ARDOT Job 100512

WALNUT RIDGE – MISSOURI STATE LINE (FUTURE I-57)

CLAY, GREENE, LAWRENCE, & RANDOLPH COUNTIES

Draft Environmental Impact Statement

September 2022

U.S. Department of Transportation
Federal Highway Administration

ARDOT
ARKANSAS DEPARTMENT OF TRANSPORTATION

WALNUT RIDGE – MISSOURI STATE LINE (FUTURE I-57)

ARDOT JOB 100512

Draft Environmental Impact Statement

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

Submitted by:
FEDERAL HIGHWAY ADMINISTRATION (FHWA)

and

ARKANSAS DEPARTMENT OF TRANSPORTATION (ARDOT)

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Division Administrator
Arkansas Division Office

30 September 2022

Date of Approval

U.S. Department of Transportation
Federal Highway Administration

In Cooperation with:
Missouri Department of Transportation (MoDOT), U.S. Army Corps of Engineers (USACE), U.S. Department of Agriculture (USDA), U.S. Environmental Protection Agency (EPA), and U.S. Fish and Wildlife Service (USFWS)

In Participation with:
Arkansas Division of Environmental Quality (DEQ), Arkansas Game and Fish Commission (AGFC), Arkansas Historic Preservation Program (AHPP), and Arkansas Natural Heritage Commission (ANHC)

Prepared by:
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In compliance with the National Environmental Policy Act, this Draft Environmental Impact Statement (DEIS) describes the proposed project to enhance connectivity and continuity of the National Highway System, provide a roadway more resilient to extreme weather events, and create increased opportunity for economic development in northeast Arkansas. A Notice of Intent (Docket No. FHWA-2021-0009), which is provided in **Appendix A**, was published by the FHWA. The analysis identifies Alternatives 2 and C as the Preferred Alternative. The FHWA will issue a single document that consists of the Final Environmental Impact Statement and Record of Decision pursuant to 49 U.S.C. 304a(b) [and 23 U.S.C. 139(n)(2)] unless the FHWA determines that statutory criteria or practicability considerations preclude issuance of such a combined document.

Comments on this draft EIS are due within 45 days of distribution to the public and should be directed to:

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This DEIS is also available for review online at: http://www.arkansashighways.com/

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Environmental Impact Statement Summary

S.1 What is the Future I-57 project and why is it needed?

The Arkansas Department of Transportation (ARDOT) in cooperation with the Federal Highway Administration (FHWA), is proposing to construct an interstate facility from Walnut Ridge to the state line within Clay, Greene, Lawrence, and Randolph counties, Arkansas. Larger communities in and around the study area include Walnut Ridge, Pocahontas, and Corning. Other cities and towns located in the study area include College City, O'Kean, Delaplaine, Peach Orchard, Knobel, Biggers, Reyno, and Datto, Arkansas. All build alternatives begin at the Highway (Hwy.) 67/Hwy. 412 interchange at Walnut Ridge, Arkansas and end on Hwy. 67 at the Arkansas-Missouri State line, a distance of approximately 42 miles.

The project is needed because there is a gap in the system linkage that diminishes connectivity and mobility of the National Highway System. Additionally, there is a lack of reliable transportation infrastructure to support economic development and a need to enhance resiliency along the route to extreme weather events. Furthermore, federal legislation designated this high priority corridor for future Interstate Route 57 (I-57). The project's purpose is to address the above needs while minimizing negative impacts to the natural, cultural, and social environments.

As the National Environmental Policy Act (NEPA) lead federal agency, FHWA has approved this Draft Environmental Impact Statement (DEIS) for public distribution. The project team sent letters describing the proposed NEPA study and soliciting input to the appropriate federal, tribal, state, and local agencies who have expressed or are known to have an interest or legal role in this project.

S.2 What was the preliminary range of alternatives considered?

This study used a multi-level screening process to narrow the preliminary range of alternatives down to a smaller set of alternatives to be studied in greater detail. The preliminary range of alternatives were developed with consideration of previous studies conducted for the corridor, including the 2015 Highway 67 Improvement Study (ARDOT, 2015).

Several types of project alternatives were considered in order to meet the future transportation needs of the Hwy. 67 corridor. Specifically, the following alternatives were initially evaluated:

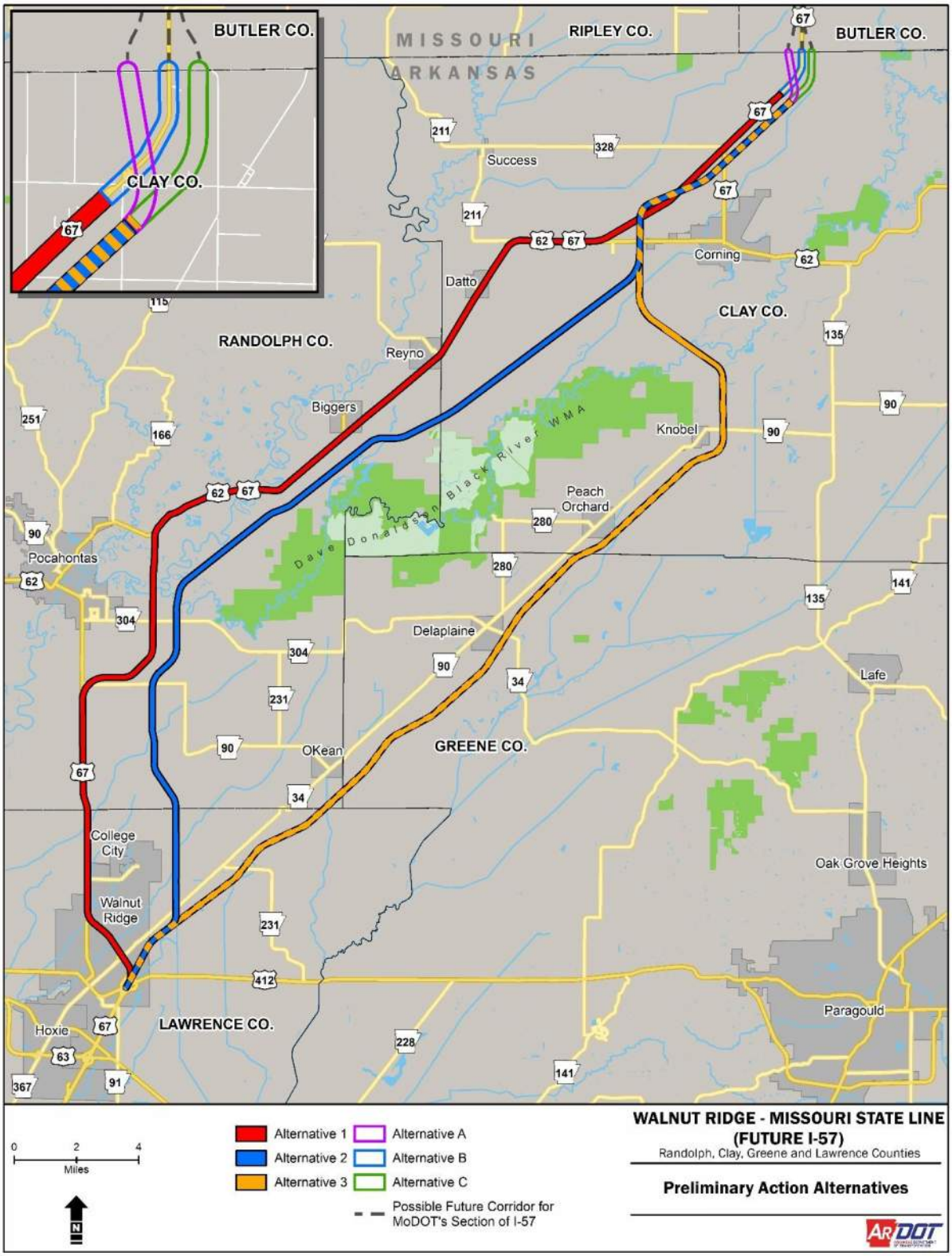
- **No Action**
- **Transportation System Management (TSM)**
- **Intelligent Transportation Systems (ITS)**
- **Mass Transit**
- **Improve Existing Hwy. 67 Alignment**
- **New Location Highway Alignment**

The analysis of the preliminary range of alternatives was completed through the Level 1 Screening Process. In Level 1, the alternatives were evaluated foremost on their ability to address the project purpose and need. Based on the Level 1 screening results, TSM, ITS, and Mass Transit Alternatives were dropped from further consideration as available information demonstrated they clearly did not meet the project's purpose and need.

S.3 What alternatives were presented to the public and how are public agencies involved?

The No Action, Existing Hwy. 67 Alignment, and the New Location Highway Alignment alternatives were carried forward to the Level 2 Screening Process and were presented to the public during the public meeting held August 13 through September 2, 2020. These alternatives are shown in **Figure 1**.

Figure 1: Preliminary Action Alternatives Presented to the Public



Although the No Action Alternative does not meet the study's purpose and need, consistent with NEPA requirements, it was carried forward for further evaluation to serve as a basis for comparison against the action alternatives. The action alternatives were evaluated as 1,000-foot-wide corridors and were divided into the Main Corridor Alternatives and the Missouri Connector Alternatives. The Main Corridor Alternatives are approximately 40 miles long and begin at the Hwy. 67/Hwy. 412 interchange at Walnut Ridge and end approximately two miles south of the Missouri State line. The Missouri Connector Alternatives provide the final approximately two-mile section to the Arkansas-Missouri border. These connectors were developed to provide multiple options to the Missouri Department of Transportation (MoDOT) for their section of future I-57. At the time of this study, MoDOT still has not studied their portion of future I-57 at the Arkansas-Missouri border. Ongoing coordination with MoDOT indicates they would locate their final section of future I-57 on or very near existing Hwy. 67. For this reason, these alternatives are located on or as close as possible to existing Hwy. 67. The screened alternatives carried forward to Level 2 are shown in **Figure 1** and described in more detail as follows:

- **No Action Alternative** – This alternative consists of no improvements to the present system and no expenditures other than regular maintenance of the existing Hwy. 67 route.
- Upgrading Existing Facility to Interstate Standards.
    - **Future I-57 Alternative 1** – This alternative would make improvements to existing Hwy. 67 with new location bypasses around the towns of Pocahontas and Corning. Alternative 1 would utilize the existing two lanes of Hwy. 67 and add two additional lanes plus frontage roads as necessary.
    - **Missouri Connector Alternative B** – This alternative is entirely on existing Hwy. 67 and would begin at the end of Alternative 1, extend north-northeast, and end at the Arkansas-Missouri State line centered on Hwy. 67. Alternative B would utilize the existing two lanes of Hwy. 67 and add two additional lanes plus frontage roads as necessary.
- New Location Interstate.
    - **Future I-57 Alternative 2** – This alternative is entirely on new location and generally lies between Hwy. 67 and the Dave Donaldson Black River Wildlife Management Area (Black River WMA).
    - **Future I-57 Alternative 3** – This alternative is entirely on new location and generally parallels the Hwy. 90 corridor east of the Black River WMA.
    - **Missouri Connector Alternative A** – This alternative is entirely on new location and would begin at the end of Alternatives 2 and 3, extend north-northwest, and end at the Missouri State line west of Hwy. 67.
    - **Missouri Connector Alternative C** – This alternative is entirely on new location and would begin at the end of Alternatives 2 and 3, extend north-northeast, and end at the Missouri State line east of Hwy. 67.

In May 2020 and February 2021, letters were sent describing the proposed NEPA study and soliciting input to the appropriate federal, tribal, state, and local agencies who have expressed or are known to have an interest or legal role in this project. Additional details regarding public agency coordination and summaries of submitted information in accordance with 40 CFR 1502.17 are provided in Section 4.2. The following agencies accepted the role as a cooperating agency and were invited to comment on the project's purpose, need, range of alternatives, and this DEIS document:

Pursuant to 23 USC Section 139, **cooperating agencies** are responsible for identifying, as early as practicable, any issues of concern regarding the project's potential environmental or socioeconomic impacts that could substantially delay or prevent an agency from granting a permit or other approval that is needed for the project.

- MoDOT
    - May 15, 2020 - Accepted the invitation to be a cooperating agency.
    - January 15, 2021 - Stated they concur with the purpose and need and alternatives presented but have no additional comments regarding the project.
    - February 19, 2022 - Concurred with the selection of Alternative C as a preferred and provided additional information about their section of future I-57.
    - August 17, 2022 - Stated they have no comments on the DEIS.

- U.S. Army Corps of Engineers (USACE)
  - November 10, 2020 - Accepted the invitation to be a cooperating agency.
  - January 28, 2021 - Stated they concur with the purpose and need and alternatives presented. Stated they concur that the three proposed alternatives meet the requirements within the defined termini and the regional and national highway network initiatives, and are sufficient for moving the study forward. Stated they would like to see any medium or high functioning wetland and stream tracts listed as major constraints and avoid, if possible. Stated they would prefer that compensatory mitigation for any unavoidable wetland and stream impacts be located in the same watershed.
  - April 19, 2021 - Provided confirmation that the three levee systems identified in Section 3.27 would likely require a Section 408 review if crossed.
  - March 10, 2022 - After review of the DEIS, stated they see no issues with the alternatives analysis and provided minor recommendations for clarification.
    - All recommendations were fully addressed and Sections 3.18 and 3.26 were revised accordingly.
  - September 6, 2022 - Stated they concur with the findings presented in the DEIS and that before they can issue a standard permit, an approved mitigation plan must be in place. Recommended adding language regarding compliance with EPA's 404(b)(1) Guidelines.
    - The recommended language was added to Section 3.26.
- U.S. Department of Agriculture (USDA)
  - June 3, 2020 - Accepted the invitation to be a cooperating agency.
  - January 25, 2021 - Stated they do not give concurrence on the need of the project or which corridor is preferred (per standard procedures), rather they just give information about the impact to agricultural easements, give information for the completions of Form NRCS-CPA-106, and any other relevant environmental or soils information.
- U.S. Environmental Protection Agency (EPA)
  - February 12, 2021 - Accepted the invitation to be a cooperating agency.
  - July 29, 2021 - Stated they reviewed the published NOI and provided detailed recommendations for consideration to assist in the scoping process. This EPA coordination is provided in **Appendix D**.
    - All recommendations were reviewed, and it has been verified that each topic has been sufficiently addressed in the DEIS.
  - August 23, 2022 - Stated they reviewed the DEIS and provided recommendations for improving the clarity of the DEIS.
    - All recommendations were reviewed to verify each topic is sufficiently clear in the DEIS. Specific recommendations incorporated include clarification of EJ analyses with regard to community, indirect, and reasonably foreseeable effects.
- U.S. Fish and Wildlife Service (USFWS)
  - May 12, 2020 - Accepted the invitation to be a cooperating agency.
  - November 24, 2020 - Provided an official species list and technical assistance.
  - January 15, 2021 - Stated they concur with the purpose and need and the range of alternatives. Stated the information provided in the purpose and need statement and the range of alternatives is sufficient for this stage in the process and that the environmental review process may proceed. Stated they have no additional comments to provide at this time.
  - January 31, 2022 - Stated they reviewed the DEIS (dated January 2022) and do not have any current reason to oppose the preferred alternative and believe that either Alternative 2 or 3 would have similar effects on fish and wildlife resources. Recommended considering nine comments for inclusion within the DEIS. This USFWS coordination is provided in **Appendix D**.
    - All nine recommendations were fully addressed and Sections 3.19 through 3.23 were revised accordingly.
  - August 3, 2022 - Stated they reviewed the DEIS (dated July 2022) and believe that the reasoning behind the selection of the preferred Alternatives 2 and C are reasonable. Provided two recommendations for

consideration of conservation measures for avoidance, minimization, and mitigation of effects from the action.

- Both recommendations would be followed as additional USFWS coordination and conservation planning for avoidance and minimization would be conducted as project designs and effects analyses are refined, or if new information on listed species becomes available, habitat effects change, new listings occur, and/or as species listing statuses change.

The following agencies have accepted the role as a participating agency:

- Arkansas Division of Environmental Quality (DEQ), Department of Energy and Environment
- Arkansas Game and Fish Commission (AGFC)
- Arkansas Historic Preservation Program (AHPP), Division of Arkansas Heritage
- Arkansas Natural Heritage Commission (ANHC), Division of Arkansas Heritage

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. No tribes have expressed concern for the project. The FHWA would continue consultation and coordination with Indian Tribal Governments as applicable.

Agency and tribal coordination is provided in **Appendix D**.

S.4 Which alternatives were dropped from further consideration and why?

In Level 2, alternatives were evaluated on how well they met other goals, such as minimizing negative impacts to the social, cultural, and natural environments, their constructability, and their cost. Environmental data was collected for the entire study area and used for quantitative assessment of potential impacts for each action alternative based on 1,000-foot-wide corridors. Major environmental concerns were floodplains, forested lands, wetlands, homes, businesses, threatened and endangered (T&E) species, farmlands, and hazardous materials.

Based on the corridor screening results, Alternatives 2, 3, A, and C satisfy the purpose and need while minimizing the environmental impacts to the greatest extent possible and were carried forward for detailed studies documented in this DEIS. Although Missouri connector Alternative B has a high probability of substantial impacts to homes, businesses, and community features, it is carried forward to comply with the Memorandum of Understanding (MOU) between ARDOT and MoDOT to consider the full range of alternatives for the optimal connection point for both states.

While Alternative 1 adequately addresses the purpose and need, it was dropped from further consideration for the following reasons:

- Alternative 1 would displace substantially more homes, businesses, and agricultural buildings than Alternatives 2 or 3.
- Alternative 1 would impact substantially more cultural resources.
- Alternative 1 would impact substantially more hazardous sites.
- Alternative 1 would negatively impact local road access and property access along existing Hwy. 67.
- Alternative 1 would cause temporary and possibly long-term negative economic impacts to businesses that are impacted by the change in access.
- Alternative 1 has more floodplain impacts than Alternatives 2 or 3.
- Alternative 1 has more wetland impacts than Alternative 2.
- Alternative 1 does not address resiliency as well as other alternatives, since using existing Hwy. 67 does not provide a redundant alternative highway in case of natural or human-made closures.
- Public preference identified Alternative 1 as the least-preferred alternative.

In summary, Alternative 1 does not address any purpose and need elements better than Alternative 2, which is typically located less than two miles away from Alternative 1. Most importantly, Alternative 1 would cause substantially greater

negative impacts to the social, natural, and cultural environments compared to the other action alternatives. Consequently, the benefits of Alternative 1 are outweighed by the negative impacts, and this alternative was dropped from further consideration.

S.5 What are the alternatives retained and analyzed in the DEIS?

The alternatives retained following the Level 1 and 2 Screening Process were carried forward in this DEIS and studied in greater detail in Chapter 3. These include the No Action Alternative and the following five action alternatives, which are listed below and shown in **Figure 2**.

- **Main Corridor Alternatives 2 and 3**
- **Missouri Connector Alternatives A, B, and C**

Due to the elimination of Alternative 1, the southern end of Alternative B was modified to begin at the end of Alternatives 2 and 3. Alternative B, therefore, has a section on new location but still improves the northernmost 0.5-mile of existing Hwy. 67. The footprints of Alternatives A and C have also been modified to include a 0.29-mile and 0.17-mile section, respectively, of County Road 278 to accommodate an interim two-lane roadway that would tie each alternative back into Hwy. 67. The two-lane section to Hwy. 67 would be an interim condition that would be replaced with the proposed interchange connecting to MoDOT's proposed future corridor. Additionally, Alternatives 2 and 3 have undergone some minor alignment revisions as updated information was obtained. For instance, detailed environmental studies following the screening process identified historical properties, cemeteries, major gas pipelines, and sensitive environmental areas that were avoided by alignment revisions. Additionally, each alternative was reduced to 400 feet wide to reflect more accurately the probable construction footprint.

All five action alternatives are fully-controlled access highways, meaning vehicles can only enter or exit the roadway at interchanges. This type of facility is also referred to as an interstate highway or freeway. Alternatives 2 and 3 each have six proposed interchanges and Alternatives A, B, and C each have one proposed interchange at the Arkansas-Missouri State line. As shown in **Figure 3**, the proposed roadway for all action alternatives would be a four-lane divided highway with a depressed grass median and an approximately 400-foot-wide right of way (ROW). The interim sections of Alternatives A and C that are along County Road 278, would be a two-lane highway with an approximately 140-foot and 120-foot wide ROW, respectively (**Figure 3**).

