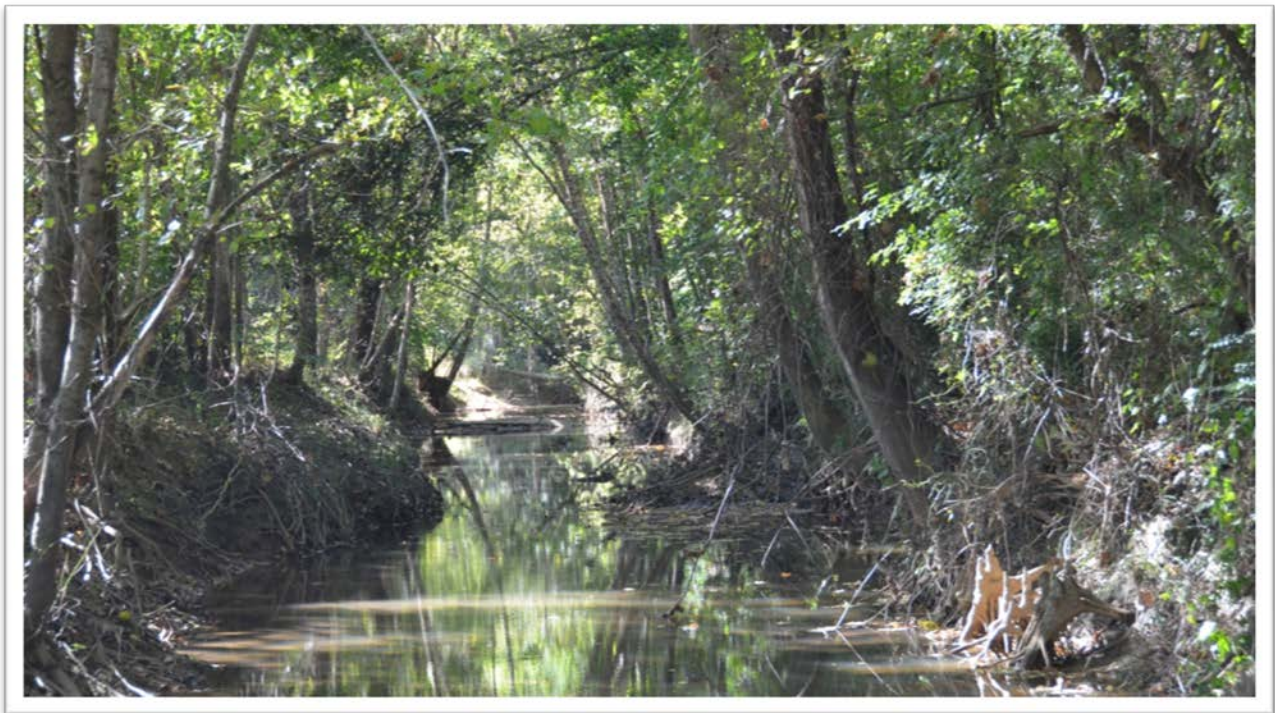


AHTD Job 061390

CROOKED CREEK
CHANNEL
IMPROVEMENTS

Environmental Assessment



CROOKED CREEK CHANNEL IMPVTS. (I-30)

F.A.P. Number NHPP-9253(67)
Environmental Assessment

Submitted pursuant to:

The National Environmental Policy Act (NEPA)
42 U.S.C. §4322(2)(c) and 23 C.F.R. §771

Submitted by:

FEDERAL HIGHWAY ADMINISTRATION

and

**ARKANSAS STATE HIGHWAY AND TRANSPORTATION
DEPARTMENT**

in cooperation with

U.S. ARMY CORPS OF ENGINEERS

The following people may be contacted for additional
information concerning this document:

Randal Looney
FHWA
700 W. Capitol, Room 3130
Little Rock, AR 72201-3298
(501)324-6430

Lynn Malbrough
AHTD
P.O. Box 2261
Little Rock, AR 72203-2261
(501)569-2281

In compliance with the National Environmental Policy Act, this Environmental Assessment (EA) describes the plan to correct flooding hazards in the Crooked Creek floodplain on Interstate 30 in Little Rock. The analysis concludes that none of the project's alternatives would have a significant adverse impact on the environment.

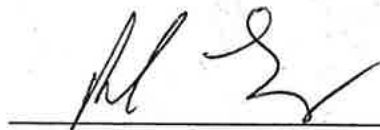
Comments should be directed to:

Mail: Environmental - Public Involvement
AHTD
P.O. Box 2261
Little Rock, AR 72203-2261

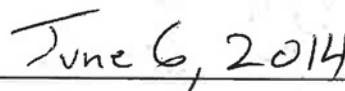
Email: info@ahtd.ar.gov

This EA is also available for review online at:

http://www.arkansashighways.com/environmental/environmental_studies/environmental_studies.aspx



Randal Looney
Environmental Specialist
Federal Highway Administration



Date of Approval



U.S. Department of Transportation
Federal Highway
Administration



Arkansas State Highway and
Transportation Department



Title VI

The Arkansas State Highway and Transportation Department (AHTD) ensures full compliance with Title VI of the Civil Rights Act of 1964 by prohibiting discrimination against any person on the basis of race, color, national origin or sex in the provision of benefits and services resulting from its federally assisted programs and activities. The AHTD public involvement process did not exclude any individuals due to income, race, color, religion, national origin, sex, age, or disability. For questions regarding the AHTD's Title VI Program, you may contact the Department's EEO/DBE Section Head (ADA/504/Title VI Coordinator) at (501) 569-2298 (Voice/TTY 711), or at the following email address: EEO_DBE_Section_Head@ahtd.ar.gov.

Americans with Disabilities Act (ADA) Information

Materials can be provided in alternative formats: large print, Braille, or audiotape for people with disabilities by contacting AHTD's EEO/DBE Section Head (ADA/504/Title VI Coordinator) at (501) 569-2298 (Voice/TTY 711), or at the following email address: EEO_DBE_Section_Head@ahtd.ar.gov. Persons who are deaf or hard of hearing may contact the AHTD through the Arkansas Relay Service at 7-1-1.

A federal agency may publish a notice in the Federal Register, pursuant to 23 USC §139(I), indicating that one or more federal agencies have taken final action on permits, licenses, or approvals for a transportation project. If such notice is published, claims seeking judicial review of those federal agency actions will be barred unless such claims are filed within 180 days after the date of publication of the notice, or within such shorter time period as is specified in the federal laws pursuant to which judicial review of the federal agency action is allowed. If no notice is published, then the periods of time that otherwise are provided by the federal laws governing such claims will apply.

TABLE OF CONTENTS

CHAPTERS

Chapter 1 – PURPOSE & NEED	1
1.1 What is the Crooked Creek Channel Improvements project?	1
1.2 Why do we need hydraulic improvements on Crooked Creek?.....	1
1.3 What is the purpose of this project?	8
1.4 What is the purpose of this Environmental Assessment?	8
1.5 Who is leading this project?	8
Chapter 2 – ALTERNATIVE DEVELOPMENT	9
2.1 What are the project limits and how were they selected?	9
2.2 What alternatives were evaluated in this EA?	10
2.3 How have government agencies been involved?	13
2.4 How have tribal governments been involved?.....	14
2.5 Which of these alternatives could be built?.....	14
Chapter 3 – PROJECT EFFECTS	15
3.1 How would the project affect traffic?	15
3.2 How would economic conditions in the City of Little Rock and surrounding areas be affected?	16
3.3 How would the project affect properties in the area?	16
3.4 What is Section 106 and how does it affect the way we evaluate historic and archeological resources?	18
3.5 Would the project affect cultural resources?	19
3.6 Would noise levels change?	19
3.7 Would utilities be affected?	19
3.8 How would the project affect views?.....	19
3.9 Would any hazardous materials be created or affected?	20
3.10 How would water resources, such as streams, be affected?	20
3.11 Would the project cause flooding in surrounding areas?.....	21
3.12 Would any wetlands be impacted by the project?	21
3.13 Would any protected species be impacted by the project?	22

3.14 How would the project affect other natural resources? 22

3.15 What are indirect effects, and does the project have any? 23

3.16 What are cumulative effects, and does the project have any?..... 23

Chapter 4 – RECOMMENDATIONS 25

4.1 What are the results of this EA?..... 25

4.2 Is the NEPA process finished?..... 25

REFERENCE PAGES

Acronyms 26

APPENDICES

- Appendix A: Floodplain and Floodway Information
- Appendix B: Conceptual Stage Relocation Statement
- Appendix C: Cultural Resources Survey Information
- Appendix D: Visual Impacts Assessment
- Appendix E: Threatened and Endangered Species Information
- Appendix F: U.S. Fish and Wildlife Service Clearance

FIGURES

1	Project Area	2
2	Project Area Overview.....	3
3	Flood Information.....	4
4	Land Use Changes.....	4
5	Historic Photography	5
6	Traffic Volumes	6
7	Project Area Drainage.....	10
8	Alternative 2.....	11
9	Alternative 3.....	11
10	Alternative 2 Property Acquisition.....	17
11	Alternative 3 Property Acquisition.....	17
12	Crooked Creek	20

TABLES

1	Road User Cost Analysis.....	7
2	Construction Road User Cost Analysis – Raising Interstate 30	13
3	Alternative Impact Comparison	24

AHTD Job 061390

CROOKED CREEK CHANNEL IMPROVEMENTS (I-30)

Environmental Assessment



Chapter 1 – PURPOSE & NEED

What's in Chapter 1?

Chapter 1 explains the purpose of the project, why improvements to the Crooked Creek floodplain are needed, and who is leading the project.

1.1 What is the Crooked Creek Channel Improvements project?

The Arkansas State Highway and Transportation Department (AHTD) is proposing hydraulic improvements on Crooked Creek near Interstate 30 in the City of Little Rock. The location is shown in Figure 1.

1.2 Why do we need hydraulic improvements on Crooked Creek?

Crooked Creek

The Interstate 30 bridge over Crooked Creek is located approximately 1.7 miles southwest of the Interstate 430 interchange (Figure 1). Crooked Creek is confined between Interstate 30 and the Union Pacific Railroad embankment before passing underneath the interstate and entering Fourche Creek approximately 0.1 mile to the north, as seen in Figure 2. Fourche Creek drains most of the Little Rock Metropolitan Area.

Crooked Creek can flood because heavy rainfall events in the Crooked Creek drainage area cause flash flooding and/or because high water levels on Fourche Creek back its floodwaters into the Crooked Creek floodplain. Development in both the Crooked Creek and Fourche Creek floodplains has contributed to increasing flood water levels and flood frequency to the point where floodwaters would encroach on the Interstate 30 eastbound mainlanes during a 5-year flood event under the current conditions.

Figure 3 shows the area on Interstate 30 that would have encroaching floodwaters during a 5-year flood, as well as the location of the Crooked Creek floodplain and regulatory floodway.

What is a floodplain?

Floodplains are land areas that become covered by water in a flood event. More information on floodplains, floodways, and other flood-related definitions can be found in [Appendix A](#).

What does it mean when a flood event is described in years?

The floodplain referred to most frequently in this document ("Crooked Creek floodplain") are areas that would be covered by a flood event that has a 1% chance of occurring (or being exceeded) each year, also known as a 100-year flood. This is the floodplain commonly used for insurance and regulatory purposes.

Interstates are generally designed to a 50-year flood design, in which the pavement remains dry during a 50-year flood event, which has a 2% chance of occurring each year. The Interstate 30 flood area currently lies in a 5-year floodplain, which has a 20% chance of occurring each year.

What is a floodway?

A floodway is a regulated area of the floodplain that is generally associated with moving water during flood events.

