ARDOT Job 090676

I-49/NE J ST. INTCHNG. (BENTONVILLE)

Environmental Assessment



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US Department of Transportation Federal Highway Administration



I-49/NE J St. Intchng. (Bentonville)

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Environmental Assessment

Submitted pursuant to: The National Environmental Policy Act 42 USC §4322(2)(c) and 23 CFR §771

Submitted by:

FEDERAL HIGHWAY ADMINISTRATION

and

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In compliance with the National Environmental Policy Act, this Environmental Assessment describes the proposed project to provide NE J Street with a connection to Interstate 49 in Bentonville, Benton County, Arkansas. The analysis did not identify any significant adverse environmental impacts and identifies the Build Alternative as the Preferred Alternative.

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Chapter 1 – Purpose and Need

Chapter 1 describes the existing conditions and current transportation problems, explains how the proposed project could resolve these problems, and outlines the project's lead agency roles.

1.1 What is this project?

The City of Bentonville, Arkansas has initiated an Environmental Assessment (EA) for the purpose of providing an interchange at Interstate 49 that would provide a connection to NE J Street. The proposed interchange would result in a more direct route from Interstate 49 to major attractions such as the Crystal Bridges Museum of American Art, Scott Family Amazeum, and the downtown district. The project would also improve approximately 1.1 miles of NE J Street from Tiger Boulevard to the proposed interchange. Improvements would generally consist of two lanes with a raised grass median and then transition to four lanes to the proposed Interstate 49 interchange. Improvements include a sidewalk and multi-use path and a bridge over Shewmaker Creek. This project is identified as a high priority project in the Bentonville area to provide congestion relief to other Interstate 49 interchanges and because of the need to provide better connectivity to important community features. The general project location is shown on **Figure 1**. The study area map is shown on **Figure 2**.

1.2 What are the existing conditions in the project area?

Population and Economic Characteristics

The project area is located in Northwest Arkansas in Benton County. Benton County has experienced

substantial population growth since 1990 (**Table 1**). The larger cities within Benton County include Rogers, Springdale, and Bentonville and have experienced substantial growth in population. The Fayetteville-Springdale-Rogers metropolitan statistical area was the 14th fastest growing metropolitan area in the United States in 2017 (Holtmeyer, 2018). The population is projected to exceed 600,000 by 2024 (Northwest Arkansas Council [NWAC], 2020).

A metropolitan statistical area is a geographical region with a relatively high population density at its core and close economic ties throughout the region.

Location	1990	2000	2020	% Change
State of Arkansas	2,350,725	2,673,400	3,011,524	28%
Benton County	97,499	153,406	284,333	192%
City of Bentonville	11,257	19,730	54,164	381%
City of Fayetteville	42,754	59,384	93,949	120%
City of Rogers	24,692	38,829	69,908	183%
City of Springdale	29,941	45,798	84,161	181%

Table 1: Population Growth



Figure 1: Project Location Map



Figure 2: Study Area Map

The NWAC is a private, non-profit organization working to advance job opportunities, physical infrastructure, health care, and quality of life. The NWAC represents more than 100 members including Walmart, Tyson Foods, JB Hunt Services, Inc., Simmons Foods, and George's, Inc. The State of the Northwest Arkansas Region Report is prepared by NWAC and serves as a tool for evaluating economic performance (NWAC, 2022). From 2015 to 2020, Northwest Arkansas' employment grew at an average annual rate of 2.1%, creating 25,800 net new jobs. Employment in Northwest Arkansas decreased - 1.1% from 264,600 in 2019 to 261,700 in 2020, impacted by the COVID-19 pandemic. The number of Northwest Arkansas business establishments grew by 388 in 2020 and has grown by 1,804 since 2015. Northwest Arkansas business establishment growth from 2019 to 2020 was 2.8%, higher than both the state and national growth rates. The five-year change in the number of establishments from 12,325 in 2015 to 14,129 in 2020 represents an annual average increase of 2.8%, higher than the average growth rate in Arkansas and the nation (NWAC, 2022).

Employers that have significantly influenced growth in Northwest Arkansas include Walmart Stores in Bentonville, Tyson Foods in Springdale, the University of Arkansas in Fayetteville, and JB Hunt Transport Services, Inc. in Lowell. Other major employers within Benton and Washington Counties include Ozark Mountain Poultry, Inc., Simmons Foods, PAM Transportation Services, Inc., and Harps Food Stores.

The region has witnessed substantial quality-of-life investments over the past decade that spurred consistent population growth. The investments include the construction of important community features such as Arvest Ballpark, the <u>Razorback Regional Greenway</u>, the <u>Walmart AMP</u>, the <u>Scott</u> <u>Family Amazeum</u>, and a major renovation to Walton Arts Center, Crystal Bridges Museum of American Art, Brightwater, Theatre Squared, Bike NWA, and Downtown Bentonville, Inc. Outdoor recreation ammenities such as walking, biking, and running trails have also increased.

Benton County is an economic center in Northwest Arkansas and contains a substantial volume of commercial traffic including traffic generated by local residents, local commercial traffic, and visitors to the area. The existing area roadway networks important to this project are described below and shown on **Figure 1** and **Figure 2**.

NE J Street within the project area consists of two 12-foot-wide travel lanes with curb and gutter and a speed limit of 30 miles per hour (mph). North of NE Chapel Hill Drive, NE J Street turns to a gravel road base with no curb or gutter. The road turns east then curves back to the north crossing over Interstate 49 east of the proposed project area. NE J Street changes name to SE J Street south of Tiger Boulevard. SE J Street has two 12-foot lanes with a 12-foot center turn lane.

Tiger Boulevard is the southern end of the study area and is an east-west roadway with two 12-footwide travel lanes. Tiger Boulevard provides access to Interstate 49 approximately 1.4 miles to the southeast via McCollum Drive access road and to Highway 71 approximately 1.5 miles to the west. The NE J Street/Tiger Boulevard intersection is a four-legged intersection with all-way-stop control. The northbound leg has a dedicated left turn lane and a through travel lane while the other three approaches have a single through travel lane. An Interstate 49 overpass is planned to be completed by 2026 that would connect Tiger Boulevard to Rice Lane east of Interstate 49, providing a continuous east-west arterial route across the city limits.

NE A Street ties into Tiger Boulevard approximately 0.4 mile west of NE J Street. It is a two-lane roadway with a 25-mph speed limit. The Parks Springs Connector Bike Trail is located on the west side of the road. NE A Street changes its name to Slaughter Pen Road north of Interstate 49.

Interstate 49 represents the primary transportation corridor that serves Northwest Arkansas. This fourlane divided interstate highway lies in the northern part of the project area. The closest interchanges are at Highway 72 approximately 2.2 miles southeast of the project and Highway 71 approximately 1.6 miles to the northwest. Regionally, Interstate 49 provides access to travelers between Missouri to Interstate 40 near Fort Smith, Arkansas. Interstate 49 serves the major cities of Bentonville, Rogers, and Fayetteville which has seen explosive population growth in the past 25 years and has resulted in greater traffic volume levels that are producing urban traffic congestion. The commercial growth of the region has gravitated to the interchanges on Interstate 49, resulting in queues that back up on Interstate 49 ramps to such an extent that they occasionally interfere with Interstate 49 operations.

Highway 72 ties into SE J Street approximately 1.3 miles south of Tiger Boulevard. This highway is a two-lane minor arterial with 11 and 12-foot-wide travel lanes, mostly minimal shoulders, and speed limits ranging from 30 to 55 mph.

Highway 71 ties into Tiger Boulevard approximately 1.5 miles west of NE J Street. This highway is a major arterial with four 12-foot-wide travel lanes and a 12-foot-wide center turn lane and a speed limit of 40 mph where it ties into Tiger Boulevard.

1.3 Why are improvements needed?

Interstate 49 Traffic

Interstate 49 serves as a benefit for local and regional travel throughout Northwest Arkansas and has resulted in transportation improvements to local and state roadways to improve system linkage. This interstate helped spawn population growth that subsequently created a need for additional capacity on the local roadways. This has resulted in the need for roadway improvements within the city limits of Bentonville and Rogers to increase roadway capacity within the city road network.

To identify any problems with traffic congestion in the local roadway network, an operational analysis was conducted (see **Appendix A** for the report). To analyze traffic conditions along Interstate 49, traffic data for Interstate 49 from 2019 was obtained from the Arkansas Department of Transportation (ARDOT) website. This data was projected to identify traffic volumes for the 2022 and 2045 no action conditions along Interstate 49 from Highway 71 to Highway 72 using growth rates as well as the Northwest Arkansas Travel Demand Model.

Under 2022 conditions, Interstate 49 is a four-lane, divided freeway with one-lane ramps. In 2045, Interstate 49 would consist of three lanes in each direction as the result of a future planned project. Tiger Boulevard would be extended eastward across Interstate 49 (overpass with no Interstate 49)

access) as a future planned project and this extension would contribute to traffic volumes on Interstate 49 for the 2045 no action condition only.

Results indicate that Interstate 49 would operate acceptably or better in 2022. However, operational issues develop by 2045. The northbound on-ramp (PM peak) and southbound off-ramp (AM peak) at Highway 71/North Walton Boulevard experience very poor conditions under the no action condition.

NE J Street/Tiger Boulevard Traffic Forecasts

To help demonstrate the need for improvements at the intersection of NE J Street and Tiger Boulevard, peak hour vehicle movement counts were collected in 2021 at the intersection and these movements were used to develop traffic volume for the 2022 no action condition at this intersection. Traffic volumes at this intersection for the 2045 no action condition were developed by applying a 2% annual growth rate in addition to applying adjustments to account for the future traffic associated with the Tiger Boulevard overpass. Results from the analyses indicate that the intersection at NE J Street and Tiger Boulevard operate at acceptable or better performance conditions during peak periods of traffic flow during the 2022 no action condition (**Table 2**). In 2045 under the no action condition, the intersection would operate overall with poor to very poor conditions during both peak hours of traffic (**Table 2**).