The primary area of controversy raised by the public involves alternative preference. During the virtual public involvement meetings that began on August 13 and ended September 2, 2020, approximately 90% of the respondents believed that the project is needed. However, some individuals in Corning have voiced opposition against Alternative 3 based on economic concerns. There are no major unresolved issues with governmental agencies.

Figure 2: Action Alternatives Carried Forward in the DEIS

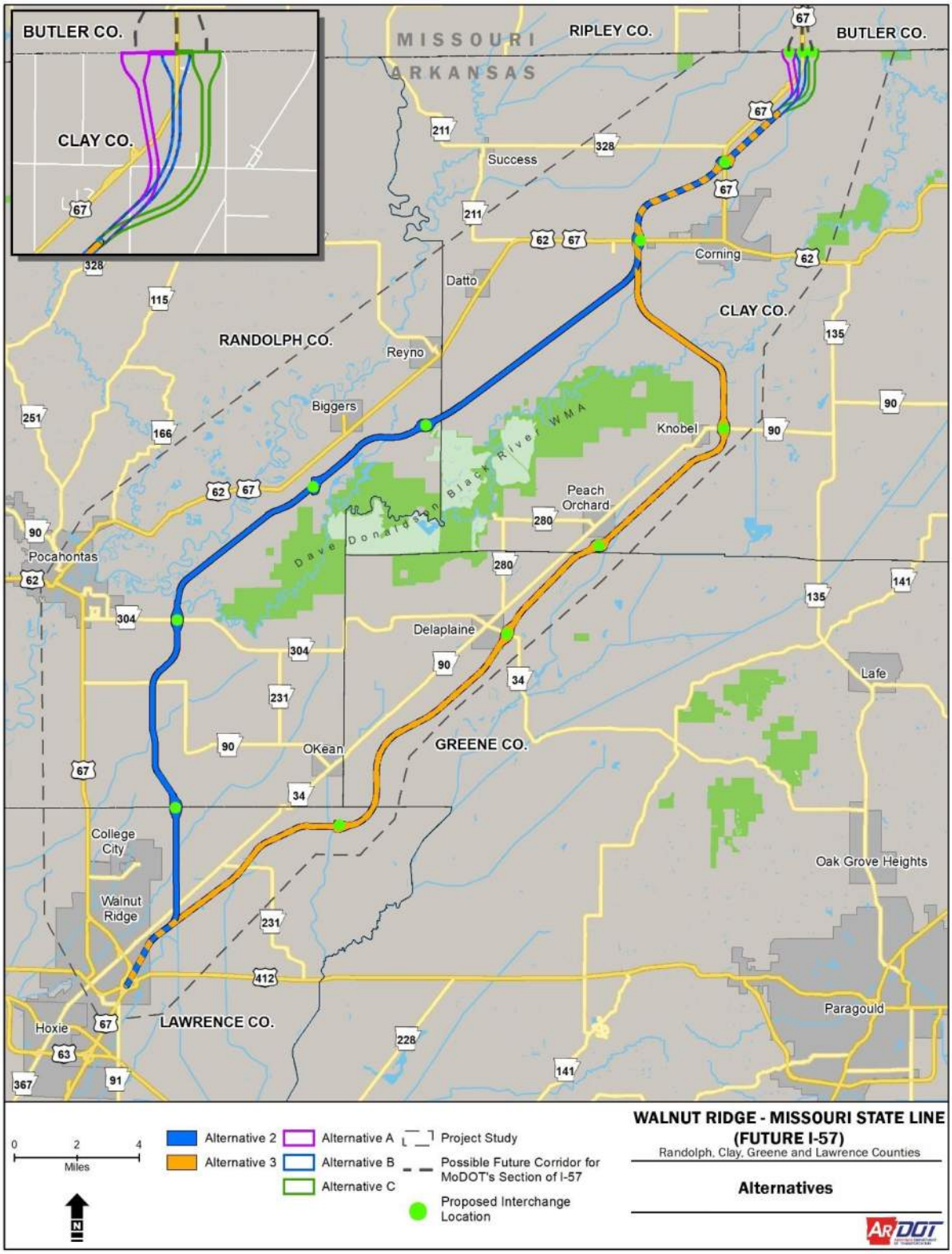
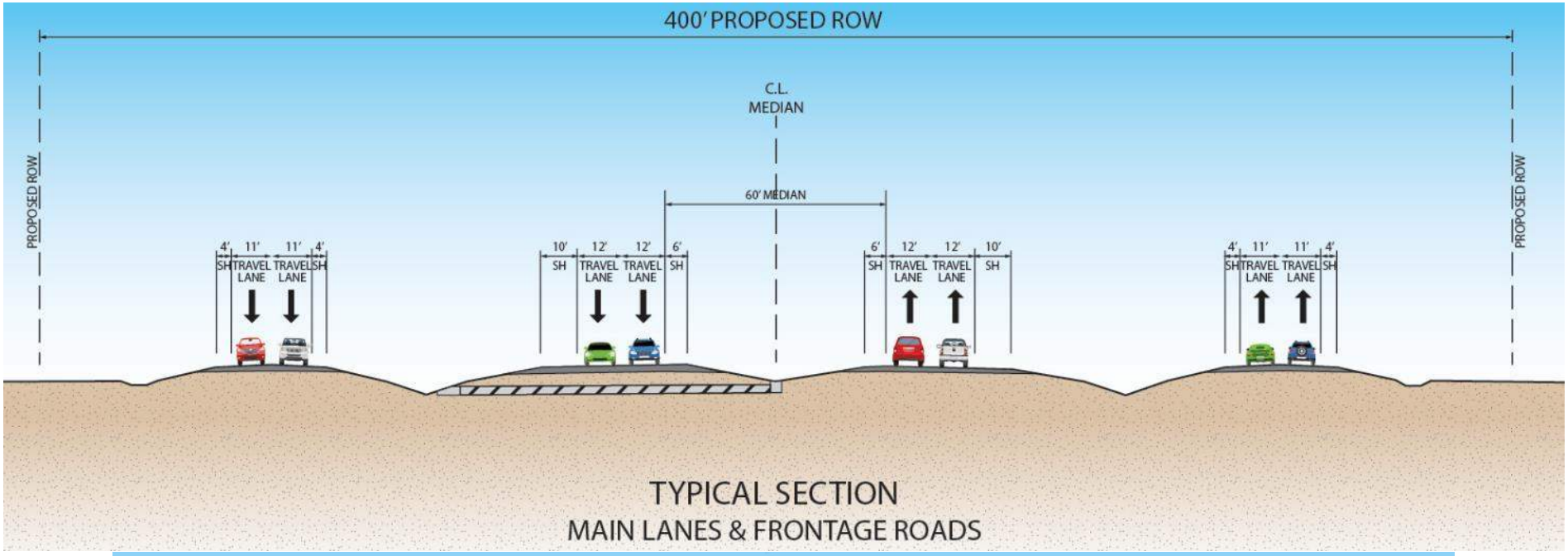
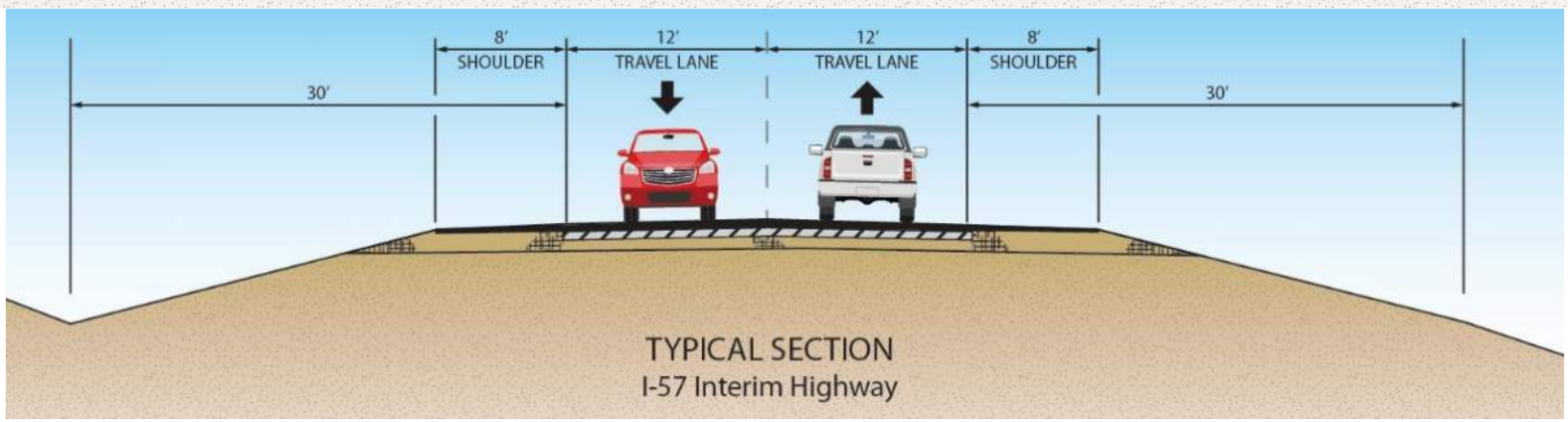


Figure 3: Typical Sections of Action Alternatives





S.6 What beneficial and adverse impacts are anticipated?

Studies were conducted to determine how the proposed project would potentially affect the natural, cultural, and social environments. Project impacts were quantified based on the anticipated ROW footprint of each action alternative, which was defined as a consistent 400-foot-wide ROW with expanded footprints at the proposed interchanges.

Construction of the proposed project would provide the following benefits:

- Provide the required interstate linkage and fill in the gap that is currently present in the National Highway System.
- Improve mobility and connectivity of the local, regional, and national transportation system.
- Provide reliable transportation infrastructure to support economic growth for the region.
- Increase the resiliency of the transportation network against extreme weather events.
- Fulfill the legislative goal to develop an interstate highway to extend I-57.

A summary of impacts is included in **Table 1**.

Table 1: Alternative Impact Comparison

Resource Category	No Action Alternative	Main Corridor Alts.		MO Connector Alts.		
		2	3	A	B	C
ENGINEERING						
Length (miles)	47.6	39.2	41.3	2.5	2.3	2.8
Required ROW (acres)	0	2,182	2,274	141	135	157
Required ROW from EJ Populations (acres)	0	631	661	2	<1	14
Landowners Impacted (#)	0	81	103	9	19	20
Landowners Impacted from EJ Populations (#)	0	34	45	4	2	10
ROW and Relocation Cost (millions)	0	17	18	1	2	1
Construction Cost (millions) [1]	0	498	496	31	37	26
Total Cost (millions) [1]	0	515	514	32	39	28
NATURAL RESOURCES						
Possible Farmed Wetland Impacts (acres) [2]	0	593.6	552.3	58.7	30.9	25.0
Total Wetland Impacts (acres) [3]	0	37.9	25.4	3.4	10.3	4.5
Stream Impacts (linear feet) [4]	0	77,963	101,736	9,299	8,803	7,667
Federally-protected Species with Habitat Impacted (#)	0	13	13	6	6	4
State-listed Species with Habitat Impacted (#) [5]	0	32	32	11	12	11
OTHER RESOURCES						
Economic Impacts [6]	(-)	(+)	(+)	(+)	(+)	(+)
Active Cropland Impacts (acres)	0	2,053	2,166	128	106	143
Active Cropland Impacts from EJ Populations (acres)	0	641	675	2	0	14
Split Farms (#)	0	71	80	5	4	8
Split Farms from EJ Populations (#)	0	22	28	1	1	2
Irrigation Wells Impacted (#)	0	29	28	3	3	4
Residential and Business Relocations (#) [7]	0	5	12	3	14	2

Resource Category	No Action Alternative	Main Corridor Alts.		MO Connector Alts.		
		2	3	A	B	C
Relocations from EJ Populations (#) [7]	0	0	0	0	0	1
Major Pipeline Crossings (# >24" diameter) [8]	0	5	1	0	0	0
Section 4(f) Resources Impacted (#) [9]	0	0	0	0	0	0
NRHP Sites Impacted (#) [10]	0	9	1	0	0	0
Public Water Assessment Areas Impacted (acres)	0	549	68	0	0	0
Floodplains Present (acres)	0	423.1	117.5	76.2	67.2	66.5
Flood Protection Levees (#)	0	1	2	0	0	0

EJ – Environmental Justice. [1] Costs are based on conceptual design with 25% contingency; utilities other than gas transmission lines greater than 24" in diameter are not included. [2] This is an estimate since USDA records are not releasable unless permission from landowner is granted. [3] Includes pond or open water, emergent, scrub-shrub, and forested wetlands. [4] Includes all ephemeral, intermittent, and perennial watercourses, some of which may not be jurisdictional features; many of these features also function as agricultural drains for adjacent fields. [5] Excludes federally-listed species. [6] Economic impacts are rated as (+) for positive and (-) for no impacts. [7] Includes residential owners, residential tenants/landlord businesses, businesses, and farm operations. [8] Pipelines with unknown diameters were assumed to be >24" in diameter. [9] Sites currently known/identified at this time that may be impacted; any NRHP-eligible archeological sites identified by the Phase I Archeological Survey would be added. [10] Number of National Register of Historic Places (NRHP) sites or sites with undetermined eligibility currently known/identified at this time that may be impacted. *Source: Project Team, 2021*

S.7 What other federal actions and permits would be required?

The following actions must occur in order to implement this project:

- The issuance of a Section 404 permit by the USACE for the placement of dredged and fill material in waters of the United States as required by Section 404 of the Clean Water Act (CWA).
- For work in or over the Black River, a Section 10 permit (USACE) will be required.
- For impacts to existing levees, which are Federally authorized civil works projects, a Section 408 review by USACE will be required.
- The issuance of a Section 401 Water Quality Certification by the Arkansas DEQ, as required by the CWA.
- The issuance of a National Pollutant Discharge Elimination System (NPDES) Permit by the Arkansas DEQ as required by Section 402 of the CWA.
- Completion of the Section 106 process for consideration of historic properties in conjunction with the AHPP and the Advisory Council on Historic Preservation.
- Completion of the Section 7 process for consideration of effects to T&E species in conjunction with the USFWS.

S.8 Are there any other major federal actions proposed in the area?

Based on the 2021-2024 Statewide Transportation Improvement Plan (STIP), new transportation infrastructure projects have been proposed within Clay, Greene, Lawrence, and Randolph Counties. However, all are intersection improvement projects, structure (bridges and grade separations, etc.) projects, or minor roadway widening projects that would not be considered major federal actions. During coordination with local city planners and stakeholders, some individual developments were noted; however, no large-scale major developments were identified.

S.9 What is the Preferred Alternative?

The Preferred Alternative is Alternative 2 for the Main Corridor and Alternative C for the Missouri Connector.

While Alternative 3 adequately addresses the purpose and need, Alternative 2 was identified as the Preferred Alternative for the following reasons:

- The cities of Corning, Biggers, Reyno and Walnut Ridge along with the Northeast Intermodal Authority provided a resolution that Alternative 2 would be more beneficial to existing developed areas for more growth potential whereas Alternative 3 could slow that development and move future development to areas to the east and away from the growth in Randolph County.
- Public preference identified Alternative 2 as the preferred alternative.
- Alternative 2 would provide better access to Pocahontas and Randolph County as well as other communities and businesses along the existing Hwy. 67 corridor than Alternative 3.
- In case of natural or manmade closures, Alternative 2 provides a closer alternative route to existing Hwy. 67 than Alternative 3.
- Alternative 2 would provide easier access to the College City Airport and to the Pocahontas Municipal Airport than Alternative 3.
- Alternative 2 would impact substantially fewer landowners and require less ROW than Alternative 3.
- Alternative 2 would impact substantially less active cropland, split fewer farms, and affect fewer farm owners.
- Alternative 2 would impact fewer linear feet (LF) of ditches or streams that appear to support agricultural fields.
- Alternative 2 would require fewer impacts to flood protection levees than Alternative 3.
- Compared to Alternative 3, Alternative 2 would require substantially fewer impacts to streams in terms of both the number of crossing and LF impacted.
- Alternative 2 would sever fewer wildlife travel corridors than Alternative 3.
- Alternative 2 would impact fewer structures that provide potentially suitable nesting habitat for migratory birds.
- Alternative 2 would impact fewer acres of forested riparian zone than Alternative 3.
- Alternative 2 would result in fewer noise impacts than Alternative 3.

While Alternatives A and B adequately address the purpose and need, Alternative C was identified as the Preferred Alternative for the Missouri Connector for the following reasons:

- Unlike Alternative A, Alternative C would avoid the need for a Hwy. 67 overpass by staying on the east side of existing Hwy. 67. Additionally, unlike Alternative B, Alternative C would avoid substantial ROW acquisition of existing homes and businesses along Hwy. 67.
- Alternative C would require the fewest residential and business relocations, though it does require one relocation within an Environmental Justice community.
- Alternative C would impact less farmed wetlands.
- Alternative C would impact the least LF of streams and the least LF of ditches or streams that appear to support agricultural fields.
- Alternative C would require the fewest impacts to floodplains.
- Alternative C would result in wetland impacts comparable to Alternative A and substantially fewer than Alternative B.
- Alternative C would impact fewer state-listed species compared to Alternative B, would impact the same number of state-listed species compared to Alternative A, and would impact the fewest number of federally-listed species compared to Alternatives A and B.
- Unlike Alternatives A and B, Alternative C would not sever any wildlife travel corridors.
- Alternative C would have the lowest construction cost and lowest total cost.

Thus, Alternatives 2 and C form the Preferred Alternative, which best meets the purpose and need of the project while minimizing impacts to the natural, cultural, and social environments to the extent possible. The Preferred Alternative fills in the gap that is currently present in the National Highway System and provides reliable and resilient transportation infrastructure to support economic growth for the region. All sections of future I-57 in Arkansas and Missouri will be completed to interstate standards before FHWA would request the facility be formally designated I-57.

S.10 Where is additional information available and what are the ways to comment on the DEIS?

This Summary was derived from information in the DEIS, which is a compilation of extensive scientific and engineering information required for compliance with federal and state rules and regulations. The DEIS provides a comparative analysis between the No Action Alternative and the action alternatives so that interested citizens, elected officials, government agencies, businesses, and other stakeholders can assess the potential social, cultural, and natural environmental effects of the Study. The DEIS is supported by 14 appendices that are included with the document.

FHWA and ARDOT invite interested individuals and entities to provide comments on the DEIS. The DEIS and appendices can be viewed and downloaded from the project website at: https://future57.transportationplanroom.com/ or at http://www.arkansashighways.com/.

The public comment period will extend 45 days after the DEIS is distributed for public review. FHWA will review all comments and consider and respond to all substantive comments received within the 45-day period. An in-person public hearing will occur at least 30 days after the Notice of Availability. Personally identifiable information provided by individuals submitting public comments may be published. Refer to https://future57.transportationplanroom.com/ for the latest information on the public hearing date and location.

Copies of the DEIS have been placed at the Randolph County, Lawrence County, Greene County, and Corning Public Libraries. The following contact information can also be used to request copies of the DEIS:

Mail: Garver
Attn: Jon Hetzel
4701 Northshore Drive
North Little Rock, AR 72118

Telephone: (501) 823-0730

E-mail: PublicInvolvement@GarverUSA.com

S.11 What are the next steps in the NEPA process?

A public hearing will be held to present the findings of the DEIS to the public and other stakeholders. After a review of comments received during the public hearing, a Final Environmental Impact Statement (FEIS) and Record of Decision (ROD) document will be prepared and submitted to FHWA, documenting the final environmental clearances and impacts associated with the Preferred Alternative. The FHWA will issue a single document that consists of the FEIS and ROD pursuant to 49 U.S.C. 304a(b) [and 23 U.S.C. 139(n)(2)] unless the FHWA determines that statutory criteria or practicability considerations preclude issuance of such a combined document. If FHWA issues the FEIS/ROD, it would identify the Selected Alternative and conclude the NEPA process.

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Chapter 1 – Purpose and Need

1.1 What is meant by a project's purpose and need?

A project's **need** is a detailed explanation of the specific problems or deficiencies that exist or that are expected to exist in the future. A project's **purpose** defines the goals and objectives that should be included as part of a successful solution to the problem. The purpose and need are the foundation for all project studies and are used to identify the range of alternatives (solutions to the transportation problem) for the project.