Project Area

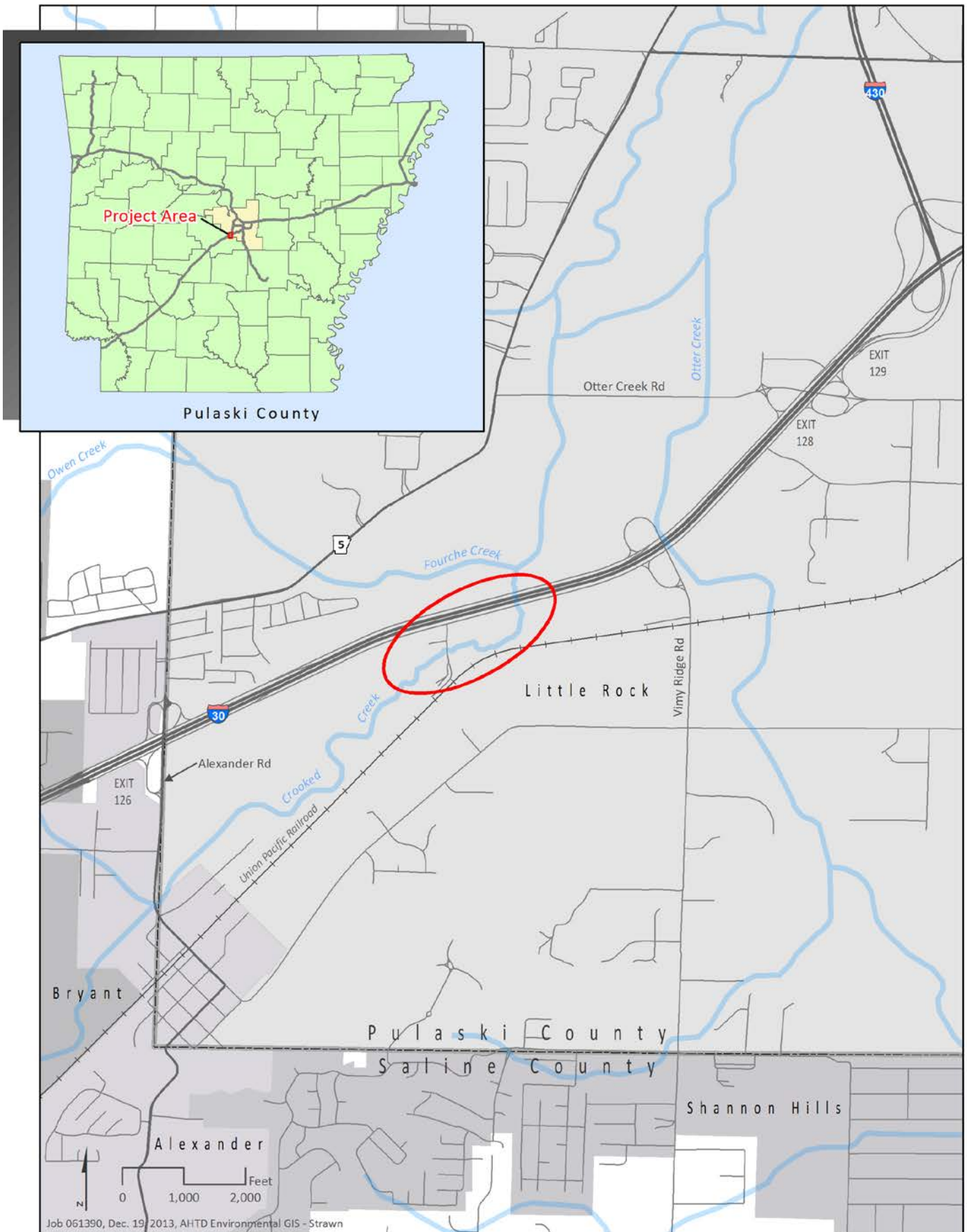


Figure 1

Project Area Overview



Job 061390, Dec. 19, 2013, AHTD Environmental GIS - Strawn

Figure 2

Flood Information

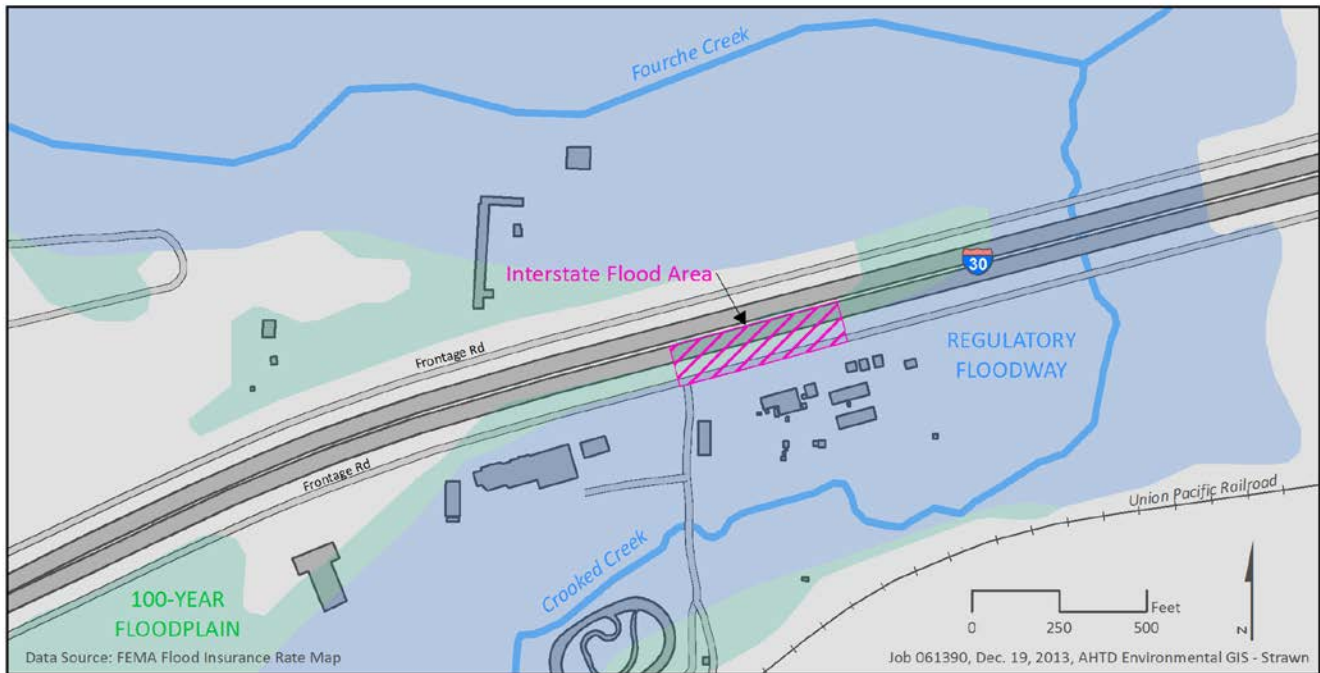


Figure 3

Aerial photography from 1973 and 2009 was used to estimate historic impacts to the Crooked Creek floodplain. Figure 4 shows the land use composition in the approximately 7,300 acre Crooked Creek watershed in 1973 and 2009. Most notably, a considerable percentage of the open space existing in 1973 was converted to urban use by 2009 indicating an increase in impermeable land surface, often associated with increased velocity and volume of runoff during rain events, which can lead to flooding.

What is a watershed?

A watershed is a drainage basin. Hydrologists refer to the area of land that contributes water flow to particular surface water outlet as its watershed.

Land Use Changes

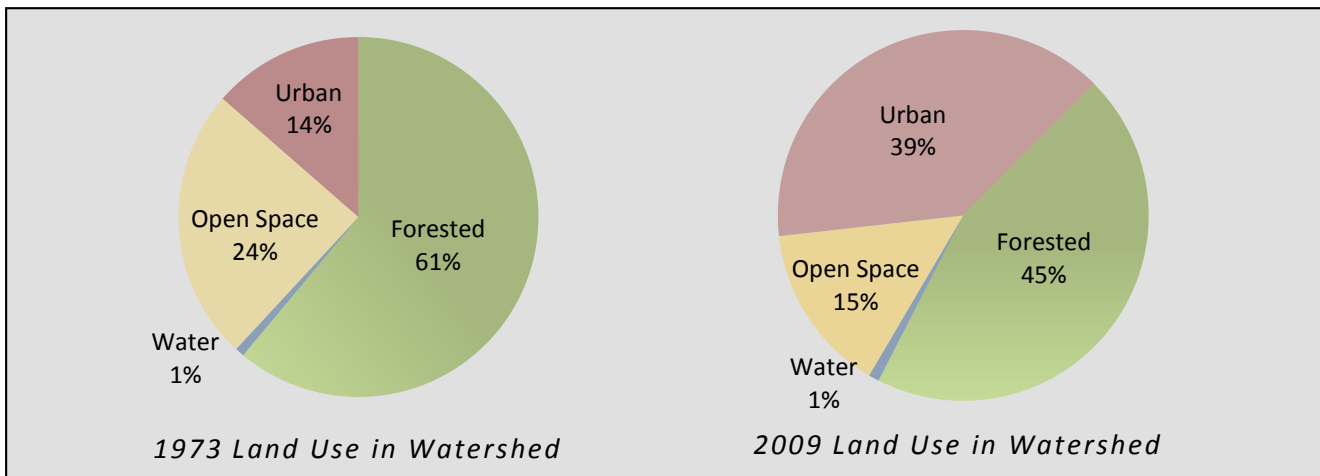


Figure 4

Historic photography also shows this same pattern of development within the project area on images from 1969, 1980, and 2013, as seen in Figure 5.

Historic Photography



Figure 5

Interstate 30

Interstate 30 connects Little Rock to the Dallas/Fort Worth area and serves as the primary route for vehicles traveling to and from these destinations. It also serves as the primary route connecting Little Rock to the Benton and Bryant areas. Figure 6 shows traffic volumes for Interstate 30 and the frontage roads.

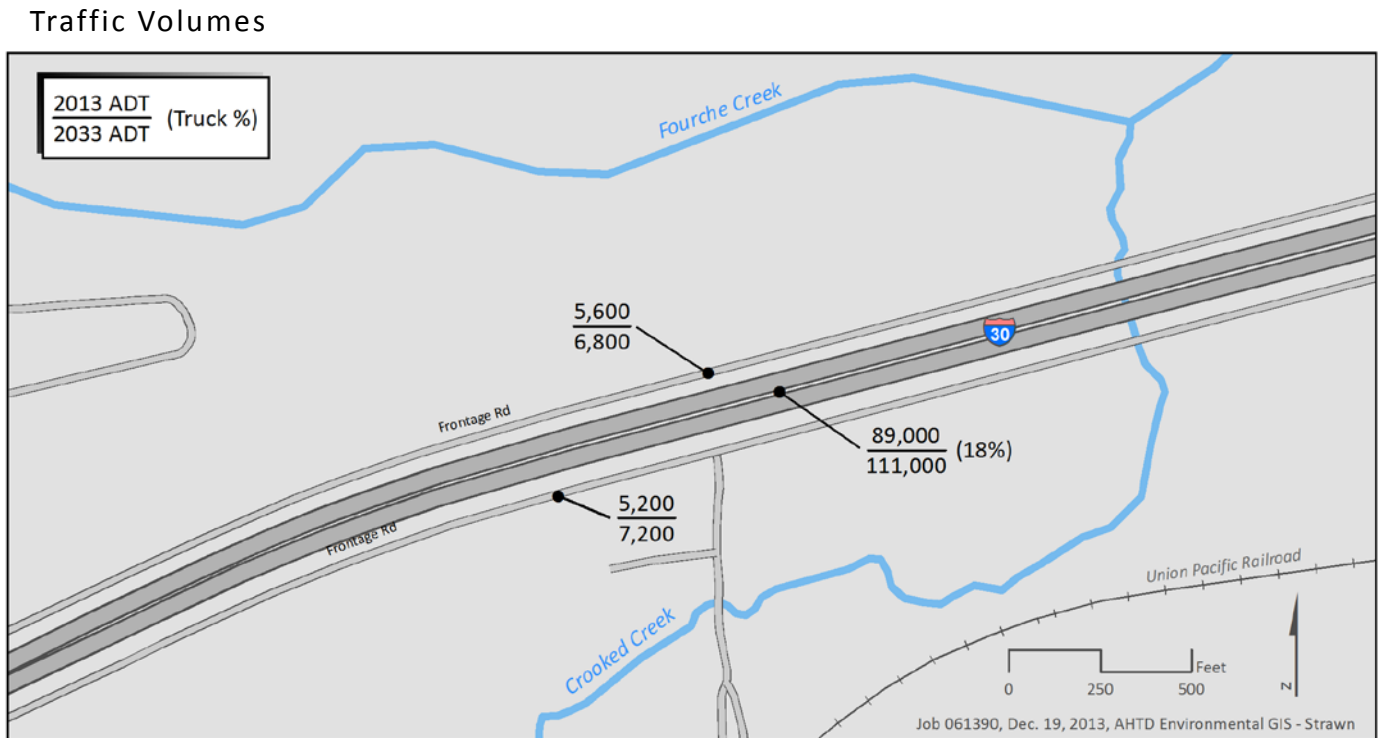


Figure 6

Highway 5

Historically, flood events affecting Interstate 30 at Crooked Creek have also resulted in the closure of Highway 5, the only other arterial connecting Little Rock to the Benton and Bryant areas. Highway 5 is a two-lane minor arterial that parallels Interstate 30, becoming a four-lane highway northeast of Otter Creek Road. The location of Highway 5 in the project area is shown in Figure 1.

Highway 5 is currently under construction from the Saline/Pulaski County line to Otter Creek Road to widen the highway, and will also include raising the highway grade to a 50-year flood design. After construction is complete, Highway 5 would be a diversion route during flood events if Interstate 30 and the frontage roads are closed.

Road User Cost

When heavy rainfall causes substantial flooding on Crooked Creek, the result is usually a closure of not only Interstate 30 but also the frontage roads. The seven known closures since 1978 are estimated to have closed these roadways from 2-8 hours per incident. The impact on traffic operations due to flooding can be measured by an analysis of the road user cost from vehicle delay.

Road user cost analysis considers costs due to loss of work time, vehicle depreciation, freight inventory delay, and fuel consumption. The afternoon highest traffic (peak) period on Interstate 30 was used for analysis since the road user cost was predicted to be greatest during this period. These cost estimates represent a scenario where vehicles use Otter Creek Road to detour to Highway 5 and then reenter Interstate 30 at Alexander Road, or vice versa. If Interstate 30 were to close due to a flood, it would take up to three hours longer for a vehicle to travel from Otter Creek Road to Alexander Road using the detoured route rather than Interstate 30 during the peak hour, assuming no vehicles divert to other local roads. The Interstate 30 route is approximately 2.3 miles long while the detoured route is approximately 2.7 miles long.

The results of this analysis are shown in Table 1.

