             | To   |
| Alum Fork Saline River | 07362587        | USGS                       | Alum Fork Saline River near Reform, AR | 27                           | 1990             | 2014 |
| Alum Fork Saline River | 07363000        | USGS                       | Saline River at Benton, AR             | 550                          | 1938             | 1981 |

**5.2 Hydraulic Analyses**

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Base flood elevations on the FIRM represent the elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report. Rounded whole-foot elevations may be shown on the FIRM in coastal areas, areas of ponding, and other areas with static base flood elevations. These whole-foot elevations may not exactly reflect the elevations derived from the hydraulic analyses. Flood elevations shown on the FIRM are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM. The hydraulic analyses for this FIS were based on unobstructed flow. The flood elevations shown on the profiles

are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

For the City of Benton FIS, dated June 15, 1981, water surface profiles were computed through use of the USACE HEC-2 step-backwater computer program (FEMA 2012). Starting water surface elevations for the various creeks were determined by computing rating curves for the channel cross-sections at the lower limits of each study. Starting elevations were picked from these curves for the 10-, 2-, 1-, and 0.2-percent annual chance peak discharges. Starting water surface elevations for the Saline River were taken from rating curves at the gage on the river. These gage data were provided by USACE-SWL. The computed profiles were checked for reasonableness by comparing them with existing high-water marks and profiles published in the Benton Flood Plain Information Report (FEMA 2012).

Water surface profiles for Salt Creek and Willow Depot Creek were obtained from the Salt Creek, Saline County, Arkansas, DPR and the Willow Depot Creek, Saline County, Arkansas, DPR, respectively. These reports were provided by USACE-MVK for use in studies for the City of Benton FIS (FEMA 2012).

Below-water sections of channels, bridges, and culverts were surveyed to obtain elevation data and structural geometry. Additional topographic information and overbank elevations on cross-sections were provided by aerial surveys. USACE-SWL and USACE-MVK provided some additional cross-section data for use on the Saline River.

Channel roughness factors (Manning's "n") used in the studies for the City of Benton FIS were chosen by engineering judgment and based on field observations of the streams and flood plain areas. McNeil Creek and Upper Depot Creek have a main channel roughness value of 0.05, with floodplain roughness values ranging from 0.09 to 0.11. The reach of the Saline River adjacent to Benton has main channel roughness values ranging from a high of 0.055 for the 10-percent-annual-chance peak discharge to a low of about 0.040 for the 0.2-percent-annual-chance peak discharge. Floodplain roughness values for the Saline River range from 0.08 to 0.10.

For the City of Bryant FIS water surface elevations for the selected peak discharges were computed using the USACE HEC-2 step-backwater computer program (FEMA 2012). The starting water surface elevation for Crooked Creek was taken from the FIS for Saline County (FEMA 2012). The Bryant Tributary and Crooked Creek Tributary starting water surface elevations were determined assuming coincident peak discharges. Cross-sections for the backwater analyses were field-surveyed. Bridge data were obtained by field surveys and measurements. Channel roughness factors (Manning's "n") used in the hydraulic computations were obtained by engineering judgment, along with field investigation of the streams and floodplain areas. Channel "n" values for Crooked Creek ranged from 0.020 to 0.055; for Crooked Creek Tributary, channel "n" values ranged from 0.045 to 0.055; and for Bryant Tributary, channel "n" values ranged from 0.018 to 0.060. Overbank "n" values ranged from 0.060 to 0.100 for all three streams.

For the City of Shannon Hills FIS dated August 15, 1989, water surface elevations were computed for Otter Creek and Shannon Hills Tributary using the USACE HEC-2 step backwater computer program (FEMA 2012). Starting water surface elevations were determined by normal depth calculations. Channel roughness factors (Manning's "n") used in the analyses were estimated from conditions along the channel and overbank sections. The channel "n" values for both streams ranged from 0.025 to 0.050, and the overbank "n" values ranged from 0.050 to 0.150.

In the original FIS for the unincorporated areas of Saline County, dated May 17, 1982, cross-sections for streams studied in detail were obtained from field surveys or from surveys previously made for other studies in the county. The Manning's roughness coefficients ("n" values) in the study were estimated from conditions along the channel and overbank sections and range from 0.03 to 0.06 for the channel sections and from 0.06 to 0.15 for the overbank sections. Water surface profiles were computed using the USACE HEC-2 Water Surface Profiles Program (FEMA 2012).

Hydraulic analyses for the first revision of the FIS for the unincorporated areas of Saline County, dated January 19, 1996, consisted of developing the 1-percent-annual-chance water surface profiles for studied streams using the USACE HEC-2 Water Surface Profiles computer program (FEMA 2012). Surveyed cross-sections, with vertical control, and detailed bridge descriptions were obtained for use in the HEC-2 model. Manning's "n" values for overbanks used in the model of existing conditions were 0.075. Channel "n" values ranged from 0.045 to 0.055. The starting water surface elevation for Crooked Creek was taken from the Saline County, Arkansas, study of Crooked Creek. The split flow of Trailer Park Ditch was assumed to occur coincidentally with the Crooked Creek peak discharge.

For the second revision of the FIS for the unincorporated areas of Saline County, dated April 2, 2003, the USACE HEC-RAS computer program (FEMA 2012) was used to compute existing conditions water surface profiles for the 10-, 2-, 1-, and 0.2-percent-annual-chance peak discharges for each of the study reaches. Following development of the existing conditions hydraulic models, the limits of the floodway were defined for the 1-percent-annual-chance peak discharge based on a maximum allowable surcharge of 1.0 foot in the water surface elevation. The surveyed cross-sections, surveyed bridge sections, and bridge descriptions with sketches were obtained during the months of January 1998 through March 1998.

This current PMR uses the USACE HEC-RAS modeling software, version 4.1.0, to compute steady state existing conditions water surface profiles for the 10%, 4%, 2%, 1%, and 0.2%-annual-chance peak discharges for each of the study reaches. Following development of the existing conditions hydraulic models for Hurricane Creek and Little Hurricane Creek, the limits of the floodway were defined for the 1-percent-annual-chance peak discharge based on a maximum allowable surcharge of 1.0 foot in the water surface elevation.

Cross section geometry for the study area was developed using LiDAR data collected in January 2014 by Northrop Grumman for the U.S. Geological Survey. Survey data of the river channel and bridges along with bridge descriptions, including sketches, were obtained during the period from October 2013 to February 2014.

Manning's "n" values were chosen by engineering judgment and based on field observations and aerial photography of the streams and floodplain areas.

Water surface profiles (Exhibit 1) were generated using RASPLOT. Where available, profiles were plotted at a scale similar to the previous FIS profiles. Where previous FIS profiles were not available, profiles were plotted at a scale similar to other streams of equivalent length and discharge.

The USACE HEC-RAS modeling software, version 4.1.0, was used to compute steady state existing conditions water surface profiles for the 10%, 4%, 2%, 1%, 1%-Plus, and 0.2%-annual-chance peak discharges for the study reach. Trace Creek, near the City of Haskell, incorporates a previous Letter of Map Revision (LOMR), dated October 2011. The analysis for this LOMR was

performed by Flood Plain Services, and includes a steady state HEC-RAS model. This model was used as the base model for the expanded hydraulic analysis. The study extent of the 2011 LOMR extended from the confluence of an unnamed tributary of Trace Creek up to approximately 2,000 feet upstream of State Highway 229. The final hydraulic model developed as part of the Arkansas Cooperating Technical Partner (CTP) study was extended beyond that of the original LOMR up to US Highway 67. The AR CTP extension was modeled as a Limited-Detail Zone AE study, while the original extent was modeled as a Detailed Zone AE study, including floodway. The floodway for Trace Creek was initially set up using the equal conveyance reduction method. Adjustments were made to encroachments' stationing using engineering judgment to ensure spatially smooth transitions while allowing a maximum surcharge of 1.0 ft.

The LOMR model was also supplemented with more recent 1-meter LiDAR data. Updates to the streamline, cross section stationing, and overbank geometry were made in order to incorporate the newer LiDAR data

Cross section geometry for the entire model was updated and/or developed using LiDAR data collected in January 2014 by Northrop Grumman for the U.S. Geological Survey.

Survey data within the Detailed study reach included existing detailed survey, which were used as is. Survey data for the Limited-Detail study reach of the river channel and bridges along with bridge descriptions, including sketches, were obtained from October 2013 to February 2014.

Manning's "n" values were chosen by engineering judgment and based on field observations and aerial photography of the streams and floodplain areas.

Water surface profiles were generated using RASPLOT. Where available, profiles were plotted at a scale similar to the previous FIS profiles. Where previous FIS profiles were not available, profiles were plotted at a scale similar to other streams of equivalent length and discharge.

For all the approximate study reaches, the USACE HEC-RAS modeling software, version 4.1.0, was used to compute steady state existing conditions water surface profiles for the 10%, 4%, 2%, 1%, 1%-Plus, and 0.2%-annual-chance peak discharges for each of the study reaches.

For the approximate study streams, cross section geometry for the study area was developed using LiDAR data collected in January 2014 by Northrop Grumman for the U.S. Geological Survey. Survey data and hydraulic structure information was not included in the modeling per regulatory standards.

For the large reservoirs located within Saline County, information was provided by the Dam Safety & Floodplain Management office of the ANRC. Elevations provided by ANRC were listed in National Geodetic Vertical Datum of 1929 (NGVD29). To convert elevations to the North American Vertical Datum of (NAVD88), a county-wide conversion factor of -0.1 feet was calculated using FEMA guidance. Watershed delineations were completed using Arkansas StreamStats, including the slope used for computing time of concentration. Additional runoff parameters were generated using publicly available data to develop HEC-HMS models to calculate the water surface elevations for each storm event.

Manning's "n" values were chosen by engineering judgment and based on field observations and aerial photography of the streams and floodplain areas.

All other previous effective study reaches were redelineated on the 2014 LiDAR topographic data.

For streams for which hydraulic analyses were based on cross sections, locations of selected cross sections are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 6.3), selected cross sections are also listed on Table 24, "Floodway Data."

A summary of the methods used in hydraulic analyses performed for this project is provided in Table 13. Roughness coefficients are provided in Table 14. Roughness coefficients are values representing the frictional resistance water experiences when passing overland or through a channel. They are used in the calculations to determine water surface elevations. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

**Table 13: Summary of Hydrologic and Hydraulic Analyses**

| Flooding Source           | Study Limits<br>Downstream Limit  | Study Limits<br>Upstream Limit   | Hydrologic<br>Model or<br>Method Used | Hydraulic<br>Model or<br>Method Used | Date<br>Analyses<br>Completed | Flood<br>Zone on<br>FIRM | Special Considerations          |
|---------------------------|---|--|---------------------------------------|--------------------------------------|-------------------------------|--------------------------|---------------------------------|
| Alum Fork<br>Saline River | Confluence with<br>North Fork<br>Saline River and<br>Saline River           | Approximately<br>8,460 feet above<br>confluence with<br>North Fork<br>Saline River and<br>Saline River | Gage Analysis                         | HEC-2                                | May 17,<br>1982               | AE                       |                                 |
| Boswell Creek             | Confluence with<br>Hurricane Creek  | Approximately<br>1.0 miles to just<br>upstream of<br>North<br>Richardson<br>Place                      | HEC-HMS<br>Version 3.5                | HEC-RAS<br>Version 4.1               | November<br>13, 2014          | AE                       | Limited Detailed Studied Stream |
| Bryant<br>Tributary       | Confluence with<br>Crooked Creek  | Approximately<br>5,148 feet above<br>confluence with<br>Crooked Creek                                  | HEC-1                                 | HEC-2                                | January<br>19, 1996           | AE                       |                                 |
| Cedar Creek               | Lake Balboa<br>County Boundary  | Lake Coronado<br>County Boundary   | HEC-1                                 | HEC-2                                | May 17,<br>1982               | AE                       |                                 |
| Clear Creek               | Approximately<br>8.14 miles above<br>confluence with<br>Pennington<br>Bayou | Approximately<br>9.27 miles above<br>confluence with<br>Pennington<br>Bayou                            | HEC-1                                 | HEC-RAS<br>version 2.2               | April 2,<br>2003              | AE                       |                                 |
| Crooked Creek             | At State Highway<br>111   | Approximately<br>744 feet<br>upstream of<br>Reynolds Road  | HEC-1                                 | HEC-2                                | January<br>19, 1996           | AE                       |                                 |