The purpose and need statement is a living document until the DEIS is approved and can be changed or modified as needed as new information is gathered. The local officials, public agencies, the public, and other stakeholders will have an opportunity to provide comments on the purpose and need throughout the NEPA process.

This chapter describes the social and environmental conditions in the study area, why transportation improvements are needed, and the purpose of this project.

1.2 What are the project's logical termini and study area limits?

Logical Termini

Logical termini identify rational end points for a transportation improvement project. The logical termini for the proposed project are the Hwy. 67/Hwy. 412 interchange at Walnut Ridge, Arkansas, and Hwy. 67 at the Arkansas-Missouri State line. The distance between the logical termini for this project is approximately 40 miles (see **Figure 4**).

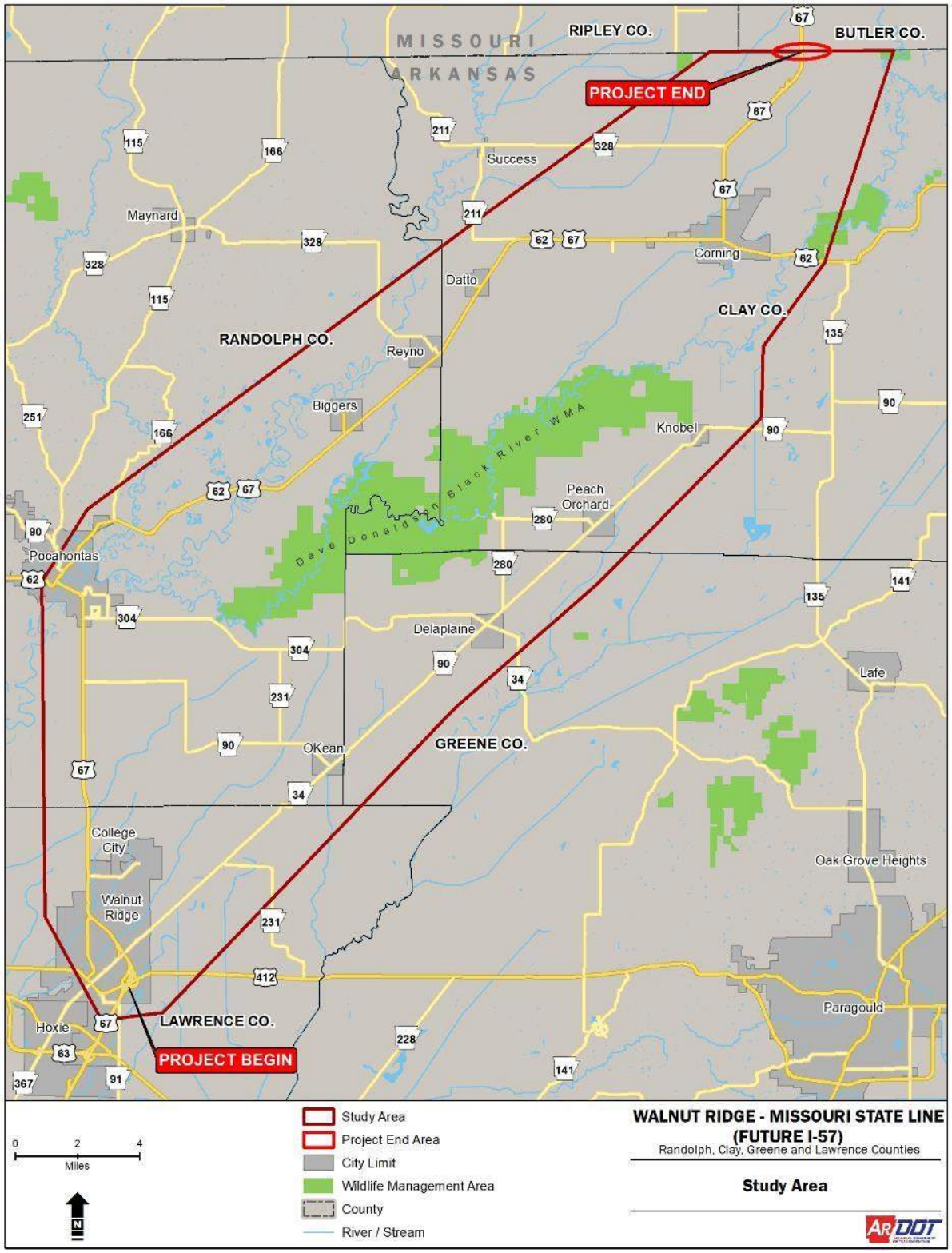
The southern terminus was selected because Hwy. 67 has been constructed to fully-controlled access standards (also referred to as Interstate Standards) from Interstate 40 (I-40) in North Little Rock, Arkansas to the Hwy. 67/Hwy. 412 interchange in Walnut Ridge, Arkansas.

A **fully-controlled access highway** is one where vehicles can only enter or exit the roadway via ramps at interchanges. These facilities are designed for higher speeds with a preference to through traffic. This type of facility is also referred to as an ***interstate highway or freeway.***

The northern terminus, Hwy. 67 at the Arkansas-Missouri State line, was selected because it ties back into the existing Hwy. 67, as an interim condition, while still allowing future coordination between ARDOT and MoDOT for the final alignment from the Arkansas-Missouri State line to County Road 272 in Missouri (approximately two miles). Additionally, County Road 278, which runs along the Arkansas-Missouri State line, could adequately handle the additional traffic that would be routed along it during the interim condition. Refer to Section 2.3 for additional details on the interim connector. A MOU was signed by ARDOT and MoDOT in 1998 for the two states to cooperate on the location of Hwy. 67 (future I-57) at the state line. Below is additional background on the coordination between MoDOT and ARDOT regarding the connection point at the Arkansas-Missouri State line.

In 2005, MoDOT completed a Final Environmental Impact Statement (FEIS) for the Hwy. 67 improvements from just south of St. Louis, Missouri to just south of Neelyville, Missouri, approximately two miles north of the Arkansas-Missouri State line. That FEIS was re-evaluated in January 2021 for the approximately 9.7-mile-long section of Hwy. 67 from south of Poplar Bluff to two miles north of the Arkansas-Missouri State line, with the intent of extending I-57 through southeast Missouri and into Arkansas. Of that approximately 9.7-mile-long section, construction is funded for completion in 2022 and 2023 for the northern-most 4.4 miles (Jobs 9P3663, 9P3764, and 9P3751), and for 100% design to County Road 272 south of Neelyville. The remaining approximately 2-mile-long gap between County Road 272 and the Arkansas-Missouri State line is in the Missouri STIP (Job 9P3661) and has NEPA funding with final studies anticipated in late 2022 or early 2023. The southern terminus of the MoDOT study, just south of Neelyville, was identified because it avoids forcing a specific northern terminus for ARDOT's portion of future I-57. As documented in their February 2022 letter (located in Appendix D) providing concurrence for the project, MoDOT stated that they are currently moving forward with preliminary screening of the 2-mile-long gap to the state line and will further their environmental screening upon final approval of the completed EIS for this project.

Figure 4: Study Area



The logical termini, as described above, provide rational end points for this project, provide enough length for a comprehensive review of the project's needs and environmental impacts, and would not preclude staged construction of independent sections as funding becomes available.

Study Area

The study area was developed based on the 2015 Highway 67 Improvement Study completed by ARDOT that examined several new location corridors that met the needs identified in the study while minimizing impacts to the natural and social environments (see Executive Summary in **Appendix B**). The study area includes the previously defined logical termini and extends from Walnut Ridge, Arkansas to the Missouri State line within Clay, Greene, Lawrence, and Randolph counties in northeast Arkansas. The study area is approximately 43 miles in length and 10 miles wide at its broadest point (see **Figure 4**).

1.3 What are the socioeconomic characteristics of the study area?

Population, Demographics, and Education

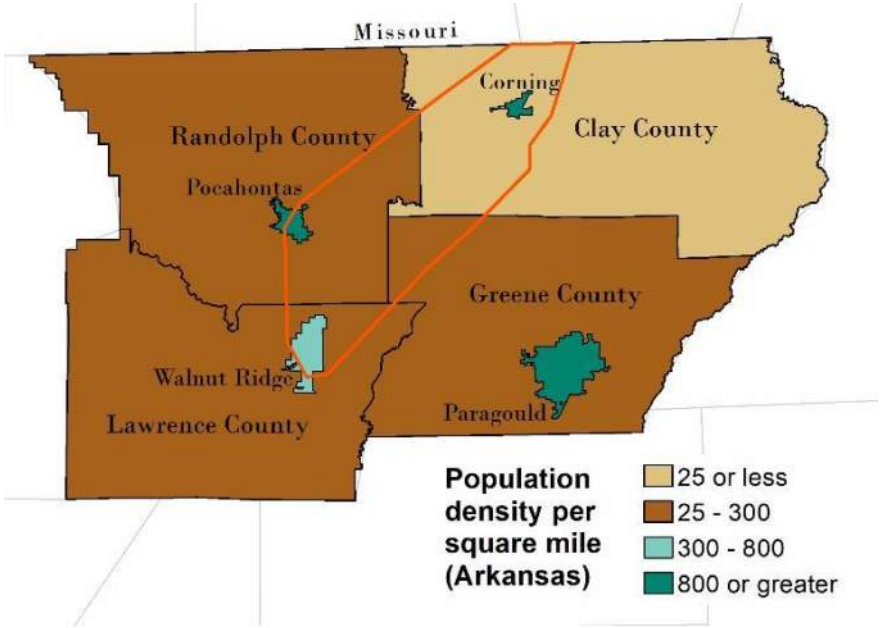
The study area includes the larger cities of Walnut Ridge, Pocahontas, and Corning. Population estimates for the study area's four counties and selected municipalities are presented in **Table 2**. The study area is generally rural with population densities ranging between 25 and 300 people per square mile (**Figure 5**).

Table 2: Population Estimates (2017)

County	County Population	City (within County)	City Population
Clay	15,202	Corning	3,205
Greene	43,745	Paragould	27,815
Lawrence	16,915	Walnut Ridge	5,146
Randolph	17,584	Pocahontas	6,459

Source: U.S. Census Bureau, American Community Survey (ACS) 2013-2017, Table B01003 – Total Population.

Figure 5: Population Density



Source: U.S. Census Bureau, ACS 2012-2016. Processed by Demographic Research, Arkansas Economic Development Institute, College of Business Administration, UALR

Most of the population in the study area is white with no less than 95% whites for any of the four study area counties (see **Table 3**). Hispanics and Latinos make up 2.1% of the population and Black individuals make up 0.8% of the population for each of the study area counties combined. The median age for all counties is older than the state average of 37.7, with the oldest median age being in Clay County at 44.0 years. As shown in **Table 4**, of those over the age of 25, with the exception of Greene County (4.7%), the counties and larger cities in the study area all have a higher percentage of people with less than a 9th grade education than the state average (5.4%). Additionally, all of the counties and larger cities in the study area have fewer people with a four-year degree than the state average (see **Table 4**).

Table 3: Demographic Data

Geography	Total Population	Median Age	White alone	Black or African American alone	Hispanic or Latino (of any race)
CITY					
Corning	3,177	46.9	3,107 (97.8%)	0 (0.0%)	70 (2.2%)
Paragould	27,521	36.1	26,170 (95.1%)	359 (1.3%)	858 (3.1%)
Pocahontas	6,470	38.9	6,224 (96.2%)	143 (2.2%)	113 (1.7%)
Walnut Ridge	4,723	38.5	4,572 (96.8%)	57 (1.2%)	18 (0.4%)
COUNTY					
Greene	43,745	38.2	41,969 (95.9%)	411 (0.9%)	1,144 (2.6%)
Randolph	17,584	42.9	16,981 (96.6%)	184 (1.0%)	312 (1.8%)
Lawrence	16,915	41.8	16,436 (97.2%)	122 (0.7%)	209 (1.2%)
Clay	15,202	44.0	14,632 (96.3%)	76 (0.5%)	275 (1.8%)
Counties Listed Above	93,446	41.7	90,018 (96.3%)	793 (0.8%)	1,940 (2.1%)
State of Arkansas	2,968,472	37.7	2,307,136 (77.7%)	460,638 (15.5%)	207,049 (7.0%)

Source: U.S. Census Bureau, ACS 2012-2016. Processed by Demographic Research, Arkansas Economic Development Institute, College of Business Administration, UALR

Table 4: Education Data

Geography	Population 25 Years and Over	Educational Attainment (25 years and over) - Number of People (% of population over 25)		
		4-year Degree	High School Equivalent	Less than 9th Grade
CITY				
Corning	2,288	99 (4.3%)	1,109 (48.5%)	251 (11.0%)
Pocahontas	4,366	450 (10.3%)	1,588 (36.4%)	320 (7.3%)
Walnut Ridge	3,114	327 (10.5%)	1,242 (39.9%)	307 (9.9%)
COUNTY				
Greene	29,009	3,262 (11.2%)	12,468 (43.0%)	1,354 (4.7%)
Randolph	12,276	1,059 (8.6%)	4,707 (38.3%)	807 (6.6%)
Lawrence	11,438	969 (8.5%)	4,707 (41.2%)	926 (8.1%)
Clay	10,812	775 (7.2%)	4,586 (42.4%)	1,053 (9.7%)
Counties Listed Above	63,535	6,065 (9.5%)	26,468 (41.7%)	4,140 (6.5%)

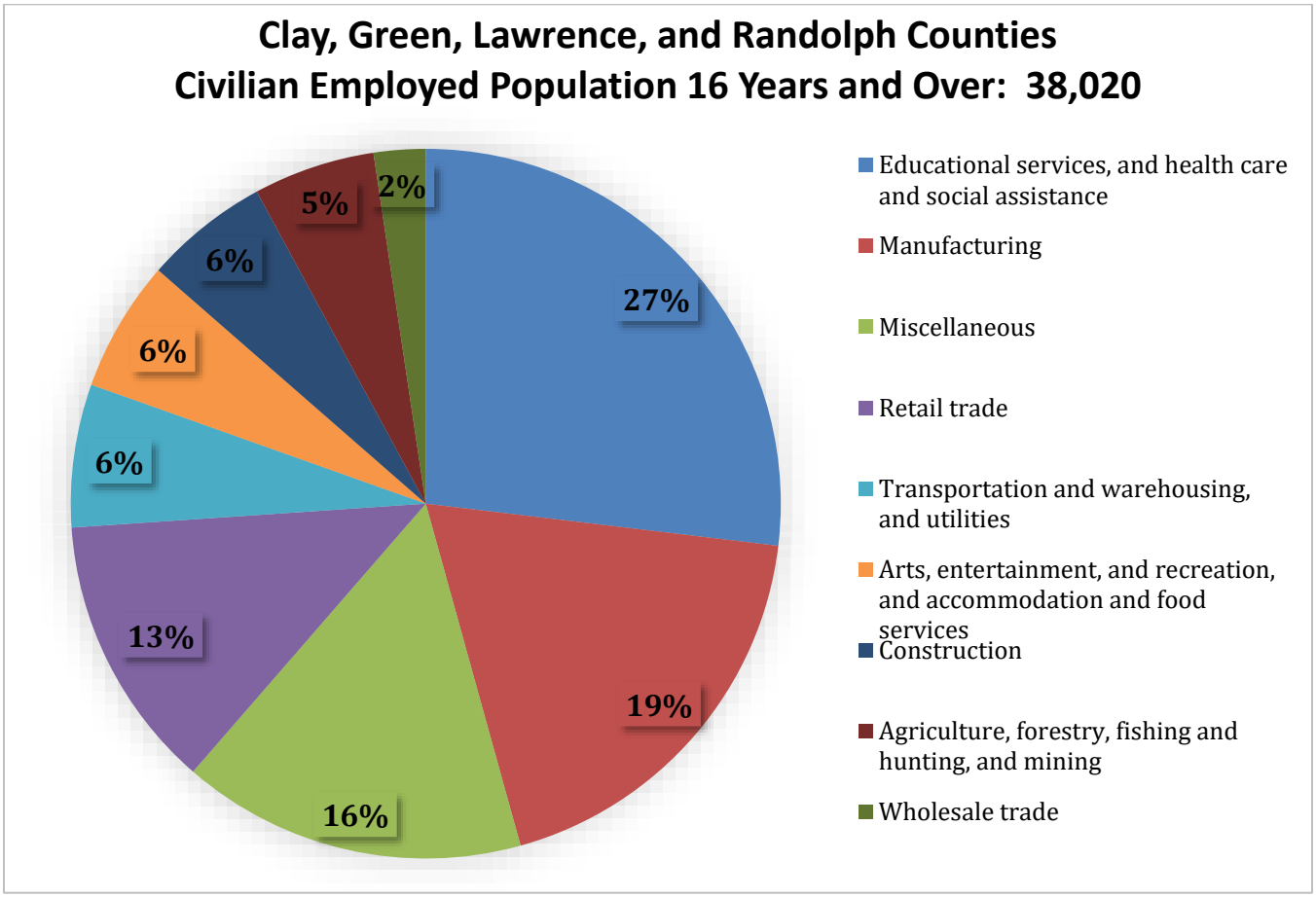
Geography	Population 25 Years and Over	Educational Attainment (25 years and over) - Number of People (% of population over 25)		
		4-year Degree	High School Equivalent	Less than 9th Grade
State of Arkansas	1,973,591	273,557 (13.9%)	683,886 (34.7%)	106,297 (5.4%)

NOTE: Percentages may not add up to 100% due to rounding. *Source: U.S. Census Bureau, ACS 2012-2016. Processed by Demographic Research, Arkansas Economic Development Institute, College of Business Administration, UALR*

Economic Information

Manufacturing, retail, educational services, healthcare, and social assistance generally employ the greatest number of residents within the study area. **Figure 6** shows the major breakout of employment for the four counties.

Figure 6: Employment for All Study Area Counties Combined



Source: U.S. Census Bureau, ACS 2012-2016. Processed by Demographic Research, Arkansas Economic Development Institute, College of Business Administration, UALR

Table 5 shows some of the important economic statistics for the study area. The City of Corning and Clay County have the lowest median household incomes, $25,608 and $32,404 respectively, and have the highest number of households living below the poverty level, 29.8% and 22.2% respectively. The unemployment rate is lowest in Corning (1.8%), well below the state average of 6.9%. The City of Pocahontas and Randolph County also have relative low unemployment rates of 3.2% and 4.1% respectively.

Table 5: Economic Data

	CITY				COUNTY				STATE
	Corning	Paragould	Pocahontas	Walnut Ridge	Greene	Randolph	Lawrence	Clay	Arkansas
Median Household Income	$25,608	$41,717	$34,248	$39,111	$49,195	$39,318	$33,381	$32,404	$42,336
Population Below Poverty	29.8%	18.6%	17.1%	19.0%	13.0%	19.6%	19.6%	22.2%	18.8%
Unemployment	1.8%	7.8%	3.2%	7.9%	8.0%	4.1%	8.2%	7.0%	6.9%

Source: U.S. Census Bureau, ACS 2012-2016. Processed by Demographic Research, Arkansas Economic Development Institute, College of Business Administration, UALR

Land Use and Environmental Features

Cultivated crops are the dominant land use in the study area with approximately 75% of the study area used as cropland. The Dave Donaldson Black River Wildlife Management Area (hereafter referred to as the Black River WMA), the Black and Current Rivers, and substantial floodplains and wetlands are the major environmental features in the study area. As shown in **Figure 4**, the Black River WMA lies directly in the middle of the study area. The Black River WMA is approximately 25,000 acres in size and supports ecologically-important bottomland hardwoods and recreational opportunities.

Northeast Arkansas Road Network

Within the study area, there are four primary highways that provide regional transportation and connect the study area to the rest of the state and beyond: Hwys. 62, 63, 412, and 67 (**Figure 7**). Hwy. 412 is the only continuous principal arterial parallel to, and north of, I-40 in Arkansas. Hwy. 412, which passes through the very southern portion of the project area is part of a strategic network of highways that support the national economy, defense, and mobility.