Table 1

Road User Cost Analysis

Closure Duration	Closure Period	Cost		
		No Diversion*	10% Diversion*	20% Diversion*
1 hour	4pm – 5pm	\$180,000	\$120,000	\$80,000
2 hours	4pm – 6pm	\$490,000	\$360,000	\$260,000
4 hours	3pm – 7pm	\$1,290,000	\$1,060,000	\$850,000
8 hours	12pm – 8pm	\$3,680,000	\$3,030,000	\$2,410,000

*No diversion calculates user cost if all traffic diverts to Highway 5, while 10% and 20% diversion assumes that a percentage of the traffic will divert to other routes.

1.3 What is the purpose of this project?

The purpose of this project is to address the Interstate 30 flooding issues that result in substantial costs to road users. This will be accomplished by improving the hydraulics on Crooked Creek. Interstate 30 will be improved from less than a 5-year flood design to a 50-year design. A 50-year flood design will allow the pavement to remain above a flood event that has a 2% chance of occurring any given year.

1.4 What is the purpose of this Environmental Assessment?

This Environmental Assessment (EA) is being prepared to:

- Evaluate the environmental effects of correcting flooding issues on Interstate 30 by implementing hydraulic improvements on the Crooked Creek floodway.
- Inform and receive feedback from the public and decision makers about the environmental effects of the project.
- Determine whether effects are significant and require an Environmental Impact Statement or if the project effects can be sufficiently documented through a Finding of No Significant Impacts (FONSI).

What are significant impacts?

NEPA regulations do not provide specific thresholds to determine if project impacts are considered significant, but they do discuss how impacts should be evaluated.

Consideration should be given both to context, where the significance of impacts varies with the setting of the proposed action, and intensity, the severity of the impacts.

1.5 Who is leading this project?

This project is being led by a partnership between the Federal Highway Administration (FHWA) and the Arkansas State Highway and Transportation Department (AHTD). The FHWA is involved because it is funding a portion of the project and has the primary responsibility for the content and accuracy of this National Environmental Policy Act (NEPA) document.

The project is also being funded through state funds allocated to the AHTD. The AHTD is responsible for structural inspection and maintenance on Interstate 30, which is being affected by the flooding on Crooked Creek. For these reasons, the AHTD is a co-lead agency with the FHWA.

The U.S. Army Corps of Engineers was invited to be a cooperating agency in the NEPA process because an Individual Section 404 Permit may be needed to construct the proposed changes to Crooked Creek. See [Appendix G](#) for USACE correspondence.

What is the difference between a lead agency and a cooperating agency?

Lead agencies are those that are responsible for preparation and approval of a NEPA document, while cooperating agencies are any federal, state, tribal or local agency having special expertise with respect to an environmental issue or jurisdiction by law.

A cooperating agency has the responsibility to assist the lead agency by participating in the NEPA, scoping, and public involvement processes.

Chapter 2 – ALTERNATIVE DEVELOPMENT

What's in Chapter 2?

Chapter 2 identifies the project limits and briefly describes the alternatives evaluated in this EA.

2.1 What are the project limits and how were they selected?

The project limits include those areas immediately upstream of Interstate 30 on Crooked Creek. Hydraulic improvements in this area would reduce the frequency and duration of Interstate 30 flood events.

Hydraulic models and observations during flood events indicate that the flooding on Interstate 30 occurs when water levels in the Crooked Creek floodplain rise and subsequent flood events, outlined below, take place. A layout of the drainage patterns in the project area can be found on Figure 7, with the flood events described below numbered on the figure:

1. High water from Crooked Creek backs up a channel approximately 2,600 feet west of the Interstate 30 bridge into the roadside ditch south of the eastbound frontage road.
2. As Crooked Creek continues to rise, overbank flow from Crooked Creek empties into the ditch south of the eastbound frontage road.
3. Water from the ditch south of the eastbound frontage road begins to back through the culverts under the frontage road into the ditch north of the eastbound frontage road.
4. Both eastbound frontage road ditches begin to flood from the combined input of the above three sources, with the interstate flooding followed by the eastbound frontage road flooding.

The project's alternatives were designed to address the interstate flooding issues by preventing or minimizing these events.

Project Area Drainage

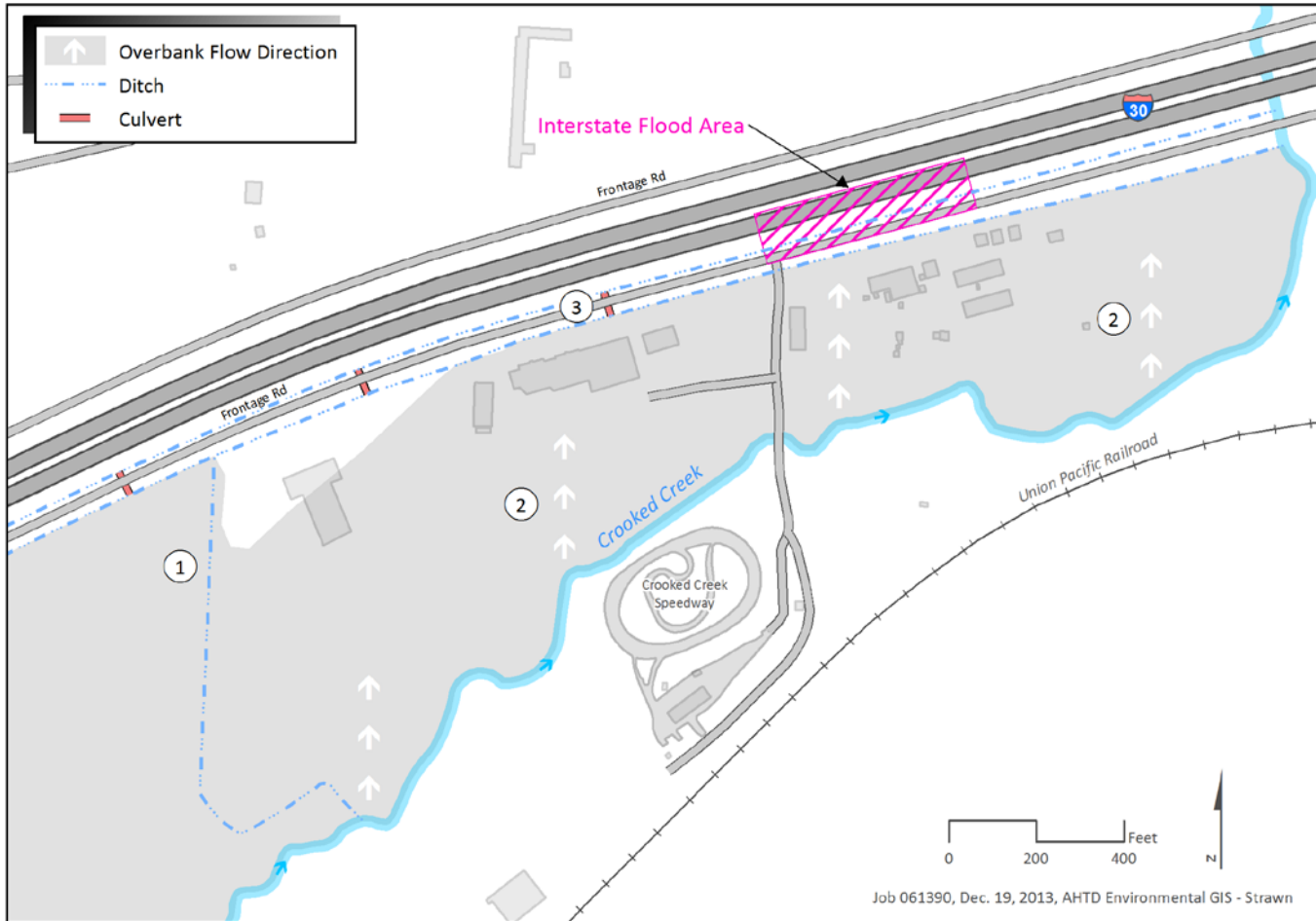


Figure 7

2.2 What alternatives were evaluated in this EA?

Four alternatives were considered for this project: three build alternatives and the No Action Alternative. Layouts of Alternatives 2 and 3 can be found in Figures 8 and 9.

No Action Alternative

The No Action Alternative would provide only routine maintenance for Interstate 30 and no maintenance on Crooked Creek except at the Interstate 30 bridge. By taking no action other than routine maintenance, the No Action Alternative would not address the flooding issues on Interstate 30. Road users would continue to experience delays and associated costs when the interstate floods. As development within the watershed continues, these flood events would

Why would you consider an alternative that does nothing?

The National Environmental Policy Act (NEPA) requires decision makers to consider a “no action” alternative in all NEPA studies. This alternative usually does not meet the project’s purpose and need, but helps to compare the beneficial and adverse impacts of build alternatives and determine their significance.