**Table 13: Summary of Hydrologic and Hydraulic Analyses**

| Flooding Source                    | Study Limits<br>Downstream Limit                                     | Study Limits<br>Upstream Limit   | Hydrologic<br>Model or<br>Method Used | Hydraulic<br>Model or<br>Method Used | Date<br>Analyses<br>Completed | Flood<br>Zone on<br>FIRM | Special Considerations          |
|------------------------------------|--|--|---------------------------------------|--------------------------------------|-------------------------------|--------------------------|---------------------------------|
| Crooked Creek<br>Tributary         | Confluence with<br>Crooked Creek                                     | Approximately<br>2,270 feet above<br>confluence with<br>Crooked Creek  | HEC-1                                 | HEC-2                                | January<br>19, 1996           | AE                       |                                 |
| Duck Creek                         | Confluence with<br>Clear Creek                                       | Approximately<br>560 feet<br>upstream of U.S.<br>Highway 167           | HEC-1                                 | HEC-RAS<br>version 2.2               | April 2,<br>2003              | AE                       |                                 |
| Fourche Creek                      | At county<br>boundary  | Approximately<br>164 feet<br>upstream of<br>Colonel Glenn<br>Road      | HEC-1                                 | HEC-2                                | May 17,<br>1982               | AE                       |                                 |
| Hope Branch                        | Confluence with<br>Lorance Creek                                     | Approximately<br>187 feet<br>upstream of<br>Dena Drive                 | HEC-1                                 | HEC-RAS<br>version 2.2               | April 2,<br>2003              | AE                       |                                 |
| Hurricane<br>Creek                 | Approximately<br>61.3 miles above<br>confluence with<br>Saline River | Approximately<br>68.1 miles above<br>confluence with<br>Saline River   | HEC-HMS<br>Version 3.5                | HEC-RAS<br>Version 4.1               | November<br>13, 2014          | AE                       |                                 |
| Hurricane<br>Creek<br>Tributary 1  | Confluence with<br>Hurricane Creek                                   | Approximately<br>2.9 miles to just<br>downstream of<br>Winchester Road | HEC-HMS<br>Version 3.5                | HEC-RAS<br>Version 4.1               | November<br>13, 2014          | AE                       | Limited Detailed Studied Stream |
| Hurricane<br>Creek<br>Tributary 1A | Confluence with<br>Hurricane Creek<br>Tributary 1                    | Approximately<br>265 feet<br>upstream of Bay<br>Meadow Drive           | HEC-HMS<br>Version 3.5                | HEC-RAS<br>Version 4.1               | November<br>13, 2014          | AE                       | Limited Detailed Studied Stream |

**Table 13: Summary of Hydrologic and Hydraulic Analyses**

| Flooding Source        | Study Limits<br>Downstream Limit                             | Study Limits<br>Upstream Limit                                  | Hydrologic<br>Model or<br>Method Used | Hydraulic<br>Model or<br>Method Used | Date<br>Analyses<br>Completed | Flood<br>Zone on<br>FIRM | Special Considerations |
|------------------------|--|---|---------------------------------------|--------------------------------------|-------------------------------|--------------------------|------------------------|
| Little Hurricane Creek | Confluence with Hurricane Creek                              | Approximately 12,000 feet above confluence with Hurricane Creek | HEC-HMS<br>Version 3.5                | HEC-RAS<br>Version 4.1               | November 13, 2014             | AE                       |                        |
| Lorance and Dry Creeks | Approximately 9.0 miles above confluence with Arkansas River | Approximately 20.2 miles above confluence with Arkansas River   | HEC-1                                 | HEC-2                                | May 17, 1982                  | AE                       |                        |
| Maple Creek            | Approximately 7,000 feet above confluence with Lorance Creek | Approximately 38,000 feet above confluence with Lorance Creek   | HEC-1                                 | HEC-RAS<br>version 2.2               | April 2, 2003                 | AE                       |                        |
| Maple Creek Tributary  | Confluence with Maple Creek                                  | Approximately 4,650 feet above confluence with Maple Creek      | HEC-1                                 | HEC-RAS<br>version 2.2               | April 2, 2003                 | AE                       |                        |
| McCright Branch        | Confluence with Hope Branch                                  | Approximately 8,125 feet above confluence with Hope Branch      | HEC-1                                 | HEC-RAS<br>version 2.2               | April 2, 2003                 | AE                       |                        |
| McNeil Branch          | Confluence with Saline River                                 | Approximately 9,980 feet above confluence with Saline River     | Snyder's<br>Synthetic<br>Hydrographs  | HEC-2                                | June 15, 1981                 | AE                       |                        |

**Table 13: Summary of Hydrologic and Hydraulic Analyses**

| Flooding Source          | Study Limits<br>Downstream Limit                            | Study Limits<br>Upstream Limit   | Hydrologic<br>Model or<br>Method Used | Hydraulic<br>Model or<br>Method Used | Date<br>Analyses<br>Completed | Flood<br>Zone on<br>FIRM | Special Considerations |
|--------------------------|---|--|---------------------------------------|--------------------------------------|-------------------------------|--------------------------|------------------------|
| Middle Fork Saline River | Confluence with Saline River                                | Approximately 7.1 miles above confluence with Saline River             | HEC-1                                 | HEC-2                                | May 17, 1982                  | AE                       |                        |
| Mill Creek               | Confluence with Middle Fork Saline River                    | Approximately 2.2 miles above confluence with Middle Fork Saline River | HEC-1                                 | HEC-2                                | May 17, 1982                  | AE                       |                        |
| North Fork Saline River  | Confluence with Alum Fork Saline River                      | Approximately 1.95 miles above confluence with North Fork Saline River | HEC-1                                 | HEC-2                                | May 17, 1982                  | AE                       |                        |
| Otter Creek              | Approximately 4.8 miles above confluence with Fourche Creek | Approximately 7.2 miles above confluence with Fourche Creek            | HEC-1                                 | HEC-2                                | August 15, 1989               | AE                       |                        |
| Otter Creek Tributary    | Confluence with Otter Creek                                 | Approximately 0.6 miles above confluence with Otter Creek              | HEC-1                                 | HEC-2                                | August 15, 1989               | AE                       |                        |
| Owen Creek               | At county boundary  | Approximately 1,000 feet upstream of Hilldale Road                     | HEC-1                                 | HEC-RAS version 2.2                  | April 2, 2003                 | AE                       |                        |

**Table 13: Summary of Hydrologic and Hydraulic Analyses**

| Flooding Source         | Study Limits<br>Downstream Limit   | Study Limits<br>Upstream Limit  | Hydrologic<br>Model or<br>Method Used | Hydraulic<br>Model or<br>Method Used | Date<br>Analyses<br>Completed | Flood<br>Zone on<br>FIRM | Special Considerations |
|-------------------------|------------------------------------|---|---------------------------------------|--------------------------------------|-------------------------------|--------------------------|------------------------|
| Saline River            | At county boundary                 | At confluence with Alum Fork Saline River and North Fork Saline River | Gage Analysis                         | HEC-2                                | May 17, 1982                  | AE                       |                        |
| Salt Creek              | Confluence with Saline River       | Approximately 2,305 feet upstream of Shenandoah Road                  | USACE Detailed Project Report         | USACE Detailed Project Report        | June 15, 1981                 | AE                       |                        |
| Shannon Hills Tributary | Confluence with Otter Creek        | Approximately 1,454 feet upstream of Joan Drive                       | HEC-1                                 | HEC-2                                | August 15, 1989               | AE                       |                        |
| Trailer Park Ditch      | Confluence with Crooked Creek      | At diversion with Crooked Creek                                       | HEC-1                                 | HEC-2                                | January 19, 1996              | AE                       |                        |
| Trace Creek             | Confluence with Willow Depot Creek | Approximately 5,330 feet above confluence with Willow Depot Creek     | HEC-HMS Version 3.5                   | HEC-RAS Version 4.1                  | November 1, 2015              | AE                       |                        |
| Upper Depot Creek       | Confluence with Saline River       | Approximately 815 feet upstream of Gary Drive                         | Snyder's Synthetic Hydrographs        | HEC-2                                | June 15, 1981                 | AE                       |                        |
| Willow Depot Creek      | Confluence with Saline River       | Approximately 815 feet upstream of Gary Drive                         | USACE Detailed Project Report         | USACE Detailed Project Report        | June 15, 1981                 | AE                       |                        |

**Table 13: Summary of Hydrologic and Hydraulic Analyses**

| Flooding Source | Study Limits<br>Downstream Limit | Study Limits<br>Upstream Limit | Hydrologic<br>Model or<br>Method Used | Hydraulic<br>Model or<br>Method Used | Date<br>Analyses<br>Completed | Flood<br>Zone on<br>FIRM | Special Considerations |
|-----------------|----------------------------------|--------------------------------|---------------------------------------|--------------------------------------|-------------------------------|--------------------------|------------------------|
| Zone A Studies  | Varies                           | Varies                         | USGS<br>Regression<br>Equations       | HEC-RAS<br>Version 4.1               | November<br>1, 2015           | A                        |                        |

**Table 14: Roughness Coefficients**

| Flooding Source              | Channel “n”    | Overbank “n”  |
|------------------------------|----------------|---------------|
| Bryant Tributary             | 0.018 – 0.060  | 0.060 – 0.100 |
| Boswell Creek                | 0.030 – 0.040  | 0.011 – 0.100 |
| Cedar Creek                  | 0.030 – 0.060  | 0.060 – 0.150 |
| Clear Creek                  | 0.040 – 0.060  | 0.100 – 0.110 |
| Crooked Creek                | 0.020 – 0.055  | 0.060 – 0.100 |
| Crooked Creek Tributary      | 0.045 – 0.055  | 0.018 – 0.060 |
| Duck Creek                   | 0.035 – 0.060  | 0.050 – 0.110 |
| Fourche Creek                | 0.030 – 0.060  | 0.060 – 0.150 |
| Hope Branch                  | 0.040 – 0.045  | 0.100 – 0.120 |
| Hurricane Creek              | 0.025 – 0.045  | 0.011 – 0.10  |
| Hurricane Creek Tributary 1  | 0.035 – 0.050  | 0.011 – 0.10  |
| Hurricane Creek Tributary 1A | 0.040 – 0.045  | 0.045 – 0.08  |
| Little Hurricane Creek       | 0.025 – 0.045  | 0.011 – 0.100 |
| Lorance and Dry Creeks       | 0.030 – 0.060  | 0.060 - .0150 |
| Maple Creek                  | 0.025 – 0.060  | 0.040 – 0.110 |
| Maple Creek Tributary        | 0.040 – 0.050  | 0.100 – 0.110 |
| McCright Branch              | 0.0415 – 0.050 | 0.080 – 0.120 |
| McNeil Creek                 | 0.050          | 0.090 – 0.110 |
| Middle Fork Saline River     | 0.030 – 0.060  | 0.060 – 0.150 |
| Mill Creek                   | 0.030 – 0.060  | 0.060 – 0.150 |
| North Fork Saline River      | 0.030 – 0.060  | 0.060 – 0.150 |
| Otter Creek                  | 0.025 - 0.050  | 0.050 – 0.150 |
| Otter Creek Tributary        | 0.030 – 0.060  | 0.060 – 0.150 |
| Owen Creek                   | 0.040 – 0.050  | 0.070 – 0.130 |
| Saline River                 | 0.040 – 0.055  | 0.080 – 0.100 |
| Salt Creek                   | 0.030 – 0.060  | 0.060 – 0.150 |
| Shannon Hills Tributary      | 0.025 – 0.050  | 0.050 – 0.150 |
| Trailer Park Ditch           | 0.030 – 0.060  | 0.060 – 0.150 |
| Trace Creek                  | 0.045 – 0.050  | 0.040 – 0.120 |
| Upper Depot Creek            | 0.050          | 0.090 – 0.110 |
| Willow Depot Creek           | 0.030 – 0.060  | 0.060 – 0.150 |

**Table 14: Roughness Coefficients**

| Flooding Source | Channel “n”   | Overbank “n”  |
|-----------------|---------------|---------------|
| Zone A Studies  | 0.030 – 0.060 | 0.050 – 0.120 |

**5.3 Coastal Analyses**

This section is not applicable to this Flood Risk Project

**Table 15: Summary of Coastal Analyses**

[Not applicable to this Flood Risk Project]

**5.3.1 Total Stillwater Elevations**

This section is not applicable to this Flood Risk Project

**Figure 8: 1% Annual Chance Total Stillwater Elevations for Coastal Areas**

[Not applicable to this Flood Risk Project]

**Table 16: Tide Gage Analysis Specifics**

[Not applicable to this Flood Risk Project]

**5.3.2 Waves**

This section is not applicable to this Flood Risk Project

**5.3.3 Coastal Erosion**

This section is not applicable to this Flood Risk Project

**5.3.4 Wave Hazard Analyses**

This section is not applicable to this Flood Risk Project

**Table 17: Coastal Transect Parameters**

[Not applicable to this Flood Risk Project]

**Figure 9: Transect Location Map**

[Not applicable to this Flood Risk Project]

**5.4 Alluvial Fan Analyses**

This section is not applicable to this Flood Risk Project

**Table 18: Summary of Alluvial Fan Analyses**

[Not applicable to this Flood Risk Project]

**Table 19: Results of Alluvial Fan Analyses**

[Not applicable to this Flood Risk Project]

## SECTION 6.0 – MAPPING METHODS

### 6.1 Vertical and Horizontal Control

All FIS Reports and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum used for newly created or revised FIS Reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD29). With the completion of the North American Vertical Datum of 1988 (NAVD88), many FIS Reports and FIRMs are now prepared using NAVD88 as the referenced vertical datum.