There is a network of other minor two-lane roadways in the eastern portion of the study area, specifically Hwys. 90, 34, 304, and 135, that pass through small communities such as O'Kean, Delaplaine, and Peach Orchard. Sections of Hwy. 34 and Hwy. 90 generally parallel the Union Pacific Railroad (UPRR) along the eastern boundary of the study area.

Regional Roadway Network

Currently, I-57 runs from Chicago, Illinois to Sikeston, Missouri, where it meets I-55 (**Figure 8**). The future I-57 corridor is designated from Sikeston, Missouri along Hwy. 60 to Poplar Bluff, Missouri and then south along the Hwy. 67 corridor to North Little Rock, Arkansas, ending at I-40 near the I-40/I-30 interchange.

Missouri has already upgraded 62 miles of the Hwy. 60/67 corridor between Sikeston and Harviell to a four-lane highway with partially-controlled access, with plans to convert it to a fully-controlled access interstate. An approved alignment for improvements to fully-controlled access from Harviell to just south of Neelyville was reevaluated in January 2021 and funding has been secured for this approximately 10-mile section (**Figure 9, red section**) with construction anticipated to begin in 2022. These surrounding improvements leave an approximately two-mile section of the future I-57 corridor just north of the Arkansas State line that does not have upgrades already approved through the NEPA process (**Figure 9, yellow section**).

A **partially-controlled access highway** is one where vehicles may enter or exit the roadway via ramps at interchanges, or at-grade at major public intersections. These types of facilities also limit the number of, or eliminate, private driveway connections.

Figure 7: Northeast Arkansas Roadway Network

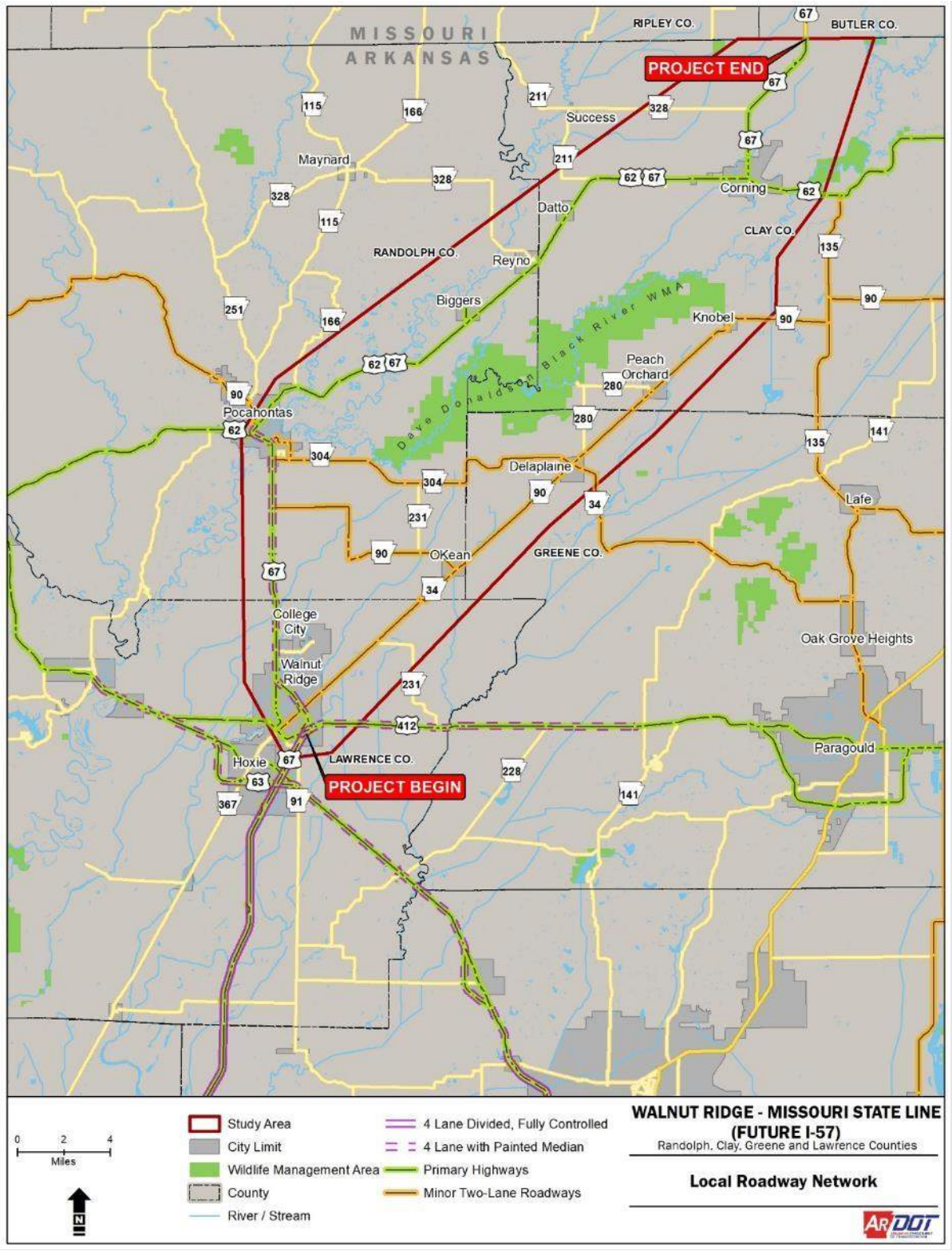
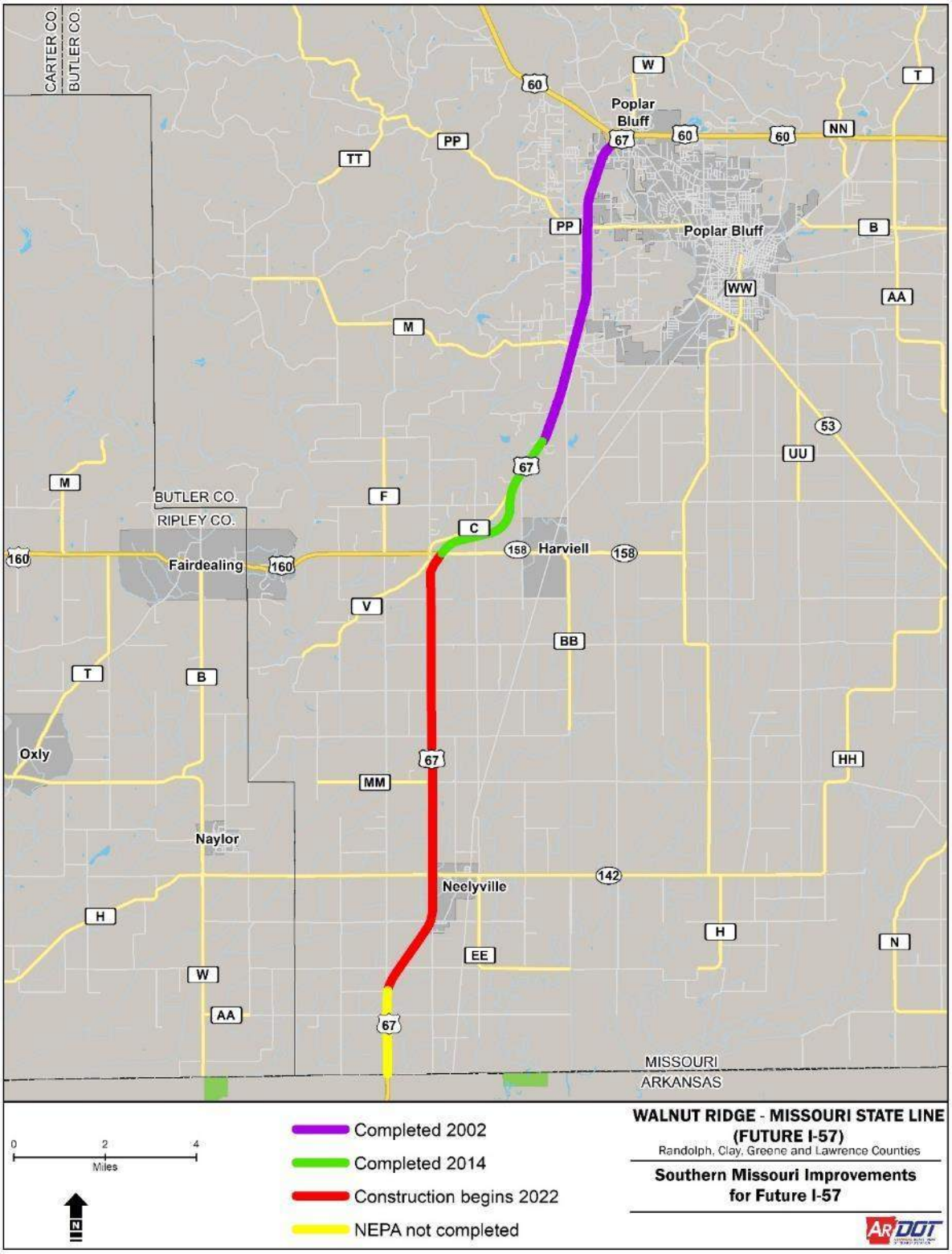


Figure 8: Regional Roadway Network

Figure 9: Southern Missouri Future I-57 Corridor



Traffic Operations

The 2015 Highway 67 Improvement Study (Executive Summary provided in **Appendix B**) found that congestion levels were acceptable with existing traffic volumes at the time and would continue to be acceptable without improvements through 2035. For this study, the 2015 and 2035 volumes developed in the previous planning study were updated to show 2019 and 2040 volumes. Annual growth rates used to calculate the 2040 No Action volumes were based on historic data for the study area. The traffic operations analysis results were similar to the 2015 study, which found that most of Hwy. 67 in the study area currently operates at acceptable levels and similar operations are expected in 2040, with exceptions occurring in Pocahontas and Corning for both 2019 and projected 2040 conditions. Accordingly, traffic congestion and crash rates are the worst in Pocahontas and Corning, both now and in 2040, due to the higher traffic volumes, signalized intersections, and higher residential and business density. Traffic volumes are provided in **Appendix C**.

1.4 What previous studies have been completed for the project area?

A list of the important actions and reports related to the Hwy. 67 corridor in Arkansas are presented below in **Table 6**.

Table 6: Summary of Project History for the Hwy. 67 Corridor

Action/Report	Date	Details
NE Ark Arterial Highway Study	1975	• Recommended that a freeway facility be studied.
Minute Order 78-186	1978	• Arkansas State Highway Commission (AHC) authorized the updating of the 1975 study.
U.S. 67 from Newport to Walnut Ridge	1988	• Update to the 1978 study. • Study led to recommendations for an improved transportation system, not just improvements to selected routes.
Walnut Ridge – Pocahontas (Hwy 67) EA	1993	• Proposed action to widen Hwy. 67 from Walnut Ridge to Pocahontas from two-lanes to a four-lane highway, transitioning into a five-lane section inside the city limits of Pocahontas.
U.S. Highway 67 FEIS, Newport – Hwy. 63	1994	• Proposed action to construct a four-lane divided highway with full control of access between Newport and Walnut Ridge/Hoxie • Purpose to improve traffic flow and address the long-term highway system improvement between Little Rock, Arkansas and St. Louis, Missouri.
U.S. 67 Corridor Study – Walnut Ridge to the Missouri State Line	1996	• Purpose of study to recommend a preferred alignment for a freeway-type facility from Walnut Ridge to the Missouri State line. • Recommended a new-location, four-lane freeway approximately 39 miles in length.
Minute Order 2012-025	2012	• AHC authorized a study to re-evaluate the long-term improvement needs for the Hwy. 67 Corridor from Walnut Ridge to the Missouri State line.
Highway 67 Improvement Study	2015	• Evaluated the long-term improvement needs for the Hwy. 67 corridor from Walnut Ridge to the Missouri State line. • Alternatives retained for further study included improving existing Hwy. 67 with bypasses at Pocahontas and Corning, a central new location route, and an eastern new location route. No Action retained as required by NEPA.
H.R. 1625-Consolidated Appropriations Act of 2018 SEC. 128, Division L	2018	• Section 1105(c)(89) of Public Law 102–240, as amended, is amended to read as follows: "*(89) I-57 Corridor Extension as follows: In Arkansas, the corridor shall follow United States Route 67 in North Little Rock, Arkansas, from I–40 to United States Route 412, then continuing generally northeast to the State line, and in Missouri, the corridor shall continue generally north from the Arkansas State line to Poplar Bluff, Missouri, and then follow United States Route 60 to I–57.*"

Source: Project Team, 2021

1.5 Why is the project needed?

System Linkage and Continuity

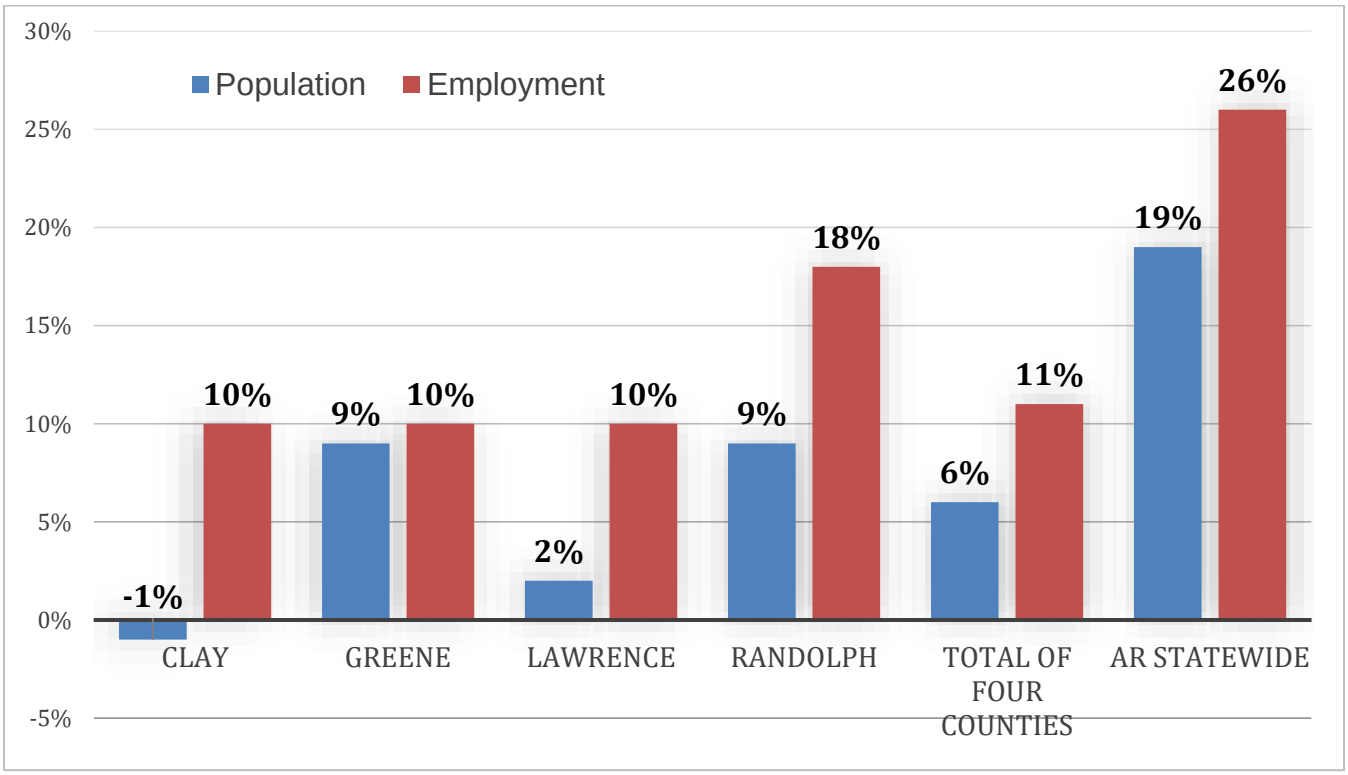
Hwy. 67 in the study area is not consistent with the transportation system in the rest of this regional corridor (**Figure 8**). South of the study area, Hwy. 67 is a fully-controlled access facility from I-40 in North Little Rock to Walnut Ridge. North of the study area, Hwy. 67 and Hwy. 60 are either built or planned to be built to a four-lane interstate-type facility from north of the Missouri State line to Sikeston, Missouri. From Sikeston, existing I-57 heads north as a four-lane, fully-controlled access facility through Missouri and Illinois until it ends in Chicago, Illinois.

There is currently no direct interstate connection between I-55 at Sikeston, Missouri and I-40 and I-30 in North Little Rock, Arkansas. The current route on Hwys. 67 and 60 do not currently function as an efficient freight alternative to I-40 and I-55.

Economic Development

The projected population growth between 2020 and 2040 is approximately 6% for the four study area counties as compared to 19% for rest of the state (**Figure 10**). Employment growth is projected to average 11% for the four study area counties as compared to the state's 26% growth (**Figure 10**). The median age of people in these counties is older than the state average and trending higher. Most of the study area has higher poverty levels than the statewide average. These demographic characteristics are typically correlated with reduced economic opportunities and fewer jobs creating an environment where younger people move away to find more employment opportunities and a higher standard of living (Applied Population Lab, 2021).

Figure 10: Population and Employment, Percent Growth (2020 to 2040)



Sources: https://arstatedatacenter.youraedi.com/past-census-data/ and https://arstatedatacenter.youraedi.com/demores/demoscripts/subcountyestimates2019.php

According to U.S. Department of Transportation (USDOT) studies (Keane, 1996), a region's industrial and employment base is closely tied to the quality of the transportation system. The importance of interstate highways to increased economic opportunities is shown to be greater when new highways are located in an area where there are currently no or limited high-quality transportation facilities. There are no interstates or other fully-controlled access highways, and there are no partially-controlled access routes to the Missouri State line within the project area.

As discussed by FHWA (1996), while there are many factors impacting economic activities in a region, interstate highways are economically important because dependable transportation systems allow businesses to receive inputs to production facilities and to transport finished goods to market in an efficient manner. An efficient transportation system allows companies to lower transportation costs, which lowers production costs and enhances productivity and profits. There is a direct ripple effect of an economic activity as one industry sector supports demand for production in other industry sectors throughout the economy due to supply chain spending and spending by workers.

There are direct and indirect effects on the local and regional economy from the transportation investment itself. The spending to construct a project of this magnitude represents a considerable investment over the time period of construction. This spending has a direct effect on the local and regional economy through job creation and through the indirect supply chain effects stemming from the purchases of goods and services and additional business to business spending that is part of the initial investment. Additional induced effects include the direct and indirect purchases by construction related workers of local goods and services.

Climate Resiliency

Climate resiliency can be defined for transportation infrastructure as engineering practices and adaptive solutions that address project-specific vulnerabilities to climate change impacts and extreme weather events.

The FHWA Order 5520 establishes FHWA policy on preparedness and resilience to climate change and extreme weather events. It encourages state departments of transportation to implement and evaluate risk-based and cost-effective strategies to minimize extreme weather risks and protect critical infrastructure using the best available science, technology, and information.

In recent years, a higher percentage of precipitation in the U.S. has come in the form of intense single-day events (U.S. EPA, 2021). The prevalence of extreme single-day precipitation events remained fairly steady between 1910 and the 1980s but has risen substantially since. Nationwide, nine of the top 10 years for extreme one-day precipitation events have occurred since 1990. The occurrence of abnormally high annual precipitation totals (as defined by the National Oceanic and Atmospheric Administration; NOAA) has also increased. Increases and decreases in frequency and magnitude of river flood events generally coincide with increases and decreases in the frequency of heavy rainfall events (http://nca2014.globalchange.gov). This trend is expected to continue.

Over the past 12 years, the Hwy. 67 corridor has experienced several major flood events causing highway disruption (**Figure 11**). Based on NOAA data, the first major flood event occurred along the Black River in 2008, submerging portions of Hwy. 67 in Pocahontas. In 2011, Hwy. 67 from Pocahontas to Walnut Ridge was shut down for more than a week due to flooding. From south of Pocahontas to Corning, Hwy. 67 was closed for several days due to high water in May 2017. Additional minor flood events impacting the Hwy. 67 corridor have occurred most frequently between Pocahontas and Corning.

Figure 11: Hwy. 67 south of Pocahontas in Randolph County in 2017.