Alternative 2

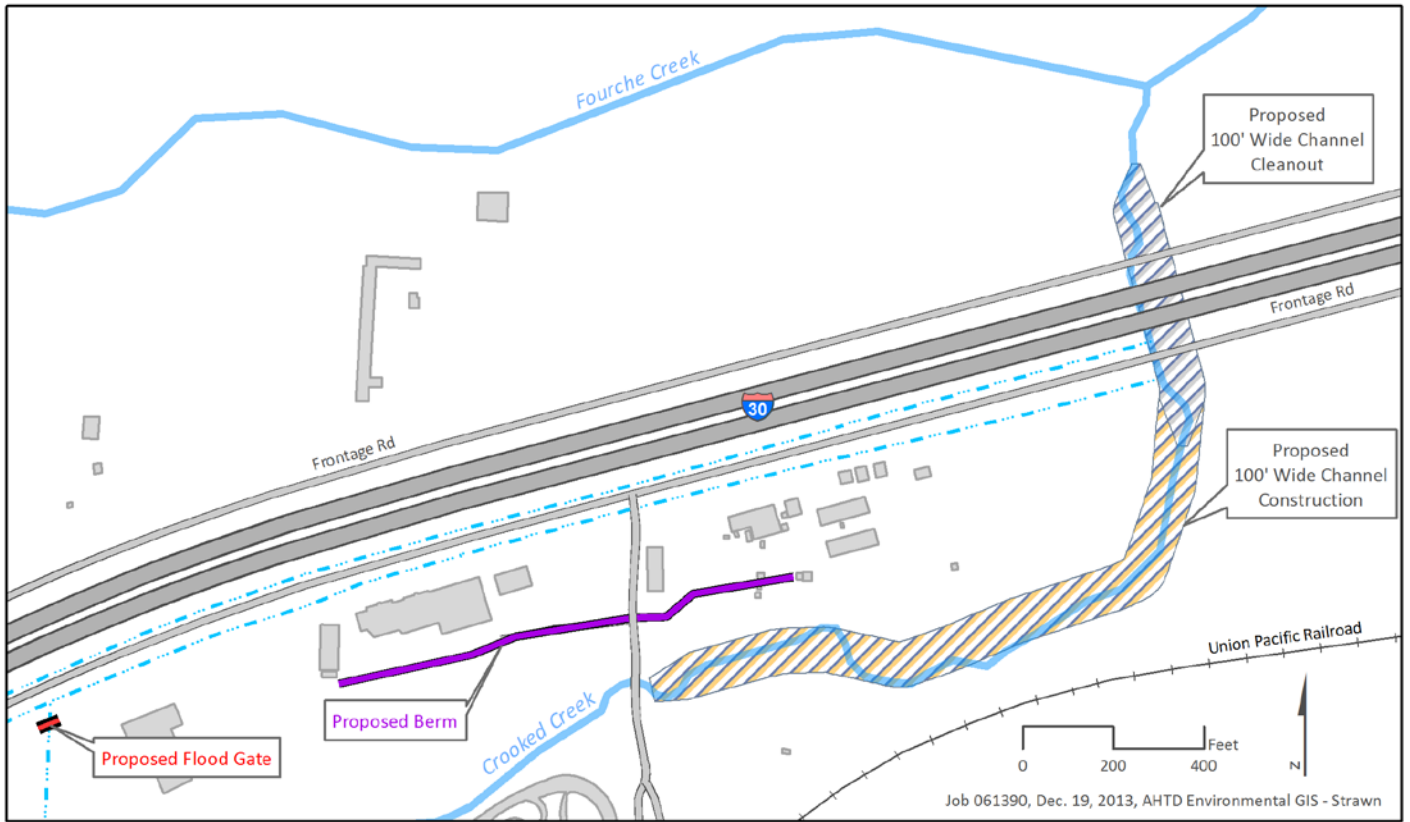


Figure 8

Alternative 3

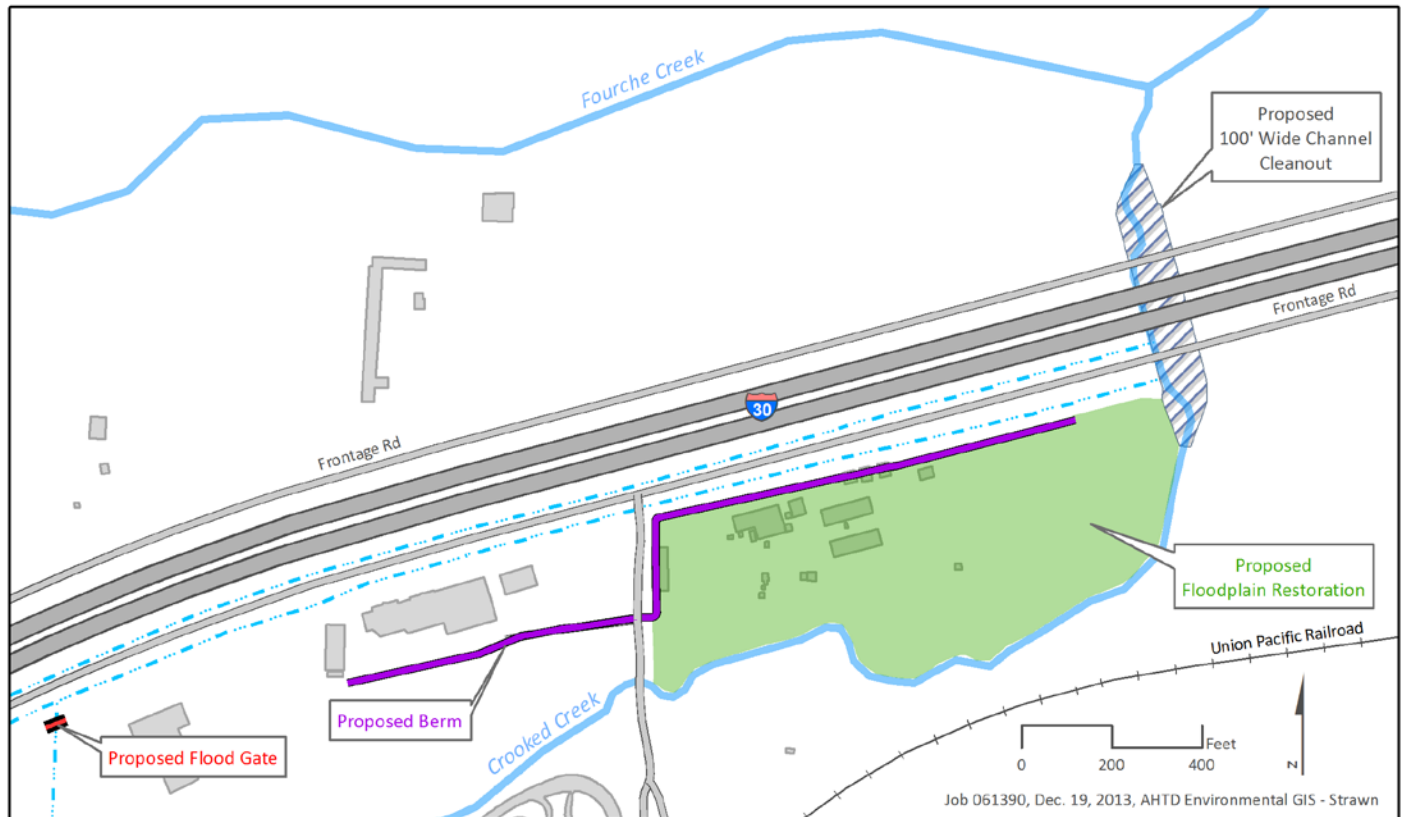


Figure 9

likely increase in frequency and duration. Even without additional development, the Crooked Creek flood area would remain within a 5-year flood area, with a 20% chance of floodwaters encroaching on the interstate mainlanes in any given year.

Alternative 1

Alternative 1 would involve reconstructing 2,068 feet of Crooked Creek immediately upstream of Interstate 30 to a 100-foot wide flat-bottom channel and installing a flood gate on the channel 2,600 feet west of the bridge to prevent water backing up into the frontage road ditches. Of the 2,068 feet of channel reconstruction, 637 feet would only involve cleaning out sediment that has accumulated since Crooked Creek was channelized as part of a project to widen Interstate 30 and the bridges over Crooked Creek. This alternative results in the flood area of Interstate 30 improved to withstand only a 25-year flood, and does not meet the AHTD criteria for interstate design frequency of a 50-year flood design.

Alternative 2

Alternative 2 (Figure 8) would involve the same work as Alternative 1, but with the addition of a 1,043-foot long, three-foot high berm constructed to prevent water from approaching Interstate 30. Construction of Alternative 2 would result in the flood area of Interstate 30 improved to a 50-year flood design. This alternative would cost approximately \$2.1 million to construct and approximately \$49,000 yearly to maintain the 100-foot wide channel.

Alternative 3

Alternative 3 (Figure 9) would construct a flood gate and 1,873-foot long, three-foot high berm, would remove most of the fill that had been placed by development to restore a more natural floodplain, and remove accumulated sediment in Crooked Creek to restore 637 feet of the 100-foot wide channel at the Interstate 30 bridge that was created when the bridge was widened. This existing channelization is visible on the aerial photography shown on Figure 2. Alternative 3 would also improve Interstate 30 to a 50-year flood design. This alternative would cost approximately \$3.1 million to construct and approximately \$15,000 yearly to maintain the 100-foot wide channel.

Were other alternatives considered?

Instead of lowering flood elevations, the grade of Interstate 30 could be raised 3.5 feet, above the 5-year floodplain. This alternative would

How does a flood gate address the flooding issues?

During flood events, the proposed one-way flap gate will not allow water to backflow and flood the frontage road ditches, but at typical levels will still allow water to drain in the opposite direction from the frontage road ditches to Crooked Creek.

Why would there be maintenance costs after the project is constructed?

The 100-foot wide channel constructed on Crooked Creek would accumulate sediment in the course of normal flow as well as during flood events. The sediment must be removed to maintain the capacity of the channel and the hydraulic opening under the Interstate 30 bridge.

have substantially higher construction costs estimated to be approximately \$6 million, and would require extensive lane closures and disruption of traffic during construction. Construction road user costs can be estimated using the same modeling system as the road user costs associated with the closure of Interstate 30 during flood events as described in Chapter 1. The total cost was calculated using the daily cost generated by the model and multiplying it by the length of construction, estimated to be 75 calendar days. It was assumed that during construction, eastbound Interstate 30 traffic would be shifted onto the westbound side of the interstate for approximately 0.5 mile, with two lanes maintained in both directions. The results of this analysis are shown in Table 2.

Table 2

Construction Road User Cost Analysis – Raising Interstate 30

Traffic Volume (vehicles per day)	Daily Cost (2014 dollars)	Total Cost (2014 dollars)
87,000 (No Diversion)	\$1,860,000	\$139,500,000
78,000 (10% Diversion)	\$1,080,000	\$81,000,000
70,000 (20% Diversion)	\$510,000	\$38,250,000

*No diversion calculates user cost if all traffic remains within the two open lanes of Interstate 30, while 10% and 20% diversion assumes that some percentage of traffic will divert to other routes.

Raising the grade of the interstate would also cause an increase in water surfaces, leading to more frequent and deeper flooding for all buildings within the study area between the railroad and the interstate frontage road. This alternative was removed from consideration due to these impacts, along with the high construction and road user costs.

2.3 How have government agencies been involved?

A field review of the project area involving representatives from the U.S. Fish & Wildlife Service (USFWS), U.S. Environmental Protection Agency, U.S. Army Corps of Engineers (USACE), Arkansas Game & Fish Commission, and Arkansas Natural Heritage Commission was held in March 2013. A scoping letter was sent out following the field

visit seeking comments from these agencies. The USFWS response can be found in [Appendix F](#). No other agencies responded.

The USACE has been involved in the development of a potential wetland and stream mitigation area for this project on Fourche Creek and the State Historic Preservation Officer was consulted regarding cultural resources in the project area.

Impacts to Crooked Creek as a result of the project would require an Individual Section 404 Permit from the USACE.

2.4 How have tribal governments been involved?

Section 106 of the National Historic Preservation Act requires federal agencies to consult with tribes where projects could affect tribal areas with historical or cultural significance. The FHWA initiated coordination with the tribes with an active cultural interest in the area during the scoping process for this project. The tribes contacted included the Osage Nation, the United Keetoowah Band of Cherokee Indians, the Quapaw Tribe of Oklahoma, the Tunica-Biloxi Tribe of Louisiana, the Choctaw Nation of Oklahoma, and the Caddo Nation. The Tribal Historic Preservation Officers were given the opportunity to comment on the proposed project. No objections to the proposed project were received.

2.5 Which of these alternatives could be built?

All four alternatives considered in this chapter are feasible and able to be constructed. Alternatives 2 and 3 are feasible and prudent alternatives, meeting the project's purpose and need.

The No Action Alternative does not meet the project's purpose and need of reducing the Interstate 30 flood frequency and duration and is therefore not a prudent alternative. The No Action Alternative will be considered in this Environmental Assessment as a baseline comparison of impacts for the two build alternatives.

Alternative 1 results in the flood area of Interstate 30 improved to only a 25-year flood design, and does not meet the AHTD criteria for design frequency. Alternative 1 was dropped from further consideration as it does not meet the project's purpose and need and is therefore not considered a prudent alternative. It will not be discussed in the remainder of this EA.

What does it mean for an alternative to be feasible and prudent?

NEPA defines feasible alternatives as those that can be built using current construction practices, while a prudent alternative is one that is reasonable, or makes sense. Alternatives that are not prudent may not meet the project's purpose and need, have severe operational or safety problems, unacceptable impacts, or severe community disruption, for example.

Chapter 3 – PROJECT EFFECTS

What's in Chapter 3?

Chapter 3 identifies permanent and construction impacts that are expected as a result of the proposed project. Only elements that would be affected by the project are discussed. The impact areas discussed in Chapter 3 are summarized in Table 3, found at the end of the chapter.

3.1 How would the project affect traffic?

How would traffic patterns and volumes on Interstate 30 and the frontage roads change with the project?

Normal traffic would not change with the construction of any of the alternatives. During flood events, users of Interstate 30 and the frontage roads would still see considerable delays in diverting to alternate routes that cannot handle interstate traffic volumes. Alternatives 2 and 3 would reduce the frequency of such events and reduce closure times when the roadways flood.

How would the project affect roadway safety?

While roadway flooding, especially on interstates, does cause safety hazards associated both with vehicles attempting to cross through floodwaters and with the queues that result during closures, only one accident was recorded during the known flood events (2009) as being a result of the flooding.

The No Action Alternative would not address any of the known flood issues, which are only likely to worsen over time as development in the Crooked Creek floodplain continues. Alternatives 2 and 3 would reduce the potential for safety hazards by reducing how often the interstate floods and the duration of the closures.

How much traffic congestion would be caused by construction?

No construction is proposed on Interstate 30 or either frontage road. There are no anticipated impacts to traffic as a result of the construction of any of the proposed alternatives.

3.2 How would economic conditions in the City of Little Rock and surrounding areas be affected?

The proposed project passes through an area that is primarily developed for small businesses. Alternative 2 would not involve relocating any of the surrounding small businesses, but would alleviate flooding issues they are currently experiencing.

Alternative 3 would require the relocation of five businesses to reopen the Crooked Creek floodway. The relocation of these businesses would negatively affect the local economy in the project area due to permanent and/or temporary loss of jobs and income, but would not negatively affect the overall economic conditions of the city of Little Rock. Both build alternatives would reduce the frequency and duration of flooding on Interstate 30, which would positively impact interstate commerce.

The No Action Alternative would not have any direct negative impacts on local businesses or economic conditions in Little Rock, but would also not alleviate the existing flooding issues for commercial traffic using Interstate 30.

3.3 How would the project affect properties in the area?

Land cover in the immediate project area was historically southern floodplain forest. Current land use involves mainly transportation and commercial businesses. The No Action Alternative would not result in any right of way acquisition or relocations.

Direct impacts to land use include the conversion of property to transportation right of way. Alternative 2 would convert 0.5 acre of commercial property and 4.7 acres of floodplain forest to transportation right of way. The proposed right of way for Alternative 2 can be found on Figure 10. All property owners would remain at their current locations and have access restored upon completion of the project. No relocations are anticipated for Alternative 2.

Alternative 3 would convert 8.6 acres of commercial property and 5.8 acres of floodplain forest. Alternative 3 would also require the relocation of five businesses, as shown in Figure 11.

What is a relocation?

Relocations occur when a residence, business, or non-profit is impacted severely enough by a proposed project that they cannot continue to live or do business at their current location. This is usually due to the proposed right of way limits crossing a structure (house or business) or taking a majority of a business's parking.