Flood elevations shown in this FIS Report and on the FIRMs are referenced to NAVD88. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between NGVD29 and NAVD88 or other datum conversion, visit the National Geodetic Survey website at [www.ngs.noaa.gov](http://www.ngs.noaa.gov), or contact the National Geodetic Survey (NGS) 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

Temporary vertical monuments are often established during the preparation of a flood hazard analysis for the purpose of establishing local vertical control. Although these monuments are not shown on the FIRM, they may be found in the archived project documentation associated with the FIS Report and the FIRMs for this community. Interested individuals may contact FEMA to access these data.

To obtain current elevation, description, and/or location information for benchmarks in the area, please contact information services Branch of the NGS at (301) 713-3242, or visit their website at [www.ngs.noaa.gov](http://www.ngs.noaa.gov).

The datum conversion locations and values that were calculated for Saline County are provided in Table 20.

**Table 20: Countywide Vertical Datum Conversion**

| Quadrangle Name                                      | Quadrangle Corner | Latitude | Longitude | Conversion from NGVD29 to NAVD88 (feet) |
|--|-------------------|----------|-----------|---|
| Nimrod   | SE                | 34.875   | -93.000   | 0.04                                    |
| Aplin  | SE                | 34.875   | -92.875   | 0.00                                    |
| Thornburg  | SE                | 34.875   | -92.750   | -0.06                                   |
| Martindale   | SE                | 34.875   | -92.625   | -0.10                                   |
| Nimrod SE  | SE                | 34.750   | -93.000   | 0.02                                    |
| Paron SW   | SE                | 34.750   | -92.875   | -0.01                                   |
| Paron  | SE                | 34.750   | -92.750   | -0.06                                   |
| Fourche SW   | SE                | 34.750   | -92.625   | -0.06                                   |
| Jessieville  | SE                | 34.625   | -93.000   | 0.02                                    |
| Goosepond Mountain                                   | SE                | 34.625   | -92.875   | -0.02                                   |
| Lonsdale NE  | SE                | 34.625   | -92.750   | -0.05                                   |
| Lake Norrell   | SE                | 34.625   | -92.625   | -0.08                                   |
| Congo  | SE                | 34.625   | -92.500   | -0.11                                   |
| Alexander  | SE                | 34.625   | -92.375   | -0.15                                   |
| Lonsdale   | SE                | 34.500   | -92.750   | -0.04                                   |
| Haskell  | SE                | 34.500   | -92.625   | -0.07                                   |
| Benton   | SE                | 34.500   | -92.500   | -0.11                                   |
| Bryant   | SE                | 34.500   | -92.375   | -0.16                                   |
| Spring Lake  | SE                | 34.500   | -92.250   | -0.20                                   |
| Average Conversion from NGVD29 to NAVD88 = -0.1 feet |                   |          |           |   |

**Table 21: Stream-Based Vertical Datum Conversion**

[Not applicable to this flood risk project]

## 6.2 Base Map

The FIRMs and FIS Report for this project have been produced in a digital format. The flood hazard information was converted to a Geographic Information System (GIS) format that meets FEMA's FIRM database specifications and geographic information standards. This information is provided in a digital format so that it can be incorporated into a local GIS and be accessed more easily by the community. The FIRM Database includes most of the tabular information contained in the FIS Report in such a way that the data can be associated with pertinent spatial features. For example, the information contained in the Floodway Data table and Flood Profiles can be linked to the cross sections that are shown on the FIRMs. Additional information about the FIRM Database and its

contents can be found in FEMA’s *Guidelines and Standards for Flood Risk Analysis and Mapping*, [www.fema.gov/guidelines-and-standards-flood-risk-analysis-and-mapping](http://www.fema.gov/guidelines-and-standards-flood-risk-analysis-and-mapping).

Base map information shown on the FIRM was derived from the sources described in Table 22 .

**Table 22: Base Map Sources**

| Data Type                        | Data Provider                     | Data Date | Data Scale | Data Description                                      |
|----------------------------------|-----------------------------------|-----------|------------|---|
| Political boundaries             | AGIO                              | 2015      | 1:12,000   | Municipal and county boundaries                       |
| Transportation Features          | AGIO, Census Bureau (TIGER Files) | 2015      | 1:12,000   | Road, airports, and railroads                         |
| Surface Water Features           | USGS NHD                          | 2006      | 1:12,000   | Streams, rivers, and lakes were derived from NHD data |
| Public Land Survey System (PLSS) | NFHL                              | 2015      | 1:24,000   | PLSS Township, Range, and Area information            |

### 6.3 Floodplain and Floodway Delineation

The FIRM shows tints, screens, and symbols to indicate floodplains and floodways as well as the locations of selected cross sections used in the hydraulic analyses and floodway computations.

For riverine flooding sources, the mapped floodplain boundaries shown on the FIRM have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using the topographic elevation data described in Table 23 .

In cases where the 1% and 0.2% annual chance floodplain boundaries are close together, only the 1% annual chance floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

The floodway widths presented in this FIS Report and on the FIRM were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. Table 23 indicates the flooding sources for which floodways have been determined. The results of the floodway computations for those flooding sources have been tabulated for selected cross sections and are shown in Table 23 , “Floodway Data.”

Certain flooding sources may have been studied that do not have published BFEs on the FIRMs, or for which there is a need to report the 1% annual chance flood elevations at selected cross sections because a published Flood Profile does not exist in this FIS Report. These streams may have also been studied using methods to determine non-encroachment zones rather than floodways. For these flooding sources, the 1% annual chance floodplain boundaries have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using the topographic elevation data described in Table 23 . All topographic data used for modeling or mapping has been converted as necessary to NAVD88. The 1% annual chance elevations for selected cross sections along these flooding sources, along with their non-

encroachment widths, if calculated, are shown in Table 25 , “Flood Hazard and Non-Encroachment Data for Selected Streams.”

**Table 23: Summary of Topographic Elevation Data used in Mapping**

| Community     | Flooding Source          | Source for Topographic Elevation Data    |       |                  |                   |                       |           |
|---------------|--------------------------|--|-------|------------------|-------------------|-----------------------|-----------|
|               |                          | Description                              | Scale | Contour Interval | RMSE <sub>z</sub> | Accuracy <sub>z</sub> | Citation  |
| Saline County | All within Saline County | Light Detection and Ranging data (LiDAR) | 4800  | 2 FT             | 12.5 cm           | 24.5 cm               | USGS 2014 |

BFEs shown at cross sections on the FIRM represent the 1% annual chance water surface elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report. Rounded whole-foot elevations may be shown on the FIRM in coastal areas, areas of ponding, and other areas with static base flood elevations.

**Table 24: Floodway Data**

| LOCATION      |                       | FLOODWAY     |                         |                           | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION ( FEET NAVD88) |                  |               |          |
|---------------|-----------------------|--------------|-------------------------|---------------------------|---|------------------|---------------|----------|
| CROSS SECTION | DISTANCE <sup>1</sup> | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/ SEC) | REGULATORY  | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| A             | 5,280                 | 1,950        | 22,701                  | 3.7                       | 302.1   | 302.1            | 303.1         | 1.0      |

<sup>1</sup>Feet above confluence with Saline River and North Fork Saline River

|                 |  |  |
|-----------------|--|--|
| <b>TABLE 24</b> | <b>FEDERAL EMERGENCY MANAGEMENT AGENCY</b> | <b>FLOODWAY DATA</b>                           |
|                 | <b>SALINE COUNTY, ARKANSAS</b>             |  |
|                 | <b>AND INCORPORATED AREAS</b>              | <b>FLOODING SOURCE: ALUM FORK SALINE RIVER</b> |

| LOCATION      |                       | FLOODWAY     |                         |                           | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION ( FEET NAVD88) |                  |               |          |
|---------------|-----------------------|--------------|-------------------------|---------------------------|---|------------------|---------------|----------|
| CROSS SECTION | DISTANCE <sup>1</sup> | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/ SEC) | REGULATORY  | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| A             | 2,112                 | 65           | 405                     | 5.4                       | 360.5   | 360.5            | 361.1         | 0.6      |
| B             | 3,168                 | 70           | 255                     | 1.6                       | 367.7   | 367.7            | 368.6         | 0.9      |
| C             | 5,122                 | 224          | 136                     | 1.3                       | 392.1   | 392.1            | 392.9         | 0.8      |

<sup>1</sup>Feet above confluence with Crooked Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**SALINE COUNTY, ARKANSAS**  
 AND INCORPORATED AREAS

**FLOODWAY DATA**

**FLOODING SOURCE: BRYANT TRIBUTARY**

| LOCATION      |                       | FLOODWAY     |                         |                           | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION ( FEET NAVD88) |                  |               |          |
|---------------|-----------------------|--------------|-------------------------|---------------------------|---|------------------|---------------|----------|
| CROSS SECTION | DISTANCE <sup>1</sup> | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/ SEC) | REGULATORY  | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| A             | 25,555                | 250          | 1,871                   | 4.1                       | 550.4   | 550.4            | 551.0         | 0.6      |
| B             | 31,416                | 160          | 650                     | 8.8                       | 578.3   | 578.3            | 579.3         | 1.0      |

<sup>1</sup>Feet above confluence with South Fork Saline River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**SALINE COUNTY, ARKANSAS**  
 AND INCORPORATED AREAS

**FLOODWAY DATA**

**FLOODING SOURCE: CEDAR CREEK**

| LOCATION      |                       | FLOODWAY     |                         |                          | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) |                  |               |          |
|---------------|-----------------------|--------------|-------------------------|--------------------------|--|------------------|---------------|----------|
| CROSS SECTION | DISTANCE <sup>1</sup> | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/SEC) | REGULATORY   | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| A             | 46,772                | 257          | 2,627                   | 1.3                      | 257.0  | 257.0            | 258.0         | 1.0      |
| B             | 47,743                | 258          | 1,435                   | 2.3                      | 257.3  | 257.3            | 258.2         | 0.9      |
| C             | 48,780                | 270          | 2,829                   | 1.0                      | 269.9  | 269.9            | 269.9         | 0.0      |

<sup>1</sup>Feet above Confluence of Pennington Bayou

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

**SALINE COUNTY, ARKANSAS**

AND INCORPORATED AREAS

**FLOODWAY DATA**

**FLOODING SOURCE: CLEAR CREEK**

| LOCATION      |                       | FLOODWAY     |                         |                           | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION ( FEET NAVD88) |                  |               |          |
|---------------|-----------------------|--------------|-------------------------|---------------------------|---|------------------|---------------|----------|
| CROSS SECTION | DISTANCE <sup>1</sup> | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/ SEC) | REGULATORY  | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| A             | 15,576                | 1,135        | 8,213                   | 1.3                       | 320.1   | 320.1            | 320.9         | 0.8      |
| B             | 20,064                | 640          | 3,371                   | 1.9                       | 327.6   | 327.6            | 328.2         | 0.6      |
| C             | 27,456                | 400          | 3,805                   | 1.4                       | 351.4   | 351.4            | 352.3         | 0.9      |
| D             | 30,096                | 150          | 918                     | 3.7                       | 353.6   | 353.6            | 354.4         | 0.8      |
| E             | 31,680                | 150          | 604                     | 4.3                       | 357.6   | 357.6            | 357.9         | 0.3      |
| F             | 36,590                | 50           | 149                     | 4                         | 392.7   | 392.7            | 393.5         | 0.8      |