Interestion	Time		EB Movement		WB Movement			NB Movement			SB Movement			
Intersection	Period	Overall	L	Т	R	L	Т	R	L	Т	R	L	Т	R
2022 No Action Condition (Existing Conditions)														
NE J Street	AM	Good	Fair		Good		Good	Better		Better				
Boulevard	PM	Fair	Fair		Fair			Fair	Better		Good			
				20)45 No	Action	Conditi	on						
NE J Street	AM	Verv	Ve	ry Po	or	V	ery Poc	or	Fair	Go	od		Fair	
at Tiger Boulevard	PM	Poor	Ve	ry Po	or	V	Very Poor		Very Poor	Fa	air		Fair	

Table 2: Congestion Results, NE J Street/Tiger Boulevard Intersection

EB – East Bound; WB – West Bound; NB – North Bound; SB – South Bound; L – Left; T – Through; R – Right

Bicycle and Pedestrian Path Connectivity

As the self-proclaimed "mountain biking capital of the word," Bentonville includes numerous mountain biking trails, paved pathways, and on-road routes. Bicycle and pedestrian accommodations within the study area currently consist of a sidewalk along the east side of NE J Street that extends north from Tiger Boulevard but terminates just north of NE Chapel Hill Drive (see **Figure 3**). South of Interstate 49, and immediately west of the study area, is a trail system called Slaughter Pen. Another system of trails, Handcut Hollow, is located immediately north of Interstate 49 along NE J Street and Price Coffee Road (**Figure 2** and **Figure 3**). However, there is currently no off-road bicycle or pedestrian connection between these two trail systems and the existing NE J Street overpass at Interstate 49 lacks bicycle

and pedestrian accommodations. Thus, Interstate 49, as well as Shewmaker Creek, effectively function as barriers to bicycle and pedestrian connectivity in the area.





1.4 What is the purpose of this project?

The purpose of this project is to improve infrastructure in the study area in order for NE J Street to move traffic through Bentonville as another major north-south roadway and to connect to the regional highway system, providing alternative access to important regional attractions. Additionally, the project purpose is to connect existing bicycle and pedestrian trails in the project vicinity that are currently disconnected by Interstate 49 and to provide pedestrian access over Shewmaker Creek.

1.5 Who is the lead agency for this project?

The Federal Highway Administration (FHWA) is the lead federal agency and has the primary responsibility for the content and accuracy of this EA in accordance with the National Environmental Policy Act (NEPA). ARDOT is participating in review of this document. The City of Bentonville is acting as the local public agency and is funding a portion of the project.

1.6 What is the purpose of this Environmental Assessment?

This EA is being prepared to:

- Explain the purpose and need of the project.
- Describe the alternatives considered for implementing the project.
- Evaluate the social, economic, and environmental effects of the alternatives.
- Inform and receive feedback from the public and local officials about the potential impacts of the proposed project.
- Determine whether impacts are significant and require an Environmental Impact Statement or if the project effects can be sufficiently documented through this EA and 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 the process that should be used to evaluate impacts.

Consideration is given both to context of the setting, and intensity, which is the severity of the impacts.

What is a Finding of No Significant Impact (FONSI)?

A **FONSI** presents the reasons why an action will not have significant environmental effects and therefore does not require preparing an Environmental Impact Statement. Based on analyses and project feedback received to date, the ARDOT anticipates preparing a FONSI for this project.

Chapter 2 – Alternatives Development

Chapter 2 identifies the project limits, explains how project alternatives were developed, describes the public involvement process, and details the alternatives evaluated in this EA.

2.1 What are the project limits and why were they chosen?

The southern terminus of the project limits is the intersection of NE J Street and Tiger Boulevard, and the northern terminus is approximately 0.2 mile north of Interstate 49. At this time, no extension of NE J Street to the north of Interstate 49 would be considered within the 20-year design horizon. These project limits were selected in order to encompass any proposed changes along NE J Street and to allow for enough area to include an interchange connection to Interstate 49.

2.2 What alternatives are evaluated in this EA?

Two alternatives were evaluated in this EA: the No Action Alternative and the Build Alternative. The Build Alternative is shown on **Figure 4**, **Figure 5**, and **Figure 6**.

No Action Alternative

The No Action Alternative would not meet the purpose and need and was retained as a comparison to the Build Alternative, as required by NEPA. The No Action Alternative would not involve the construction of the proposed project. Under the No Action Alternative, the project area roadway network would evolve as currently planned or programmed and involve normal roadway maintenance activities and improvements. Without the

NEPA requires including a "**No Action**" alternative in environmental analysis. Although it is unlikely to meet the project's purpose and need, the "No Action" alternative provides a baseline against which the other alternatives can be compared.

construction of the proposed project, the Interstate 49 would lack the connectivity to NE J Street. Selection of the No Action Alternative would avoid the City of Bentonville an expenditure and would avoid any impacts to the social and natural environments.



Figure 4: Build Alternative, Panel 1 and 2 of 4



Figure 5: Build Alternative, Panel 3 of 4



Figure 6: Build Alternative, Panel 4 of 4

Build Alternative

The proposed project, which is approximately 1.1 miles in length, begins just south of the intersection of Tiger Boulevard and NE J Street extending north across Interstate 49 with a dead-end access on the north side of the new Interstate 49/NE J Street interchange. The proposed NE J Street and Tiger Boulevard intersection would be signalized with dedicated left and right turn lanes on the approaches to meet future traffic demands. The design and posted speed would be 30 mph from Tiger Boulevard to approximately 900 feet north of Chapel Hill Drive. A single lane roundabout would be constructed at the intersection of NE J Street and Chapel Hill Drive. NE J Street improvements from Tiger Boulevard to approximately 900 feet north of Chapel Hill Drive would include two 11-foot-wide travel lanes with a raised landscaped median and a 12-foot-wide multiuse path (see **Figure 7A** for typical section).

Figure 7: Build Alternative Typical Section



From approximately 900 feet north of Chapel Hill Drive to the proposed Shewmaker Creek bridge, the roadway would include two 11-foot-wide travel lanes, a 12-foot-wide center median varying between a 9-foot-wide raised landscaped median and 12-foot-wide two-way left turn lane, a 5-foot-wide sidewalk, and a 12-foot-wide multiuse path (see **Figure 7B and 7C** for typical sections). The design speed for this section would be 35 mph. The typical section of the Shewmaker Creek bridge would include four 11-foot-wide travel lanes, 2-foot-wide shoulders, a 5-foot-wide sidewalk, and a 12-foot-wide multiuse path (see **Figure 7D** for typical section including placement of metal bridge railings). North of the proposed Shewmaker Creek bridge the typical section transitions to four 11-foot-wide travel lanes, a 16-foot-wide raised center median, a 5-foot-wide sidewalk, and a 12-foot-wide multiuse path (see **Figure 7E** for typical section). The design speed from the proposed Shewmaker Creek bridge to the interchange would be 45 mph. Left turn lanes would be provided on NE J Street at side streets and the interchange ramps as required for access.



Figure 7 Continued: Build Alternative Typical Section



The typical section of the proposed bridge over Interstate 49 would include four 11-foot-wide travel lanes, a 12-foot-wide center median, 3-foot-wide shoulders, a 6.5-foot-wide sidewalk, and a 12-foot-wide multiuse path. The proposed bridge over Interstate 49 would include similar metal bridge railings as shown in **Figure 7D**. The proposed interchange would consist of a folded diamond interchange with Interstate 49 southbound vehicles exiting Interstate 49 via a loop ramp and entering Interstate 49 via an on-ramp in the southeast quadrant. Interstate 49 northbound vehicles would exit Interstate 49 via an off-ramp and enter Interstate 49 via a loop ramp in the northeast quadrant. Loop ramp design would consist of one 15-foot-wide lane with 6-foot-wide outside shoulders and 4-foot-wide inside shoulders exiting the interstate and expanding to two 12-foot-wide lanes approaching the bridge for right and left turn lanes. Design speed would range from 30 to 45 mph.

2.3 How would the Build Alternative improve traffic and connectivity?

Traffic

To analyze future traffic conditions along Interstate 49, traffic congestion levels were identified for the 2045 no action and 2045 build conditions along Interstate 49 northbound and Interstate 49 southbound. Results are provided in **Table 3** and **Table 4**, respectively, and the operational analysis report is available in **Appendix A**.

Results indicate that Interstate 49 northbound on-ramp (PM peak) and southbound off-ramp (AM peak) at Highway 71/North Walton Boulevard experience very poor conditions under both the no action and build conditions. These results demonstrate that Interstate 49 would operate similarly under no action and build conditions even with the build condition serving higher volumes in some areas and providing direct access to NE J Street. By increasing access and volume served along Interstate 49, the surrounding roadway network should experience some relief in demand and improved operations. For example, the loop exit ramp and entrance ramps at Highway 72 (rows 3 and 4 of **Table 3**) have lower volumes under the build condition as compared to no action condition.

Interstate 49 Northbound	2045 No	Action Con Levels	gestion	2045 Buil	d Congesti	on Levels
Location	ADT	AM Peak	PM Peak	ADT	AM Peak	PM Peak
SE 8th St. (Exit 87) to Hwy. 72 (Exit 88)	81,000	Good	Poor	81,500	Good	Poor
Exit 88 Exit Ramp Hwy. 72	6,600	Fair	Poor	6,600	Fair	Poor
Exit 88 Loop Exit Ramp Hwy. 72	4,400	Better	Good	3,900	Better	Good
Exit 88 Entrance Ramp Hwy. 72	4,400	Better	Fair	4,000	Better	Fair
Hwy. 72 (Exit 88) to J Street (Exit 91 or 92)	68,500	Better	Fair	68,500	Better	Fair
Exit 89 Exit Ramp J Street	Future	Future	Future	800	Better	Fair
Exit 89 Entrance Ramp J Street	Future	Future	Future	4,700	Better	Fair
J Street (Exit 91 or 92) to Hwy. 71 (Exit 93)	68,500	Better	Fair	76,500	Good	Fair
Exit 93 Exit Ramp Hwy. 71	8,600	Better	Good	8,800	Better	Good

Table 3: Interstate 49 Northbound, 2045 No Action and 2045 Build Traffic Congestion Levels

Interstate 49 Northbound	2045 No	Action Con Levels	gestion	2045 Buil	ld Congesti	on Levels
Location	ADT	AM Peak	PM Peak	ADT	AM Peak	PM Peak
Exit 93 Entrance Ramp Hwy. 71	15,000	Good	Very Poor	15,000	Good	Very Poor

ADT - Average Daily Traffic; St. - Street; Hwy. - Highway

Table 4: Interstate 49 Southbound, 2045 No Action and 2045 Build Traffic Congestion Levels

Interstate 49 Southbound	2045 No Action Congestion Levels 2045 Build Congestion Leve					on Levels
Location	ADT	AM Peak	PM Peak	ADT	AM Peak	PM Peak
Exit 93 Exit Ramp Hwy. 71	14,500	Very Poor	Fair	14,500	Very Poor	Fair
Exit 93 Entrance Ramp Hwy. 71	9,800	Fair	Good	10,000	Fair	Good
Hwy. 71 (Exit 93) to J Street (Exit 91 or 92)	68,500	Fair	Good	76,500	Fair	Good
Exit 89 Exit Ramp J Street	Future	Future	Future	4,700	Fair	Good
Exit 89 Entrance Ramp J Street	Future	Future	Future	800	Good	Good
J Street (Exit 91 or 92) to Hwy. 72 (Exit 88)	68,500	Fair	Good	68,500	Fair	Good
Exit 88 Exit Ramp Hwy. 72	4,800	Poor	Fair	4,700	Poor	Good
Exit 88 Loop Entrance Ramp Hwy. 72	6,500	Fair	Good	6,300	Fair	Good
Exit 88 Entrance Ramp Hwy. 72	4,400	Fair	Fair	5,100	Fair	Good
Hwy. 72 (Exit 88) to SE 8th St. (Exit 87)	81,000	Poor	Fair	81,500	Poor	Fair

ADT – Average Daily Traffic; St. – Street; Hwy. – Highway

Additionally, traffic volumes were identified at four intersection locations from Tiger Boulevard to Interstate 49 to evaluate any traffic deficiencies associated with the Build Alternative constructed for 2022, 2026, and 2045 (2026 was included because the Tiger Boulevard overpass would be completed then); see **Appendix A**. Traffic volumes were identified at the intersections of Tiger Boulevard and NE J Street, NE J Street and old NE J Street, NE J Street and the southbound on ramp to Interstate 49, and NE J Street and the northbound on ramp to Interstate 49. Results from each method used indicated adequate performance with fair levels of congestion or better for all intersection locations under the proposed 2022, 2026, and 2045 build scenarios.