Alternative 2 Property Acquisition

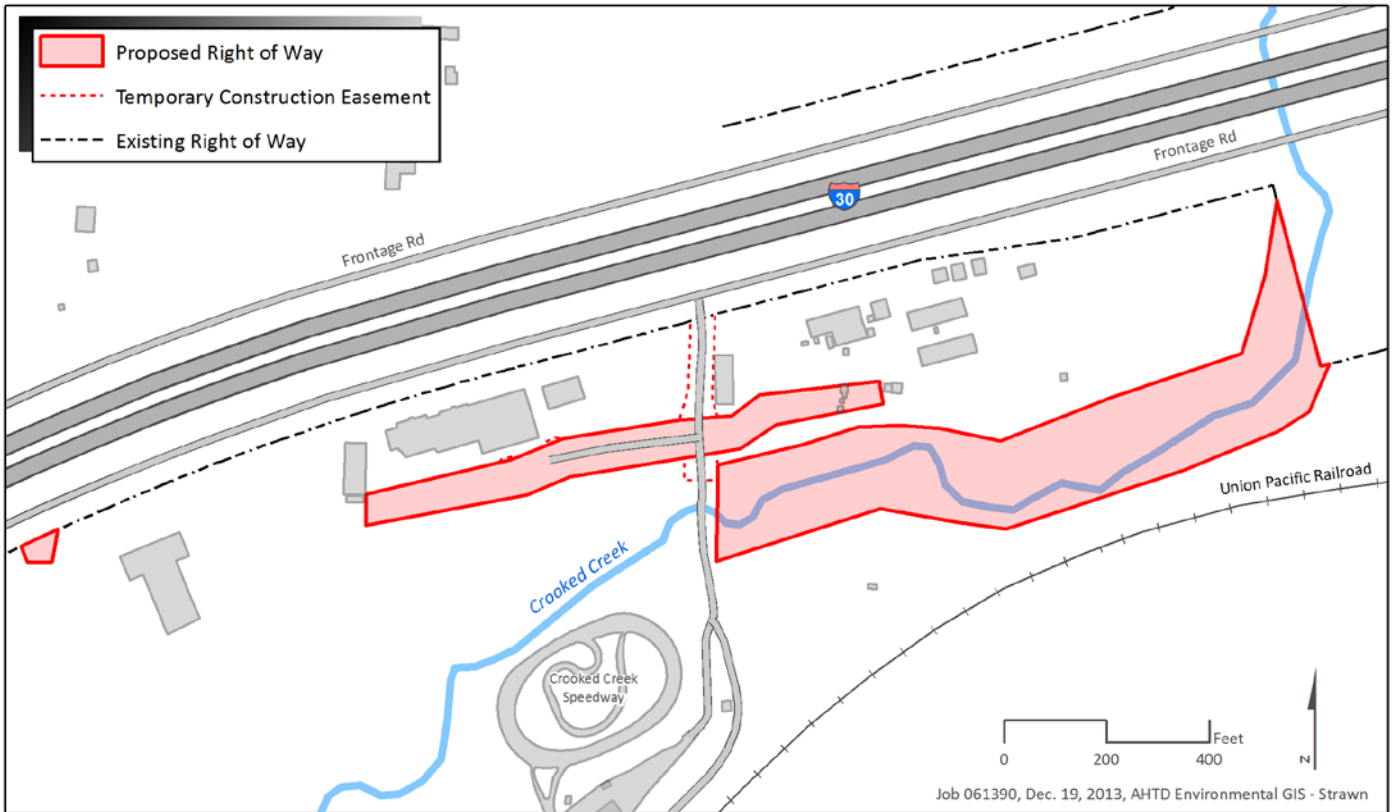


Figure 10

Alternative 3 Property Acquisition

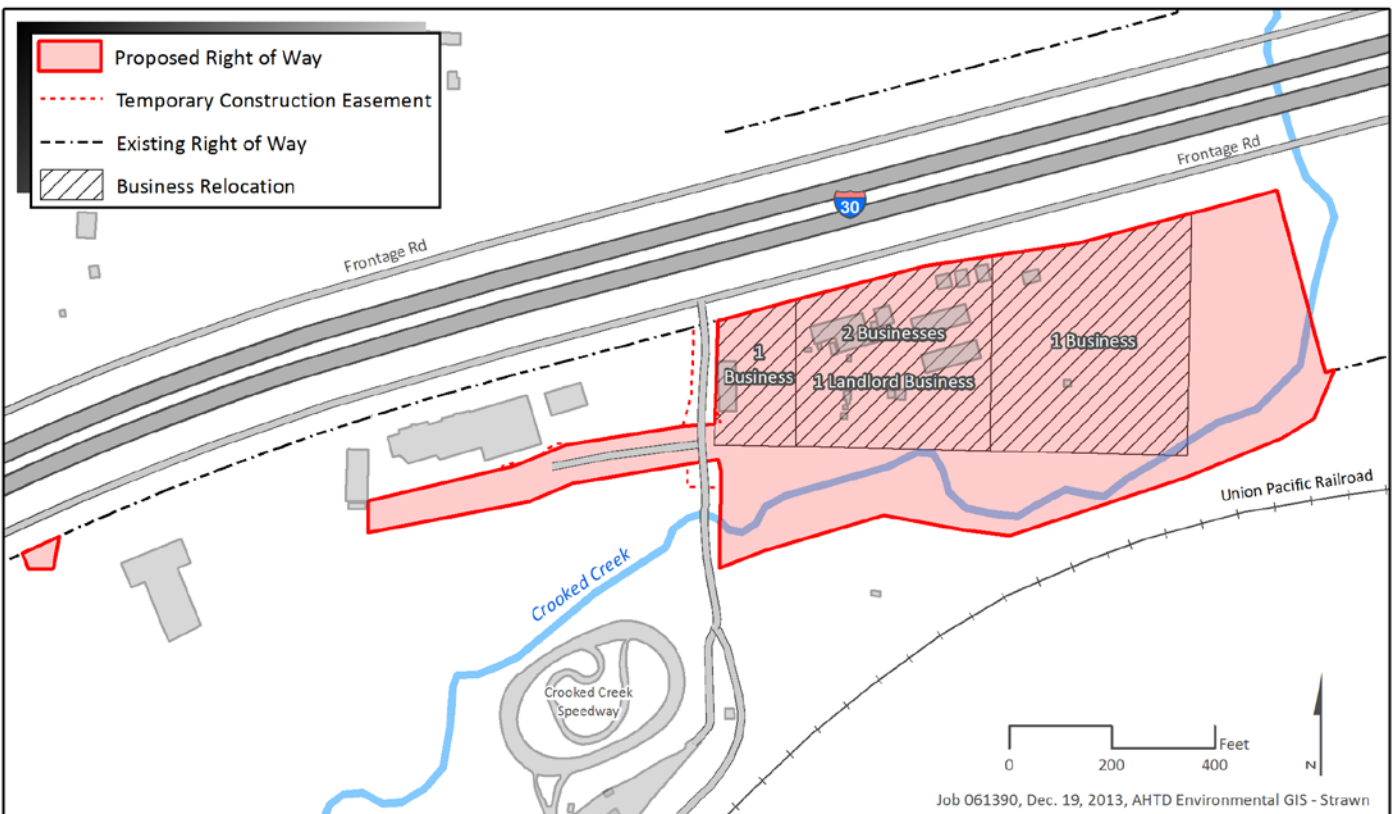


Figure 11

Estimated right of way widths were used in determining potential structures to be relocated. Right of way acreages and relocation counts are subject to change until a Selected Alternative is identified and design plans are finalized. Cost estimates, a conceptual stage relocation study, and an available housing inventory are provided in [Appendix B](#). The right of way acreage and number of relocations identified in the conceptual stage relocation study for each alternative can be found in Table 3. Relocation assistance would be provided to all property and business owners relocated as a result of this project.

3.4 What is Section 106 and how does it affect the way we evaluate historic and archeological resources?

Section 106 of the National Historic Preservation Act requires agencies to consider the effects of federal actions to historic properties. In compliance with Section 106 requirements, AHTD cultural resource specialists consult with the State Historic Preservation Officer (SHPO) and Native American tribes.

Preliminary checks with the Arkansas Archeological Survey and Arkansas Historic Preservation Program, as well as early maps of the project area, were checked for records of known archeological sites or historic structures. A cultural resources specialist also performed a visual survey of each proposed alternative to check for structures and areas that have a high probability for the occurrence of cultural resources.

An intensive cultural resources survey was conducted for the areas impacted by Alternative 2. If Alternative 3 is selected, an additional cultural resources survey will be conducted. If no additional historic properties are identified, the project will be documented and submitted to the SHPO with a recommendation of no further work. If historic or Native American archeological sites are identified, a full report documenting the results of the survey and stating the AHTD's recommendations would be prepared and submitted to the SHPO for review. If prehistoric sites are identified, consultation with the Native American tribe would be initiated, and the site or sites would be evaluated to determine if Phase II testing is necessary. Should any of the sites be found eligible or potentially eligible for nomination to the NRHP and avoidance is not possible, then site-specific data recovery plans would be prepared and data recovery would be carried out at the earliest practicable time.

What is a historic property?

Cultural resources include elements of the built environment (buildings, structures, or objects) or evidence of past human activity (archeological sites). Those that are listed on or eligible for inclusion in the National Register of Historic Places (NRHP) are defined as historic properties.

3.5 Would the project affect cultural resources?

From these records checks and field observations, it has been determined that none of the alternatives impact known historic properties and have a very low likelihood of impacting undiscovered cultural resources. Additional information about the cultural resources survey can be found in [Appendix C](#).

3.6 Would noise levels change?

Based upon the AHTD's Policy on Highway Traffic Noise Abatement, a noise analysis is not required for this project because it meets the criteria for a Type III project established in the 23 CFR §772. Type III projects do not involve added capacity, construction of new through lanes or auxiliary lanes, changes in the horizontal or vertical alignment of the roadway, or exposure of noise sensitive land uses to a new or existing highway noise source. None of the proposed alternatives are anticipated to cause a change in traffic noise levels.

What is noise?

Sound is anything we hear, while noise is unwanted or undesirable sound. Traffic noise is a combination of the noises produced by vehicle engines, exhaust, and tires.

3.7 Would utilities be affected?

Impacts to utilities in the project area will be avoided and minimized as much as possible. Several utilities would need to be relocated to accommodate the build alternatives, but significant impacts to area residents and business owners are not anticipated. The costs to relocate utilities are included in the right of way cost estimates in Table 3. The No Action Alternative would not affect any utilities.

3.8 How would the project affect views?

The view from Interstate 30 and the frontage roads in the immediate project area is of trees to the north and commercial businesses to the south. There are no officially designated scenic areas or visually sensitive resources in the project area.

Construction of the proposed project would result in the temporary presence of construction equipment, grading and excavation, and vegetation clearing throughout the project area that may be viewable from Interstate 30. These activities would result in temporary impacts to the view from the roadway during construction but are expected to be short term and minor in nature. No adverse impacts to the visual character within the project area are expected as a result of the proposed project.

More information regarding viewshed impacts, including a screening level Visual Impact Assessment, can be found in [Appendix D](#).

3.9 Would any hazardous materials be created or affected?

A visual assessment was performed to determine if any hazardous materials were located in the project area. Visual reconnaissance and government records identified no areas of concern. No hazardous materials, landfill sites, leaking underground storage tanks, or hazardous areas were noted within the immediate project area. None of the project alternatives would involve the creation of hazardous materials.

If hazardous materials are identified, observed or accidentally uncovered by any AHTD personnel, contracting company(s), or state regulating agency, it would be the AHTD’s responsibility to determine the type, size and extent of contamination. The AHTD would identify the type of contaminant, develop a remediation plan and coordinate disposal methods to be employed for the particular type of contamination. All remediation work would be conducted in conformance with the Arkansas Department of Environmental Quality, Environmental Protection Agency and Occupational Safety and Health Administration regulations.

3.10 How would water resources, such as streams, be affected?

Both build alternatives propose reconstruction of Crooked Creek, as seen in Figure 12, to a 100-foot wide flat-bottom channel. Alternative 2 requires widening an additional 1,431 linear feet of Crooked Creek upstream of Interstate 30 plus restoring 637 linear feet of the channel where it was previously widening at the Interstate 30 bridge, while Alternative 3 only involves the 637 feet of restoration. These impacts are included in Table 3.

The AHTD will obtain permits for Section 401, Water Quality Certification, Section 402, National Pollutant

What is a viewshed?
 A viewshed is simply the area that is visible from a specific location. The viewshed could be from the point of view from a vehicle, pedestrians, bicyclists, or even river users.

What are hazardous materials?
 A hazardous material is any item or chemical that can cause harm to people, plants, or animals when released into the environment.

Crooked Creek

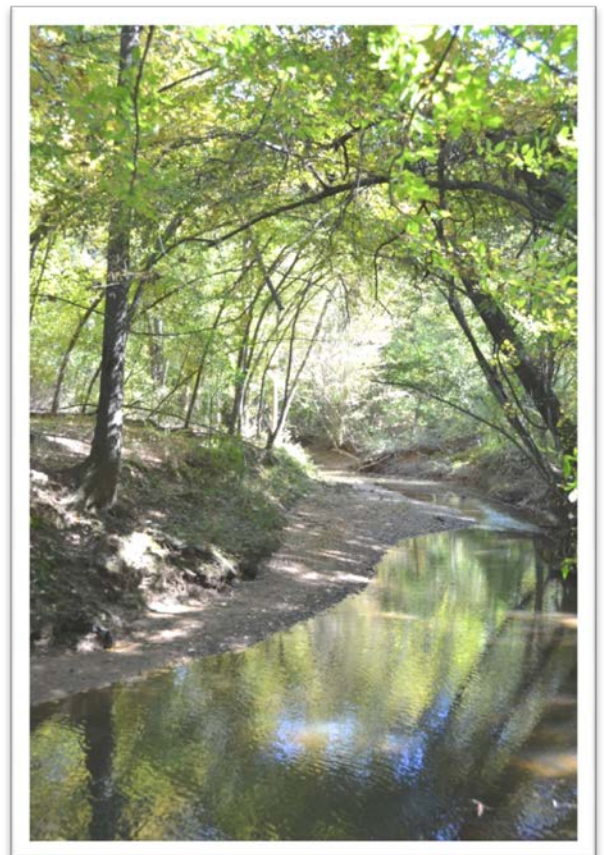


Figure 12

Discharge Elimination System, and Section 404, Permits for Dredged or Fill Material. All permits will be approved before construction begins.

Both build alternatives would require stream mitigation under Section 404 of the Clean Water Act. Estimating the cost per stream credit at \$35, Alternative 2 would require approximately \$290,500 of stream mitigation, while Alternative 3 mitigation would cost approximately \$83,900. Property has been already been purchased for restoration in order to generate stream and wetland credits in the Fourche Creek basin for use on this project and others in the future.

The No Action Alternative would not affect any water resources.