<sup>1</sup>Feet above confluence with Fourche Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**SALINE COUNTY, ARKANSAS**  
 AND INCORPORATED AREAS

**FLOODWAY DATA**

**FLOODING SOURCE: CROOKED CREEK**

| LOCATION      |                       | FLOODWAY     |                         |                           | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION ( FEET NAVD88) |                  |               |          |
|---------------|-----------------------|--------------|-------------------------|---------------------------|---|------------------|---------------|----------|
| CROSS SECTION | DISTANCE <sup>1</sup> | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/ SEC) | REGULATORY  | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| A             | 158                   | 57           | 182                     | 4.2                       | 373.4   | 373.4            | 374.3         | 0.9      |
| B             | 2,270                 | 63           | 177                     | 3.1                       | 397.2   | 397.2            | 398.2         | 1.0      |

<sup>1</sup>Feet above confluence with Crooked Creek

|          |   |   |
|----------|---|---|
| TABLE 24 | <b>FEDERAL EMERGENCY MANAGEMENT AGENCY</b><br><b>SALINE COUNTY, ARKANSAS</b><br><b>AND INCORPORATED AREAS</b> | <b>FLOODWAY DATA</b>                            |
|          |   | <b>FLOODING SOURCE: CROOKED CREEK TRIBUTARY</b> |

| LOCATION      |                       | FLOODWAY     |                         |                          | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) |                  |               |          |
|---------------|-----------------------|--------------|-------------------------|--------------------------|--|------------------|---------------|----------|
| CROSS SECTION | DISTANCE <sup>1</sup> | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/SEC) | REGULATORY   | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| A             | 2,346                 | 440          | 3,070                   | 3.0                      | 258.5  | 258.5            | 259.0         | 0.5      |
| B             | 4,324                 | 575          | 4,041                   | 2.2                      | 259.9  | 259.9            | 260.6         | 0.7      |
| C             | 7,876                 | 575          | 4,383                   | 1.4                      | 264.8  | 264.8            | 265.3         | 0.5      |
| D             | 12,164                | 635          | 3,010                   | 2.0                      | 267.7  | 267.7            | 268.7         | 1.0      |

<sup>1</sup>Feet above Confluence of Clear Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

**SALINE COUNTY, ARKANSAS**

AND INCORPORATED AREAS

**FLOODWAY DATA**

**FLOODING SOURCE: DUCK CREEK**

| LOCATION      |                       | FLOODWAY            |                         |                           | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION ( FEET NAVD88) |                  |               |          |
|---------------|-----------------------|---------------------|-------------------------|---------------------------|---|------------------|---------------|----------|
| CROSS SECTION | DISTANCE <sup>1</sup> | WIDTH (FEET)        | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/ SEC) | REGULATORY  | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| A             | 22.54                 | 645                 | 2,968                   | 4.1                       | 320.8   | 320.8            | 321.6         | 0.8      |
| B             | 23.00                 | 975                 | 5,257                   | 2.3                       | 325.9   | 325.9            | 326.8         | 0.9      |
| C             | 23.35                 | 850                 | 5,044                   | 2.4                       | 332.0   | 332.0            | 333.0         | 1.0      |
| D             | 23.70                 | 925                 | 5,162                   | 2.3                       | 336.2   | 336.2            | 337.1         | 0.9      |
| E             | 24.21                 | 745/31 <sup>2</sup> | 4,693                   | 2.6                       | 342.5   | 342.5            | 343.4         | 0.9      |
| F             | 31.86                 | 520                 | 1,753                   | 2.5                       | 489.1   | 489.1            | 489.1         | 0.0      |
| G             | 32.45                 | 200                 | 1,052                   | 2.5                       | 506.4   | 506.4            | 507.0         | 0.6      |
| H             | 33.10                 | 100                 | 415                     | 6.3                       | 531.9   | 531.9            | 532.1         | 0.2      |

<sup>1</sup>Miles above confluence with Arkansas River

<sup>2</sup>Total floodway width / width within jurisdiction

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

**SALINE COUNTY, ARKANSAS**

AND INCORPORATED AREAS

**FLOODWAY DATA**

**FLOODING SOURCE: FOURCHE CREEK**

| LOCATION      |                       | FLOODWAY     |                         |                          | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) |                  |               |          |
|---------------|-----------------------|--------------|-------------------------|--------------------------|--|------------------|---------------|----------|
| CROSS SECTION | DISTANCE <sup>1</sup> | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/SEC) | REGULATORY   | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| A             | 3,400                 | 245          | 1,832                   | 3.2                      | 277.0  | 277.0            | 277.8         | 0.8      |
| B             | 4,720                 | 270          | 2,341                   | 2.5                      | 279.4  | 279.4            | 280.3         | 0.9      |

<sup>1</sup>Feet above Confluence of Lorange Creek

TABLE 24

**FEDERAL EMERGENCY MANAGEMENT AGENCY**  
**SALINE COUNTY, ARKANSAS**  
**AND INCORPORATED AREAS**

**FLOODWAY DATA**

**FLOODING SOURCE: HOPE BRANCH**

| LOCATION       |                       | FLOODWAY             |                         |                           | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION ( FEET NAVD88) |                  |               |          |
|----------------|-----------------------|----------------------|-------------------------|---------------------------|---|------------------|---------------|----------|
| CROSS SECTION  | DISTANCE <sup>1</sup> | WIDTH (FEET)         | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/ SEC) | REGULATORY  | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| A              | 11.34                 | 635/390 <sup>3</sup> | 7,109                   | 1.5                       | 247.9   | 247.9            | 248.7         | 0.8      |
| B <sup>2</sup> | 12.38                 | 1,045                | 9,317                   | 1.1                       | 252.9   | 252.9            | 253.9         | 1.0      |
| C <sup>2</sup> | 13.32                 | 440                  | 3,754                   | 3.3                       | 254.5   | 254.5            | 255.5         | 1.0      |
| D              | 15.58                 | 540                  | 5,085                   | 2.4                       | 266.6   | 266.6            | 267.5         | 0.9      |
| E              | 16.00                 | 1500/35 <sup>3</sup> | 9,079                   | 1.4                       | 268.1   | 268.1            | 269.0         | 0.9      |
| F              | 17.49                 | 650                  | 5,172                   | 1.2                       | 277.8   | 277.8            | 278.7         | 0.9      |
| G              | 18.22                 | 700                  | 4,294                   | 1.5                       | 283.0   | 283.0            | 283.2         | 0.2      |
| H              | 19.24                 | 800                  | 4,001                   | 1.4                       | 288.5   | 288.5            | 289.4         | 0.9      |

<sup>1</sup>Miles above confluence with Arkansas River

<sup>2</sup>Cross Section located outside of unincorporated area of Saline County

<sup>3</sup>Total floodway width / width within jurisdiction

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

**SALINE COUNTY, ARKANSAS**

AND INCORPORATED AREAS

**FLOODWAY DATA**

**FLOODING SOURCE: LORANCE AND DRY CREEKS**

| LOCATION      |                       | FLOODWAY     |                         |                          | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) |                  |               |          |
|---------------|-----------------------|--------------|-------------------------|--------------------------|--|------------------|---------------|----------|
| CROSS SECTION | DISTANCE <sup>1</sup> | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/SEC) | REGULATORY   | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| A             | 13,786                | 330          | 1,407                   | 1.5                      | 239.7  | 239.7            | 240.6         | 0.9      |
| B             | 16,585                | 400          | 2,537                   | 1.1                      | 242.6  | 242.6            | 242.9         | 0.3      |
| C             | 20,026                | 385          | 1,969                   | 1.2                      | 244.9  | 244.9            | 245.4         | 0.5      |
| D             | 24,300                | 658          | 2,611                   | 0.8                      | 251.2  | 251.2            | 251.3         | 0.1      |
| E             | 28,246                | 142          | 719                     | 3.1                      | 258.1  | 258.1            | 258.9         | 0.8      |
| F             | 31,850                | 200          | 748                     | 3.0                      | 267.0  | 267.0            | 267.0         | 0.0      |
| G             | 34,625                | 230          | 873                     | 1.7                      | 274.6  | 274.6            | 275.3         | 0.7      |

<sup>1</sup>Feet above Confluence of Lorange Creek

|          |   |   |
|----------|---|---|
| TABLE 24 | <b>FEDERAL EMERGENCY MANAGEMENT AGENCY</b><br><b>SALINE COUNTY, ARKANSAS</b><br><b>AND INCORPORATED AREAS</b> | <b>FLOODWAY DATA</b><br><br><b>FLOODING SOURCE: MAPLE CREEK</b> |
|----------|---|---|

| LOCATION      |                       | FLOODWAY     |                         |                          | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) |                  |               |          |
|---------------|-----------------------|--------------|-------------------------|--------------------------|--|------------------|---------------|----------|
| CROSS SECTION | DISTANCE <sup>1</sup> | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/SEC) | REGULATORY   | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| A             | 2,219                 | 72           | 299                     | 3.4                      | 248.7  | 248.7            | 249.6         | 0.9      |
| B             | 3,453                 | 287          | 894                     | 0.9                      | 250.3  | 250.3            | 251.3         | 1.0      |

<sup>1</sup>Feet above Confluence of Maple Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

**SALINE COUNTY, ARKANSAS**

AND INCORPORATED AREAS

**FLOODWAY DATA**

**FLOODING SOURCE: MAPLE CREEK TRIBUTARY**

| LOCATION      |                       | FLOODWAY     |                         |                          | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) |                  |               |          |
|---------------|-----------------------|--------------|-------------------------|--------------------------|--|------------------|---------------|----------|
| CROSS SECTION | DISTANCE <sup>1</sup> | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/SEC) | REGULATORY   | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| A             | 2,750                 | 200          | 919                     | 1.3                      | 290.1  | 290.1            | 291.0         | 0.9      |
| B             | 5,790                 | 160          | 806                     | 1.5                      | 301.3  | 301.3            | 302.3         | 1.0      |

<sup>1</sup>Feet above Confluence of Hope Branch

|          |   |   |
|----------|---|---|
| TABLE 24 | <b>FEDERAL EMERGENCY MANAGEMENT AGENCY</b><br><b>SALINE COUNTY, ARKANSAS</b><br><b>AND INCORPORATED AREAS</b> | <b>FLOODWAY DATA</b>                    |
|          |   | <b>FLOODING SOURCE: MCCRIGHT BRANCH</b> |

| LOCATION      |                       | FLOODWAY     |                         |                          | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) |                    |               |          |
|---------------|-----------------------|--------------|-------------------------|--------------------------|--|--------------------|---------------|----------|
| CROSS SECTION | DISTANCE <sup>1</sup> | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/SEC) | REGULATORY   | WITHOUT FLOODWAY   | WITH FLOODWAY | INCREASE |
| A             | 620                   | 100          | 546                     | 7.3                      | 291.4  | 281.6 <sup>2</sup> | 282.3         | 0.9      |
| B             | 2,320                 | 149          | 451                     | 6.7                      | 297.5  | 297.5              | 297.5         | 0        |
| C             | 2,420                 | 125          | 429                     | 7.0                      | 300.0  | 300                | 300.0         | 0        |
| D             | 4,030                 | 89           | 275                     | 10.9                     | 323.2  | 323.2              | 323.2         | 0        |
| E             | 4,730                 | 100          | 399                     | 7.5                      | 329.2  | 329.2              | 329.4         | 0.2      |
| F             | 6,820                 | 80           | 213                     | 12.1                     | 350.5  | 350.5              | 350.5         | 0        |
| G             | 7,050                 | 71           | 284                     | 9.1                      | 353.6  | 353.6              | 354.3         | 0.7      |
| H             | 7,370                 | 80           | 300                     | 8.6                      | 358.4  | 358.4              | 358.5         | 0.1      |
| I             | 7,530                 | 57           | 366                     | 7.0                      | 362.5  | 362.5              | 362.5         | 0        |
| J             | 7,730                 | 75           | 402                     | 6.4                      | 363.6  | 363.6              | 363.6         | 0        |
| K             | 8,730                 | 55           | 322                     | 6.3                      | 372.6  | 372.6              | 372.6         | 0        |
| L             | 8,880                 | 32           | 156                     | 13.0                     | 373.9  | 373.9              | 373.6         | -0.3     |
| M             | 9,980                 | 190          | 706                     | 2.9                      | 386.4  | 386.4              | 386.4         | 0        |