Bicycle and Pedestrian Path Connectivity

The Build Alternative would include construction of a 12-foot-wide sidepath and/or sidewalk along NE J Street from Tiger Boulevard to the north side of Interstate 49, bridging both Shewmaker Creek and Interstate 49. Thus, the Build Alternative would provide connectivity to bicycle and pedestrian trails located on the south and north side of Interstate 49, including a connection to several mountain biking trails located along NE J Street and Price Coffee Road.

2.4 How has the public been involved?

On February 17, 2022, a virtual public involvement meeting and local officials meeting were held. Citizens were able to participate by asking questions and make comments with project team members. A project website was provided with documents explaining the proposed project with the ability to view and download meeting materials. Materials include a project map, typical section of the roadway, and an environmental constraints map. Comments could be submitted about the project by mail, email, and the online form. The first half of the meeting consisted of a team presentation that included instructions on how to submit comments, utilize Microsoft Teams, navigate the public involvement meeting website, and a detailed discussion of the conceptual map exhibit and typical section for an arterial boulevard in the city's Master Street Plan. The meeting continued with a live question-and-answer forum.

A total of 100 people participated in the virtual public meeting and 138 comment forms or letters were received. Tracking of the project website indicated:

- 1,912 Unique Users
- 2,592 Visits to the Website
- 5,484 Websites Pages Reviewed
- 58% of Total Users Interacted with Mobile Devices
- 88 Attendees Signed the Electric Sign-in Sheets.

The complete public involvement meeting synopsis is included in Appendix B.

An informational meeting was held on February 10, 2023, for the Allencroft and Chapel Hill neighborhoods. The meeting was held at the City Council Chambers room at Bentonville City Hall with virtual links provided for individuals to join online. At this meeting, a project update was provided including the reduction of the roadway typical section from four lanes to two lanes with a narrow median. Intersection improvements at Tiger Boulevard and NE J Street were introduced as well as plans for pedestrian access along the corridor. The typical section reduction was generally positively received by attendees. The discussion became focused on crosswalk locations, pedestrian safety, and further limiting impacts to trees planted outside the neighborhood fences. All these items have since been addressed as the design has progressed.

2.5 How have government agencies been involved?

In October 2021, federal and state resource agencies were provided maps and project information and were asked to review the proposed study area and provide information or identify concerns they may have about the project impacts. Additional agency coordination has occurred throughout the NEPA process. Agency correspondence is provided in **Appendix C**. Responses and a summary of input received are listed below:

- Arkansas Geological Survey Stated karst features within the study area could be encountered during construction.
- Arkansas Department of Health Stated they do not anticipate any adverse environmental impacts that would affect the project.
- Arkansas Department of Parks, Heritage and Tourism Stated it appears construction would not affect any public outdoor recreation sites monitored by their program.
- Arkansas Natural Heritage Commission (ANHC) Provided a list of species of state conservation concern with the potential to occur in McKisic Creek and those they have recorded occurrences for within a one and five-mile radius of the project. Stated the project falls within a karst region of the state but does not fall within a known recharge area.
- Local Floodplain Administrator Provided a list of known resources within the project area including floodplains, streams, springs, permitted sites, and utilities.
- Natural Resources Conservation Service Provided occurrence information on Prime Farmland and Farmland of Statewide Importance within the project area.
- Ozark Underground Laboratory, Inc. Provided opinion and research regarding the possible association of the project with habitat for the Ozark Cavefish.
- State Historic Preservation Office Provided concurrence with the finding of no historic properties affected.
- US Army Corps of Engineers (USACE) Acknowledged they received the provided information.
- US Fish and Wildlife Services (USFWS) Provided concurrence that the project's required geotech borings "may affect, not likely to adversely affect" listed species.

In February 2022, input from local officials was solicited regarding the proposed project. During the meeting, public officials used the time to familiarize themselves with, and ask questions about, the project. An attendance list is provided in **Appendix B**.

2.6 How have tribal governments been involved?

Section 106 of the National Historic Preservation Act requires federal agencies to consult with tribes where projects may affect tribal areas with historical or cultural significance. The FHWA initiated coordination with tribes having an active cultural interest in the area. The Tribal Historic Preservation Officers were given the opportunity to comment on the proposed project. An invitation to comment on the proposed project was sent to the Osage Nation, Caddo Nation, United Keetoowah Band of Cherokee Indians in Oklahoma, and the Shawnee Tribe in order to identify avoidance areas that contain significant historic properties. The Osage Nation replied requesting to review the draft EA and the Phase I cultural resources survey report. Copies of both documents will be provided to the Osage Nation and any tribe that request them. Tribal correspondence is provided in **Appendix C**.

Chapter 3 – Environmental Impacts & Mitigation

This chapter summarizes potential project impacts on people and the environment.

3.1 How were potential impacts evaluated?

Studies were conducted to determine how the proposed project would potentially impact the natural, cultural, and social environments. Results of studies and analyses that are not fully discussed in the following EA text are incorporated by reference or included in the appendices. Resources not impacted by the project are not discussed in detail.

Potential impacts are changes or effects that may occur as a result of a proposed project. The impacts may be social or cultural, economic, or ecological. The terms "impact" and "effect" can be used interchangeably.

The analyses considered both the intensity of the effects and their duration (e.g., short term during construction, or long term, remaining after construction). The effects discussed in this chapter are presumed to be long term unless otherwise noted and generally described as positive or negative. The analyses in this chapter are based on preliminary design of the Build Alternative.

3.2 How would the project affect climate change?

The earth's climate is changing. Multiple lines of evidence show changes in our weather, oceans, and ecosystems. These changes are due to a buildup of greenhouse gases (GHGs) in our atmosphere and the warming of the planet due to the greenhouse effect (EPA, 2022). GHGs are gases that trap heat in the atmosphere like a greenhouse and include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and fluorinated gases (such as hydrofluorocarbons). CO₂ accounts for 80% of all US manmade GHG emissions (EPA, 2021) and transportation is one of the main sources of CO₂ emissions in the US.

Carbon dioxide equivalent (CO2E) is a unit of measure used to compare emissions of various GHGs. To provide a project-level comparison, estimated annual average daily traffic (AADT) data was used to determine CO2E. Because metric tons of CO2E is considered by most to be an abstract measurement, project alternatives are also compared using "equivalencies" to make the emissions

CO2E is the number of metric tons of CO2 emissions with the same global warming potential as one metric ton of another GHG. AADT, or annual average daily traffic, is the total number of vehicles over a year divided by 365 days. It is used as a measurement of how busy a road is.

data more tangible (see **Table 5**). These equivalencies were determined using the US Environmental Protection Agency (EPA) equivalencies calculator (<u>https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator</u>).

No Action Alternative

Traffic volumes would increase under the No Action Alternative, as population increases, resulting in increased air emissions. Air quality would be further affected as congestion increases, particularly during summer months when ground level ozone is more likely to form because of higher temperatures

(EPA, 2020). Under the No Action Alternative, higher densities and lower speeds are anticipated because of traffic growth.

As shown in **Table 5**, the GHG emission for the No Action Alternative along NE J Street is estimated to be approximately 4,065,546 metric tons CO2E per year. To put this in perspective, this total would be equivalent to CO_2 emissions from consuming 457,471,097 gallons of gasoline or carbon sequestered from 782,678 acres of US forests in one year.

Carbon sequestration is the process by which atmospheric CO₂ is taken up by trees, grasses, and other plants through photosynthesis and stored as carbon in biomass (trunks, branches, foliage, and roots) and soils.

Alternative 2045 Metric		Equivalent to:				
	AADT TONS CO2E		CO ₂ Emissions from	Carbon sequestered by		
Existing NE J St. from Tiger Boulevard. To Future Extension (No Action Alternative)	2,400	4,065,546	457,471,097 Gallons of Gasoline Consumed	782,678 acres of US forests in one year		
Existing I-49 from Hwy. 72 to Hwy. 71 (No Action Alternative)	68,500	116,037,449	13,056,987,570 Gallons of Gasoline Consumed	146,344,034 acres of US forests in one year		
Existing NE J St. from Tiger Boulevard. To Future Extension (Build Alternative)	16,000	27,103,638	3,049,807,316 Gallons of Gasoline Consumed	182,815 acres of US forests in one year		
Existing I-49 from Hwy. 72 to Proposed J St. (Build Alternative)	76,500	129,589,267	14,581,891,228 Gallons of Gasoline Consumed	874,086 acres of US forests in one year		
Existing I-49 from Proposed J St. to Hwy. 71 (Build Alternative)	68,500	116,037,449	13,056,987,570 Gallons of Gasoline Consumed	146,344,034 acres of US forests in one year		

Table 5: GHG Emission Equivalent and Equivalent Emission Sources

St. - Street; I-49 - Interstate 49; Hwy. - Highway

Build Alternative

Traffic volumes would increase under the Build Alternative, as population increases, resulting in increased air emissions. As shown in **Table 5**, the GHG emission for the Build Alternative along NE J Street is estimated to be approximately 27,103,638 metric tons CO2E per year.

If the Build Alternative is constructed, the projected AADTs in 2045 would be distributed along Interstate 49 between the proposed J Street interchange and Highway 72 or Highway 71. Overall, the GHG emissions resulting from the construction of the Build Alternative would be greater than the

No Action Alternative because of the increased capacity and attracting traffic from other roadways resulting in greater total AADT in the area.

Construction and subsequent maintenance of the project would generate additional GHG emissions. Typically, construction emissions associated with a new roadway account for a relatively minor amount of the total 20-year lifetime emissions from the roadway, although this can vary widely with the extent of construction activity and the number of vehicles that use the roadway.