3.11 Would the project cause flooding in surrounding areas?

Flood Insurance Rate Maps issued by FEMA were reviewed to determine the limits of the regulatory floodway and 100-year floodplain within the project area, as seen in Figure 3. With the exception of the proposed flood gate, all of the proposed activities for the build alternatives would occur within the regulatory floodway.

The construction of the proposed berm for Alternative 2 would require the placement of 2,850 cubic yards of fill within the regulatory floodway, but would be offset by the excavation of 46,970 cubic yards of material to widen 2,068 feet of Crooked Creek.

The construction of the proposed berm for Alternative 3 would require the placement of 4,000 cubic yards of fill within the regulatory floodway. The placement of fill would be offset by the excavation of 74,940 cubic yards of material to restore the floodplain north of Crooked Creek.

Both build alternatives would result in net benefits to the Crooked Creek floodplain by excavating more fill than would be placed, resulting in the reduced frequency and duration of flood events. The No Action Alternative would not cause any additional flooding issues other than those already present in the project area.

3.12 Would any wetlands be impacted by the project?

There were no jurisdictional wetlands identified within the right of way of the two proposed alternatives. Any historic wetlands were filled in as the Crooked Creek floodplain was developed.

Why are floodplain impacts important to consider?

In order to prevent flooding issues caused by fill within a floodplain, local ordinances allow only a 1-foot rise in the water surface elevation for construction projects within a floodplain and no rise in water surface elevations within a regulatory floodway without FEMA approval.

What is a wetland?

Wetlands are areas typically inundated or saturated by surface or groundwater to the extent that they can support vegetation adapted for life in wet soil conditions.

3.13 Would any protected species be impacted by the project?

The U.S. Fish and Wildlife Service (USFWS) has identified 11 threatened, endangered, or candidate species listed for protection under the Endangered Species Act in Pulaski County. None of these species are anticipated to be affected by the No Action Alternative or either of the build alternatives. More information on the 11 species and their status in the project area can be found in [Appendix E](#). The USFWS clearance can be found in [Appendix F](#).

What is the difference between threatened and endangered species?

An endangered species is one that is in danger of extinction throughout all or a significant portion of its range. Endangered species receive the highest level of protection. A threatened species is one that is likely to become endangered in the near future.

3.14 How would the project affect other natural resources?

The project is located within the South Central Plains Ecoregion, commonly known as the West Gulf Coastal Plains. The South Central Plains are characterized by rolling plains divided by nearly flat fluvial terraces, bottomlands, and sandy low hills. The terrain is unlike the much more rugged Ouachita Mountains, located just a few miles north of the project area.

What are candidate species?

Candidate species are those being considered for listing as an endangered or threatened species.

Soils in the project area consist of very deep, poorly drained, slowly permeable soils formed in old alluvium high in silt, and very deep, moderately well drained, moderately permeable soils that formed in loamy alluvium. Both soil types are associated with nearly flat floodplains, such as those including and surrounding Crooked Creek.

What is a fluvial terrace?

Fluvial terraces are elongated raised areas that flank the sides of floodplains.

Natural vegetation in the project area consists of mixed oak-pine forest and southern floodplain forest. Common native trees on drained sites include shortleaf pine, southern red oak, white oak, and post oak, while the floodplain forest includes green ash, sweetgum, river birch, sycamore, and American elm. Areas that pond water following flooding also tend to contain willow oak and water oak.

What is an invasive species?

Invasive species are non-native species that invade and cause harm to ecosystems beyond their historic range. Their invasion can threaten native ecosystems or commercial, agricultural, or recreational activities dependent on these ecosystems. They may even harm the health of humans. Human actions, both unintentional and intentional, are the primary means of invasive species introductions.

Two non-native invasive species were noted in the project area. Chinese privet has colonized the understory and edges of forested areas. Callery pear forms thorny thickets on abandoned open areas, preventing the establishment of native plants through succession.

Alternatives 2 and 3 would clear existing bottomland vegetation adjacent to Crooked Creek. Alternative 3, which would open up a large area to restore the floodway, would be susceptible to Callery pear invasion.

3.15 What are indirect effects, and does the project have any?

An indirect effect is a reasonably foreseeable effect that may be caused by a project but would occur in the future or outside of the project area. The build alternatives would require periodic channel maintenance which would likely result in impacts to the stream and water quality, but these effects are anticipated to be temporary and minor. Alternative 2 channelizes and maintains a stretch of the Crooked Creek channel that is three times longer than that of Alternative 3, so the effects and cost of periodic maintenance for Alternative 2 would be greater than those associated with Alternative 3. The No Action Alternative involves no work other than regular interstate maintenance and would not result in any indirect effects other than deterioration of the interstate roadway due to frequent flooding.

3.16 What are cumulative effects, and does the project have any?

Cumulative effects result from the total effects of a proposed project, when added to other past, present, and reasonably foreseeable future projects or actions. Cumulative effects are studied so that the public, decision-makers, and project proponents take time to consider the “big picture” effects a project could have on the community and environment.

The AHTD does not have any other programmed jobs on Crooked Creek or within its floodplain and it is unknown if there are any private or local projects to be developed. Any such projects within the floodplain would require a permit from the local authority. No cumulative effects to Crooked Creek are anticipated with the No Action Alternative or either build alternative.

Table 3

Alternative Impact Comparison

Alternative	Total Project Cost*	Construction Cost	Right of Way Cost	Stream Mitigation Cost	Yearly Maintenance Cost	Relocations	Right of Way (acres)	Stream Impacts (linear feet)
No Action	0	0	0	0	\$15,000	0	0	0
Alternative 2	\$2,105,378	\$241,253	\$1,573,600	\$290,525	\$49,000	0	5.2	2,070
Alternative 3	\$3,112,350	\$374,806	\$2,653,600	\$83,944	\$15,000	5	14.4	643

*Total project cost includes the one-time costs of construction, right of way, and stream mitigation. Yearly maintenance costs are recurring.

Chapter 4 – RECOMMENDATIONS

What's in Chapter 4?

Chapter 4 contains the results and conclusions of this Environmental Assessment.

4.1 What are the results of this EA?

The environmental analysis of the proposed project did not identify any significant impacts to the natural and social environment as a result of the No Action Alternative, Alternative 2, or Alternative 3.

4.2 Is the NEPA process finished?

After this EA is signed by the FHWA and approved for public dissemination, a Location and Design Public Hearing will be offered concurrently with the USACE.

After a review of comments received from citizens, public officials, and public agencies, the next step in the environmental process will be to identify a Preferred Alternative based on the information contained in the EA and the comments received.

After the design is finalized, a FONSI document will be prepared by the AHTD and submitted to the FHWA. Approval of the FONSI by the FHWA will identify the Selected Alternative and conclude the NEPA process.

Reference Page

Acronyms

AHTD	Arkansas State Highway and Transportation Department
EA	Environmental Assessment
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
NEPA	National Environmental Policy Act
NRHP	National Register of Historic Places
SHPO	State Historic Preservation Officer
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

Appendices

- Appendix A: Floodplain and Floodway Information
- Appendix B: Conceptual Stage Relocation Statement
- Appendix C: Cultural Resources Survey Information
- Appendix D: Visual Impacts Assessment
- Appendix E: Threatened and Endangered Species Information
- Appendix F: U.S. Fish and Wildlife Service Clearance

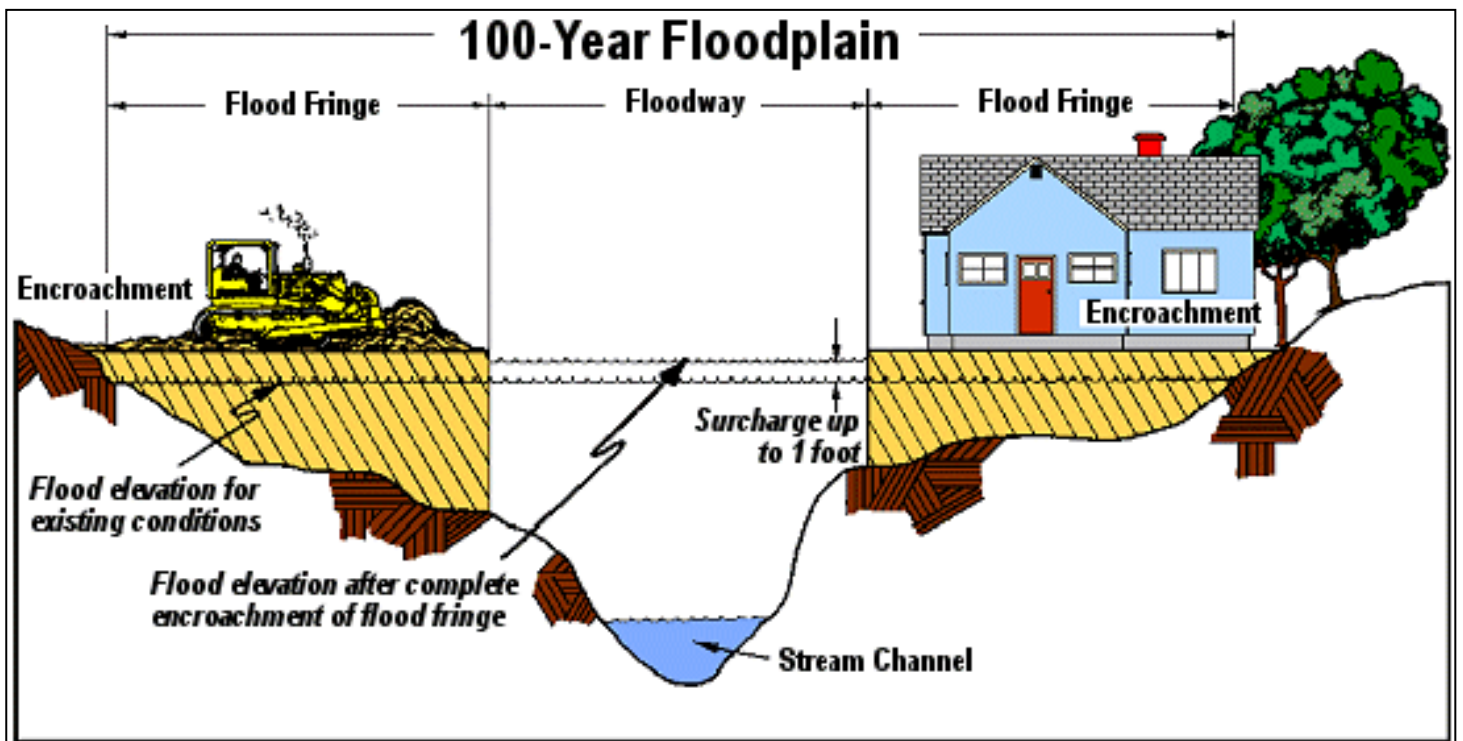
Appendix A – FLOODPLAIN AND FLOODWAY INFORMATION

Floodplain and Floodway Information

A floodplain is any land area susceptible to being inundated by water from any source. It includes the floodway and flood-fringe areas.

Flooding is defined as a general and temporary condition of partial or complete inundation of normally dry land areas from the overflow of inland or tidal waters, the unusual and rapid accumulation or runoff of surface waters from any source, or mudflows which are proximately caused by flooding

The *regulatory floodway* means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height. The floodway is the most dangerous part of the floodplain. It is associated with moving water. Development is generally prohibited in floodways.



The *flood-fringe* is the portion of the floodplain outside of the floodway, which is covered by floodwater during the 100-year discharge. The term, "flood-fringe" is generally associated with standing rather than flowing water. It is also that part of the floodplain wherein development is subject to a community's floodplain ordinance.

Base flood means the flood having a one percent chance of being equaled or exceeded in any given year.

Floodplain management means the operation of an overall program of corrective and preventive measures for reducing flood damage, including but not limited to emergency preparedness plans, flood control works and floodplain management regulations.

Floodplain regulations are meant to:

- Protect life, health and property
- Minimize public expenditures for costly flood control projects
- Minimize rescue and relief efforts
- Minimize business interruptions
- Minimize damage to public facilities
- Minimize the occurrence of future flood blight areas
- Discourage the victimization of unwary land and homebuyers
- Prevent increases in the regional flood from occurring

This information is from the Virginia Department of Conservation & Recreation website, and can be accessed at the following location:

http://www.dcr.virginia.gov/dam_safety_and_floodplains/fpregs.shtml

Appendix B – CONCEPTUAL STAGE RELOCATION STATEMENT

General Statement of Relocation Procedure

Persons displaced as a direct result of acquisition for the subject project will be eligible for relocation assistance in accordance with Public Law 91-646, and the Uniform Relocation Assistance Act of 1970. The Relocation Program provides advisory assistance and payments to minimize the adverse impact and hardship of displacement upon such persons. No lawful occupant shall be required to move without receiving a minimum of 90 days advance written notice.

All displaced persons are eligible for reimbursement of actual reasonable moving costs. Businesses, farms, and nonprofit organizations are also eligible for Reestablishment payments, not to exceed \$10,000.00. Reestablishment payments are made in addition to Moving Expense payments. A business, farm, or nonprofit organization may be eligible for a fixed payment in lieu of the moving costs and reestablishment costs if relocation cannot be accomplished without a substantial loss of existing patronage. The fixed payment will be computed in accordance with the Code of Federal Regulations and cannot exceed \$20,000.00.

If the displacee is not satisfied with the amounts offered as relocation payments, they will be provided a form to assist in filing a formal appeal. A hearing will be arranged at a time and place convenient for the displacee, and the facts of the case will be promptly and carefully reviewed.