<sup>1</sup>Feet above Confluence of Saline River

<sup>2</sup>Computed without backwater

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

**SALINE COUNTY, ARKANSAS**

AND INCORPORATED AREAS

**FLOODWAY DATA**

**FLOODING SOURCE: MCNEIL CREEK**

| LOCATION      |                       | FLOODWAY     |                         |                           | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION ( FEET NAVD88) |                  |               |          |
|---------------|-----------------------|--------------|-------------------------|---------------------------|---|------------------|---------------|----------|
| CROSS SECTION | DISTANCE <sup>1</sup> | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/ SEC) | REGULATORY  | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| A             | 16.21                 | 900          | 6,632                   | 4.3                       | 470.1   | 470.1            | 470.8         | 0.7      |
| B             | 17.37                 | 1,200        | 12,172                  | 2.3                       | 481.5   | 481.5            | 482.3         | 0.8      |
| C             | 18.43                 | 950          | 6,994                   | 4.1                       | 492   | 492.0            | 493.0         | 1.0      |
| D             | 19.53                 | 835          | 7,817                   | 3.7                       | 505.5   | 505.5            | 505.7         | 0.3      |
| E             | 20.66                 | 650          | 5,585                   | 5.1                       | 515.7   | 515.7            | 516.2         | 0.5      |
| F             | 21.40                 | 650          | 5,528                   | 5.2                       | 525.3   | 525.3            | 526.2         | 0.9      |
| G             | 22.36                 | 650          | 7,509                   | 3.8                       | 536.4   | 536.4            | 537.3         | 0.9      |
| H             | 23.81                 | 1,100        | 10,316                  | 2.8                       | 547.4   | 547.4            | 548.2         | 0.8      |

<sup>1</sup>Miles above confluence with Alum Fork Saline River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**SALINE COUNTY, ARKANSAS**  
AND INCORPORATED AREAS

**FLOODWAY DATA**

**FLOODING SOURCE: MIDDLE FORK SALINE RIVER**

| LOCATION      |                       | FLOODWAY     |                         |                           | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION ( FEET NAVD88) |                  |               |          |
|---------------|-----------------------|--------------|-------------------------|---------------------------|---|------------------|---------------|----------|
| CROSS SECTION | DISTANCE <sup>1</sup> | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/ SEC) | REGULATORY  | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| A             | 3,062                 | 240          | 1,271                   | 4.0                       | 545.4   | 545.4            | 546.4         | 1.0      |

<sup>1</sup>Miles above confluence with Middle Fork Saline River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**SALINE COUNTY, ARKANSAS**  
 AND INCORPORATED AREAS

**FLOODWAY DATA**

**FLOODING SOURCE: MILL CREEK**

| LOCATION      |                       | FLOODWAY     |                         |                           | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION ( FEET NAVD88) |                  |               |          |
|---------------|-----------------------|--------------|-------------------------|---------------------------|---|------------------|---------------|----------|
| CROSS SECTION | DISTANCE <sup>1</sup> | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/ SEC) | REGULATORY  | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| A             | 2,006                 | 1,220        | 17,377                  | 1.9                       | 299.5   | 299.5            | 300.5         | 1.0      |
| B             | 7,075                 | 1,100        | 12,685                  | 2.6                       | 301.7   | 301.7            | 302.6         | 0.9      |

<sup>1</sup>Feet above confluence with Saline River and Alum Fork Saline River

|                 |   |   |
|-----------------|---|---|
| <b>TABLE 24</b> | <b>FEDERAL EMERGENCY MANAGEMENT AGENCY</b>                      | <b>FLOODWAY DATA</b>                            |
|                 | <b>SALINE COUNTY, ARKANSAS</b><br><b>AND INCORPORATED AREAS</b> | <b>FLOODING SOURCE: NORTH FORK SALINE RIVER</b> |

| LOCATION      |                       | FLOODWAY             |                         |                          | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) |                    |               |          |
|---------------|-----------------------|----------------------|-------------------------|--------------------------|--|--------------------|---------------|----------|
| CROSS SECTION | DISTANCE <sup>1</sup> | WIDTH (FEET)         | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/SEC) | REGULATORY   | WITHOUT FLOODWAY   | WITH FLOODWAY | INCREASE |
| A             | 26,664                | 550/200 <sup>2</sup> | 3,613                   | 1.6                      | 311.9  | 311.9 <sup>3</sup> | 312.9         | 1.0      |
| B             | 29,251                | 500                  | 2,935                   | 1.5                      | 313.7  | 313.7              | 314.7         | 1.0      |
| C             | 30,571                | 470                  | 2,232                   | 1.8                      | 315.8  | 315.8              | 316.8         | 1.0      |
| D             | 33,370                | 735                  | 4,670                   | 1.5                      | 318.9  | 318.9              | 319.8         | 0.9      |
| E             | 37,910                | 470                  | 2,393                   | 1.5                      | 329.9  | 329.9              | 330.9         | 1.0      |

<sup>1</sup>Feet above Confluence of Fourche Creek

<sup>2</sup>Width/width within county limits

<sup>3</sup>Elevation with backwater effects from Fourche Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

**SALINE COUNTY, ARKANSAS**

AND INCORPORATED AREAS

**FLOODWAY DATA**

**FLOODING SOURCE: OTTER CREEK**

| LOCATION      |                       | FLOODWAY     |                         |                          | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) |                  |               |          |
|---------------|-----------------------|--------------|-------------------------|--------------------------|--|------------------|---------------|----------|
| CROSS SECTION | DISTANCE <sup>1</sup> | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/SEC) | REGULATORY   | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| A             | 370                   | 130          | 357                     | 5.5                      | 322.1  | 322.1            | 323.1         | 1.0      |
| B             | 3,010                 | 365          | 1,408                   | 1.4                      | 332.1  | 332.1            | 333.1         | 1.0      |

<sup>1</sup>Feet above Confluence of Otter Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

**SALINE COUNTY, ARKANSAS**

AND INCORPORATED AREAS

**FLOODWAY DATA**

**FLOODING SOURCE: OTTER CREEK TRIBUTARY**

| LOCATION      |                       | FLOODWAY     |                         |                          | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) |                  |               |          |
|---------------|-----------------------|--------------|-------------------------|--------------------------|--|------------------|---------------|----------|
| CROSS SECTION | DISTANCE <sup>1</sup> | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/SEC) | REGULATORY   | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| A             | 3,220                 | 440          | 2,242                   | 3.0                      | 323.6  | 323.6            | 324.6         | 1.0      |
| B             | 4,960                 | 370          | 2,302                   | 3.1                      | 329.6  | 329.6            | 329.6         | 0.0      |
| C             | 8,130                 | 380          | 2,113                   | 3.4                      | 339.1  | 339.1            | 340.1         | 1.0      |
| D             | 10,890                | 290          | 1,108                   | 6.5                      | 352.9  | 352.9            | 353.0         | 0.1      |
| E             | 14,190                | 230          | 741                     | 6.3                      | 367.4  | 367.4            | 367.5         | 0.1      |
| F             | 15,880                | 230          | 1,083                   | 4.1                      | 380.6  | 380.6            | 381.5         | 0.9      |
| G             | 20,000                | 255          | 1,163                   | 3.4                      | 405.2  | 405.2            | 406.2         | 1.0      |

<sup>1</sup>Feet above Pulaski County

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

**SALINE COUNTY, ARKANSAS**

AND INCORPORATED AREAS

**FLOODWAY DATA**

**FLOODING SOURCE: OWEN CREEK**

| LOCATION      |                       | FLOODWAY               |                         |                           | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION ( FEET NAVD88) |                  |               |          |
|---------------|-----------------------|------------------------|-------------------------|---------------------------|---|------------------|---------------|----------|
| CROSS SECTION | DISTANCE <sup>1</sup> | WIDTH (FEET)           | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/ SEC) | REGULATORY  | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| A             | 183.89                | 4000/3400 <sup>2</sup> | 48,451                  | 2.2                       | 251.8   | 251.8            | 252.6         | 0.8      |
| B             | 189.90                | 10,000                 | 79,519                  | 1.3                       | 264.2   | 264.2            | 265.1         | 0.9      |
| C             | 195.00                | 6,050                  | 50,406                  | 2.1                       | 274.6   | 274.6            | 275.6         | 1.0      |
| D             | 195.95                | 5,380                  | 21,505                  | 4.9                       | 282.7   | 282.7            | 283.2         | 0.5      |
| E             | 196.58                | 4,200                  | 59,399                  | 1.8                       | 284.6   | 284.6            | 285.1         | 0.5      |
| F             | 197.24                | 3,270                  | 25,393                  | 4.1                       | 286.1   | 286.1            | 286.8         | 0.7      |
| G             | 197.92                | 1,210                  | 21,061                  | 5.0                       | 287.8   | 287.8            | 288.5         | 0.7      |
| H             | 198.97                | 2,100                  | 33,630                  | 3.1                       | 292.4   | 292.4            | 293.1         | 0.7      |
| I             | 200.51                | 3,215                  | 30,746                  | 3.4                       | 295.9   | 295.9            | 296.8         | 0.9      |

<sup>1</sup>Miles above confluence with Ouachita River

<sup>2</sup>Total floodway width/ width within jurisdiction

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

**SALINE COUNTY, ARKANSAS**

AND INCORPORATED AREAS

**FLOODWAY DATA**

**FLOODING SOURCE: SALINE RIVER**

| LOCATION      |                       | FLOODWAY     |                         |                           | 1% ANNUAL CHANCE FLOOD WATER SURFACE<br>ELEVATION ( FEET NAVD88) |                    |               |          |
|---------------|-----------------------|--------------|-------------------------|---------------------------|--|--------------------|---------------|----------|
| CROSS SECTION | DISTANCE <sup>1</sup> | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/ SEC) | REGULATORY   | WITHOUT FLOODWAY   | WITH FLOODWAY | INCREASE |
| A             | 2,800                 | 325          | 1,595                   | 2.4                       | 293.0  | 281.3 <sup>2</sup> | 282.3         | 1.0      |
| B             | 3,225                 | 325          | 1,490                   | 3.2                       | 293.2  | 282.9 <sup>2</sup> | 283.8         | 0.9      |
| C             | 3,650                 | 325          | 1,526                   | 2.5                       | 293.4  | 284.4 <sup>2</sup> | 285.2         | 0.8      |
| D             | 4,050                 | 400          | 1,773                   | 2.1                       | 293.7  | 285.9 <sup>2</sup> | 286.9         | 1.0      |
| E             | 4,500                 | 250          | 450                     | 4.8                       | 293.7  | 287.9 <sup>2</sup> | 287.9         | 0.0      |
| F             | 4,925                 | 225          | 1,097                   | 4.4                       | 293.7  | 292.7 <sup>2</sup> | 293.3         | 0.6      |
| G             | 5,875                 | 200          | 854                     | 4.7                       | 297.2  | 297.2              | 297.7         | 0.5      |
| H             | 6,825                 | 200          | 1,156                   | 3.7                       | 304.4  | 304.4              | 305.2         | 0.8      |
| I             | 7,250                 | 160          | 344                     | 4.3                       | 306.5  | 306.5              | 306.5         | 0.0      |
| J             | 8,250                 | 290          | 373                     | 6.0                       | 312.9  | 312.9              | 312.9         | 0.0      |
| K             | 8,550                 | 200          | 642                     | 5.9                       | 316.2  | 316.2              | 316.9         | 0.7      |
| L             | 9,550                 | 125          | 448                     | 7.7                       | 324.2  | 324.2              | 324.7         | 0.5      |
| M             | 10,225                | 150          | 431                     | 3.4                       | 331.7  | 331.7              | 332.4         | 0.7      |
| N             | 10,725                | 125          | 340                     | 7.5                       | 334.3  | 334.3              | 334.3         | 0.0      |
| O             | 11,345                | 125          | 927                     | 3.2                       | 340.1  | 340.1              | 341.1         | 1.0      |
| P             | 11,820                | 125          | 353                     | 4.7                       | 343.0  | 343.0              | 343.0         | 0.0      |
| Q             | 12,440                | 150          | 370                     | 4.5                       | 349.6  | 349.6              | 350.0         | 0.4      |
| R             | 13,440                | 150          | 548                     | 5.0                       | 360.0  | 360.0              | 360.6         | 0.6      |