3.3 Would the project affect land cover/land use?

Aerial imagery from 2021 was used to identify dominant land use/land cover types along the Build Alternative and are tabulated in **Table 6** and shown on **Figure 8**. The dominant land use/land cover on the southern portion of the Build Alternative from Tiger Boulevard to just south of Brewer Circle consists of previously developed single-family residential neighborhoods and then transitions to undeveloped upland woodlands and grassland to the northern boundary of the study area with the exception of the presence of Interstate 49 and an isolated business located south of Interstate 49. The proposed project would mostly change the landscape in the northern portion of the Build Alternative. The removal of forest and pastureland would be required for the construction of exit and on ramps at the proposed interchange location.

		Acres of each Land Use Type								
Alternative	Deciduous Forest	Pasture/Hay	Existing Transportation Facility	ng Transportation Developed, Low Facility Intensity						
No Action	0	0	0	0	0					
Build Alternative	51	22	29	2	104					

 Table 6:
 Land Cover Types

No Action Alternative

Under the No Action Alternative, the proposed project would not be constructed and not affect land use patterns within the project area. Land use changes would likely continue along the current trend of increasing development and urban sprawl seen throughout Northwest Arkansas in recent years.

Build Alternative

The Build Alternative would require approximately 41 acres of right of way. This would predominantly include the conversion of small amounts of land zoned as single-family residential development along NE J Street, deciduous forest, pasture, commercial development, and existing land used for a transportation facility. Indirect impacts to land use are discussed in Section 3.15.



Figure 8: Land Cover

3.4 Would there be any relocations?

When avoidance is not possible, acquisition and relocation assistance would be provided to displaced persons in accordance with Public Law 91-646, the Uniform Relocation Assistance and Real Properties Acquisitions Policies Act of 1970. Construction of the project would not begin until decent, safe, and sanitary replacement housing is in place for all residential occupants.

No Action Alternative

The No Action Alternative would not require any relocations.

Build Alternative

The Build Alternative is anticipated to involve one business relocation with a building and shed located immediately south of Interstate 49. It is anticipated that these structures could be moved to a nearby location on the same parcel.

3.5 How would the project affect views?

The viewshed for the proposed project includes views of the surrounding landscape from the Build Alternative and views of the Build Alternative from the surrounding landscape. The existing visual character of the landscape within the project area consists of single -family residential development from Tiger Boulevard northward to just north of the neighborhood along NE St Ives Road. The remaining one-half mile of the study area consists predominantly of

A **viewshed** is the area that is visible from a specific location. The viewshed may be from the point of view from a traveler or a neighbor. Project viewers such as **travelers** include drivers, bicyclists, and pedestrians that have views *from* the road.

upland forest, open grassland, and the maintained right of way of Interstate 49. As documented by the Visual Impact Assessment Scoping Questionnaire (**Appendix D**), the project is considered to have a high compatibility with the current policies of the general area, therefore, no formal visual impact assessment is necessary.

No Action Alternative

The No Action Alternative would not result in a change to the viewshed or to the existing visual character or visual quality of the project area.

Build Alternative

The Build Alternative would result in reconstruction of NE J Street adjacent to the Chapel Hill Subdivision to the east and the Allencroft Subdivision (Photo 1) to the west and improve intersections at Tiger Boulevard, NE Dysart Woods Lane, and NE Chapel Hill Drive. These changes in design



Relocations occur when a residence, business, or nonprofit organization is impacted severely enough that they cannot continue to live or do business at their current location. This usually occurs when proposed right of way acquisition requires removing a structure, taking most of a business's parking, or severing access to a property. at existing intersections would not change the visual character of the view from or to the Build Alternative.

The increase in roadway width within the extent of the current residential development includes a raised grass median and left turning lanes that would modify the appearance of the existing roadway but would not substantially alter the existing views from residential homes or roadway users. The Build Alternative would enhance views in this area because the raised grass medians, sidewalk, and multi-use paths are considered a visual streetscape enhancement and would act as а minimization/mitigation measure to the visual character of the adjacent neighborhoods.

North of the subdivisions, NE J Street transitions to a gravel roadway (Photo 2) with adjacent woodlands that dominate the landscape on both sides approaching the sharp eastward curve south of Shewmaker Creek. North of Shewmaker Creek, the dominant land cover consists of upland forest (Photo 3) and pastureland (Photo 4). In this portion of the Build Alternative, views of adjacent woodlands and landscapes would be created for roadway users previously not available. Views of the proposed roadway on new alignment in this section are not currently visible to any residential homes.

The improvements made to NE J Street are overall expected to enhance the views for local residents and roadway users. Additionally, the owners of commercial property adjacent to Interstate 49 would consider the Build Alternative as a beneficial visual resource to increase their exposure to regional travelers.

Construction of the Build Alternative would result in the short-term presence of construction vehicles and equipment, temporarily altering the area's visual character. Vegetation impacts in temporary construction easements

would be minor and short-term until new vegetation becomes established. Overall, construction activities would have minor short-term impacts on views in the project area. Adverse impacts to the overall viewshed are not expected as a result of the construction of the Build Alternative.







3.6 Would there be highway-related noise impacts?

A traffic noise analysis is required for proposed Federal-aid highway projects that would construct a highway on new location, substantially alter an existing highway, or increase the number of through-traffic lanes. A detailed traffic noise analysis was performed in accordance with the ARDOT *Policy on Highway Traffic Noise Abatement* (ARDOT Noise Policy) using FHWA's Traffic Noise Model version 2.5 software. The Traffic Noise Analysis report is provided in **Appendix E**.

No Action Condition Noise Level Results

The No Action Alternative would allow for the continued ambient noise levels to remain unchanged and coincide with the increase in traffic on surrounding roadways and development in the area. However, the No Action Alternative was analyzed in the detailed analysis and utilized future traffic conditions with the existing roadway configurations. A total of eight residences would be impacted by future traffic noise level conditions. There are more impacts for the No Action Alternative than the Build Alternative because it does not include the speed reduction and construction of short masonry walls that are included in the Build Alternative.

Build Alternative Results

The results of the future 2045 Build Alternative indicated that three of the residences would approach, meet, or exceed the 67 decibel (dBA) threshold for residential noise impacts. One residence would experience a substantial increase (i.e., an increase of 10 dBA or more).

Two of the three impacted residences are located adjacent to Tiger Boulevard

northeast of its intersection with NE J Street. Noise abatement in the form of a noise wall was evaluated for feasibility (e.g., constructability) in this location. However, utility conflicts that would require relocating a buried fiber-optic line resulted in the determination that a noise wall at this location would not be feasible.

The third impacted receptor is located northeast of the interchange of NE J Street and Interstate 49. However, the estimated costs for a noise wall in this location are expected to range from \$115,000 to \$154,000. These costs exceed the ARDOT Noise Policy cost criteria of \$36,000 per residence receiving a sufficient noise level reduction from constructing a noise wall. As a result, noise mitigation measures are not considered for the Build Alternative.

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.

A-weighted decibels, abbreviated **dBA**, are an expression of the relative loudness of sounds in air as perceived by the human ear.

3.7 Would any historic or archeological resources be affected by the project?

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, the FHWA is conducting ongoing consultation with the appropriate Native American tribes.

Historic properties are those that are listed, or eligible for inclusion, in the National Register of Historic Places (NRHP), as defined in (36 CFR §800.16(I)).

The Arkansas Historic Preservation Program (AHPP) GIS Historical Properties database and the Automated Management of Archeological Site

Data in Arkansas (AMASDA) were searched for records/sites within the direct area of potential effect (APE) of the Build Alternative to determine if previously documented cultural resources were known in the project area. An historic properties records check was also conducted of the AHPP's structure database.

A review of the AMASDA database identified 17 previously recorded archeological sites within a 1-mile radius of the proposed project area. Only one site, Site 3BE0624, is recorded to occur within the project area. This prehistoric site was revisited during the Phase I cultural resources survey and is recommended to remain undetermined for inclusion in the NRHP. However, as the proposed road construction and ground disturbing activities are expected to occur through a severely disturbed portion of Site 3BE0624, results of the Phase I survey suggest that additional work within the proposed project area would not yield significant data regarding pre-contact lifeways due to the level of disturbance to the site located inside the project area. The portion of the site within the proposed project area provides little or no potential research value. Therefore, it is recommended that the intact portion of Site 3BE0624, if one exists outside of the project area, would not be affected by the proposed roadway project, and thus no historic property would be affected.

Phase I cultural resources surveys that included shovel tests were conducted within the APE. Results from the Phase I surveys identified two sites, Sites 3BE1103 and 3BE1104, that were recommended as undetermined for inclusion in the National Register of Historic Places (NRHP). Avoidance and protection are appropriate measures to preserve site integrity. If this is not possible, Phase II significance testing to recover sufficient data from the site to inform a recommendation regarding NRHP eligibility is recommended.

An Architectural Resources Survey was also conducted in the indirect APE. Eight recorded historic structures in the indirect APE were evaluated and recommended as not eligible for inclusion to the NRHP.

The Phase I cultural resources survey reports and the Architectural Resources Survey report documenting the results of the surveys, quantifying impacts to historic properties, and recommending a finding of No Historic Properties Affected was submitted to the State Historic Preservation Officer/AHPP for review. On October 20, 2023, AHPP concurred with the recommendations of the surveys and with the effect finding as long as Sites 3BE1103 and 3BE1104 are avoided. Section 106 related documentation is provided in **Appendix F**.

No Action Alternative

The No Action Alternative would not impact any cultural resources identified in the project area.

Build Alternative

The Build Alternative would avoid impacts to Sites 3BE1103 and 3BE1104. If avoidance of these undetermined sites is not possible, then site-specific data recovery plans would be prepared, and data recovery would be carried out at the earliest practicable time. FHWA-led consultation with the appropriate Native American Tribe would be conducted.

3.8 Would any karst areas be impacted?

Coordination was conducted with the Arkansas Geological Survey, Nature Conservancy, and the US

Geological Survey (USGS) to identify any concerns regarding the karst terrain within the project area. Additionally, the Ozark Underground Laboratory was contacted to determine any work they may have performed within or near the project area. The Arkansas Geological Survey indicated the project area is in an area of karst terrain which includes caves, springs, and sinkholes, and is underlain by the Mississippian Boone Formation.

The **Ozark Underground Laboratory** provides services such as water and land use investigations with special emphasis on karst and fractured rock landscapes.

Karst can be defined as an area of land underlain by soluble rocks, primarily limestone and dolomites, where surface water and groundwater have slowly dissolved bedrock at the surface and in the subsurface. This process forms a unique set of surface features that can include sinkholes, losing streams, and springs. **Figure 9** represents a conceptual model of the karst terrain and the underlying karst aquifer and can be considered representative of the Mississippian Boone Formation. Precipitation that falls on the karst landscape that replenishes groundwater supplies is known as recharge.