While the section of Hwy. 67 within the study area flooded on rare occasions prior to the first

major flood in 2008, the rate of highway inundation and the extent of flooding has increased. The roadway was not designed or built at an elevation to withstand the more frequent and severe flood events in recent decades. The closure of Hwy. 67 due to extreme weather events prevents commerce from moving throughout the region, keeps locals from accessing their jobs and local commerce, inhibits emergency vehicle access between the rural communities and the medical centers in the cities, and eliminates evacuation routes for lower-lying areas.

Congressional Designation

Recent federal legislation designated the existing Hwy. 67 corridor as the future I-57 corridor. The Consolidated Appropriations Act of 2018 states: "*I-57 Corridor Extension as follows: In Arkansas, the corridor shall follow United States Route 67 in North Little Rock, Arkansas, from I-40 to United States Route 412, then continuing generally northeast to the State line, and in Missouri, the corridor shall continue generally north from the Arkansas State line to Poplar Bluff, Missouri, and then follow United States Route 60 to I-57*".

1.6 What is the purpose of the project?

The purpose of the project is to enhance connectivity and continuity of the National Highway System, provide a roadway more resilient to extreme weather events, and create increased opportunity for economic development in northeast Arkansas and southeast Missouri.

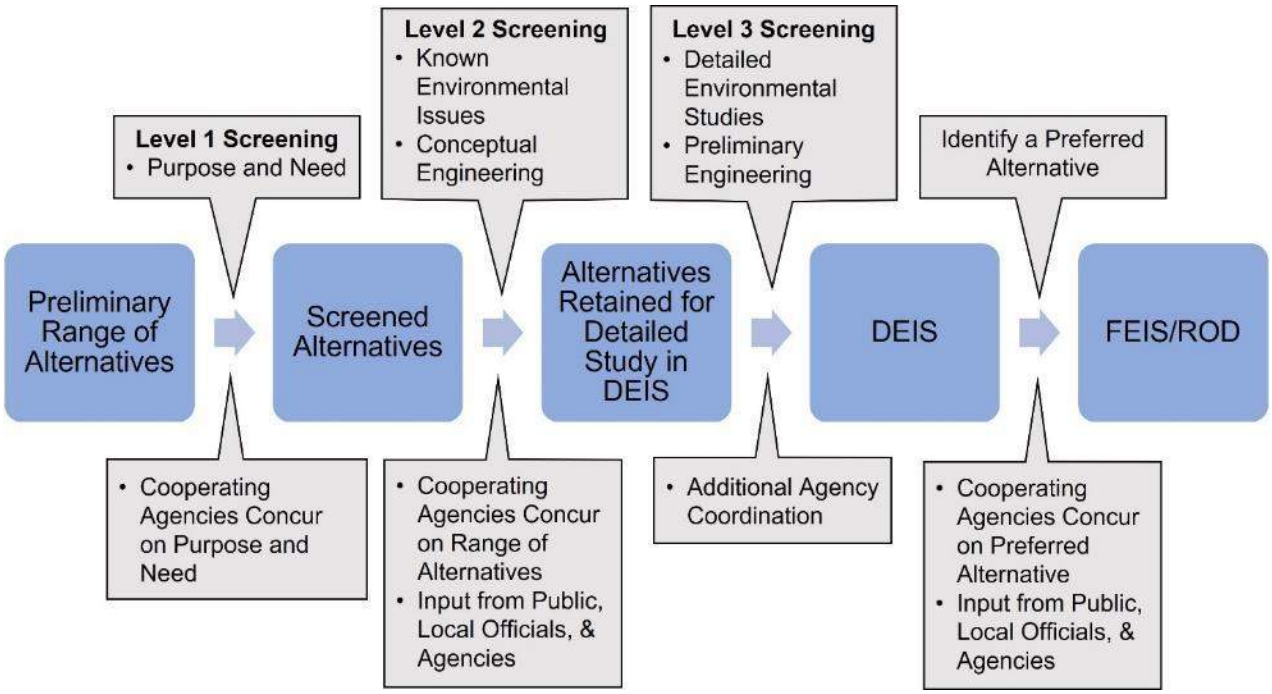
Chapter 2 – Alternatives

2.1 How were the alternatives developed?

Preparation of an Environmental Impact Statement (EIS) under NEPA involves the identification of reasonable alternatives to address a proposed action. A reasonable range of alternatives are those that meet the study's purpose and need (Chapter 1 – Purpose and Need) and are practical or feasible from a technical and economic standpoint using common sense (Council on Environmental Quality [CEQ], 40 questions, response to question 2a). The preliminary range of alternatives presented in this DEIS were developed with consideration of all previous studies including the 2015 Highway 67 Improvement Study (ARDOT, 2015). The Executive Summary of the 2015 study is provided in **Appendix B**.

For NEPA studies, the alternatives are evaluated foremost on their ability to address the project purpose and need, and then on how well they meet other goals such as minimizing negative impacts to the social and natural environment, their constructability, and cost. This study utilized a multi-level screening process as described below (**Figure 12**). The intent of the screening levels is to narrow the initial range of alternatives down to a smaller set of alternatives to be studied at the greatest level of detail. Accordingly, the level of information gathered is more detailed as the screening process reduces the range of alternatives.

Figure 12: Multi-Level Alternative Screening Process



The screening process satisfies the requirements of 40 Code of Federal Regulations (CFR) 1502.14 (a) that states: "*Evaluate reasonable alternatives to the proposed action, and, for alternatives that the agency eliminated from detailed study, briefly discuss the reasons for their elimination.*" The first two screening levels reduce the range of alternative to those that are studied in detail in this DEIS. The screening criteria for each level are described below.

Level 1 screening uses conceptual alternatives, broad concepts, and qualitative analysis based solely on the purpose and need. The evaluation may be based on the suitability of technology and mode, rather than location and design; impacts to the social and natural environment are not applied at this stage.

Level 2 screening further evaluates Level 1 alternatives carried forward and includes a greater depth of analysis for purpose and need elements including both natural and social resources. Level 2 screening incorporates preliminary qualitative and quantitative data for environmental resources as well as conceptual engineering, costs, and constructability.

Level 3 screening focuses on the refinement of alternatives remaining after Level 2 screening. These are the alternatives that are carried forward and evaluated in detail in Chapter 3 of this document. This is where the greatest effort and time is spent conducting additional research and detailed field studies such as cultural resource surveys, field delineation of wetlands, protected species surveys, noise studies, etc. Additionally, there is a closer look at interchange configurations, traffic patterns, bridges, etc. during the Level 3 screening.

2.2 What is the project history regarding alternative development?

Federal regulations allow and encourage planning-level analysis and decisions to inform the NEPA process (23 U.S. Code §168). Using previously collected information leads to more efficient use of resources, reduces cost, and ultimately improves the NEPA process. A corridor-level planning study can be used to support the development of the purpose and need, preliminary screening of alternatives, elimination of unreasonable alternatives, and other planning level decisions. For the results of a planning-study decision or analysis to be used in NEPA (such as elimination of alternatives), a federal agency must consider at the minimum: 1) did the planning study involve state, local, tribal, and federal agencies; 2) was there public review and a reasonable opportunity to comment; and 3) did the study document relevant decisions in a form that can be referenced in the NEPA document.

ARDOT began improving the Hwy. 67 corridor to a four-lane fully-controlled access facility in the 1960s, beginning in North Little Rock. The first planning study for the current project area was the U.S. 67 Corridor Study – Walnut Ridge to Missouri State Line (minute Order 96-042) that was completed by ARDOT in 1996. That study evaluated six major corridors and 24 individual alignments and recommended a four-lane fully-controlled access highway on new location. Funding for the project was not identified and the recommendations of this study were shelved for many years.

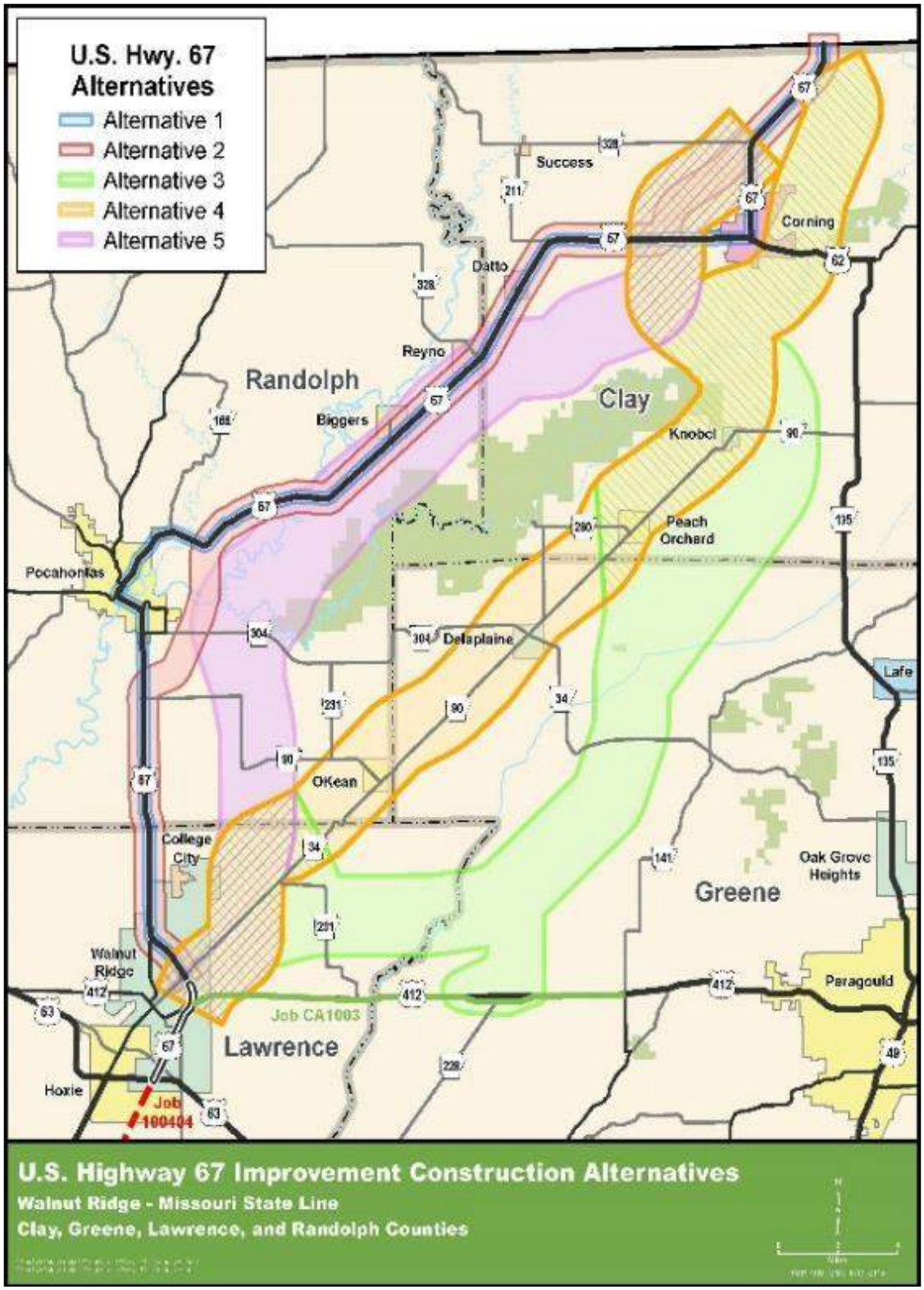
In 2015, a new planning study was completed for the project area (the Executive Summary of the 2015 study is provided in **Appendix B**). With almost 20 years spanning between the two studies, there were changes in both the study area conditions as well as planning study guidance and requirements. An important difference between the 1996 and 2015 study was that in the 2015 study, non-interstate alternatives were considered to keep the proposed improvements in conformity with MoDOT's transportation improvement plans at that time, which did not require an upgrade to interstate standards for the Hwy. 67 corridor.

The 2015 study considered engineering improvements and environmental concerns and included agency and public input. The study evaluated five alternative corridors and the no build alternative (**Figure 13**). The study documented the reason why each alternative was or was not recommended to be carried forward into any future NEPA studies. Alternatives 2, 4 and 5 shown on **Figure 13** were recommended to be carried forward.

When the current NEPA study began, the results of the 2015 study were reviewed with consideration of any new information or changes in the project area that might affect previous decisions. These reviews included updates to environmental data, census data, and traffic data. It was determined by FHWA and ARDOT that the current conditions were very similar to those during the 2015 study and that the recommendations were still valid.

A notable change was legislation in 2017 that designated the Hwy. 67 corridor in Arkansas as future I-57, so non-interstate alternatives would no longer meet the project's purpose and need.

Figure 13: Alternatives Evaluated in 2015 Study



Coordination with MoDOT on the location of the project termini at the Arkansas-Missouri State line was ongoing throughout the project development. As noted in Chapter 1, there is an MOU between the two states regarding the development of the Hwy. 67 alternatives. MoDOT is not only an official cooperating agency with elevated review responsibilities, but also a critical partner in developing the most beneficial border crossing location for both states. With flexibility in the border location in mind, three separate alternative corridors were developed and labeled as Missouri Connector Alternatives. Separating these Missouri connectors from the Main Corridor Alternatives gives the flexibility to combine any Future I-57 Alternative with any one of the three connectors.

2.3 What is the preliminary range of alternatives?

Several types of project alternatives were considered in order to meet the future transportation needs of the Hwy. 67 corridor. Specifically, the following alternatives were evaluated:

- No Action
- TSM
- ITS
- Mass Transit
- Improve Existing Hwy. 67 Alignment
- New Location Highway Alignment

No Action
As required in 40 CFR §1502.14(c), this project's range of alternatives includes the No Action Alternative. The No Action Alternative assumes that activities and projects such as roadway improvements or maintenance initiated under existing legislation and regulations would continue. Consequently, projected impacts of the planned ongoing programs would be compared in the EIS to those impacts projected for the proposed plan. Even though the No Action Alternative does not meet the purpose and need of the project it is retained as a baseline for comparison against action alternative impacts.

TSM
TSM uses techniques and strategies to optimize safety and efficiency of transportation systems to improve reliability, increase capacity, and reduce travel delays. Examples of TSM are dedicated lanes for vehicles carrying multiple people – called high occupancy lanes; or use of reversible lanes to adjust for morning and evening travel patterns or during major events like evacuations. These techniques are typically used in urban areas with populations greater than 200,000.

ITS
ITS refers to information and communication technology and includes varied technologies such as adjusting traffic signal timing to better manage traffic congestion, using electronic signs to help travelers be aware of traffic conditions, and real time video and camera control to manage traffic signals or other operations to improve traffic flow. These techniques are also most commonly used in high population urban areas.

Mass Transit
Modes of mass transit include, but are not limited to, buses, trolleys, trains, trams, high speed rail, intercity rail, airlines, and ferries.

Improve Existing Hwy. 67 Alignment
This alternative would involve reconstructing, to interstate standards, the existing Hwy. 67 roadway in the project area with bypasses around both Pocahontas and Corning.

New Location Highway Alternative
This alternative would involve constructing an interstate highway on a new location between Walnut Ridge and the Missouri State line.

Level 1 Analysis

This initial evaluation considers a broad range of possible alternatives or solutions to address the purpose and need of the project as described in Chapter 1. Those five elements are system linkage, mobility, resilience, economic benefit, and legislation. For an alternative to pass these initial screening criteria the threshold was set to meet at least three of the five purpose and need elements. It is a pass/fail evaluation with a "yes" or "no" approach to indicate either the alternative does or does not address the purpose and need.

Level 1 Analysis Results

The results of the Level 1 screening analysis are summarized below and **Table 7** presents the pass/fail for each alternative.

No Action Alternative

The No Action Alternative does not meet any element of the purpose and need of the project but is retained as a baseline for comparison against the action alternatives.

TSM

Transportation Systems Management was determined to be impractical due to the rural setting of the project corridor and not addressing any element of the purpose and need if implemented on the Hwy. 67 corridor or other highways in the project area.

ITS

Intelligent Transportation Systems technologies primarily help to alleviate heavy congestion in urbanized areas with high population densities. Although traffic signalization is utilized in Pocahontas and Corning to help reduce congestion and improve safety within those specific communities, ITS does not address any element of the purpose and need.

Mass Transit

Existing mass transit options for the project area includes AMTRAK and Greyhound Bus terminals in Walnut Ridge. As this area is generally rural and there is not a defined point to point transportation need, additional mass transit facilities are not needed and none of the modes address any element of the project purpose and need.

Upgrading the Existing Highway to Interstate Standards

This alternative would address the principal elements of the purpose and need.

New Location Highway with Full Control of Access

This alternative would address the principal elements of the purpose and need.

Table 7: Level 1 Screening Results

Evaluation Criteria	Alternative					
	No Action	TSM	ITS	Mass Transit*	Upgrade Existing Hwy.	New Location Hwy.
System Linkage	No	No	No	No	Yes	Yes
Mobility	No	No	No	No	Yes	Yes
Resilience	No	No	No	No	Yes	Yes
Economic Benefit	No	No	No	No	Yes	Yes
Legislation	No	No	No	No	Yes	Yes

*All TSM, ITS, and Mass Transit options combined within each alternative. *Source: Project Team, 2021*

Based on the Level 1 screening results, upgrading the existing highway and new location highway alternatives were carried forward and **TSM, ITS, and Mass Transit Alternatives were dropped from further consideration**.

Level 2 Analysis

The screening criteria for Level 2 used the same purpose and need elements as Level 1; however, to help differentiate between alternatives, environmental impacts and preliminary cost estimates were also included in Level 2 evaluations.

Environmental data was collected for the entire study area to create a geographic information system (GIS) database. Data was used graphically on maps to aid in alternative development and also used for quantitative assessment of potential impacts. Major environmental concerns were floodplains, forested lands, wetlands, homes, businesses, T&E species, farmlands, and hazardous materials.

Engineering and design considerations were employed to help generate preliminary designs and cost estimates that were considered along with the environmental data for each alternative. Some of the important engineering and constructability considerations at this level included acceptable crossings for the Black River, local road crossings, interchange locations, community access, utility crossings, splitting of farm tracts, and railroad crossings.

The alternatives were presented to the local officials and public in August 2020 for comments and were submitted to the cooperating agencies in December 2020 for their review and concurrence or objection prior to advancing to the Level 2 screening. Comments from the public were considered and all cooperating agencies concurred with the preliminary range of alternatives (see **Appendix D** for coordination).

The preliminary alternatives screened in Level 2 are listed below and shown on **Figure 14**:

- **No Action Alternative.**
- **New Location Interstate:** Alternatives included Alternatives 2 and 3 and Missouri Connector Alternatives A and C.
- **Upgrading Existing Facility to Interstate Standards**: Alternatives included Alternative 1 and Missouri Connector Alternative B.

For the new location alternatives, several alignments and combinations of alignments were developed and reviewed within the larger Alternative 2 and 3 corridors carried forward from the 2015 Planning Study. Design and environmental teams worked together closely throughout the development process to ensure early identification and minimization of known environmental concerns. Through a collaborative process, an alignment for each alternative was ultimately selected that best addressed the engineering and design criteria while minimizing environmental impacts.

Once the alignment for each alternative was determined, a 1,000-foot-wide corridor, centered around the best alignment was chosen for each alternative because it allowed for some flexibility in adjusting the estimated 400-foot-wide ROW required for an interstate highway (see **Figure 15**). The intent of this effort was to identify corridors narrow enough that probable impacts could be better estimated but still allow room and flexibility to adjust the alignment as more detailed studies were completed.

Alternative 1 would utilize the existing two lanes of Hwy. 67 and add two additional lanes plus frontage roads. Upgrading the existing facility to interstate standards requires consideration of the existing Hwy. 67 alignment as well as all the connecting roads and adjacent development in order to supply realistic impacts and cost estimates. Because this alternative is an improvement to the existing roadway, there are few options for impact avoidance other than switching from one side of the highway to the other. This alternative is complex due to the associated road networks, frontage roads, property access, and extensive property development adjacent to the highway. Minimizing impacts to homes, businesses, churches, and other community features was a priority, but design challenges often dictated the location of the alignment and necessary frontage roads.