Relocation services will be provided until all persons are relocated or their relocation eligibility expires. The Relocation Office will have listings of available commercial properties. Information is also maintained concerning other Federal and State Programs offering assistance to displaced persons.

Based on an on-site inspection and aerial photographs, it is estimated that the project could cause the following displacements and costs:

Alternative 2

3	Personal Properties	\$12,000.00
	Services	\$3,000.00
	Total	\$15,000.00

Alternative 3

4	Businesses	\$175,000.00
1	Landlord Business	\$10,000.00
1	Personal Property	\$2,000.00
	Services	\$33,000.00
	Total	\$220,000.00

It is noted that while Alternative 2 causes three Personal Property displacements, these would all be partial relocations. In essence, it is anticipated the occupants would need only move

personal property from one part of the property to another. The businesses would likely not be fully displaced.

The general characteristics of the displacees to be relocated are listed on the Conceptual Stage Inventory Record forms in the back of this report. The general characteristics have been determined by a visual inspection of the potential displacees by a Relocation Coordinator. The Relocation Coordinator utilizes past experiences and knowledge in making this determination.

Forty-seven commercial properties were found for sale in the greater Little Rock area. A breakdown of the properties is as follows:

Commercial Properties		Number of Units
Improved	For Sale	
\$0 -	\$100,000	1
\$100,001 -	\$200,000	3
\$200,001 -	\$300,000	0
\$300,001 -	\$500,000	3
\$500,001 -	\$1,000,000	3
Total		10

Commercial Properties		Number of Units
Land	For Sale	
\$0 -	\$100,000	4
\$100,001 -	\$200,000	12
\$200,001 -	\$300,000	5
\$300,001 -	\$500,000	15
\$500,001 -	\$1,000,000	1
Total		37

An additional search was conducted to determine the availability of retail lease space. Following is the breakdown of properties found which are currently on the market.

Commercial Properties	Average Rent	Number of Units
Retail (sq. ft.)	For Lease (sq. ft.) (per sq. ft.)	
750 -	1,000 \$15.38	2
1,001 -	1,501 \$13.38	4
1,501 -	2,000 \$14.25	2
2,001 -	2,500 \$12.00	1
2,501 -	3,000 \$8.00	1
3,001 -	4,000 \$12.88	2
Total		12

A commercial property inventory indicates there are at least 47 properties for sale and 12 properties available for lease in the greater Little Rock area at this time. The businesses affected by the project may not be able to relocate in the immediate area of their displacement, resulting in termination of the operation. However, in order to assist the displaced businesses in relocating, the State will explore all possible sources of funding or other resources that may be

available to businesses. Sources that will be considered include State and Local entities, the Department of Housing and Urban Development, the Economic Development Administration, the Small Business Administration, and other federal agencies. Emphasis will be given in providing relocation advisory services to the business. Appropriate measures will be taken to ensure that each entity displaced is fully aware of their benefits, entitlements, courses of action that are open to it, and any special provisions designed to encourage business and nonprofit organizations to relocate within the same community.

All displacees will be offered relocation assistance under provisions in the applicable FHWA regulations. Also, special relocation advisory services and assistance will be administered commensurate with displacees' needs, when necessary. Examples of these include, but are not limited to, consultation with local officials, social and federal agencies, and community groups. There are no other identified unusual conditions involved with this project.

Appendix C – CULTURAL RESOURCES SURVEY INFORMATION

Cultural Resources Survey Information

Cultural resources include elements of the built environment (buildings, structures, or objects) or evidence of past human activity (archeological sites). Those that are listed, or eligible for inclusion, in the National Register of Historic Places (NRHP) are defined as historic properties (36 CFR §800.16(l)). Impacts to historic properties are avoided, minimized, or mitigated through a variety of methods that vary depending on the nature of the property. Those that are not eligible for inclusion in the NRHP do not require protection.

The cultural resources survey consisted of a review of appropriate records and a visual survey of the proposed alternatives by an AHTD staff archeologist. The survey was conducted in order to identify any obvious archeological sites or historic properties that might be affected by the project and to see if any of the alternatives were located within areas having a high probability for the occurrence of undiscovered cultural resources.

In accordance with federal regulations (36 CFR §800.4a through 800.6) regarding the identification and treatment of historic properties, the Federal Highway Administration (FHWA) has initiated consultation regarding the project with the Osage Nation, United Keetoowah Band of Cherokee Indians, Quapaw Tribe of Oklahoma, Tunica-Biloxi Tribe of Louisiana, Inc., Choctaw Nation of Oklahoma, and the Caddo Nation. Consultation will remain open throughout the duration of the project.

A variety of records were checked to determine if previously documented cultural resources were known in the project area. These include the archeological site files kept by the Arkansas Archeological Survey (AAS) in Fayetteville and the historic structure database kept by the Arkansas Historic Preservation Program (AHPP) in Little Rock. Several early maps were also reviewed to gather information regarding early historic settlement in the project area. The windshield survey consisted of driving to as many public access points as possible to determine if any unrecorded historic structures were present.

A review of the AAS site files revealed several sites within or near the proposed alternatives. Site 3PU231 is located within the project area. The site consisted of a lithic scatter. A revisit of the site was done, and it was determined that the site has been completely destroyed. Site 3PU230 is located within close proximity to the project area and consisted of a light lithic scatter. A revisit of the site was done, and it was determined that the site has been completely destroyed. Several sites (3PU232, 3PU233, 3PU234, and 3PU237) are recorded outside of the proposed alternatives near Crooked Creek. These sites have been heavily impacted by construction of businesses. Most of the sites within or near the proposed alternatives have been entirely destroyed by construction of sewer lines and businesses or Phase II testing.

A review of the AHPP historic structure file shows no known historic structures within or near the project area. There are no existing structures that appeared to be 50 years old or older.

No new cultural resources were identified during the windshield survey. Several early maps were reviewed to gather information regarding early historic settlement in the project area. These included copies of the 1822 General Land Office (GLO) map for Township 1 South, Range 13 West and the 1936 Pulaski County Highway Map. The 1822 GLO map showed no cultural indicators such as fields, houses, or roads. The 1936 Pulaski County Highway map had the area blacked out and could not be read.

The alternatives were also plotted on the most recent Alexander topographic quadrangle map in order to preview existing landforms for areas considered to have a high probability for Native American and historic settlements. An analysis of the Alexander topographic quadrangle map shows that the alternatives are located entirely within the floodplain of Crooked Creek which decreases the chances of finding unknown Native American sites.

None of the alternatives impact an archeological site or historic structure. An intensive cultural resources survey has been conducted for Alternative 2. No cultural resources would be adversely affected. A full report documenting the results of the survey was submitted to the SHPO for review with a recommendation of no further archeological work. SHPO concurred with the recommendations and had no objection to the implementation of this undertaking. The report has been sent to the appropriate Native American Tribes to continue consultation. If Alternative 3 is selected, additional survey work will not be necessary. The Crooked Creek channel, proposed berm, and a portion of the proposed floodway restoration area was already surveyed as part of Alternative 2. The northern portion of the proposed floodway restoration area will not require additional work. This area has already been visually examined. Shovel testing is not applicable due to businesses, gravel lots, and paved parking areas. An Addendum to SHPO that includes the additional right of way would be required to document this information.

Appendix D – VISUAL IMPACTS ASSESSMENT

Visual Impact Assessment

A Visual Impact Assessment (VIA) was conducted for this project through use of a VIA Guide based on the FHWA's *Visual Impact for Highway Projects*. The VIA Guide is a checklist meant to assist in understanding the degree and breadth of possible visual issues and to estimate probable visual impacts. The VIA Guide checklist and results are presented below.

Change to the Visual Environment

1. Will the project result in a noticeable change in the physical characteristics of the existing environment?

High level of change (3) Moderate level of change (2) ***Low level of change (1)***

2. Will the project complement or contrast with the visual character desired by the community?

Highly incompatible (3) Somewhat incompatible (2) ***Somewhat compatible (1)***

3. What types of project features and construction impacts are proposed? Are bridge structures, large excavations, sound barriers, or median planting removal proposed?

High concern (3) Moderate concern (2) ***Low concern (1)***

4. Will the project changes likely be mitigated by normal means such as landscaping and architectural enhancement or will avoidance measures be necessary to minimize adverse change?

Project alternative may be needed (3) Extensive mitigation likely (2) ***Normal mitigation (1)***

5. Will this project, when seen collectively with other projects, result in an aggregate adverse change in overall visual quality or character?

Impacts likely in 0-5 years (3) Impacts likely in 6-10 years (2) ***Cumulative impacts unlikely (1)***

Viewer Sensitivity

1. What is the potential that the project proposal may be controversial within the community, or opposed by any organized group?

High potential (3) Moderate potential (2) ***Low potential (1)***

2. How sensitive are potential viewer-groups likely to be regarding visible changes proposed by the project?

High sensitivity (3) Moderate sensitivity (2) ***Low sensitivity (1)***

3. To what degree does the project appear to be consistent with applicable laws, ordinances, regulations, policies, or standards?

Incompatible (3) Moderately compatible (2) ***Largely compatible (1)***

4. Are any permits going to be required by outside agencies (i.e., federal, state, or local) that will necessitate a particular level of Visual Impact Assessment?

Yes (3) Maybe (2) ***No (1)***

5. Will the Project Development Team or public benefit from a more detailed visual analysis in order to help reach consensus on a course of action?

Yes (3) Maybe (2) ***No (1)***

Final Score = 10

A score of 10 indicates the lowest potential for adverse visual impacts as measured by the VIA Guide.

Review of the project site and project plans indicate that the project would not result in adverse impacts to the visual environment.

Appendix E – THREATENED AND ENDANGERED SPECIES INFORMATION

Threatened and Endangered Species Information

The Arkansas Ecological Services Field Office of the U.S. Fish & Wildlife Service lists 11 threatened (LT), endangered (LE), and candidate (C) species as occurring in Pulaski County.

Piping Plover (*Charadrius melodus*) LT

The Piping Plover is a small, migratory shorebird that inhabits beaches, shorelines and dry lakebeds. There are three breeding populations in the Northern Great Plains, Great Lakes and Upper Atlantic. The Piping Plover winters along coasts of the south eastern US, northern Mexico, and northern Caribbean. Migration typically occurs in a single overnight flight. (National Audubon Society 2013).

Determination

The species is only an occasional visitor to Arkansas, making brief stops during migration; therefore, the project was determined to have no effect on the species.

Pink Mucket (*Lampsilis abrupta*) LE

The Pink mucket is known from the Black, Spring, Current, White, Ouachita, Little Missouri, Saline, and Little Rivers as well as Bayou Bartholomew in Arkansas.

Determination

There are no known populations of Pink mucket within Pulaski County or the Arkansas River System; therefore, the project will have no effect on the species.

Arkansas Fatmucket (*Lampsilis powelli*) LT

The Arkansas fatmucket is an Arkansas endemic freshwater mussel occurring only in the Ouachita, Saline and Caddo River systems (USFWS 1992).

Determination

The Arkansas fatmucket is not known to occur within any streams within the Arkansas River system including Crooked Creek; therefore, the project will have no effect on the species.

Scaleshell (*Leptodea leptodon*) LE

In Arkansas, the species is known from Frog Bayou, St. Francis, Spring, South Fork Spring, South Fourche La Fave, Strawberry and White rivers. (USFWS 2011b)

Determination

The Scaleshell mussel is not known to occur within the Crooked Creek watershed; therefore, the project will have no effect on the species.

Rattlesnake-Master Borer Moth (*Papaipema eryngii*) C

The Rattlesnake-Master Borer Moth is a nocturnal moth that feeds exclusively on the Rattlesnake-Master plant (*Eryngium yuccifolium*). The Rattlesnake-Master plant occurs in low densities on remnant prairies and woodland openings throughout much of the eastern US. The Rattlesnake-Master Borer Moth is known from five States: Illinois, Arkansas, Kentucky, North Carolina, and Oklahoma. Within Arkansas there are only two known populations, one in Jefferson County on the Pine Bluff Arsenal and one in Pulaski County on the Little Rock Air Force Base. (USFWS 2013).

Determination

No Rattlesnake-Master plants were observed during site visits to the project area. Habitat within the project area consists of urban development and forested riparian areas. Based on the lack of host plants and the unavailability of suitable habitat within the project area the project was determined to have no effect on the species.

Red-Cockaded Woodpecker (*Picooides borealis*) LE

Red-cockaded woodpeckers are a cooperatively breeding species, living in family groups that typically consist of a breeding pair with one or two male helpers. Females may also become helpers, but do so at a much lower rate than males. Red-cockaded woodpeckers require open pine woodlands and savannahs with large old pines for nesting and roosting habitat. Cavity trees must be in open stands with little or no hardwood midstory and few or no overstory hardwoods. Red-cockaded woodpeckers also require abundant foraging habitat. Suitable foraging habitat consists of mature pine with an open canopy, low densities of small pines, little or no hardwood or pine midstory, few or no overstory hardwoods, and abundant native bunchgrass and forb groundcovers. (USFWS 2003)

Determination

There are no known colonies of Red-cockaded woodpeckers or suitable habitat within the project area; therefore, the project will have no effect on the Red-cockaded woodpeckers.

Fat Pocketbook (*Potamilus capax*) LE

The Fat pocketbook is a species of freshwater mussel that was historically known from the Mississippi, Ohio, and St. Francis River systems. In Arkansas, the Fat pocketbook is known

from 27 stream and ditch channels within the St. Francis River system, the Mississippi River, and the lower White River. (USFWS 2012).