Good groundwater quality is essential in maintaining stream, spring, and cave environments in karst areas that support healthy ecosystems and endangered species habitat. About 75% of the water that ultimately reaches rivers and lakes in the area passes through groundwater systems for some distance

and most of the groundwater recharge enters through losing streams as opposed to sinkholes or water infiltrating through soil (Aley and Moss, 2001). A losing stream is a surface stream that loses considerable volumes of water to the subsurface in localized areas. In addition, karst groundwater systems can be affected by changes in recharge to the groundwater flow system caused by changes in land cover and changes in drainage. A decrease to surface water quality of recharge water would likely affect the quality of groundwater resources. Areas identified as open groundwater systems provide ineffective natural cleansing and are especially vulnerable to contaminated inputs associated with runoff and spills.

Aley and Aley (2014) identify lands overlying presumptive habitat for the Ozark Cavefish as an Extremely High Vulnerability area. The proposed project would cross an unnamed tributary upstream of McKisic Creek, locally identified as Shewmaker Creek. Shewmaker Creek intersects with the Presumptive Habitat Area for the Ozark Cavefish for Civil War Cave at a point about 6,400 feet downstream of the project area. It is possible that water sinking in or a short distance downstream of the project area contributes to groundwater and springs in the delineated Presumptive Habitat Area.

Extremely High Vulnerability areas are defined as lands within the direct recharge area with soils that have been classified as having poor natural soils treatment capability. Locations within the groundwater trough and along losing stream corridors are also considered as extremely high vulnerability factors.

No Action Alternative

The No Action Alternative would not impact karst or associated habitats in the project area.

Build Alternative

A karst assessment was conducted along the Build Alternative to identify any surface karst features and any exposures or outcrops of the Mississippian Boone Formation that may be receiving water from the surface or discharging water from the subsurface. There are no mapped recharge areas or caves within the study area. Exposures of the Mississippian Boone Formation were observed adjacent to Shewmaker Creek along a bluff line. Four springs and four seeps were observed within the study area (**Figure 10**). Three springs and four seeps would be impacted by the Build Alternative. Details on impacts to these features and avoidance and mitigation measures are provided in Section 3.12.

During construction, there is the potential to encounter voids or caves and their inhabitants; therefore, precautionary measures must be taken during construction in sensitive areas, such as karst regions, to avoid impacts to groundwater and the aquatic habitat of sensitive species. The construction of highways and associated activities can introduce pollutant contamination into the groundwater because of minimal filtration and rapid introduction of the surface water into the groundwater system. Introduction of contaminants such as petroleum products would be detrimental to water quality in wells, springs, caves, and any organisms that may inhabit the caves. Due to a lack of observed evidence for karst features (e.g., losing streams, sinkholes, or cave openings) within the study area, the majority of the impacted area appears to be within a diffuse recharge area which would help minimize the potential impact through slow infiltration.



Figure 10: Aquatic Features Overview

Erosion and sediment control would follow ARDOT's best management practices (BMPs) to minimize sedimentation and avoid impacts to groundwater and sensitive or endangered species. Any additional BMP's specific to the proposed project and karst area would be developed for protected species potentially affected by the project and through recommendations from USFWS.

In the event of cave discovery during construction, work would halt and the USFWS and ARDOT Environmental Division would be contacted for a determination of the proper procedures to be followed as is outlined in the Cave Discovery Special Provision (SP) that would be added to the project contract.

3.9 How would water resources, wetlands, and streams be affected?

Coordination with the Arkansas Department of Health revealed that no designated source water assessment areas are located in the study area. No public water supply intakes are located downstream of the project. Correspondence is provided in **Appendix C**.

Topographic review identified one perennial stream, locally known as Shewmaker Creek, that flows west and enters McKisic Creek about two miles to the northwest (**Figure 10**).

The Build Alternative was evaluated to identify wetlands, streams, springs, and ponds. Wetlands were preliminarily identified and classified by qualified biologists based on Cowardin et al. (1979). Wetland determinations were made using vegetation, hydrology, and soils in accordance with the routine approach described in the USACE Wetland Delineation Manual (1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (2012) (Version 2.0). The wetland delineation report is provided in **Appendix G**.

What are wetlands?

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. Wetlands are protected under Section 404 of the Clean Water Act because they provide flood control, aid in water quality, and provide wildlife habitat.

No Action Alternative

The No Action Alternative would not impact any wetlands, streams, springs, or ponds. No groundwater resources would be affected.

Build Alternative

The Build Alternative would have direct impacts to one wetland, one pond, and seven streams. **Table 7** provides a summary of anticipated impacts to those aquatic features and **Figure 10** shows the location of preliminary identified wetlands, streams, and springs along the Build Alternative.

Altornativa		S	treams (Springs &					
Alternative	PEM	PFO	PUB	Total	Per	Int	Eph	Total	Seeps
No Action Alternative	0	0	0	0	0	0	0	0	0
Build Alternative	0	<0.1 (1,742 ft ²)	0.1	0.1	323	1,177	1,548	3,048	3 springs & 4 seeps

 Table 7: Approximate Wetland, Stream, Spring, and Pond Impacts

*PEM - Emergent Wetland; PFO - Forested Wetland; PUB - Pond or Open Water Wetland; ft² - square feet

** Per - Perennial; Int - Intermittent; Eph – Ephemeral

Direct impacts to wetlands and streams would occur as a result of direct fill, temporary clearing, grading, culvert installation, and channel improvements. The Build Alternative would impact approximately 3,048 linear feet (LF) of stream channels with an estimated 1,548 LF of the impacted streams considered to be ephemeral and 1,177 LF considered to be intermittent streams. One perennial stream, Shewmaker Creek, is located within the study area but would be bridged; thus, direct impacts would be limited to a temporary stream crossing and approximately 323 LF of vegetation clearing. None of the streams flowing into or through the Build Alternative right of way flow into known groundwater recharge zones. One pond (0.1 acre), one forested wetland (<0.1 acre), four seeps, and three springs would be directly impacted by the Build Alternative. Spring 2 would be avoided by the project. The pond and wetland would be filled.

Direct impacts to the springs and seeps may occur due to heavy equipment usage in close proximity that may compact surrounding soils. The Build Alternative would install spring boxes, which would allow for continued issuance of the springs to downstream areas. During construction activities for the Build Alternative, streams would be subject to a temporary influx of sediment laden surface runoff associated

with construction activities such as clearing and grubbing and bridge installation. Construction activities would comply with requirements of the Clean Water Act (CWA) as required by the USACE Section 404 permit program. Unavoidable impacts to streams and/or wetlands would be mitigated by using an approved stream and/or wetland mitigation bank. Stormwater runoff would be controlled and monitored according to applicable federal regulations. Water quality regulations required by the Arkansas Division of Environmental Quality (DEQ) State Water Quality Certification (Section 401 of the CWA) also would be implemented.

What is the Clean Water Act (CWA)?

The CWA is a federal regulation governing activities that may have a harmful effect on the quality of the nation's water bodies. Section 404 of the CWA governs discharge (and taking) of materials into wetlands (and streams). Section 401 of the CWA gives the states the authority to regulate the discharges that may affect water quality.

3.10 Would floodplains be impacted by the project?

The project was evaluated to determine if any encroachment into special flood hazard areas, identified through the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps, would occur within the Build Alternative. **Figure 11** shows special flood hazard areas, also known as the 100-year floodplain, associated with Shewmaker Creek within the project area.

No Action Alternative

The No Action Alternative would not affect any floodplains.

Build Alternative

Approximately 2.5 acres of floodplain and 0.7 acre of floodway associated with Shewmaker Creek occur within the study area. The Build Alternative would bridge both the floodplain and floodway, which would result in only minor impacts to the floodplain and floodway due to pier placement. The bridge

What is a floodplain?

Floodplains are land areas that become covered by water in a flood event. 100-year floodplains 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.

The **floodway** is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so the 100-year flood may be carried without substantial increases in flood heights. The floodway fringe is the remaining portion of the floodplain outside of the regulated floodway.

crossing of the floodplain and floodway would be constructed in a manner to cause zero rise in the 100-year flood elevations.

The final project design would be reviewed to confirm that the design is adequate and that the potential risk to life and property are minimized. Adjacent properties should not be impacted nor have a greater flood risk than existed before construction of the project. For the Build Alternative, associated floodplain impacts would result in a no net rise of the floodplain elevation or affect water surface elevations.

3.11 Are impacts to wildlife or their habitat expected from the project?

The project area has varied topography and contains diverse vegetation types. The project area is primarily located in the Springfield Plateau Ecoregion with approximately 5% of the north end of the project area located within the Dissected Springfield Plateau-Elk River Hills of the Ozark Highlands Ecoregion (Level IV Ecoregions 39a and 39b; Woods et al., 2004). This ecoregion is underlain by highly soluble and fractured limestone and dolomite, is highly dissected, partly forested, and is rich in karst features. According to Woods et al. (2004), potential natural vegetation consists of oak–hickory forest and some oak–hickory–pine forest; native uplands consist of mixed deciduous forest containing black oak (*Quercus velutina*), white oak (*Q. alba*), blackjack oak (*Q. marilandica*), post oak (*Q. stellata*), and hickories (*Carya* spp.) with some mixed deciduous–shortleaf pine (*Pinus echinata*) forest; and floodplains with low terraces commonly containing willows (*Salix* spp.), maples (*Acer* spp.), hickories, birch (*Betula nigra*), American elm (*Ulmus americana*), and American sycamore (*Platanus occidentalis*).



Figure 11: FEMA Floodplain Map

Based on 2021 aerial imagery shown in **Figure 8**, the majority of the natural land covers identified along and adjacent to the project area consists of pastureland and woodland. Common edge plant species in the project area include blackberries (*Rubus* spp.), honeysuckles (*Lonicera* spp.) and other vine species, American beautyberry (*Callicarpa americana*), and young trees. The study area has forested, edge, and open field habitats present for many of the common wildlife species and species of concern. Most wildlife

What are edge species?

The area where two habitat types meet, such as woodlands and pastures, is called edge habitat. Edges provide greater plant diversity, cover, nesting areas, and travel corridors for wildlife (McPeake, University of Arkansas Cooperative Extension Service).

species found in the project area are habitat generalists and are not restricted to a particular habitat type. The species of wildlife expected to use or be present within the proposed project area include White-tailed Deer (*Odocoileus virginianus*), squirrels (*Sciurus* spp.), Cottontail Rabbit (*Sylvilagus floridanus*), Raccoon (*Procyon lotor*), Mink (*Vison vison*), Opossum (*Didelphis virginiana*), Skunk (*Mephitis mephitis*), Muskrat (*Ondatra zibethicus*), and Beaver (*Castor canadensis*). Various avian species (comprised of raptors, waterfowl, songbirds, and neo-tropical migrants), as well as a variety of reptiles and amphibians including Timber Rattlesnakes (*Crotalus horridus*), Copperheads (*Agkistrodon contortrix*), Cottonmouths (*A. piscivorus*), water snakes (*Nerodia* spp.), salamanders, lizards, skinks, tortoises, and turtles are present in and/or migrate through the general area.