<sup>1</sup>Feet above confluence with Saline River

<sup>2</sup>Elevation computed without consideration of backwater effects from Saline River

TABLE 24

**FEDERAL EMERGENCY MANAGEMENT AGENCY**  
**SALINE COUNTY, ARKANSAS**  
**AND INCORPORATED AREAS**

**FLOODWAY DATA**

**FLOODING SOURCE: SALT CREEK**

| LOCATION      |                       | FLOODWAY     |                         |                           | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION ( FEET NAVD88) |                    |               |          |
|---------------|-----------------------|--------------|-------------------------|---------------------------|---|--------------------|---------------|----------|
| CROSS SECTION | DISTANCE <sup>1</sup> | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/ SEC) | REGULATORY  | WITHOUT FLOODWAY   | WITH FLOODWAY | INCREASE |
| A             | 475                   | 260          | 806                     | 1.9                       | 313.2   | 312.1 <sup>2</sup> | 313.1         | 1.0      |
| B             | 2,320                 | 75           | 331                     | 4.7                       | 320.0   | 320.0              | 320.9         | 0.9      |
| C             | 3,854                 | 114          | 278                     | 7.5                       | 329.7   | 329.7              | 330.3         | 0.6      |

<sup>1</sup>Feet above confluence with Otter Creek

<sup>2</sup>Elevation computed without consideration of backwater effects from Fourche Creek

|          |   |   |
|----------|---|---|
| TABLE 24 | <b>FEDERAL EMERGENCY MANAGEMENT AGENCY</b><br><b>SALINE COUNTY, ARKANSAS</b><br><b>AND INCORPORATED AREAS</b> | <b>FLOODWAY DATA</b>                            |
|          |   | <b>FLOODING SOURCE: SHANNON HILLS TRIBUTARY</b> |

| LOCATION      |                       | FLOODWAY                  |                         |                          | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88) |                  |               |          |
|---------------|-----------------------|---------------------------|-------------------------|--------------------------|--|------------------|---------------|----------|
| CROSS SECTION | DISTANCE <sup>1</sup> | WIDTH <sup>2</sup> (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/SEC) | REGULATORY   | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| A             | 50,104                | 86                        | 665                     | 4.2                      | 279.9  | 279.9            | 280.8         | 0.9      |
| B             | 51,430                | 195                       | 877                     | 3.2                      | 282.8  | 282.8            | 283.7         | 0.9      |
| C             | 51,955                | 114                       | 758                     | 3.6                      | 285.7  | 285.7            | 285.9         | 0.2      |
| D             | 52,735                | 142                       | 638                     | 4.2                      | 287.2  | 287.2            | 287.9         | 0.7      |
| E             | 53,696                | 148                       | 746                     | 3.6                      | 289.5  | 289.5            | 290.5         | 1.0      |
| F             | 54,954                | 247                       | 1,090                   | 2.5                      | 294.0  | 294.0            | 295.0         | 1.0      |
| G             | 55,599                | 138                       | 627                     | 4.3                      | 296.4  | 296.4            | 297.4         | 1.0      |
| H             | 56,470                | 196                       | 1,153                   | 2.3                      | 300.4  | 300.4            | 301.0         | 0.6      |
| I             | 57,120                | 54                        | 336                     | 7.0                      | 300.4  | 300.4            | 301.3         | 0.9      |
| J             | 57,794                | 218                       | 846                     | 2.8                      | 303.5  | 303.5            | 304.1         | 0.6      |
| K             | 59,644                | 205                       | 632                     | 3.7                      | 307.0  | 307.0            | 307.9         | 0.9      |
| L             | 60,722                | 378                       | 991                     | 2.4                      | 310.2  | 310.2            | 311.1         | 0.9      |
| M             | 61,585                | 313                       | 782                     | 3.0                      | 312.9  | 312.9            | 313.8         | 0.9      |
| N             | 62,383                | 293                       | 921                     | 2.5                      | 315.9  | 315.9            | 316.7         | 0.8      |
| O             | 63,354                | 215                       | 588                     | 4.0                      | 318.8  | 318.8            | 319.8         | 1.0      |

<sup>1</sup>Feet above confluence with Saline River

<sup>2</sup>Width measured from left encroachment to right encroachment with small island considerations

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, ARKANSAS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: TRACE CREEK

| LOCATION      |                       | FLOODWAY     |                         |                           | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION ( FEET NAVD88) |                  |               |          |
|---------------|-----------------------|--------------|-------------------------|---------------------------|---|------------------|---------------|----------|
| CROSS SECTION | DISTANCE <sup>1</sup> | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/ SEC) | REGULATORY  | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| A             | 0.18                  | 284          | 2,261                   | 0.5                       | 347.9   | 347.9            | 348.8         | 0.9      |
| B             | 0.38                  | 325          | 2,831                   | 0.4                       | 348.0   | 348.0            | 348.9         | 0.9      |

<sup>1</sup>Miles above confluence with Crooked Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**SALINE COUNTY, ARKANSAS**  
 AND INCORPORATED AREAS

**FLOODWAY DATA**

**FLOODING SOURCE: TRAILER PARK DITCH**

| LOCATION      |                       | FLOODWAY     |                         |                           | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION ( FEET NAVD88) |                  |               |          |
|---------------|-----------------------|--------------|-------------------------|---------------------------|---|------------------|---------------|----------|
| CROSS SECTION | DISTANCE <sup>1</sup> | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/ SEC) | REGULATORY  | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| A             | 1,850                 | 400          | 1,369                   | 1.8                       | 337.9   | 337.9            | 338.9         | 1.0      |
| B             | 2,140                 | 400          | 1,100                   | 2.2                       | 338.6   | 338.6            | 339.2         | 0.6      |
| C             | 5,330                 | 500          | 924                     | 2.4                       | 355.9   | 355.9            | 355.9         | 0.0      |

<sup>1</sup>Feet above confluence with Willow Depot Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**SALINE COUNTY, ARKANSAS**  
 AND INCORPORATED AREAS

**FLOODWAY DATA**

**FLOODING SOURCE: UPPER DEPOT CREEK**

| LOCATION      |                       | FLOODWAY     |                         |                           | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION ( FEET NAVD88) |                    |               |          |
|---------------|-----------------------|--------------|-------------------------|---------------------------|---|--------------------|---------------|----------|
| CROSS SECTION | DISTANCE <sup>1</sup> | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/ SEC) | REGULATORY  | WITHOUT FLOODWAY   | WITH FLOODWAY | INCREASE |
| A             | 1,525                 | 550          | 7,424                   | 1.2                       | 281.5   | 280.5 <sup>2</sup> | 281.4         | 0.9      |
| B             | 2,475                 | 650          | 6,777                   | 1.3                       | 281.5   | 280.6 <sup>2</sup> | 281.6         | 1.0      |
| C             | 2,885                 | 600          | 1,539                   | 1.4                       | 281.5   | 280.5 <sup>2</sup> | 280.9         | 0.4      |
| D             | 3,525                 | 600          | 3,954                   | 2.1                       | 281.5   | 281.0 <sup>2</sup> | 282.0         | 1.0      |
| E             | 4,025                 | 450          | 2,908                   | 2.9                       | 281.5   | 281.3 <sup>2</sup> | 282.2         | 0.9      |
| F             | 4,525                 | 200          | 1,107                   | 4.8                       | 281.5   | 281.3              | 282.1         | 0.8      |
| G             | 5,025                 | 200          | 914                     | 5.2                       | 283.9   | 283.9              | 284.4         | 0.5      |
| H             | 6,025                 | 200          | 836                     | 4.9                       | 287.9   | 287.9              | 288.4         | 0.5      |
| I             | 6,550                 | 250          | 1,760                   | 3.0                       | 290.4   | 290.4              | 291.4         | 1.0      |
| J             | 7,075                 | 250          | 1,588                   | 3.2                       | 291.8   | 291.8              | 292.5         | 0.7      |
| K             | 8,025                 | 300          | 1,118                   | 5.5                       | 294.6   | 294.6              | 295.0         | 0.4      |
| L             | 8,615                 | 300          | 915                     | 5.3                       | 298.0   | 298.0              | 298.2         | 0.2      |
| M             | 8,975                 | 400          | 2,119                   | 3.0                       | 300.6   | 300.6              | 301.4         | 0.8      |
| N             | 9,597                 | 600          | 2,883                   | 2.1                       | 302.2   | 302.2              | 303.1         | 0.9      |
| O             | 10,537                | 400          | 1,921                   | 4.0                       | 304.1   | 304.1              | 305.1         | 1.0      |
| P             | 10,885                | 400          | 1,262                   | 4.0                       | 305.2   | 305.2              | 305.3         | 0.1      |
| Q             | 11,335                | 400          | 1,320                   | 3.9                       | 306.5   | 306.5              | 307.5         | 1.0      |
| R             | 11,575                | 385          | 799                     | 2.7                       | 306.7   | 306.7              | 306.7         | 0.0      |
| S             | 12,125                | 400          | 1,978                   | 3.9                       | 309.9   | 309.9              | 310.8         | 0.9      |
| T             | 12,535                | 400          | 2,352                   | 3.1                       | 312.4   | 312.4              | 313.4         | 1.0      |
| U             | 13,025                | 500          | 3,727                   | 2.2                       | 313.6   | 313.6              | 314.6         | 1.0      |
| V             | 13,650                | 600          | 1,184                   | 2.8                       | 314.2   | 314.2              | 314.9         | 0.7      |

<sup>1</sup>Feet above confluence with Saline River

<sup>2</sup>Elevation computed without consideration of backwater effects from Saline River

|          |   |  |
|----------|---|--|
| TABLE 24 | <b>FEDERAL EMERGENCY MANAGEMENT AGENCY</b><br><b>SALINE COUNTY, ARKANSAS</b><br><b>AND INCORPORATED AREAS</b> | <b>FLOODWAY DATA</b>                       |
|          |   | <b>FLOODING SOURCE: WILLOW DEPOT CREEK</b> |

| LOCATION      |                       | FLOODWAY     |                         |                           | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION ( FEET NAVD88) |                  |               |          |
|---------------|-----------------------|--------------|-------------------------|---------------------------|---|------------------|---------------|----------|
| CROSS SECTION | DISTANCE <sup>1</sup> | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/ SEC) | REGULATORY  | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| W             | 14,200                | 600          | 2,990                   | 3.2                       | 316.1   | 316.1            | 317.1         | 1.0      |
| X             | 14,740                | 400          | 1,573                   | 3.8                       | 317.9   | 317.9            | 318.4         | 0.5      |
| Y             | 15,575                | 400          | 1,729                   | 6.1                       | 320.1   | 320.1            | 320.7         | 0.6      |
| Z             | 15,775                | 400          | 1,482                   | 3.2                       | 321.8   | 321.8            | 322.6         | 0.8      |
| AA            | 16,075                | 300          | 1,967                   | 4.1                       | 322.5   | 322.5            | 323.5         | 1.0      |
| AB            | 16,525                | 300          | 1,220                   | 6.1                       | 324.0   | 324.0            | 324.4         | 0.4      |
| AC            | 16,985                | 500          | 2,690                   | 4.0                       | 326.1   | 326.1            | 327.0         | 0.9      |
| AD            | 17,360                | 350          | 2,241                   | 4.4                       | 327.2   | 327.2            | 328.2         | 1.0      |
| AE            | 17,650                | 350          | 1,876                   | 4.6                       | 328.6   | 328.6            | 329.4         | 0.8      |
| AF            | 17,925                | 350          | 2,271                   | 3.6                       | 329.8   | 329.8            | 330.7         | 0.9      |
| AG            | 18,125                | 275          | 1,800                   | 3.7                       | 330.8   | 330.8            | 331.8         | 1.0      |
| AH            | 18,300                | 78           | 461                     | 2.7                       | 331.2   | 331.2            | 331.2         | 0.0      |
| AI            | 18,400                | 55           | 401                     | 3.1                       | 332.2   | 332.2            | 332.2         | 0.0      |
| AJ            | 18,850                | 450          | 3,123                   | 1.5                       | 336.0   | 336.0            | 337.0         | 1.0      |
| AK            | 19,250                | 450          | 2,842                   | 1.8                       | 336.3   | 336.3            | 337.3         | 1.0      |
| AL            | 19,500                | 350          | 1,799                   | 2.5                       | 336.9   | 336.9            | 337.9         | 1.0      |
| AM            | 20,250                | 200          | 658                     | 4.4                       | 339.8   | 339.8            | 340.3         | 0.5      |
| AN            | 20,800                | 200          | 881                     | 3.4                       | 342.8   | 342.8            | 343.6         | 0.8      |
| AO            | 21,050                | 200          | 843                     | 4.0                       | 343.9   | 343.9            | 344.7         | 0.8      |
| AP            | 21,400                | 200          | 848                     | 4.4                       | 346.0   | 346.0            | 346.6         | 0.6      |
| AQ            | 21,625                | 200          | 600                     | 3.3                       | 347.8   | 347.8            | 348.3         | 0.5      |
| AR            | 22,075                | 200          | 906                     | 4.2                       | 349.8   | 349.8            | 350.6         | 0.8      |