Figure 14: Preliminary Action Alternatives Screened in Level 2

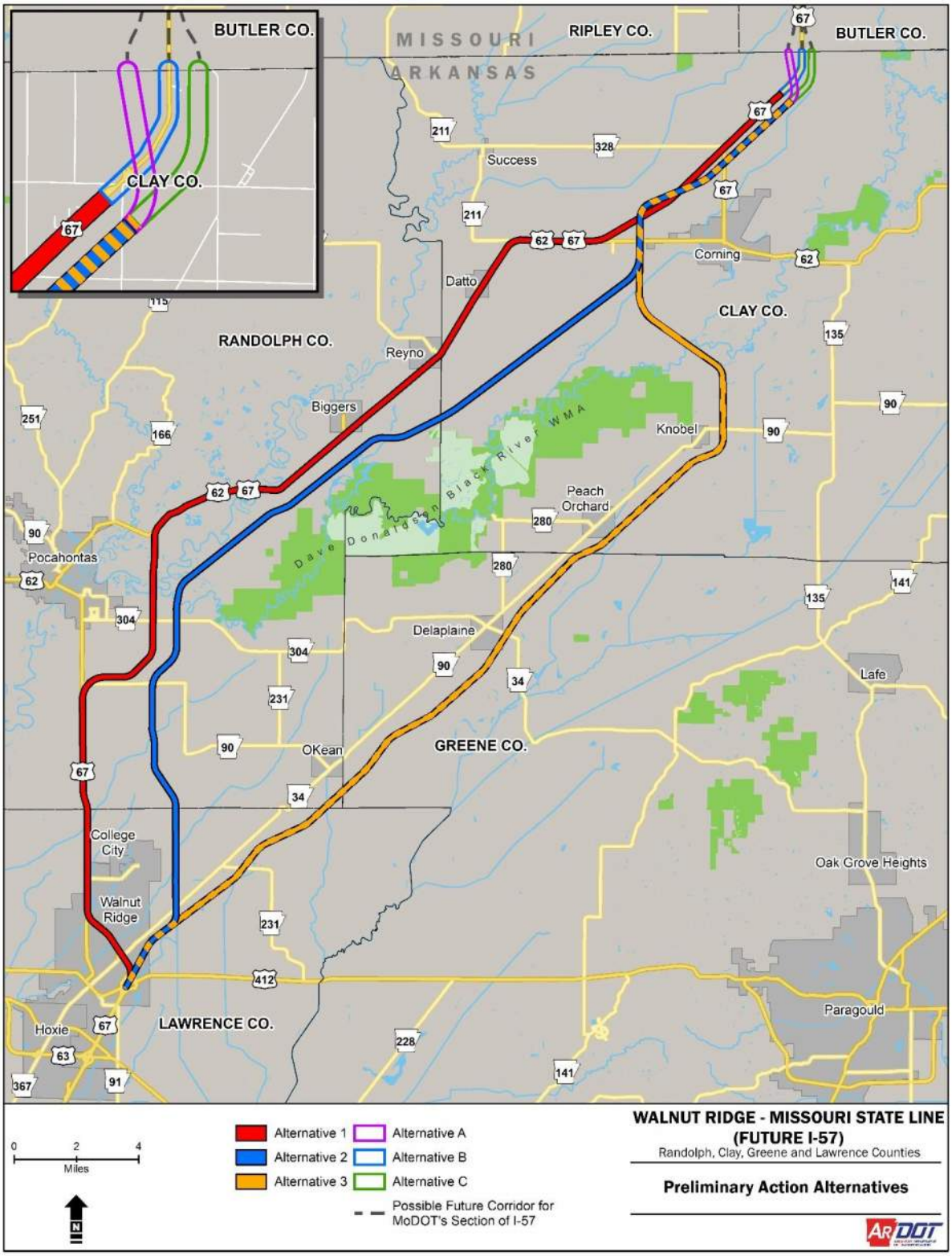
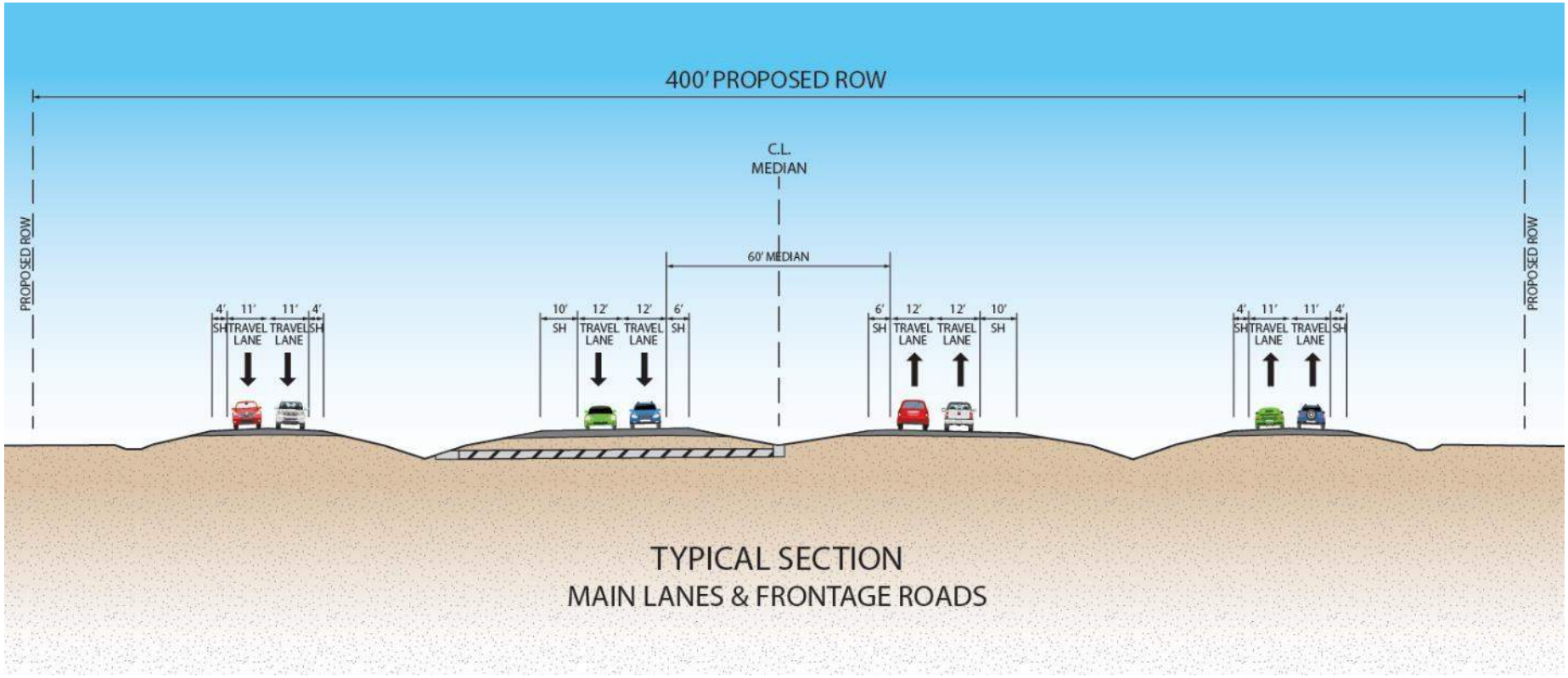


Figure 15: Typical Section of Action Alternatives



For Alternative 1 to be consistent with the other action alternatives screened at this level, a 1,000-foot-wide corridor was centered on the existing highway alignment to allow for a future decision on which side would be optimal as more detailed studies and design took place.

Alternatives A, B, and C provide the final approximately two-mile section at the Arkansas-Missouri State line. These short section connectors were developed to help ARDOT provide multiple connection alternatives to MoDOT for their section of future I-57. At the time of this study, MoDOT still has not studied their portion of future I-57 at the Arkansas-Missouri State line. Ongoing coordination with MoDOT indicates they would locate their final section of future I-57 on or very near existing Hwy. 67. For this reason, these alternatives are located on or as close as possible to existing Hwy. 67. The Missouri Connector Alternatives were developed so that any of them could be combined with any of the Main Corridor Alternatives.

Table 8 provides preliminary impacts and cost estimates that were used in the Level 2 analysis.

Table 8: Level 2 Natural and Social Environmental Impact Comparison

Factors Evaluated		No Action Alternative	Main Corridor Alternatives			MO Connector Alternatives		
			Alt. 1	Alt. 2	Alt. 3	Alt. A	Alt. B	Alt. C
Construction	Length (miles)	0	44	40	41	1.5	1.5	1.5
	Cost (millions)	0	577	493	482	25	27	20
Social Impacts	Residences (#)	0	174	11	15	3	24	8
	Businesses (#)	0	68	0	0	0	14	0
	Agricultural Structures (#)	0	92	54	25	1	4	2
	Farmlands (ac)	0	3,628	4,304	4,368	193	87	208
	Cemeteries (#)	0	0	1	1	0	0	0
	Other Structures (#)	0	76	5	6	2	11	9
	Cultural Resources (#)	0	28	8	1	0	0	0
	Hazmat Sites (#)	0	15	1	0	0	0	0
	Community Features (#)	0	4**	0	0	0	10*	0
	Cell Towers (#)	0	3	0	0	0	0	0
	Pipelines (# crossings)	0	18	10	3	0	0	0
	Public Comment (# stating a preference)***	0	26	68	31	37	46	20
Natural Resource Impacts	100- Year Floodplain (ac)	0	1,513	1,042	271	105	107	84
	Wetlands (ac)	0	191	123	86	1	0	1
	Streams (# crossings)	0	51	48	73	1	1	1

* Arkansas Tourist Information Center Buildings; ** Churches; *** Preferences derived from comments submitted during the public meeting held August 13 -September 2, 2020; *Source: Project Team, 2021*

Level 2 Analysis Results

Discussions of environmental impacts below are separated into the Main Corridor Alternatives (Alternatives 1, 2, and 3) and the Missouri Connector Alternatives (Alternatives A, B, and C) because they are compared and advanced independently. The following impact and cost evaluations were based on early conceptual design and have been refined as the project has advanced through additional studies and design—as discussed in more detail in the following chapters.

Main Corridor Alternatives (Alternatives 1, 2, and 3)

All three action alternatives for the main corridor address all the main elements of the purpose and need. They would provide the required interstate linkage and improve local, regional, and national mobility, support economic growth for the region, and improve highway infrastructure climate resilience. Additionally, they fulfill the legislative goal to develop an interstate highway to extend I-57.

The primary difference between the alternatives in terms of social impacts is that Alternatives 1 and 2 provide better access to existing populations, businesses, and development along Hwy. 67 and Pocahontas than Alternative 3. As shown in **Table 8**, Alternative 1 would impact substantially more homes, businesses, and community features than Alternatives 2 or 3, which are located primarily on rural farmlands. There is substantially greater risk for impacts to known hazardous materials, pipelines, agricultural structures, and cultural resources sites for Alternative 1 when compared to Alternatives 2 and 3. Alternative 1 does not address resiliency as well as Alternatives 2 and 3 because it does not provide for a redundant alternate roadway between the project termini. Alternative 2 would impact more pipelines, agricultural structures, and cultural resources than Alternative 3. Alternative 1 has the highest estimated cost and Alternative 3 has the lowest. See **Table 8** for additional comparisons.

Social impact is a general term that refers to impacts to the human-built environment such as buildings, roads, cemeteries, cell towers, etc., as opposed to the Natural Environment such as animals and habitats.

Utilizing the existing roadway for roadway improvements often reduces the natural environmental impacts because some of the required ROW is already in transportation use. However, there are substantial environmental impacts predicted for Alternative 1. For three of the primary natural resource concerns for this project (wetlands, streams, and floodplains) listed in **Table 8**, Alternative 1 has the greatest impacts to floodplains and wetlands and has more estimated stream crossings compared to Alternative 2 (51 vs. 48) and less compared to Alternative 3 (51 vs. 73). Alternative 3 would impact substantially less of the 100-year floodplain and wetlands than Alternatives 1 or 2.

Missouri Connector Alternatives (Alternatives A, B, and C)

Alternative B would impact substantially more homes, businesses, and community features than Alternatives A or C. Alternatives A and C would impact similar acreages of farmlands while Alternative B impacts the least acreage of farmlands. The impacts to other social resources are relatively similar between all three alternatives. Alternative C has the lowest cost and Alternative B has the highest cost.

Considering the natural environmental impacts, Alternatives A and B impact similar acres of the floodplain while Alternative C impacts the least. Wetland and stream impacts are very minor and comparable between all the alternatives.

Table 9 summarizes the Level 2 screening results where "Yes" means it satisfies the purpose and need or "No" means it does not. Natural and social environmental impacts are rated low (L), medium (M), or high (H) where low constitutes no or very minimal impact, medium indicates more impact but not significant, and high represents a greater level of, and potentially substantial, impact. Support for these impact ratings are provided in **Table 8**.

Table 9: Level 2 Screening Results

Screening Criteria	Alternatives						
	No Action	Alt. 1	Alt. 2	Alt. 3	Alt. A	Alt. B	Alt. C
System Linkage	No	Yes	Yes	Yes	Yes	Yes	Yes
Mobility	No	Yes	Yes	Yes	Yes	Yes	Yes
Resilience	No	Yes	Yes	Yes	Yes	Yes	Yes
Economic Benefit	No	Yes	Yes	Yes	Yes	Yes	Yes
Legislation	No	Yes	Yes	Yes	Yes	Yes	Yes
Social Environment	L	H	L	L	M	H	L
Natural Environment	L	M	M	M	L	L	L

L – Low impact; M – Medium impact; H – High impact. *Source: Project Team, 2021*

Based on the corridor screening results, Alternatives 2, 3, A, and C satisfy the purpose and need while minimizing the environmental impacts to the greatest extent possible and are carried forward through the detailed studies documented in this DEIS. Alternative B has a high probability of substantial impacts to homes, businesses, and community features, it is carried forward to comply with the MOU between ARDOT and MoDOT to consider the full range of alternatives for the optimal connection point for both states.

While Alternative 1 adequately addresses the purpose and need with the exception of resilience, **it is dropped from further consideration** for the following reasons:

- Alternative 1 would displace substantially more homes, businesses, and agricultural buildings than Alternatives 2 or 3.
- Alternative 1 would impact substantially more cultural resources.
- Alternative 1 would impact substantially more hazardous sites.
- Alternative 1 would negatively impact local road access and property access along existing Hwy. 67.
- Alternative 1 would cause temporary and possibly long-term negative economic impacts to businesses that are impacted by the change in access.
- Alternative 1 has more floodplain impacts than Alternatives 2 or 3.
- Alternative 1 has more wetland impacts than Alternative 2.
- Alternative 1 does not address resiliency as well as other alternatives since using existing Hwy. 67 does not provide a redundant alternative highway in case of natural or manmade closures.
- Public preference identified Alternative 1 as the least preferred alternative.

In summary, Alternative 1 does not address any purpose and need elements better than Alternative 2, which is located less than two miles away from Alternative 1 at most locations. Most importantly, Alternative 1 would cause substantially greater negative impacts to the social, natural, and cultural environments compared to the other action alternatives. **Consequently, the benefits of Alternative 1 are outweighed by the negative impacts, and this alternative is dropped from further consideration.**

Alternatives Carried Forward

In addition to the required No Action Alternative, action alternatives that were carried forward and studied in greater detail include Alternatives 2, 3, A, B, and C; see **Figure 16** through **Figure 20** for more detailed maps of the alternatives. The action alternatives listed meet the project purpose and need and are considered reasonable alternatives for further study.

Due to the elimination of Alternative 1, the southern end of Alternative B was modified to begin at the end of Alternatives 2 and 3. Alternative B, therefore, has a section on new location but still improves the northernmost 0.5-mile of existing Hwy. 67. The footprints of Alternatives A and C have also been modified to include a 0.29-mile and 0.17-mile section, respectively, of County Road 278 to accommodate an interim two-lane roadway that would tie each alternative back to Hwy. 67. See **Figure 21** for a detailed exhibit showing the proposed interim connector from the four-lane facility back to Hwy. 67. Impacts associated with the interim condition have been accounted for in the Chapter 3 analysis. Additionally, Alternatives 2 and 3 have undergone at least some minor alignment revisions as new or better information was obtained. For instance, detailed environmental studies, following the screening process described previously, identified historical properties, cemeteries, major gas pipelines, and sensitive environmental areas that were avoided by alignment revisions. Not all impacts can be avoided, but every effort was made to minimize negative impacts wherever possible. The study area for each alternative has been reduced to 400 feet in width to reflect more accurately the actual impacts for the construction of each. The alternative alignments that were studied and are discussed in the following chapters are briefly described below.

Figure 16: Alternatives Carried Forward (1 of 5)

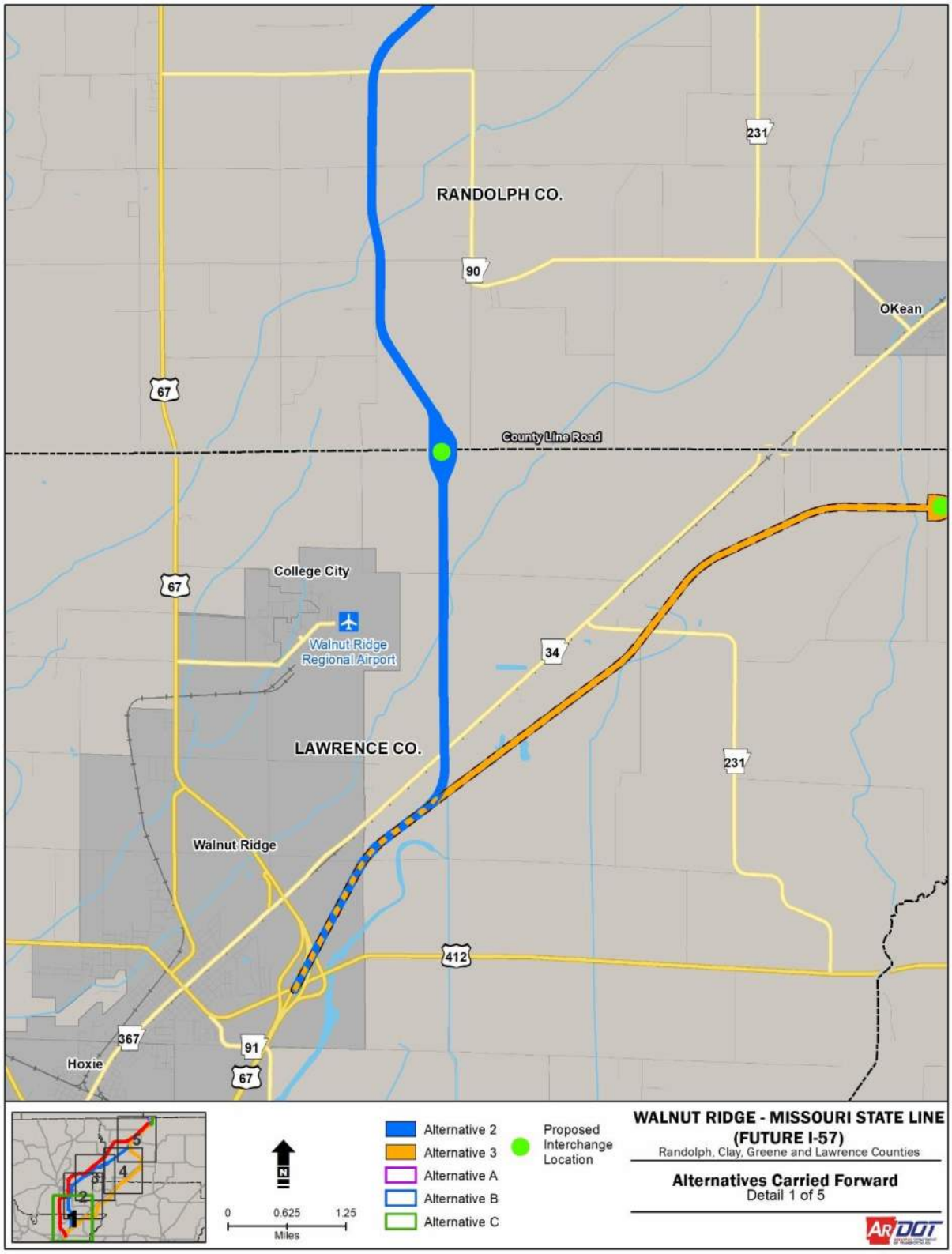


Figure 17: Alternatives Carried Forward (2 of 5)