The ANHC Natural Diversity Database records identified only one state listed species, the Royal Catchfly (*Silene regia*), that is known to occur within a one-mile radius of the project area. Other species known to occur within a five-mile radius of the project area are listed in correspondence from the ANHC and provided in **Appendix C**. ANHC also indicated that Shewmaker Creek flows westward into McKisic Creek, which supports species of state conservation concern near the confluence of these two streams that include the Sunburst Darter (*Etheostoma mihileze*), Neosho Midget Crayfish (*Faxonius macrus*), and the Redspot Chub (*Nocomis asper*). The confluence of these two streams is approximately two miles downstream from the project area. Care should be taken to minimize adverse impacts to Shewmaker Creek and employ BMPs as discussed above in Sections 3.8 and 3.9 to protect water quality.

No Action Alternative

The No Action Alternative would have no effect on wildlife or wildlife habitat.

Build Alternative

The Build Alternative would impact an area predominantly composed of woodland and open pastureland or hayfields that would be converted to roadway and maintained right of way. Conversion of these habitat types would reduce the available habitat for wildlife. Approximately 29 acres of forest habitat would be lost. Details on forested impacts associated with federally listed bat species are provided in Section 3.12 and karst habitat impacts are covered in Section 3.8. Unimpeded wildlife movement through the area would be reduced by the new four-lane roadway. The Build Alternative may remove suitable habitat, in the form of dry, rocky soils in forest edges and prairies, for the Royal Catchfly. Impacts to the Sunburst Darter, Neosho Midget Crayfish, and the Redspot Chub would be

minimized and temporary (i.e., limited to soil disturbance and increased turbidity) due to the employment of BMPs as discussed above in Sections 3.8 and 3.9 to protect water quality. BMPs would include installing and maintaining appropriate sediment control features.

3.12 Are impacts to federally-protected species expected from the project?

In accordance with the Endangered Species Act of 1973, federallylisted threatened and endangered species were identified for the proposed project. A total of 12 species are on the USFWS Official Species List for the proposed project and have the potential to be present in or migrate through Benton County. Of these 12 species, one candidate, one proposed endangered, and one proposed threatened species are included on the list. Suitable habitat for each species is summarized in **Table 8**. No critical habitats are present within the proposed project area.

An **endangered species** is one that is in danger of extinction throughout all or a substantial 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.

Common Name (Scientific name) Status		Suitable Habitat Impacts (acres)	
Closest Known Occurrence*	Suitable Habitat	No Action Alternative	Build Alternative
Northern Long-eared Bat (<i>Myotis</i> septentrionalis) Endangered; Within 5 miles	Forested Acreage	0	29
	Roosting Structures	0	4
Gray Bat (<i>Myotis grisescens</i>) Endangered; Within 5 miles	Forested Acreage	0	29
	Roosting Structures	0	4
Indiana Bat (<i>Myotis sodalis</i>) Endangered; Beyond 5 miles	Forested Acreage	0	29
	Roosting Structures	0	4
Ozark Big-eared Bat (<i>Corynorhinus townsendii ingens</i>) Endangered; Beyond 5 miles	Summer Foraging Habitat Acreage	0	29
Tricolored Bat (<i>Perimyotis subflavus</i>) Proposed Endangered; Beyond 5 miles	Forested Acreage	0	29
	Roosting Structures	0	4
Eastern Black Rail (<i>Laterallus jamaicensis ssp. jamaicensis</i>) Threatened; Beyond 5 miles	Acres of Emergent Wetlands and Marshes	0	0
Piping Plover (<i>Charadrius melodus</i>) Threatened; Beyond 5 miles	Acres of Sandbars of Major Rivers, Salt Flats, and Mudflats	0	0
Red Knot (<i>Calidris canutus rufa</i>) Threatened; Beyond 5 miles	Acres of Mudflats Associated with Reservoirs	0	0
Alligator Snapping Turtle (<i>Macrochelys temminckii</i>) Proposed Threatened; Beyond 5 miles	Acres of Rivers, Lakes, Sloughs, or Oxbows	0	0
Ozark Cavefish (<i>Amblyopsis rosae</i>) Threatened; Cave Springs Cave located 9 miles to southwest	Number of Springs Impacted	0	3

Table 8: Federally Listed Species Preliminary Habitat Impacts

Common Nome (Scientific nome) Status		Suitable Habitat Impacts (acres)	
Closest Known Occurrence*	Suitable Habitat	No Action Alternative	Build Alternative
Monarch Butterfly (<i>Danaus plexippus</i>) Candidate; Beyond 5 miles**	Acres of Grassland	0	12
Missouri Bladderpod (<i>Physaria filiformis</i>) Threatened; Beyond 5 miles	Acres of Open Limestone Glades, Barrens, and Outcrops	0	0

*ANHC Natural Diversity Database records (2021). Occurrence was listed as beyond 5 miles for species not listed by ANHC. **ANHC did not have records for the Monarch within the study area, but it is reasonable to assume seasonal presence of the species.

Habitat observed in the study area indicates the presence of suitable forested foraging and roosting habitat for the listed bat species. An overview of existing habitat is presented in **Figure 12**. Consultation with USFWS began early and has been ongoing throughout the NEPA process. Site investigations of the study area were conducted in May of 2022 and January of 2023. A habitat assessment was prepared and a request for technical assistance was submitted to USFWS in June 2023 (see **Appendix H**).

Bald Eagles (*Haliaeetus leucocephalus*) are protected under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act. Other protected migratory birds include Cliff Swallows (*Petrochelidon pyrrhonota*) and Barn Swallows (*Hirundo rustica*). Barn Swallows use man-made structures for nesting and live in close association with humans. Both swallow species commonly use bridges and culverts for nesting. Other migratory birds can also nest on transportation structures. Suitable nesting habitat is present within the proposed project area for migratory birds.

No Action Alternative

The No Action Alternative would have no effect on federally-protected species.

Build Alternative

Suitable nesting trees and foraging areas for the Bald Eagle were observed within the Build Alternative; however, no Bald Eagles or nests were observed during the site reconnaissance. If a nest were discovered during construction, all activity would cease within a 660-foot buffer around the nest.

Construction activities with the potential to affect migratory birds are encouraged to occur between August 15 and March 31 to avoid the nesting season. Suitable habitat for non-migratory ground nesting birds is also present and construction is encouraged to occur during the same timeframe. Provided construction can be conducted within the non-nesting season, no direct adverse effects are anticipated to migratory birds. If construction cannot avoid the nesting season, impacts to migratory and non-migratory nesting birds may include incidental take. The ARDOT migratory bird SP would be implemented as part of the project. Implementation of these mitigation measures would ensure that the proposed project would avoid or minimize potential adverse effects to migratory birds nesting on bridges and culverts.



Figure 12: Habitat Overview

No suitable habitats for the Eastern Black Rail, Piping Plover, Red Knot, Alligator Snapping Turtle or Missouri Bladderpod were identified within the study area. Suitable habitats were identified for the Northern Long-eared Bat, Gray Bat, Indiana Bat, Ozark Big-eared Bat, Tricolored Bat, Ozark Cavefish, and the Monarch Butterfly within the study area. Details on suitable habitats and impacts to listed species by the Build Alternative are detailed in **Appendix H** and summarized below and in **Table 8**.

As tree clearing would take place during the inactive season, indirect impacts to bat species include clearing an estimated 28.9 acres of potential summer tree roosting habitat and disturbance or demolition of four potential roosting structures. Direct impacts to bat species would include permanent lighting and vibration of construction equipment.

Four springs and four seeps, including three originating in spring boxes were observed within the study area (**Figure 12**) and may be suitable Ozark Cavefish habitat. Three springs and four seeps would be impacted by the Build Alternative. Direct impacts to the springs and seeps may occur due to heavy equipment usage in close proximity that may compact surrounding soils. The Build Alternative would install spring boxes, which would allow for continued issuance of the springs to downstream areas. The introduction of sediment and degraded water quality into these systems from both construction and post-construction paved roadway surfaces may also indirectly impact Ozark Cavefish habitat.

The following BMPs and avoidance and minimization measures will be implemented:

- Seasonal tree clearing is proposed to occur between November 15 and March 14 to avoid impacting potentially roosting listed bat species.
- ARDOT SPs would include:
 - Nesting Sites of Migratory Birds
 - Off-site Restraining Conditions for Indiana and Northern Long-eared Bats
 - o Special Clearing Requirements
 - Cave Discovery Including construction methods and procedures upon cave discovery.
 - Water Pollution Control Select BMPs as identified below will be implemented before construction, maintained during construction, and temporary BMPs will be removed after construction.
- BMPs will be installed and maintained according to a DEQ-approved construction stormwater pollution prevention plan (SWPPP). This plan will include BMPs listed below.
- Maintaining vegetated buffer zones of 25 feet from waterways and 50 feet from sensitive streams to the extent possible.
- Implementation of the following erosion and sediment control BMPs in compliance with the National Pollutant Discharge Elimination System (NPDES) permit and current version of the ARDOT Erosion and Sediment Control Design and Construction Manual.
 - o Diversion channels
 - o Silt fence
 - Slope protections and slope drains
 - Sediment basins and traps

- o Seeding and/or sodding
- $\circ \quad \text{Erosion control matting} \quad$
- Rock and sandbag ditch checks

Section 7 consultation with the USFWS would continue upon the selection of the Preferred Alternative and, if required, mitigation will be determined prior to construction. USFWS concurrence/clearance will be obtained for the Preferred Alternative prior to final NEPA approval.

3.13 Are there any hazardous materials located in the project area?

Federal actions require consideration of hazardous material impacts in NEPA documentation. The Comprehensive Environmental Response, Compensation, and Liability Act defines a hazardous material as any substance or material that has been determined to be capable of posing an

unreasonable risk to health, safety, and property when transported in commerce. The term hazardous material includes both hazardous wastes and hazardous substances, as well as petroleum and natural gas substance and materials. The Resource Conservation and Recovery Act defines solid waste as any discarded material that meets specific regulatory requirements and can

Hazardous materials are any materials which if encountered may cause a potential health risk to the public.

include items such as refuse, scrap metal, spent material, chemical-by-products, and sludge from industrial and municipal wastewater and water treatment plants. A review of government databases was conducted to determine the location of any Superfund sites, hazardous waste generator facilities, or solid waste sites within or near the study area. This included the use of the EPA's NEPAssist mapping tool and the Arkansas DEQ Enviroview mapping tools.

A site reconnaissance of the study area was conducted in May 2022 and January 2023. The field survey did not identify any hazardous materials or sites of concern.

No Action Alternative

The No Action Alternative would not impact any hazardous materials.

Build Alternative

The Build Alternative is not anticipated to impact any hazardous materials. If hazardous materials, unknown illegal dumps, or underground storage tanks are identified or accidentally uncovered during construction, the type and extent of the contamination would be determined according to the ARDOT response protocol. If necessary, appropriate remediation and disposal methods would be determined in cooperation with the Arkansas DEQ. All remediation work would be conducted in conformance with the DEQ, EPA, and Occupational Safety and Health Administration (OSHA) regulations.