<sup>1</sup>Feet above confluence with Saline River

|          |   |  |
|----------|---|--|
| TABLE 24 | <b>FEDERAL EMERGENCY MANAGEMENT AGENCY</b><br><b>SALINE COUNTY, ARKANSAS</b><br><b>AND INCORPORATED AREAS</b> | <b>FLOODWAY DATA</b><br><br><b>FLOODING SOURCE: WILLOW DEPOT CREEK</b> |
|----------|---|--|

| LOCATION      |                       | FLOODWAY     |                         |                           | 1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION ( FEET NAVD88) |                  |               |          |
|---------------|-----------------------|--------------|-------------------------|---------------------------|---|------------------|---------------|----------|
| CROSS SECTION | DISTANCE <sup>1</sup> | WIDTH (FEET) | SECTION AREA (SQ. FEET) | MEAN VELOCITY (FEET/ SEC) | REGULATORY  | WITHOUT FLOODWAY | WITH FLOODWAY | INCREASE |
| AS            | 22,265                | 300          | 1,709                   | 3.0                       | 350.8   | 350.8            | 351.8         | 1.0      |
| AT            | 22,865                | 250          | 984                     | 4.5                       | 354.5   | 354.5            | 355.2         | 0.7      |
| AU            | 23,365                | 250          | 1,014                   | 5.2                       | 357.2   | 357.2            | 358.0         | 0.8      |
| AV            | 23,815                | 200          | 786                     | 5.3                       | 360.9   | 360.9            | 361.5         | 0.6      |
| AW            | 24,040                | 200          | 390                     | 6.1                       | 362.9   | 362.9            | 363.0         | 0.1      |
| AX            | 24,465                | 200          | 1,080                   | 4.3                       | 368.6   | 368.6            | 369.4         | 0.8      |
| AY            | 24,715                | 100          | 435                     | 5.4                       | 371.1   | 371.1            | 371.6         | 0.5      |
| AZ            | 24,865                | 58           | 293                     | 4.2                       | 377.3   | 377.3            | 377.3         | 0.0      |

<sup>1</sup>Feet above confluence with Saline River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**SALINE COUNTY, ARKANSAS**  
 AND INCORPORATED AREAS

**FLOODWAY DATA**

**FLOODING SOURCE: WILLOW DEPOT CREEK**

Non-encroachment areas may be delineated where it is not possible to delineate floodways because specific channel profiles with bridge and culvert geometry were not developed. Any non-encroachment determinations for this Flood Risk Project have been tabulated for selected cross sections and are shown in Table 25 . The non-encroachment width indicates the measured distance left and right (looking downstream) from the mapped center of the stream to the non-encroachment boundary based on a surcharge of 1.0 foot or less.

**Table 25: Flood Hazard and Non-Encroachment Data for Selected Streams**

[Not applicable to this Flood Risk Project]

**6.4 Coastal Flood Hazard Mapping**

This section is not applicable to this Flood Risk Project.

**Table 26: Summary of Coastal Transect Mapping Considerations**

[Not applicable to this Flood Risk Project]

**6.5 FIRM Revisions**

This FIS Report and the FIRM are based on the most up-to-date information available to FEMA at the time of its publication; however, flood hazard conditions change over time. Communities or private parties may request flood map revisions at any time. Certain types of requests require submission of supporting data. FEMA may also initiate a revision. Revisions may take several forms, including Letters of Map Amendment (LOMAs), Letters of Map Revision Based on Fill (LOMR-Fs), Letters of Map Revision (LOMRs) (referred to collectively as Letters of Map Change (LOMCs)), Physical Map Revisions (PMRs), and FEMA-contracted restudies. These types of revisions are further described below. Some of these types of revisions do not result in the republishing of the FIS Report. To assure that any user is aware of all revisions, it is advisable to contact the community repository of flood-hazard data (shown in Table 31 , “Map Repositories”).

**6.5.1 Letters of Map Amendment**

A LOMA is an official revision by letter to an effective NFIP map. A LOMA results from an administrative process that involves the review of scientific or technical data submitted by the owner or lessee of property who believes the property has incorrectly been included in a designated SFHA. A LOMA amends the currently effective FEMA map and establishes that a specific property is not located in a SFHA. A LOMA cannot be issued for properties located on the PFD (primary frontal dune).

To obtain an application for a LOMA, visit [www.fema.gov/floodplain-management/letter-map-amendment-loma](http://www.fema.gov/floodplain-management/letter-map-amendment-loma) and download the form “MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill”. Visit the “Flood Map-Related Fees” section to determine the cost, if any, of applying for a LOMA.

FEMA offers a tutorial on how to apply for a LOMA. The LOMA Tutorial Series can be accessed at [www.fema.gov/online-tutorials](http://www.fema.gov/online-tutorials).

For more information about how to apply for a LOMA, call the FEMA Map Information eXchange; toll free, at 1-877-FEMA MAP (1-877-336-2627).

### 6.5.2 Letters of Map Revision Based on Fill

A LOMR-F is an official revision by letter to an effective NFIP map. A LOMR-F states FEMA’s determination concerning whether a structure or parcel has been elevated on fill above the base flood elevation and is, therefore, excluded from the SFHA.

Information about obtaining an application for a LOMR-F can be obtained in the same manner as that for a LOMA, by visiting [www.fema.gov/floodplain-management/letter-map-amendment-loma](http://www.fema.gov/floodplain-management/letter-map-amendment-loma) for the “MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill” or by calling the FEMA Map Information eXchange, toll free, at 1-877-FEMA MAP (1-877-336-2627). Fees for applying for a LOMR-F, if any, are listed in the “Flood Map-Related Fees” section.

A tutorial for LOMR-F is available at [www.fema.gov/online-tutorials](http://www.fema.gov/online-tutorials)

### 6.5.3 Letters of Map Revision

A LOMR is an official revision to the currently effective FEMA map. It is used to change flood zones, floodplain and floodway delineations, flood elevations and planimetric features. All requests for LOMRs should be made to FEMA through the chief executive officer of the community, since it is the community that must adopt any changes and revisions to the map. If the request for a LOMR is not submitted through the chief executive officer of the community, evidence must be submitted that the community has been notified of the request.

To obtain an application for a LOMR, visit [www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/mt-2-application-forms-and-instructions](http://www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/mt-2-application-forms-and-instructions) and download the form “MT-2 Application Forms and Instructions for Conditional Letters of Map Revision and Letters of Map Revision”. Visit the “Flood Map-Related Fees” section to determine the cost of applying for a LOMR. For more information about how to apply for a LOMR, call the FEMA Map Information eXchange; toll free, at 1-877-FEMA MAP (1-877-336-2627) to speak to a Map Specialist.

Previously issued mappable LOMCs (including LOMRs) that have been incorporated into the Saline County FIRM are listed in Table 27 . Please note that this table only includes LOMCs that have been issued on the FIRM panels updated by this map revision. For all other areas within this county, users should be aware that revisions to the FIS Report made by prior LOMRs may not be reflected herein and users will need to continue to use the previously issued LOMRs to obtain the most current data.

**Table 27: Incorporated Letters of Map Change**

| Case Number | Effective Date | Flooding Source | FIRM Panel(s) |
|-------------|----------------|-----------------|---------------|
| 13-06-1581P | 03-17-2014     | Cedar Creek     | 05125CO150E   |

### 6.5.4 Physical Map Revisions

Physical Map Revisions (PMRs) are an official republication of a community’s NFIP map to effect changes to base flood elevations, floodplain boundary delineations, regulatory floodways and planimetric features. These changes typically occur as a result of structural works or improvements,

annexations resulting in additional flood hazard areas or correction to base flood elevations or SFHAs.

The community's chief executive officer must submit scientific and technical data to FEMA to support the request for a PMR. The data will be analyzed and the map will be revised if warranted. The community is provided with copies of the revised information and is afforded a review period. When the base flood elevations are changed, a 90-day appeal period is provided. A 6-month adoption period for formal approval of the revised map(s) is also provided.

For more information about the PMR process, please visit [www.fema.gov](http://www.fema.gov) and visit the "Flood Map Revision Processes" section.

### **6.5.5 Contracted Restudies**

The NFIP provides for a periodic review and restudy of flood hazards within a given community. FEMA accomplishes this through a national watershed-based mapping needs assessment strategy, known as the Coordinated Needs Management Strategy (CNMS). The CNMS is used by FEMA to assign priorities and allocate funding for new flood hazard analyses used to update the FIS Report and FIRM. The goal of CNMS is to define the validity of the engineering study data within a mapped inventory. The CNMS is used to track the assessment process, document engineering gaps and their resolution, and aid in prioritization for using flood risk as a key factor for areas identified for flood map updates. Visit [www.fema.gov](http://www.fema.gov) to learn more about the CNMS or contact the FEMA Regional Office listed in Section 8 of this FIS Report.

### **6.5.6 Community Map History**

The current FIRM presents flooding information for the entire geographic area of Saline County. Previously, separate FIRMs, Flood Hazard Boundary Maps (FHBM) and/or Flood Boundary and Floodway Maps (FBFM) may have been prepared for the incorporated communities and the unincorporated areas in the county that had identified SFHAs. Current and historical data relating to the maps prepared for the project area are presented in Table 28, "Community Map History." A description of each of the column headings and the source of the date is also listed below.

- *Community Name* includes communities falling within the geographic area shown on the FIRM, including those that fall on the boundary line, nonparticipating communities, and communities with maps that have been rescinded. Communities with No Special Flood Hazards are indicated by a footnote. If all maps (FHBM, FBFM, and FIRM) were rescinded for a community, it is not listed in this table unless SFHAs have been identified in this community.
- *Initial Identification Date (First NFIP Map Published)* is the date of the first NFIP map that identified flood hazards in the community. If the FHBM has been converted to a FIRM, the initial FHBM date is shown. If the community has never been mapped, the upcoming effective date or "pending" (for Preliminary FIS Reports) is shown. If the community is listed in Table 28 but not identified on the map, the community is treated as if it were unmapped.
- *Initial FHBM Effective Date* is the effective date of the first Flood Hazard Boundary Map (FHBM). This date may be the same date as the Initial NFIP Map Date.

- *FHBM Revision Date(s)* is the date(s) that the FHBM was revised, if applicable.
- *Initial FIRM Effective Date* is the date of the first effective FIRM for the community.
- *FIRM Revision Date(s)* is the date(s) the FIRM was revised, if applicable. This is the revised date that is shown on the FIRM panel, if applicable. As countywide studies are completed or revised, each community listed should have its FIRM dates updated accordingly to reflect the date of the countywide study. Once the FIRMs exist in countywide format, as Physical Map Revisions (PMR) of FIRM panels within the county are completed, the FIRM Revision Dates in the table for each community affected by the PMR are updated with the date of the PMR, even if the PMR did not revise all the panels within that community.

The initial effective date for the Saline County FIRMs in countywide format was 11/17/1982.

**Table 28: Community Map History**

| Community Name                     | Initial Identification Date | Initial FHBM Effective Date | FHBM Revision Date(s) | Initial FIRM Effective Date | FIRM Revision Date(s)                  |
|------------------------------------|-----------------------------|-----------------------------|-----------------------|-----------------------------|--|
| Alexander, Town of                 | 04/18/1975                  | 04/18/1975                  | NONE                  | 01/20/1982                  | 06/19/2012                             |
| Bauxite, Town of                   | 06/19/2012                  | NONE                        | NONE                  | 06/19/2012                  | NONE                                   |
| Benton, City of                    | 11/16/1973                  | 11/16/1973                  | 10/24/1975            | 12/15/1981                  | 06/19/2012                             |
| Bryant, City of                    | 06/27/1975                  | 06/27/1975                  | NONE                  | 06/28/1977                  | 01/19/1996<br>08/19/1991<br>06/19/2012 |
| Haskell, City of                   | 06/27/1975                  | 06/27/1975                  | 06/28/1977            | 08/19/1987                  | 06/19/2012                             |
| Saline County Unincorporated Areas | 08/09/1977                  | 08/09/1977                  | NONE                  | 11/17/1982                  | 04/02/2003<br>01/19/1996<br>06/19/2012 |
| Shannon Hills, City of             | 05/17/1982                  | NONE                        | NONE                  | 05/17/1982                  | 08/15/1989<br>06/19/2012               |
| Traskwood, City of                 | 04/18/1975                  | 04/18/1975                  | NONE                  | 10/12/1982                  | 06/19/2012                             |

## SECTION 7.0 – CONTRACTED STUDIES AND COMMUNITY COORDINATION

### 7.1 Contracted Studies

Table 29 provides a summary of the contracted studies, by flooding source, that are included in this FIS Report.