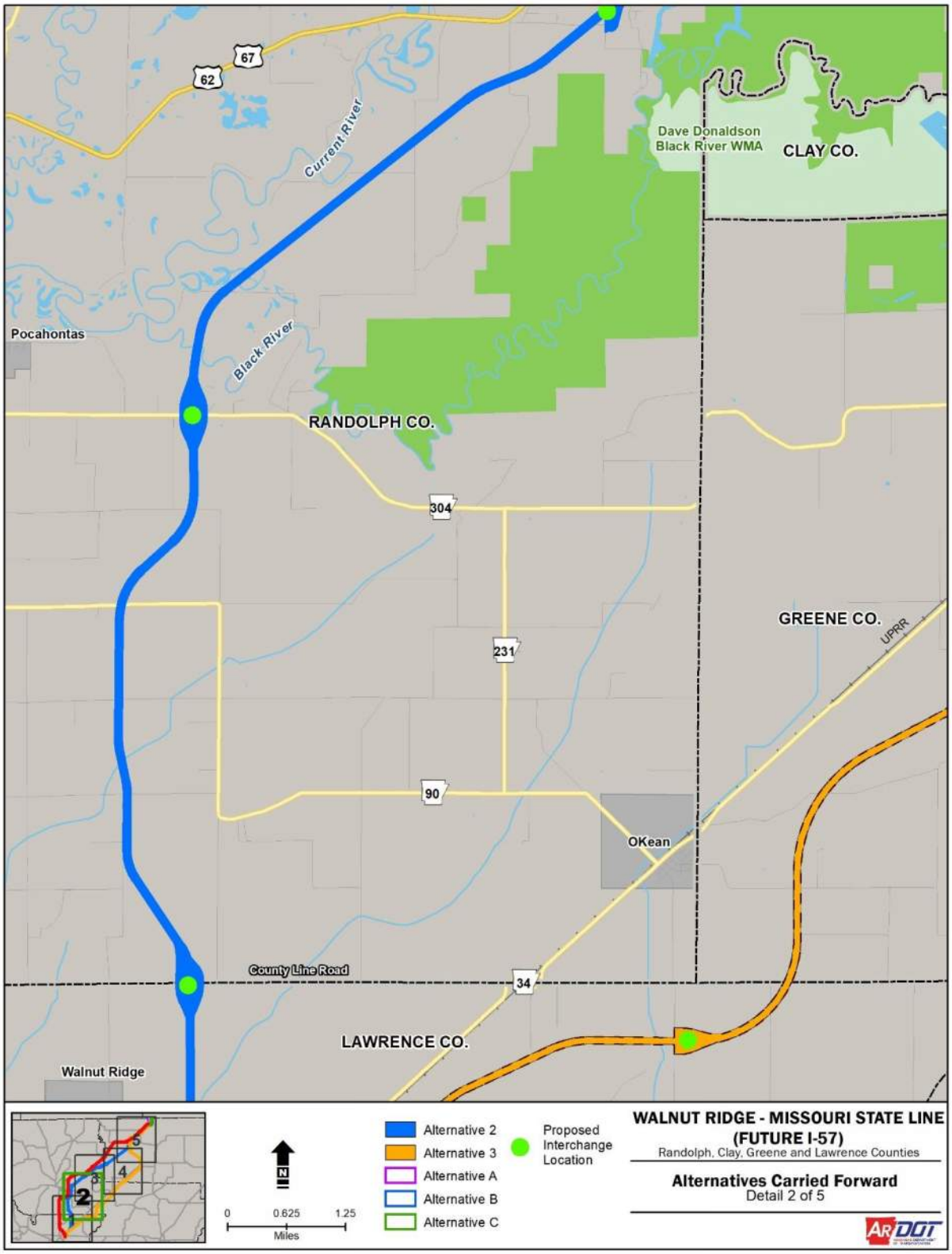


Figure 18: Alternatives Carried Forward (3 of 5)

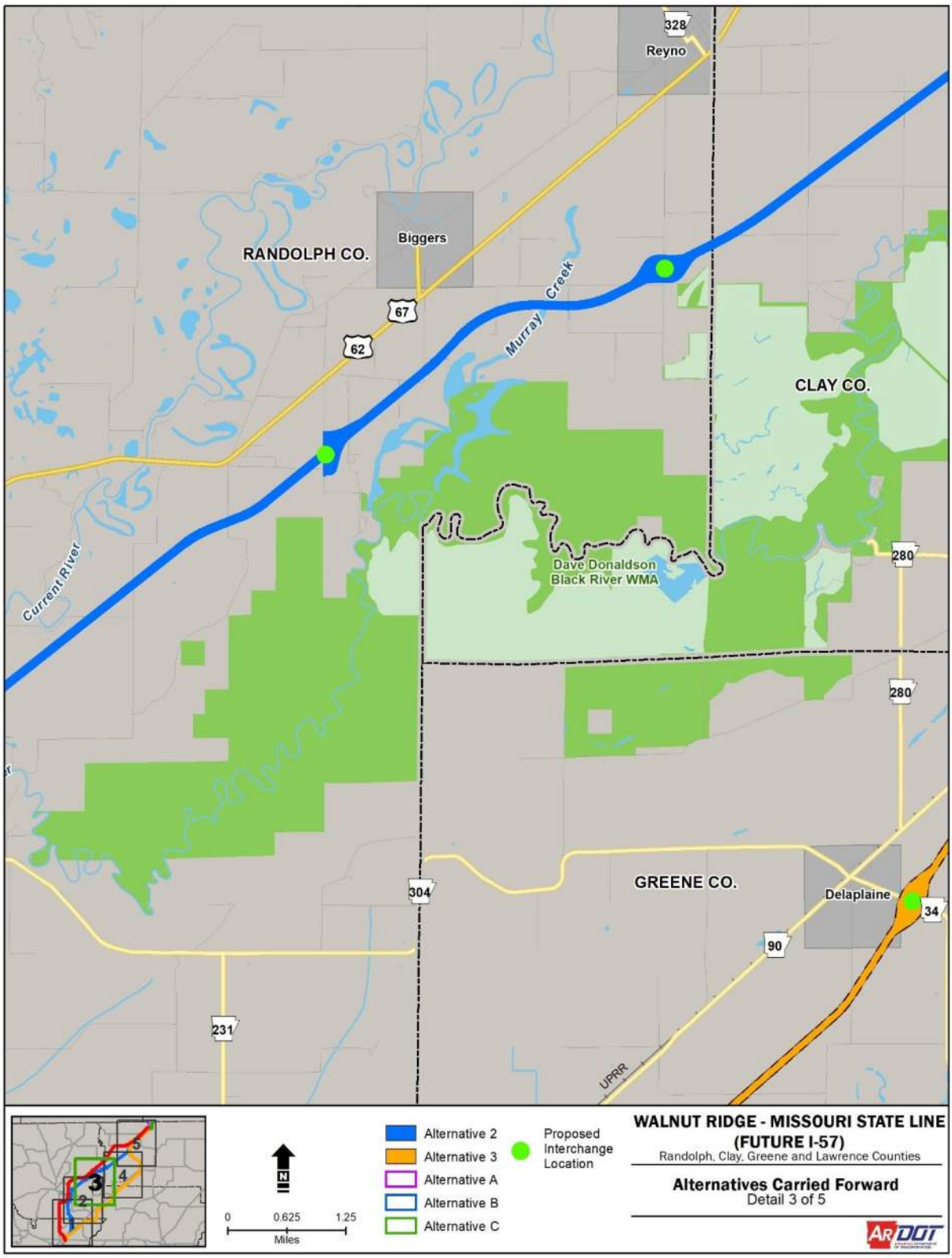


Figure 19: Alternatives Carried Forward (4 of 5)

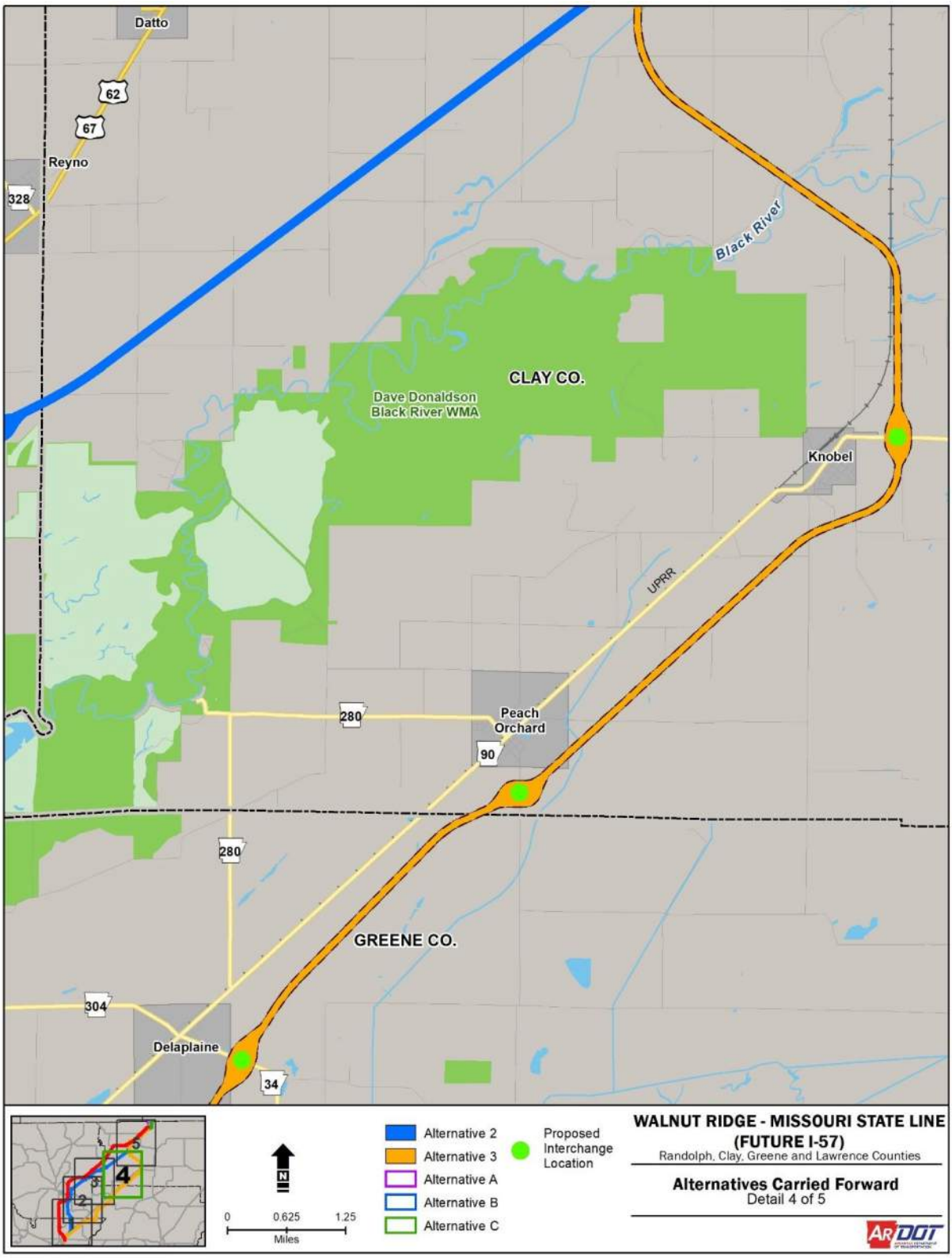


Figure 20: Alternatives Carried Forward (5 of 5)

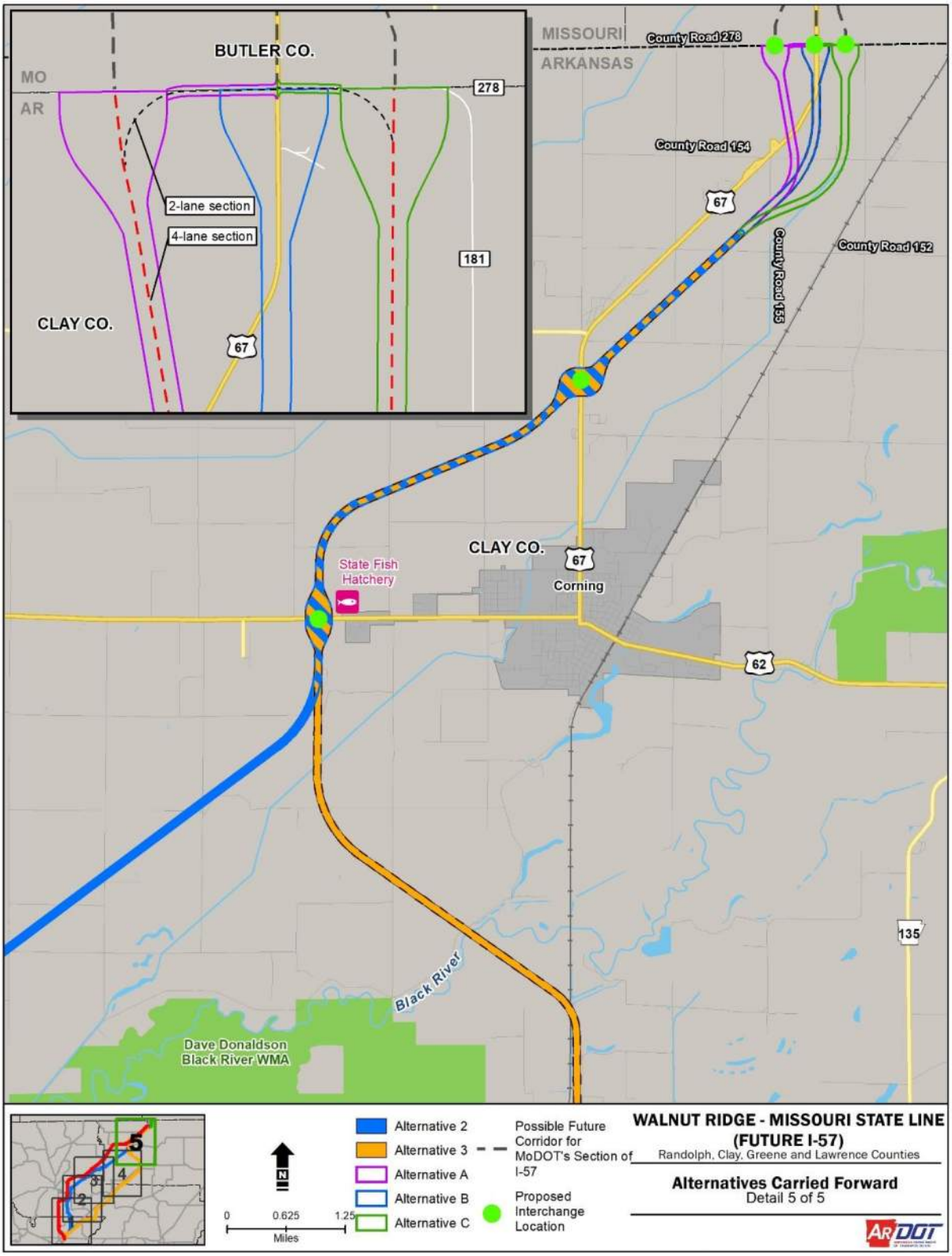
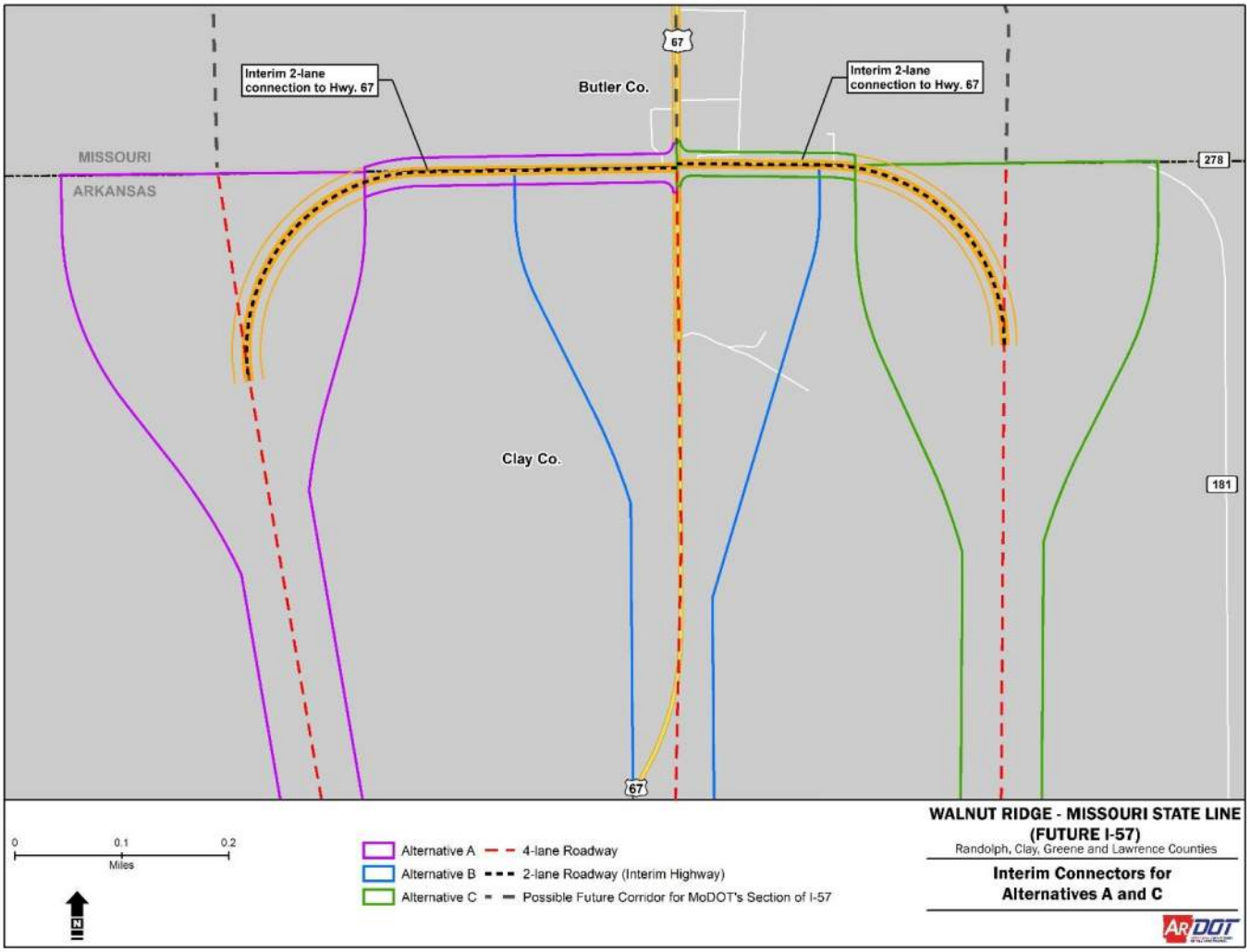


Figure 21: Interim Connectors for Alternatives A and C



Main Corridor Alternatives

Alternative 2. Alternative 2 is on new location and is approximately 39.2 miles long with a consistent ROW footprint of 400 feet wide and expanded footprints at the six proposed interchange locations. This alternative is a four-lane divided interstate with frontage roads and a 60-foot-wide open depressed median. There would be 12-foot-wide travel lanes with 10-foot-wide shoulders on the main lanes and 11-foot-wide travel lanes with 4-foot shoulders on the frontage roads (**Figure 15**). All action alternatives have the same four-lane cross section. Alternative 2 begins at the Hwy. 67/412 interchange at Walnut Ridge and extends northeast approximately two miles to avoid impacts to College City and the airport, then turns north. The alignment follows a path north to the Black River that avoids running adjacent to Hwy. 90 and minimizes splitting of the farmland tracts to the extent possible. It crosses the Black River and floodplain at the best possible crossing location, i.e., a perpendicular crossing that minimizes impacts to extent possible. It then turns northeast to avoid crossing the Current River and proceeds northeast between Hwy. 67 and the Black River WMA.