Additionally, an asbestos survey by a certified asbestos inspector would be conducted on any building identified for demolition. If the survey detects the presence of any asbestos-containing materials, plans would be developed for the safe removal of these materials prior to demolition. All asbestos abatement work would be conducted in accordance with DEQ, EPA, and OSHA asbestos abatement regulations.

3.14 Would any prime farmlands be impacted by the project?

The Natural Resource Conservation Service (NRCS) administers the Farmland Protection Policy Act of 1981 to ensure that federal programs minimize unnecessary and irreversible conversion of prime farmland or farmland of statewide importance to nonagricultural uses. The NRCS Web Soil Survey was accessed to identify the presence of any prime farmland in the project area.

No Action Alternative

No prime farmland would be converted under the No Action Alternative.

Build Alternative

The Build Alternative could disturb up to 27 acres of prime and unique farmland and 18 acres of statewide or local important farmland. Numbers exclude the project area within the Bentonville municipal boundary and area within the existing right of way. Form CPA-106 was sent to the NRCS for their review and completion. The Build Alternative received a total site assessment score of 56 points on the worksheet, which is less than 160 points; therefore, the consideration of alternatives does not apply. The NRCS completed form is provided in **Appendix C**.

3.15 Does the project have any indirect effects?

Council of Environmental Quality (CEQ) and FHWA regulations require that potential indirect effects be considered during the NEPA process. Indirect effects are reasonably foreseeable effects that may be caused by the project but would occur in the future or outside of the project area.

Encroachment-Alteration Effects

Encroachment-alteration effects are physical, chemical, or biological changes in the environment that occur as a result of the project but are removed in time or distance from the direct effects. Impacts to water quality that occur as a result of the project but are then distributed off-site as water moves downstream beyond the project area, are the primary encroachment-alteration effect for this project.

No Action Alternative

For the No Action Alternative, no improvements would be constructed; therefore, no short-term or long-term indirect effects (of any type) are anticipated to occur.

Build Alternative

For the Build Alternative, construction is anticipated to cause temporary encroachment-alteration effects to water quality that may impact streams, springs (i.e., karst features), and cave-obligate species

Prime farmland is defined by the US Department of Agriculture as land that has the best combination of physical and chemical characteristics for producing crops. In some areas, land that does not meet the criteria for prime or unique farmland is considered to be farmland of statewide importance and may include lands that are nearly prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods.

> Indirect effects are defined as impacts that are "caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable" according to the CEQ (40 Code of Federal Regulations [CFR] 1508.8) and may "include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems".

such as the Ozark Cavefish. The Build Alternative would directly impact streams (including Shewmaker Creek) due to vegetation removal and earth moving activities during construction. These activities may indirectly affect receiving drainages by causing a temporary increase in sedimentation, which decreases water quality, to the local watershed from stormwater runoff. These temporary impacts would likely include increased turbidity in some areas or even sources of petroleum or other pollutants from construction vehicles. The Build Alternative would directly impact springs (i.e., karst features) and may, therefore, indirectly impact other springs and other connected, subterranean karst features, through the introduction of degraded water quality associated with construction and/or stormwater runoff. Decreased water quality is a known threat to karst systems (including springs). Therefore, karst features and/or springs may also be temporarily degraded if construction results in a direct connection between the surface and the groundwater system that allows pollution from septic tanks, urban runoff, and waste from livestock/poultry to impact groundwater. Moreover, because springs are linked to suitable habitat for aquatic cave species such as the Ozark Cavefish, the introduction of degraded water quality may also indirectly impact this species, which is known to be vulnerable to chemicals in the groundwater (USFWS, 2023).

However, without additional studies, the true potential for karst, spring, and groundwater impacts is not known. Regardless, BMP measures would be implemented as part of the design and construction of the project to avoid and/or reduce encroachment-alteration effects to surrounding resources resulting from stormwater runoff. These construction BMPs are described in Section 3.12 and would help minimize water quality degradation. Additionally, the project would have provisions relating to karst features (including springs) in place that would reduce impacts if cave or surface openings are encountered during construction.

Induced-Growth Effects

Changes in the pattern of land use, growth patterns, population density, or growth rate due to the construction of a highway project also may occur, and the resulting induced development can impact sensitive resources. This is another type of indirect effect that is categorized as induced-growth effects. An assessment of induced-growth effects is summarized below and provided in **Appendix I**.

No Action Alternative

With the No Action Alternative, no improvements would be constructed, and increased accessibility and induced growth would not occur as a result. However, city planners in the region anticipate most areas lacking steep terrain are highly likely to develop over the next 20 years regardless of the proposed project due to the region's anticipated growth (see Section 1.2).

Build Alternative

Increased accessibility due to the Build Alternative is anticipated by City of Bentonville planners to increase the rate and intensity of future development within the immediate vicinity. These anticipated induced growth effects are expected to occur near the proposed interchange, adjacent to Interstate 49, and limited to areas with less steep terrain. The improved accessibility within the project limits could

indirectly alter traffic operations and growth patterns on existing highways. The increased rate of commercial development in these areas could potentially impact wildlife habitat or important farmland soils. However, measures such as BMPs, permitting guidelines, agency coordination, and regulatory requirements in cooperation with appropriate stakeholders and entities would help to mitigate or minimize some potential adverse induced-growth impacts for these sensitive resources.

3.16 Does the project have any cumulative impacts?

Cumulative impacts result from the total effects of a proposed project when added to other past, present, and reasonably foreseeable future projects or actions. Cumulative impacts include the direct and indirect impacts of a project together with the reasonably foreseeable future actions of others. The cumulative impacts that result from an action may be undetectable but can add to other disturbances and eventually lead to a measurable environmental change. For any given resource, a cumulative impact would only potentially exist if the resource were also directly or indirectly impacted by the proposed project.

Cumulative impacts are defined as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other action (CFR 40 §1508.7).

No Action Alternative

The No Action Alternative would not result in any cumulative effects.

Build Alternative

For the Build Alternative, cumulative impacts to wetlands, streams, and federally-listed bat habitat were evaluated. Cumulative analyses considered other past, present, and reasonably foreseeable future projects identified primarily through assessment of the City of Bentonville's 2021 Master Street Plan, Northwest Arkansas Regional Transportation Study Transportation Improvement Program, and the Statewide Transportation Improvement Plan. Interviews with city and regional planners were also conducted. Based on the rapid growth projected within the region, planners were asked to identify areas where foreseeable projects within their jurisdictions were not anticipated as opposed to requesting them to identify extensive lists of foreseeable projects. Specific other actions evaluated include proposed Highway 72 improvements, Interstate 49 widening, six planned roadways totaling 6.1 miles as identified by the Bentonville Master Street Plan, a bridge improvement project, the Tiger Boulevard Interstate 49 overpass, and pavement preservation projects. The detailed cumulative impacts assessment, which was conducted individually by resource, is provided in **Appendix I** and is summarized below.

Wetlands and Streams

The Build Alternative would directly impact wetlands and surface water sources and may indirectly affect receiving drainages associated with a temporary increase in sedimentation to the local watershed from stormwater runoff. However, no induced growth impacts to wetlands and streams are anticipated (see Section 3.15). The combined impacts resulting from direct, indirect, and those other actions where impacts were able to be estimated would produce a cumulative impact of 10 acres of wetlands and streams within the cumulative effects study area investigated for this resource, which is a 125,638-acre

area comprised of the six 10-digit hydrological unit areas that are associated with the proposed project. As the region is known to be rapidly growing, this likely only represents a subset of the impacts resulting from future projects. Therefore, cumulative impacts were also conservatively estimated based on research by Dahl (2011) who identified a two percent decline in wetlands over a five-year period. Projecting this trend over the next 20 years, the amount of wetlands would decline by approximately eight percent, resulting estimates indicating a total loss of approximately 266 acres of wetlands throughout the entire resource study area over the next 20 years. The true cumulative impact to the acreages of wetlands and streams would be somewhere between these two values (i.e., between 10 and 266 acres). With the use of BMPs for the Build Alternative and assuming appropriate implementation of BMPs for other actions, stormwater runoff resulting from the project combined with impacts of other actions are anticipated to be minimized or prevented and not influence other areas of the watershed. Additionally, given the relatively minor percentage of wetland reduction for the entire resource study area, the proposed project is not expected to contribute substantial cumulative impacts to streams and wetlands in the project vicinity.

Habitats for Federally-Protected Bat Species

As detailed in Section 3.12, the proposed project has the potential to impact five federally-listed bat species: the Gray Bat, Indiana Bat, Northern Long-eared Bat, Ozark Big-eared Bat, and Tricolored Bat. Resources associated with these species include wooded habitat for roosting and/or foraging. The combined impacts resulting from direct, indirect, and those other actions where impacts were able to be estimated would produce a cumulative impact of 85 acres of tree clearing within the study area investigated for this resource. Cumulative impacts conservatively calculated based on historical trends identified by Dahl (2011) indicate a total loss of approximately 5,176 acres of woodlands throughout the entire resource study area. However, not all of these wooded areas may be suitable bat habitat. Likely the true cumulative impact for the acreages of tree removal would be somewhere between these two values (i.e., between 85 and 5,176 acres).

For the Build Alternative, general avoidance and minimization measures described in Section 3.12 would be applied to help protect impacts to bat species and their habitats. Additionally, for any other actions involving federal funds or permits, coordination with, and project clearance from, the USFWS would be required prior to construction. However, for other actions that do not involve a federal nexus, project clearance from USFWS would likely not be required. Given the quantity of available bat habitat in the project vicinity and the conservation measures in place for those federally funded/permitted projects, the proposed project is not expected to contribute to substantial cumulative impacts to bat habitat.

3.17 What resources are either not present or not affected?

Air Quality

The purpose of this project is to improve NE J Street and provide a connection to the regional highway system by constructing a new interchange at Interstate 49 that would provide a connection to

NE J Street. This project has been determined to generate minimal air quality impacts for Clean Air Act criteria pollutants and has not been linked with any special mobile source air toxic (MSAT) concerns. As such, this project will not result in changes in traffic volumes, vehicle mix, basic project location, or any other factor that would cause a meaningful increase in MSAT impacts of the project from that of the No Action Alternative.

Moreover, EPA regulations for vehicle engines and fuels will cause overall MSAT emissions to decline significantly over the next several decades. Based on regulations now in effect, an analysis of national trends with EPA's MOVES3 model forecasts a combined reduction of over 76% in the total annual emissions rate for the priority MSAT from 2020 to 2060 while vehicle-miles of travel are projected to increase by 31% (Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents, Federal Highway Administration, January 18, 2023). This will both reduce the background level of MSAT as well as the possibility of even minor MSAT emissions from this project.