Determination

There are no known records of the Fat pocketbook within the Arkansas River System including Crooked Creek; therefore, the project will have no effect on the species.

Rabbitsfoot (*Quadrula cylindrica cylindrica*) LT

The Rabbitsfoot mussel primarily inhabits small to medium sized streams and some larger rivers. It usually occurs in shallow water areas along the bank and adjacent runs and shoals with reduced water velocity. Bottom substrates generally include gravel and sand but they have been found in rip rap. Rabbitsfoot populations are considered to be extant in 51 streams in 13 states. In Arkansas it occurs in the St. Francis River, White River, War Eagle Creek, Buffalo River, Black River, Current River, Spring River, South Fork Spring River, Strawberry River, Middle Fork Little Red River, Illinois River, Cossatot River, Ouachita River, Little Missouri River, and Saline River. (USFWS 2012a).

Determination

The Rabbitsfoot is not known from within the project area and no suitable habitat exists within the project footprint; therefore, the project will have no effect on the species.

Winged Mapleleaf (*Quadrula fragosa*) LE

The Winged Mapleleaf mussel is known from only five populations: the St. Croix River in MN and WI, the Saline and Ouachita Rivers in AR, the Little River in OK, and the Bourbeuse River in Missouri (USFWS 2009).

Determination

The Winged Mapleleaf is not known to occur within the Arkansas River system; therefore, the project will have no effect on the species.

Least Tern (*Sterna antillarum athalassos*) LE

Least terns are neotropical migratory birds that breed in North America and winter in Central and South America. They are the smallest members of the Family Laridae (gulls and terns). Least terns have historically been subdivided into three separate subspecies based on habitat use and vocalizations (USFWS 1990 and Thompson et al. 1997). The eastern or coastal least tern (*Sterna a. antillarum*) breeds along the Atlantic and Gulf coasts, California least terns (*Sterna a. browni*) breed along the California coast and the interior least terns (*Sterna a. athalassos*) breed along the Mississippi, Red, Arkansas, Ohio, Missouri, and Rio Grande River

Systems. More recent research has been unable to clearly separate the subspecies (USFWS 1990, Thompson 1992). Based on the uncertain taxonomic status of the US Fish and Wildlife Service (USFWS) has chosen to manage each population separately rather than subspecies; therefore, all least terns occurring greater than 50 miles from the coast are considered to be the interior population (USFWS 1990).

Interior least terns are colonial nesters, constructing shallow bowl shaped nests or scrapes on large barren sand/gravel bars and islands along large braided river channels (USFWS 1990, Thompson et al. 1997, Watterson 2009). Much of the historic nesting habitat has been modified or destroyed by channel alterations, impoundments, shoreline developments, and recreational activities (USFWS 1990, Thompson et al. 1992, Watterson 2009). The resulting population declines and loss of available nesting habitat led the USFWS to list the interior population of the least tern as endangered 28 May 1985 (50 Federal Register 21784-21792).

Recent studies have shown that as a result of the limited availability of suitable nesting habitat that least terns have begun to utilize artificial nesting habitats such as roof tops (Forys and Borboen–Abrams 2006, Watterson 2009). In 2007, least terns were first observed successfully nesting on rooftops in Arkansas (Watterson 2009).

Least terns forage primarily on small fish in shallow waters of streams, ponds and reservoirs. While the distance to which least terns can travel to suitable foraging areas can vary widely (10 feet to 4.7 mile) most foraging activity takes place within 328 feet of the nesting colony (Wilson et al. 1993, Forys and Borboen–Abrams 2006, Watterson 2009).

Determination

Neither alternative will have an effect on least terns. No natural nesting habitat exists within the project area; the nearest known least tern colony is located just upstream of Murray Lock and Dam (11.4 miles from the project area) (ANHC 2012). If selected Alternative 3 will demolish three buildings within the proposed floodway restoration area, the nearest known rooftop nesting colony is located 10.6 miles of the project area (Watterson 2009).

Running Buffalo Clover (*Trifolium stoloniferum*) LE

Running Buffalo Clover is known from 101 populations in Missouri, Indiana, Ohio, West Virginia and Kentucky. The species has also been collected historically in Arkansas, Kansas, and Illinois. The lone record in Arkansas was collected along a railroad in Independence County and is thought to represent an accidental introduction. (USFWS 2007).

Determination

Running Buffalo Clover is thought to be extirpated from the state; therefore, the project will have no effect on the species.

Literature Cited

Forys, E. A. and M. Borboen-Abrams.

2006. Rooftop selection by least terns in Pinellas County, Florida. *Waterbirds* 29:501-506.

National Audubon Society.

2013 Piping Plover *Charadrius melodus*. <http://birds.audubon.org/species/pipplo> accessed 26 September 2013.

Thompson, B. C., M. E. Schmidt, S. W. Calhoun, D. C. Morizot, and R. D. Slack.

1992. Subspecific status of least tern populations in Texas: North American implications. *Wilson Bulletin* 104:244-262.

Thompson, B. C., J. A. Jackson, J. Burger, L. A. Hill, E. M. Kirsch, and J. L. Atwood.

1997. Least terns (*Sterna antillarum*). In *The Birds of North America*, No. 290 (A. Poole and F. Gill Eds.). The Academy of Natural Sciences, Philadelphia, Pennsylvania and the American Ornithologist's Union, Washington, D.C.

USFWS.

1990. Recovery Plan for the interior population of the least tern (*Sterna antillarum*). U.S. Fish and Wildlife Service, Twin Cities, Minnesota.

USFWS.

1992 Arkansas Fatmucket Mussel (*Lampsilis powelli*) Recovery Plan. US Fish and Wildlife Service. Jackson, MS. 19pp.

USFWS.

2003. Recovery plan for the red-cockaded woodpecker (*Picoides borealis*): second revision. US Fish and Wildlife Service, Atlanta, GA. 296pp.

USFWS.

2007. Running buffalo clover (*Trifolium stoloniferum*) Recovery Plan: First Revision. Fort Snelling, MN. US Fish and Wildlife Service.

USFWS.

2009 Winged Mapleleaf spotlight species action plan. Ft. Snelling, MN. US Fish and Wildlife Service.

USFWS.

- 2011b Scaleshell Mussel (*Leptodea leptodon*) 5-Year Review: Summary and Evaluation. Columbia, MO. US Fish and Wildlife Service.

USFWS.

- 2012a Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for the Neosho Mucket, Threatened Status for the Rabbitsfoot, and Designation of Critical Habitat for Both Species; Proposed Rule. Federal Register 77(200): 63440-63536.

USFWS.

- 2012b Fat Pocketbook (*Potamilus capax*) 5-Year Review: Summary and Evaluation. Jackson, MS. US Fish and Wildlife Service.

USFWS.

- 2013 Endangered and Threatened Wildlife and Plants; 12-month Finding on a Petition to List the Rattlesnake-Master Borer Moth (*Papaipem eryngii*) as an Endangered or Threatened Species. Federal Register 78(157): 49422-49440.

Watterson, J. A.

- 2009 Nesting Ecology of Ground and Roof-Nesting Interior Least Terns in Arkansas River Valley, Arkansas. Master's Thesis. Arkansas Tech University, Russellville, Arkansas.

Wilson, E. C., W. A. Hubert, and S. H. Anderson.

- 1993 Nesting and foraging of least terns on sand pits in Central Nebraska. The Southwestern Naturalist 38:9-14.

Woods, A.J., et al.

- 2004 Ecoregions of Arkansas (color poster with map, descriptive text, summary tables and photographs). Reston, Virginia. U.S. Geological Survey.

Appendix F – U.S. FISH AND WILDLIFE SERVICE CLEARANCE



IN REPLY REFER TO:

United States Department of the Interior

FISH AND WILDLIFE SERVICE
 110 S. Amity Road, Suite 300
 Conway, Arkansas 72032
 Tel.: 501/513-4470 Fax: 501/513-4480



June 14, 2013

Mr. Lynn P. Malbrough
 Environmental Division Head
 Arkansas Highway and Transportation Department
 P.O. Box 2261
 Little Rock, AR 72203-2261

Re: AHTD Job # 061390, Crooked Creek Channel Alteration at I-30 near Alexander, Pulaski County, Arkansas

Dear Mr. Malbrough:

This responds to your letter dated May 21, 2013, soliciting U.S. Fish and Wildlife Service (Service) comments on the above referenced project. Our comments are submitted in accordance with the Endangered Species Act of 1973 (87 stat. 884, as amended; 16 U.S.C. 1531 et seq.).

According to your letter and earlier email correspondence from the U.S. Army Corps of Engineers, the Arkansas Highway and Transportation Department (AHTD) is proposing to widen 3,100 linear feet of Crooked Creek from 20 feet to 100 feet; installation of a flood gate in the drainage ditch at the western end of the project; and the construction of a 3.75 foot high levee. The stream alteration is proposed to alleviate flooding of I-30 that has become more prevalent in recent years, likely resulting from increased floodplain development in the Fourche Creek watershed.

A review of the study area revealed that no federally listed threatened, endangered, or candidate species are known to occur in the project vicinity. However, over-widening Crooked Creek may lead to unintentional scouring and stream bank failure both upstream and downstream of the proposed project site. The Service is also concerned that channel alteration alone may only alleviate the flooding problem on Interstate 30 for a short time due to the development of the Crooked Creek drainage basin which, as referenced in your letter, is likely the root cause of the flooding issue.

Alternatives studied should include removal of unauthorized fills that have occurred in the project vicinity historically to improve flood storage capacity. This alternative should include discussions with the city of Little Rock concerning their floodplain management standards to identify any concerns that may exacerbate flooding at the project site. The Service also recommends investigating the possibility of horizontal borings under the interstate that would allow additional floodplain relief structures to pass more flood flows, if feasible. Natural stream channel designs should be incorporated to the extent possible and appropriate mitigation should be secured for any unavoidable adverse effects to the stream.

Numerous species of migratory birds protected under the Migratory Bird Treaty Act occur in the area and may be nesting on structures to be replaced or otherwise affected by the project. Surveys should be conducted prior to initiation of project construction and special consideration given to the times and dates of construction to avoid impacts to these species which typically nest in Arkansas from March through September.

Thank you for allowing our agency the opportunity to comment on the proposed project. For future correspondence on this matter, please contact Mitch Wine of this office at (501) 513-4488 or mitch_wine@fws.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Melvin Tobin', with a stylized flourish at the end.

Melvin Tobin
Deputy Project Leader

cc:

Randal Looney, Federal Highway Administration
Brenda Price, Arkansas Highway and Transportation Department
John Fleming, Arkansas Highway and Transportation Department
Susan Staffeld, Arkansas Highway and Transportation Department
Cindy Osborne, Arkansas Natural Heritage Commission
Jennifer Sheehan, Arkansas Game and Fish Commission
Wanda Boyd, United States Environmental Protection Agency

Appendix G – U.S. ARMY CORPS OF ENGINEERS CORRESPONDENCE



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
LITTLE ROCK DISTRICT, CORPS OF ENGINEERS
 POST OFFICE BOX 867
 LITTLE ROCK, ARKANSAS 72203-0867
www.swl.usace.army.mil/

February 5, 2014

Regulatory Division

PROJECT NO. SWL 2013-00136

Mr. Lynn Malbrough
 Division Head, Environmental Division
 Arkansas Highway and Transportation Department
 PO Box 2261
 Little Rock, Arkansas 72203-2261

Dear Mr. Malbrough:

This is in regard to your November 5, 2103, letter in which you requested that the Corps of Engineers be a cooperating agency on your Crooked Creek Channel Improvements project along Interstate 30 (I-30) in Southwest Pulaski County. The creek periodically overtops the roadway creating a potential safety hazard and major delays for motorists. Crooked Creek is a perennial stream that flows into Fourche Creek approximately 400 feet downstream from the I-30 crossing. You are in the process of preparing an Environmental Assessment (EA) which will evaluate alternatives for physically modifying the Crooked Creek channel versus raising the existing roadway. Any work in the stream channel will likely require a Section 404 of the Clean Water Act permit review. Large scale modifications to the channel would likely require a Department of the Army Standard Permit review and, if approved, would require a substantial amount of compensatory mitigation.

We are willing to be a cooperating agency. We do recommend that the AHTD develop and thoroughly evaluate every potential alternative since the least environmentally damaging most practicable alternative must be selected in accordance with the Environmental Protection Agency's Section 404(b)(1) Guidelines.

We also share your concerns about the continued rapid development around Crooked Creek and in the upper Fourche Creek watershed. The Fourche Creek basin contains one of the largest contiguous tracts of urban wetlands in the United States. The basin provides critical functions and services such as floodwater storage, filtration, recreation, and fish and wildlife habitat. Therefore, as part of the EA process, you should include the public, private landowners, resource agencies and any governmental agency or non-governmental group that has an interest in the Fourche Creek watershed. Your cooperation in this process is appreciated. If you have any questions, please contact Mr. Johnny McLean at 501-325-5295.

-2-

Sincerely,



Sarah Chitwood

Chief, Regulatory Evaluation Branch

Copy Furnished:

U.S. Fish and Wildlife Service

Environmental Protection Agency

Federal Highway Administration

Arkansas Natural Heritage Commission

Arkansas Game and Fish Commission

Arkansas Department of Environmental Quality

Arkansas Natural Resources Commission

Chief, Planning Division

Chief, Regulatory Enforcement Branch