**Table 29: Summary of Contracted Studies Included in this FIS Report**

| Flooding Source   | FIS Report Dated | Contractor                         | Number                           | Work Completed Date | Affected Communities               |
|---|------------------|------------------------------------|----------------------------------|---------------------|------------------------------------|
| Crooked Creek, Crooked Creek Tributary  | 07/20/1981       | US Army Corps of Engineers (USACE) | Interagency Agreement No. H-9-79 | September 1980      | Town of Alexander                  |
| McNeil Creek, Salt Creek, Upper Depot Creek, Willow Depot Creek   | 06/15/1981       | Garver & Garver, Inc.              | H-4746                           | March 1980          | City of Benton                     |
| Owen Creek  | 01/19/1996       | USACE-SWL                          | EMW-88-E-2768                    | September 1989      | City of Bryant                     |
| Otter Creek, Shannon Hills Tributary  | 08/15/1989       | USACE-SWL                          | H-9-79                           | July 1988           | City of Shannon Hills              |
| Bryant Tributary, and Trailer Park Ditch  | 05/17/1982       | USACE-SWL                          | H-18-78                          | January 1981        | Saline County Unincorporated Areas |
| Alum Fork saline River, Cedar Creek, Fourche Creek, Lorange and Dry Creeks, Middle Fork Saline River, Mill Creek, North Fork Saline River, Saline River, Clear Creek, Duck Creek, Hope Branch (Formerly identified as both Hopt Branch and Hopf Branch), Maple Creek, | 1/19/1996        | USACE-SWL                          | H-18-78                          | January 1996        | Saline County Unincorporated Areas |

**Table 29: Summary of Contracted Studies Included in this FIS Report (Continued)**

| Flooding Source   | FIS Report Dated | Contractor                            | Number            | Work Completed Date | Affected Communities                          |
|---|------------------|---------------------------------------|-------------------|---------------------|---|
| Maple Creek Tributary, McCright Branch, and Owen Creek  | 04/02/2003       | USACE-SWL                             | H-18-78           | April 2000          | Saline County Unincorporated Areas            |
| All previously studied streams  | 06/16/2012       | FTN/Taylor Joint Venture              | EMT-2002-CO-0050  | March 2009          | Saline County and Incorporated area           |
| Boswell Creek, Hurricane Creek, Hurricane Creek Tributary 1, Hurricane Tributary 1A, Little Hurricane Creek | TBD              | Arkansas Natural Resources Commission | MAS 5             | October 31, 2014    | City of Benton, City of Bryant, Saline County |
| Trace Creek   | TBD              | Amec Foster Wheeler                   | EMW-2014-CA-00163 | November 2015       | City of Haskell, Saline County                |

## 7.2 Community Meetings

The dates of the community meetings held for this Flood Risk Project and previous Flood Risk Projects are shown in Table 30. These meetings may have previously been referred to by a variety of names (Community Coordination Officer (CCO), Scoping, Discovery, etc.), but all meetings represent opportunities for FEMA, community officials, study contractors, and other invited guests to discuss the planning for and results of the project.

**Table 30: Community Meetings**

| Community                             | FIS Report Dated | Date of Meeting | Meeting Type        | Attended By |
|---------------------------------------|------------------|-----------------|---------------------|-------------|
| Alexander, Town of                    | 07/20/1981       | 02/13/1931      | Final CCO Meeting   |             |
|                                       |                  | 11/09/1978      | Initial CCO Meeting |             |
| Benton, City of                       | 06/15/1981       | 08/14/1980      | Final CCO Meeting   |             |
|                                       |                  | 04/03/1978      | Initial CCO Meeting |             |
| Bryant, City of                       | 01/19/1996       | 08/15/1990      | Final CCO Meeting   |             |
|                                       |                  | 07/28/1988      | Initial CCO Meeting |             |
| Haskell, City of                      | 08/19/1987       | *               | Final CCO Meeting   |             |
|                                       |                  | *               | Initial CCO Meeting |             |
| Shannon Hills, City of                | 08/15/1989       | 06/30/1981      | Final CCO Meeting   |             |
|                                       |                  | 05/12/1978      | Initial CCO Meeting |             |
| Traskwood, City of                    | 10/12/1982       | *               | Final CCO Meeting   |             |
|                                       |                  | *               | Initial CCO Meeting |             |
| Unincorporated Areas of Saline County | 11/17/1982       | 02/15/1995      | Final CCO Meeting   |             |
|                                       |                  | 12/16/1981      | Final CCO Meeting   |             |
|                                       |                  | 05/10/1978      | Initial CCO Meeting |             |

**Table 30: Community Meetings(Continued)**

| Community                            | FIS Report Dated | Date of Meeting | Meeting Type       | Attended By                                     |
|--------------------------------------|------------------|-----------------|--------------------|---|
| Saline County and Incorporated Areas | June 19, 2012    | 8/4/2009        | Final CCO          | FEMA, the communities, and the study contractor |
|                                      |                  | 4/14/2008       | Initial CCO        | FEMA, the communities, and the study contractor |
| Saline County and Incorporated Areas | TBD              | 12/16/2015      | Flood Study Review | TBD   |

## SECTION 8.0 – ADDITIONAL INFORMATION

Information concerning the pertinent data used in the preparation of this FIS Report can be obtained by submitting an order with any required payment to the FEMA Engineering Library. For more information on this process, see [www.fema.gov](http://www.fema.gov).

The additional data that was used for this project includes the FIS Report and FIRM that were previously prepared for Saline County (FEMA 2012).

Table 31 is a list of the locations where FIRMs for Saline County can be viewed. Please note that the maps at these locations are for reference only and are not for distribution. Also, please note that only the maps for the community listed in the table are available at that particular repository. A user may need to visit another repository to view maps from an adjacent community.

**Table 31: Map Repositories**

| Community                             | Address                          | City          | State | Zip Code |
|---------------------------------------|----------------------------------|---------------|-------|----------|
| Alexander, City of                    | 15605 Alexander Road             | Alexander     | AR    | 72002    |
| Bauxite, Town of                      | 6055 Stanley Circle              | Bauxite       | AR    | 72011    |
| Benton, City of                       | 114 South East Street            | Benton        | AR    | 72015    |
| Bryant, City of                       | 312 Roya Lane                    | Bryant        | AR    | 72022    |
| Haskell, City of                      | 2520 Highway 229                 | Haskell       | AR    | 72015    |
| Saline County<br>Unincorporated Areas | 215 North Main Street<br>Suite 7 | Benton        | AR    | 72015    |
| Shannon Hills, City of                | 10401 High Road East             | Shannon Hills | AR    | 72103    |
| Traskwood, City of                    | 212 Main Street                  | Traskwood     | AR    | 72167    |

The National Flood Hazard Layer (NFHL) dataset is a compilation of effective FIRM databases and LOMCs. Together they create a GIS data layer for a State or Territory. The NFHL is updated as studies become effective and extracts are made available to the public monthly. NFHL data can be viewed or ordered from the website shown in Table 32 .

Table 32 contains useful contact information regarding the FIS Report, the FIRM, and other relevant flood hazard and GIS data. In addition, information about the State NFIP Coordinator and GIS Coordinator is shown in this table. At the request of FEMA, each Governor has designated an agency of State or territorial government to coordinate that State's or territory's NFIP activities. These agencies often assist communities in developing and adopting necessary floodplain management measures. State GIS Coordinators are knowledgeable about the availability and location of State and local GIS data in their state.

**Table 32: Additional Information**

| FEMA and the NFIP                         |  |
|---|--|
| FEMA and FEMA Engineering Library website | <a href="http://www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/engineering-library">www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/engineering-library</a>         |
| NFIP website                              | <a href="http://www.fema.gov/national-flood-insurance-program">www.fema.gov/national-flood-insurance-program</a>   |
| NFHL Dataset                              | <a href="http://msc.fema.gov">msc.fema.gov</a>   |
| FEMA Region VI                            | Federal Emergency Management Agency, FRC 800 North Loop 288, Denton, TX 76209-3698<br>(940) 898-5399   |
| Other Federal Agencies                    |  |
| USGS website                              | <a href="http://www.usgs.gov">www.usgs.gov</a>   |
| Hydraulic Engineering Center website      | <a href="http://www.hec.usace.army.mil">www.hec.usace.army.mil</a>   |
| State Agencies and Organizations          |  |
| State NFIP Coordinator                    | Michael Borengasser, CFM<br>Arkansas Natural Resources Commission<br>101 E. Capitol Avenue, Suite 350<br>Little Rock, AR 72201<br>(501) 682-3969<br>michael.borengasser@arkansas.gov                       |
| State GIS Coordinator                     | Shelby Johnson<br>Statewide GIS Coordinator<br>124 West Capitol Avenue, Suite 990<br>Little Rock, AR 72201<br>Phone: 501-682-2767<br><a href="http://www.gis.arkansas.gov">http://www.gis.arkansas.gov</a> |

## SECTION 9.0 – BIBLIOGRAPHY AND REFERENCES

Table 33 includes sources used in the preparation of and cited in this FIS Report as well as additional studies that have been conducted in the study area.

**Table 33: Bibliography and References**

| Citation in this FIS | Publisher/ Issuer  | <i>Publication Title</i> , "Article," Volume, Number, etc.            | Author/Editor                                 | Place of Publication  | Publication Date/ Date of Issuance | Link  |
|----------------------|--|---|---|-----------------------|------------------------------------|---|
| AGIO, 2015           | Arkansas Geographic Information Office (AGIO)              | Base Map data<br>Aerial Photography                                   | Arkansas Geographic Information Office (AGIO) | Little Rock, Arkansas | 2015                               | <a href="http://gis.arkansas.gov">http://gis.arkansas.gov</a> |
| TIGER, 2015          | United States Department of Commerce, Bureau of the Census | 2015 TIGER GIS data   | United States Census Bureau                   | Washington, D.C.      | 2015                               | <a href="http://www.census.gov">www.census.gov</a>            |
| USGS, 1989           | United States Geological Survey (USGS)                     | USGS 7.5-Minute Series Topographic Maps                               | United States Geological Survey (USGS)        | Reston, VA            | 1989                               | <a href="http://www.usgs.gov">www.usgs.gov</a>                |
| USGS, 2006           | United States Geological Survey (USGS)                     | National Hydrography Dataset  | United States Geological Survey (USGS)        | Reston, VA            | 2006                               | <a href="http://nhd.usgs.gov">http://nhd.usgs.gov</a>         |
| FEMA, 2012           | Federal Emergency Management Agency (FEMA)                 | Flood Insurance Study, Saline County, Arkansas and Incorporated Areas | Federal Emergency Management Agency (FEMA)    | Washington, D.C.      | June 19, 2012                      | <a href="https://msc.fema.gov">https://msc.fema.gov</a>       |
| FEMA, 2015           | Federal Emergency Management Agency (FEMA)                 | National Flood Hazard Layer (NFHL)                                    | Federal Emergency Management Agency (FEMA)    | Washington, D.C.      | December 2015                      | <a href="https://msc.fema.gov">https://msc.fema.gov</a>       |

| Citation in this FIS | Publisher/ Issuer                          | <i>Publication Title</i> , "Article," Volume, Number, etc. | Author/Editor                              | Place of Publication | Publication Date/ Date of Issuance | Link  |
|----------------------|--|--|--|----------------------|------------------------------------|---|
| FEMA, 2017           | Federal Emergency Management Agency (FEMA) | Saline County PMR, 2016                                    | Federal Emergency Management Agency (FEMA) | Washington, D.C.     | 2017                               | <a href="https://msc.fema.gov">https://msc.fema.gov</a> |