Energy

There are no energy impacts associated with the proposed project.

Environmental Justice

An Environmental Justice evaluation was prepared for the proposed project to determine if low-income or minority populations would suffer disproportionately high and adverse effects of the proposed project. The evaluation determined that the proposed project will not cause disproportionately high and adverse effects on any minority of low-income populations. No further Environmental Justice analysis is required.

Wild and Scenic Rivers

No Wild and Scenic Rivers would be impacted by the proposed project.

Section 4(f) Resources

There are no public parks, recreation areas, wildlife or waterfowl refuges eligible for protection under Section 4(f) of the US Department of Transportation Act within the proposed project area. Mountain biking trails may be present within the project limits west of NE J Street near Brewer Circle. A temporary detour route along a portion of these trails may be necessary during some phases of construction. However, this does not constitute a Section 4(f) "use". Overall, the Build Alternative would benefit area trails by providing connectivity to bicycle and pedestrian trails located on the south and north sides of Interstate 49.

Section 6(f) Resources

No Section 6(f) resources have been identified within the proposed project area.

Chapter 4 – Results and Recommendations

This chapter summarizes environmental analysis results and recommendations.

4.1 What are the results of this EA?

Table 9 summarizes impacts of the Build Alternative as compared to the No Action Alternative.

4.2 What is the Preferred Alternative?

The Build Alternative has been identified as the Preferred Alternative because it provides the most direct and reliable route to Interstate 49 while minimizing impacts to the natural, cultural, and social environments. **Table 9** identifies the major impacts associated with the Build Alternative.

Resource Category	No Action Alternative	Build Alternative
Alternative Length	1.1 miles	1.1 miles
Right of Way Required	None	41 acres
Construction Cost*	None	\$59,375,000
Right of Way Acquisition Cost*	None	\$17,215,000
Utility Relocation Cost*	None	\$571,000
Total Cost*	None	\$77,161,000
Wetland Impacts	None	0.1 acre
100-Year Floodplain Impacts	None	None
Stream Impacts	None	3,048 linear feet
Springs Impacted**	None	3
Suitable Monarch Butterfly Habitat Impacts	None	12 acres
Suitable Bats Roosting/Foraging Habitat Impacts	None	29 acres
Suitable Bat Roosting Structures Impacted	None	4
Residencial Relocations	None	None
Landlord Business Relocations	None	None
Business Relocations	None	1
NRHP Eligible Sites Impacted	None	None
Hazardous Materials Sites Impacted	None	None
Noise Impacts	8 receptors	3 receptors
Important Farmland Impacts***	None	96 acres
Visual Quality Impacts	None	Minor

Table 9: Alternative Comparison Table

* Costs are based on preliminary design and do not include mitigation costs. ** Suitable habitat for the federally-protected Ozark Cavefish. *** Includes Prime and Unique Farmland and Farmland of Statewide Importance.

4.3 What commitments have been made?

ARDOT's standard commitments regarding relocation procedures, hazardous waste abatement, cultural resources discovery, water quality impact controls, and revegetation have been made for this project. The commitments are as follows:

- Businesses displaced as a direct result of acquisition for the project will be eligible for relocation assistance in accordance with Public Law 91-646, Uniform Relocation Assistance Act of 1970.
- A note will be included in the plans that the contractor is not to disturb archeological Site 3BE1103 or Site 3BE1104. If avoidance of these undetermined sites is not possible, then site-specific data recovery plans would be prepared, and data recovery would be carried out at the earliest practicable time. FHWA-led consultation with the appropriate Native American Tribe would be conducted.
- All borrow pits, waste areas, and work roads will be surveyed for cultural resources when locations become available.
- In the event of cave discovery during construction, work will immediately be discontinued in the area, access shall be denied, and the opening secured to prevent unauthorized entry. The USFWS and ARDOT Environmental Division will be contacted for a determination of the proper procedures to be followed as is outlined in the Cave Discovery SP that would be added to the project contract.
- Project construction will be in compliance with all applicable CWA regulations, as required. This includes obtaining the following: Section 401 Water Quality Certification, Section 402 National Pollutant Discharge Elimination System, and Section 404 Permit for Dredged or Fill Material.
- Stream and wetland mitigation will be offered at an approved mitigation site at a ratio approved during the Section 404 permitting process.
- A detailed hydrology and hydraulics study will be performed during the final design to demonstrate that the project would not result in any increase in flood level due to construction that would violate applicable floodplain regulations or ordinances.
- The following BMPs and avoidance and minimization measures will be incorporated into the construction contract to minimize potential impacts to water quality, migratory birds, and federally-protected species: Water Pollution Control SP, Nesting Sites of Migratory Birds SP, Off-site Restraining Conditions for Indiana and Northern Long-eared Bats SP, Special Clearing Requirements SP, and Cave Discovery SP.
- Seasonal tree clearing is proposed to occur between November 16 and March 14 to avoid impacting potentially roosting listed bat species.
- Section 7 consultation with the USFWS will continue upon the selection of the Preferred Alternative and, if required, mitigation will be determined prior to construction. USFWS

concurrence/clearance will be obtained for the Preferred Alternative prior to final NEPA approval.

- If hazardous materials are identified, observed, or accidentally uncovered during construction, work will be halted, and the appropriate entities will be notified. Prior to resuming construction, the type of contaminant and extent of contamination will be identified. If necessary, a remediation and disposal plan will be developed. All remediation work will be conducted in conformance with the DEQ, EPA, and OSHA regulations.
- An asbestos survey will be conducted by a certified asbestos inspector on any building slated for acquisition and demolition. All detected asbestos-containing materials will be removed prior to demolition in accordance with ADEQ, EPA, and OSHA regulations.
- If hazardous materials, unknown illegal dumps, or underground storage tanks are identified or accidentally uncovered during construction, the type and extent of the contamination will be determined according to the ARDOT response protocol. In cooperation with the DEQ, appropriate remediation and disposal methods will be determined.

4.4 Is the NEPA process finished?

After this EA is approved by the FHWA for public dissemination, a Location and Design Public Hearing will be held. After a review of comments received from citizens, public officials, and public agencies, if it is determined that there are not significant impacts associated with the Preferred Alternative, a FONSI document will be prepared and submitted to the FHWA. If significant, immitigable impacts are identified, an EIS would be initiated. If FHWA issues a FONSI, it will identify the Selected Alternative and conclude the NEPA process.

References

Literature Cited

- Aley, T. and C. Aley. 2014. Recharge area delineation and vulnerability mapping for Civil War Cave, Centerton Spring, and Centerton Fish Hatchery Spring, Benton County, Arkansas. Ozark Underground Laboratory contract report to The Nature Conservancy, Ozark Highlands Office, Fayetteville, Arkansas. 94 pages + appendices.
- Aley, T. and P. Moss. 2001. Recharge area delineation of the Pautler Cave system and Annbriar Spring in Monroe County, Illinois. Contract report to the Illinois Nature Preserves Commission. 124 pages.
- Cowardin, LM, V. Carter, FC Golet, and ET LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. US Department of the Interior, Fish and Wildlife Service, Washington, DC Jamestown, ND: Northern Prairie Wildlife Research Center Online.
- Dahl, TE. 2011. Status and Trends of Wetlands in the Conterminous United States 2004 to 2009. US Department of the Interior; Fish and Wildlife Service, Washington, DC. 108 pp.
- Holtmeyer, D. 2018. Report: Growth Continues in Northwest Arkansas. https://www.nwaonline.com/news/2018/mar/22/report-growth-continues-in-northwest-ar/
- Northwest Arkansas Council (NWAC). 2020. Engage the Future, A Look at the Growing Diversity in Northwest Arkansas, March 2020.
- Northwest Arkansas Council (NWAC). 2022. Northwest Arkansas State of the Region Report, 2021. Available at <u>https://cber.uark.edu/NWAC_StateoftheRegionReport_2021.pdf</u>. 8 pages.
- US Army Corps of Engineers (USACE). 1987. US Army Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1. Vicksburg, Mississippi.
- US Army Corps of Engineers (USACE). 2012. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Version 2.0, ed. JF Berkowitz, JS Wakeley, RW Lichvar, CV Noble. ERDC/EL TR-12-9. Vicksburg, MS: US Army Engineer Research and Development Center.
- US Environmental Protection Agency (EPA). 2020. Ground-level Ozone Basics. Available online at: <u>https://www.epa.gov/ground-level-ozone-pollution/ground-level-ozone-basics</u>
- US Environmental Protection Agency (EPA). 2022. Basics of Climate Change. Available online at: <u>https://www.epa.gov/climatechange-science/basics-climate-change</u>
- US Fish and Wildlife Service (USFWS). 2023. Ozark Cavefish. Available online at: https://www.fws.gov/species/ozark-cavefish-amblyopsis-rosae

Woods AJ, TL Foti, SS Chapman, JM Omernik, JA Wise, EO Murray, WL Prior, JB Pagan, Jr., JA Comstock, M. and Radford. 2004. Ecoregions of Arkansas (color poster with map, descriptive text, summary tables, and photographs): Reston, Virginia, US Geological Survey (map scale 1:1,000,000).

Acronyms

AADT	Annual Average Daily Traffic
ADA	Americans with Disabilities Act
ADT	Average Daily Traffic
AHPP	Arkansas Historic Preservation Program
AMASDA	Automated Management of Archeological Site Data in Arkansas
ANHC	Arkansas Natural Heritage Commission
APE	Area of Potential Effect
ArDOT	Arkansas Department of Transportation
BMP	Best Management Practice
CEQ	Council of Environmental Quality
CFR	Code of Federal Regulations
CH ₄	Methane
CO ₂	Carbon Dioxide
CO2E	Carbon Dioxide Equivalent
CPBR	Cost per Benefitted Receptor
CWA	Clean Water Act
dB	Decibel
dBA	A-weighted Decibel
DEQ	Arkansas Division of Environmental Quality
EA	Environmental Assessment
EB	East Bound
EPA	US Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
GHG	Greenhouse Gas
LF	Linear Feet
MBTA	Migratory Bird Treaty Act
mph	Miles per Hour
MSAT	Mobile Source Air Toxic
N ₂ O	Nitrous Oxide
NAC	Noise Abatement Criteria
NB	North Bound

- NEPA National Environmental Policy Act
- NPDES National Pollutant Discharge Elimination System
- NRCS Natural Resources Conservation Service
- NRHP National Register of Historic Places
- NWAC Northwest Arkansas Council
- OSHA Occupational Safety and Health Administration
- PEM Palustrine Emergent Wetland
- PFO Palustrine Forested Wetland
- PUB Pond or Open Water Wetland
- SB South Bound
- SP Special Provision
- SWPPP Stormwater Pollution Prevention Plan
- USACE US Army Corps of Engineers
- USFWS US Fish and Wildlife Service
- USGS US Geological Survey
- WB West Bound