Southeast of Biggers the alignment curves to the east in order to cross Murray Creek as perpendicularly as possible, then turns back northeast eventually merging with Alternative 3 just south of Hwy. 67 where Alternatives 2 and 3 then follow the same alignment. From this merger the alignment proceeds north across Hwy. 67 just east of the State Fish Hatchery and then turns northeast crossing Hwy. 67 just south of Hwy. 328 and proceeds northeast across County

Road 152 where the Future I-57 Alternative's end with the option to tie into one of the three Missouri Connector Alternatives. Alternative 2 would provide better access to Randolph County and Pocahontas as well as other smaller communities and businesses along the existing Hwy. 67 corridor.

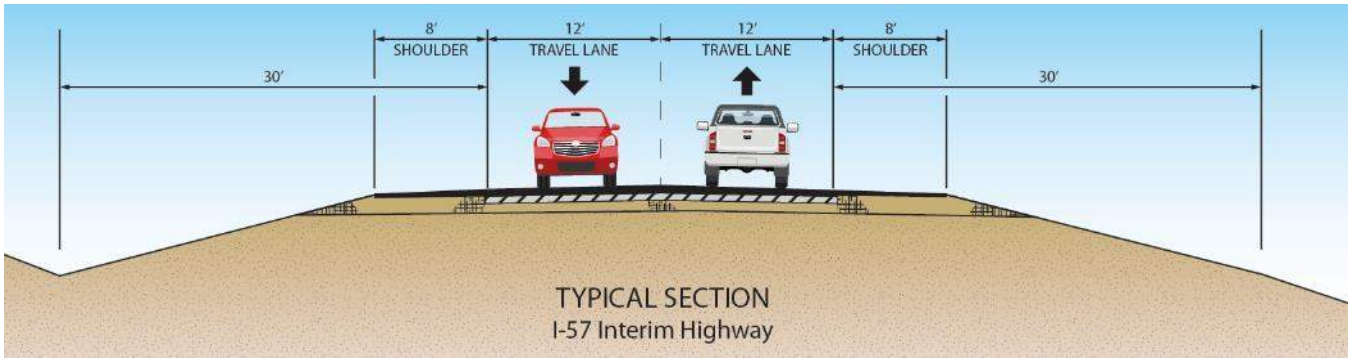
Alternative 3. Alternative 3 is on new location and is approximately 41.3 miles long with a consistent ROW footprint of 400 feet wide and expanded footprints at the six proposed interchange locations. Alternative 3 begins at the Hwy. 67/412 interchange and heads northeast staying generally parallel to Hwys. 34 and 90 and the UPRR. This location avoids direct impacts to any of the towns along the Hwy. 34/90 corridor. The alignment turns to the north to cross Hwy. 90 near Knobel then northwest to cross the Black River just north of the Black River WMA where the floodplains and bottomland hardwoods are least impacted. The alignment then curves back to the north where it merges with Alternative 2 and follows the same alignment as described above for Alternative 2. Alternative 3 would provide better access to communities such as Knobel and O'Kean along the Hwy. 90/34 corridor.

Missouri Connector Alternatives

As discussed in previous sections, the Missouri connectors described below were developed to give additional flexibility for the location of the final termini at the Arkansas-Missouri border in Clay County. While Alternative 1, which improved existing Hwy. 67 was dropped from further consideration, Alternative B, which also improves a portion of existing Hwy. 67, was retained to provide more flexibility in coordinating the final termini with MoDOT. Alternatives 2 and 3 can be combined with any of the Missouri Connector Alternatives as all the Missouri Connector Alternatives start at the end of Alternatives 2 and 3.

Alternative A. Alternative A is primarily on new location and consists of approximately 2.0 miles of a four-lane divided highway with a consistent ROW footprint of 400 feet wide and an expanded footprint at the proposed interchange on the Arkansas-Missouri State line. An approximately 0.5-mile-long section of two-lane highway is proposed at the north end as an interim condition to connect Alternative A back to existing Hwy. 67 (**Figure 20**). This interim section would require additional proposed ROW along County Road 278 that is approximately 140 feet wide and 0.29 mile long. As explained in Section 1.2, this two-lane roadway would be replaced with the proposed interchange if Alternative A is identified as the Selected Alternative. As shown in **Figure 22**, this interim highway would have two 12-foot-wide travel lanes with 8-foot-wide shoulders. County Road 278 was determined to be able to adequately handle the additional traffic during the interim condition. This determination was made using the highest volumes when looking at all of the no action/action alternatives for 2019 and 2040 and assuming a paved two-lane highway with a speed limit of 55 mph, passing constrained (which would be worst-case for LOS), and level terrain. The Alternative A alignment begins where Alternatives 2 and 3 end on new location. Alternative A starts just north of County Road 152 on the east side of Hwy. 67, proceeds northeast across County Road 155, turns north-northwest and crosses Hwy. 67, continues north-northwest for approximately 0.7 mile then transitions to the interim two-lane highway. This two-lane section curves east, ties into County Road 278, then continues east for 0.29 mile to Hwy. 67.

Figure 22: Typical Section of Interim Highway for Alternatives A and C



Alternative B. Alternative B consists of approximately 2.3 miles of a four-lane divided highway with a consistent ROW footprint of 400 feet wide and an expanded footprint at the proposed interchange on the Arkansas-Missouri State line. Alternative B has a short section on new location then improves the northern 0.5-mile of existing Hwy. 67 (**Figure 20**). The alignment begins where Alternatives 2 and 3 end on new location. Alternative B starts just north of County Road 152 on the east side of Hwy. 67, proceeds northeast across County Road 155, and turns north and ties into Hwy. 67. It then follows the existing Hwy. 67 alignment for a 0.5-mile before terminating at the Arkansas-Missouri State line. Because Alternative B ties back into Hwy. 67, no interim section is required.

Alternative C. Alternative C is primarily on new location and consists of approximately 2.4 miles of a four-lane divided highway with a consistent ROW footprint of 400 feet wide and an expanded footprint at the proposed interchange on the Arkansas-Missouri State line. An approximately 0.4-mile-long section of two-lane highway is proposed at the north end as an interim condition to connect Alternative C back to existing Hwy. 67 (**Figure 20**). This interim section would require additional proposed ROW along County Road 278 that is 120 feet wide and 0.17 mile long and would have the same two-lane cross section as Alternative A (**Figure 22**). As explained in Section 1.2, this two-lane roadway would be replaced with the proposed interchange if Alternative C is identified as the Selected Alternative. County Road 278 was determined to be able to adequately handle the additional traffic during the interim condition. This determination was made using the highest volumes when looking at all of the no action/action alternatives for 2019 and 2040 and assuming a paved two-lane highway with a speed limit of 55 mph, passing constrained (which would be worst-case for LOS), and level terrain. The alignment begins where Alternatives 2 and 3 end on new location. Alternative C starts just north of County Road 152 on the east side of Hwy. 67, proceeds northeast for approximately 1.3 miles, crosses County Road 154, continues north for approximately one mile, then transitions to the interim two-lane highway. This two-lane section curves west, ties into County Road 278, then continues west for 0.17 mile to Hwy. 67.

Chapter 3 – Environmental Resources, Consequences, and Mitigation

3.1 How were impacts evaluated?

Studies were conducted to determine how the proposed project would potentially impact the natural, cultural, and social environments. For resources within this chapter, the affected environment, environmental consequences, and mitigation are typically described. Results of studies and analyses that are not fully discussed in the following DEIS text are incorporated by reference or included in the appendices. Resources not impacted by the project are not discussed in detail. Fisheries and coastal zone resources are not discussed at all as these resources are not present in the project vicinity.

Potential impacts are changes or effects that could occur as a result of a proposed project. The impacts may be social, cultural, economic, or ecological, and may also be beneficial or adverse. 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 impacts only occurring during construction, or long-term impacts remaining or occurring after construction). The effects discussed in this chapter are presumed to be long-term unless otherwise noted and are generally described as positive or negative. The analyses in this chapter are based on the conceptual design of the action alternatives.

Unless noted otherwise, project impacts are quantified based on the anticipated ROW footprint of each action alternative and it is assumed that all areas within the ROW footprint would be directly affected by construction activities. The footprint of each action alternative is defined as a consistent 400-foot-wide ROW with expanded footprints at the proposed interchanges. The proposed interchanges can be seen in **Figure 16** through **Figure 20**. Alternatives 2 and 3 each have six proposed interchanges and Alternatives A, B, and C each have one proposed interchange at the north end of the project. Each action alternative carried forward in this chapter for detailed evaluation is shown in **Figure 16** through **Figure 20** and the length and footprint acreage of each is listed below:

- Alternative 2 – 39.2 miles; 2,249 acres
- Alternative 3 – 41.3 miles; 2,337 acres
- Alternative A – 2.5 miles; 142 acres
- Alternative B – 2.3 miles; 139 acres
- Alternative C – 2.8 miles; 159 acres

3.2 Would changes to land use and zoning occur?

Introduction and Methodology

The physical landscape often influences the type and location of development and land use in a given area. Zoning within a particular area, such as within the planning boundaries of a city, can also impact land use by regulating the type and density of manmade development that occurs. Comprehensive land use plans are adopted by communities in an effort to direct growth and ensure its diversity, efficiency, and balance of land uses. In most moderately sized cities, there is typically a basic framework of zoning. However, rural areas composed of smaller cities, such as the project area, struggle to enact zoning and code enforcement ordinances (EAPDD, 2015). Of the communities within the project study area, only Pocahontas and Walnut Ridge currently have comprehensive land use and zoning plans in place.

Zoning is a method of urban planning in which a municipality or other tier of government divides land into areas called zones, each of which has a set of regulations for new development that differs from other zones.

The primary tool for evaluating land use impacts in a rural area is quantifying land conversion from its current use to a transportation use. The U.S. Geological Survey (USGS) 2016 National Land Cover Dataset (NLCD) was used to identify land use/land cover types along the alternative alignments. This 2016 dataset is the most recent year available and considered acceptable given the relatively slow growth rate for the region.

Based on the NLCD, current land uses within the action alternatives are classified into the following categories:

- Cultivated crops (agricultural)
- Developed (high, medium, or low intensity; or as open space)
- Wetland (emergent or forested)
- Open water

Recent aerial imagery (2019 and 2020) and direct observations during site visits were used to confirm existing land uses. The impact analyses covered in the Environmental Consequences section below are based on a 400-foot wide ROW footprint for each action alternative.

Developed High Intensity - Highly developed areas where people reside or work in high numbers; examples include apartment complexes, high rises, or multi-story mixed use buildings. Impervious surfaces (e.g., paved roads and parking lots) are 80-100% of total cover.

Developed Medium and Low Intensity -Both are areas such as single-family housing units with a mixture of constructed materials and vegetation. Medium intensity has 50-79% impervious surfaces and low intensity has 20-49% impervious surfaces.

Developed Open Space - Areas with a mixture of some constructed materials, but mostly vegetation as lawn grasses. Impervious surfaces are less than 20% of total cover. These areas most commonly include large-lot single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes.

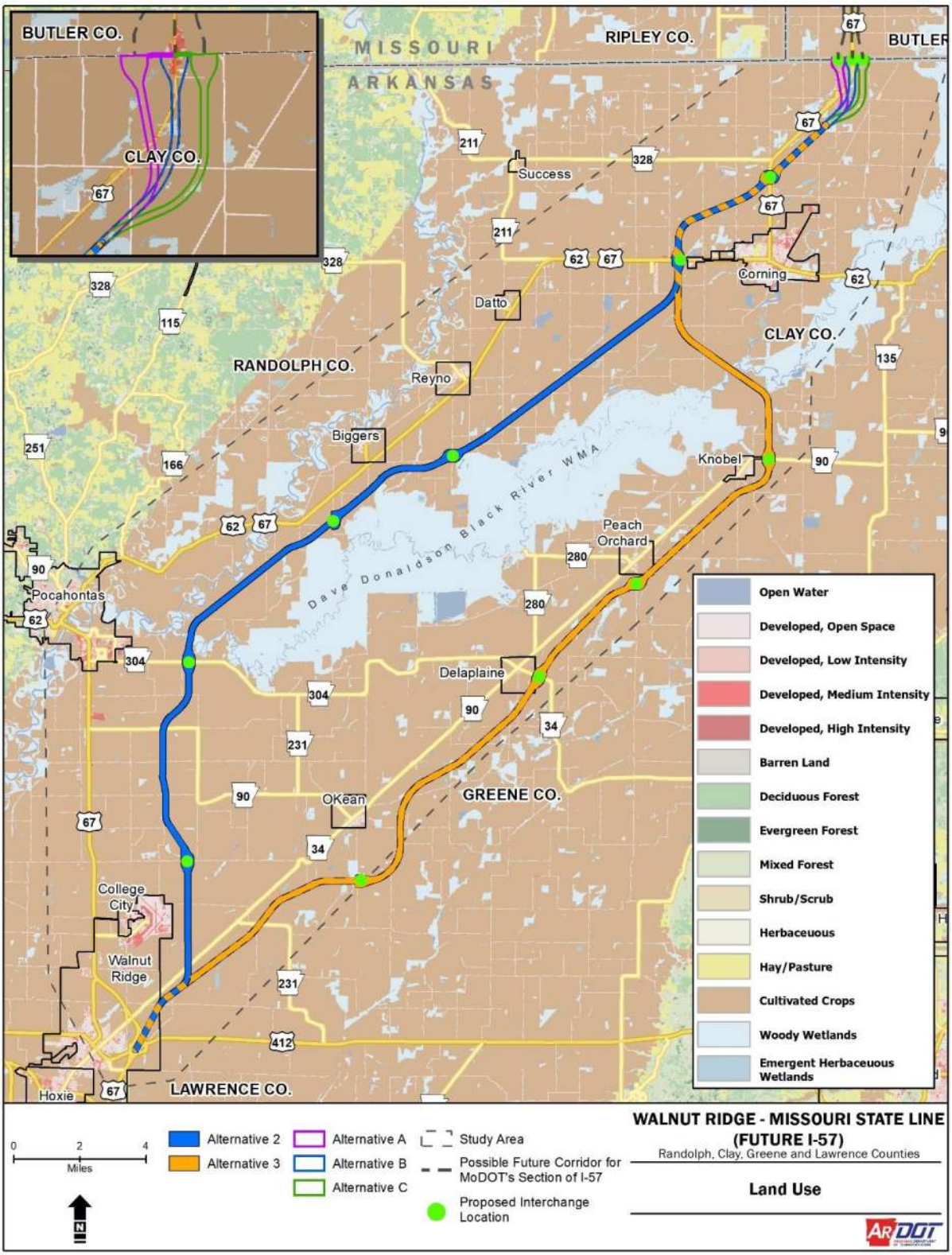
Affected Environment

The project occurs exclusively within a portion of the Mississippi Alluvial Plain ecoregion, which is a broad, nearly level, agriculturally dominated alluvial plain characterized by widespread clayey, poorly-drained soils. The Mississippi Alluvial Plain ecoregion provides important habitat for fish and wildlife and includes the largest continuous system of wetlands in North America (AGFC, 2015).

The project study area is shown in **Figure 23** and encompasses 379 square miles. Land use within the study area is characterized by the predominantly rural nature of the area, with large expanses of agricultural lands followed by forested wetlands being the main land cover types within the landscape. Agriculture (cultivated crops) is the dominant land use within the project corridors for all the action alternatives. According to data provided by the USDA, Natural Resources Conservation Service (NRCS), the major crops within Lawrence, Randolph, Green, and Clay Counties are soybean and rice. Based on the site investigation conducted in March 2021, the dominant crop within the footprints of the alternatives is rice, with some fields planted in corn or soybeans. Near the center of the project area is the Black River WMA consisting of approximately 25,510 acres of mostly forested wetlands and guided by a formal master plan to manage wildlife and provide recreational and educational opportunities to the public. None of the project alternatives would impact the Black River WMA.

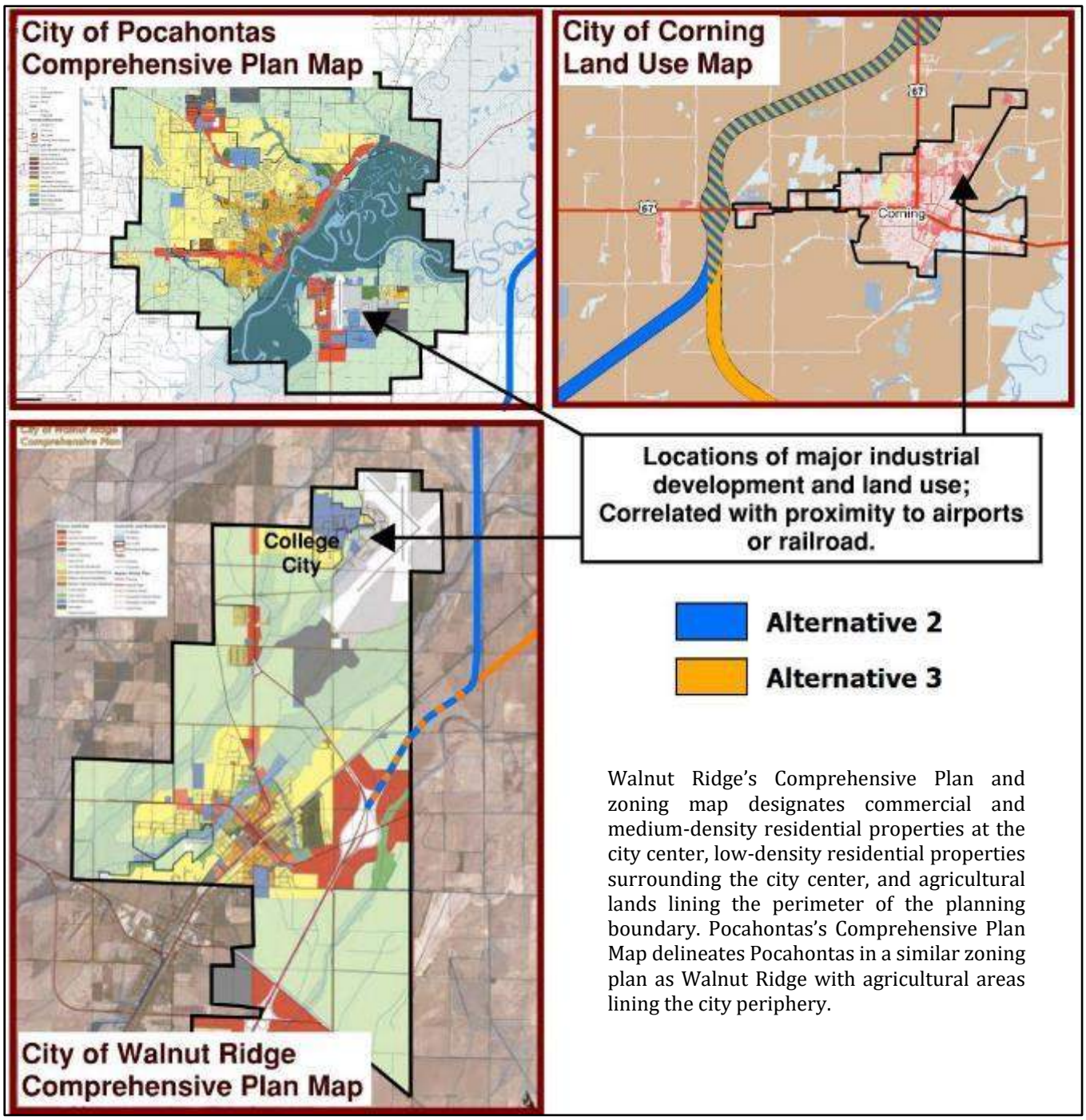
Development within the study area is strongly correlated with the existing cities and the current roadway network. The three main areas of development occur at Walnut Ridge, Pocahontas, and Corning. Other small towns in the study area include College City, O'Kean, Delaplaine, Biggers, Reyno, Peach Orchard, and Knobel. The city/town limits of each developed area are shown in **Figure 23**. The remainder of the project area consists of the occasional rural residential property surrounded by farmland.

Figure 23: Land Use



As shown in **Figure 24**, a portion of both Alternatives 2 and 3 occur within the city limits of Walnut Ridge, but not within the city limits or planning boundaries of Pocahontas or Corning. The city of Corning does not have a published comprehensive plan or zoning map.

Figure 24: Overview of Zoning and Land Use in Areas of Main Development



While the project area counties are included within the East Arkansas Planning and Development District (EAPDD) along with eight other counties in eastern Arkansas, the EAPDD does not implement land use or zoning codes. However, EAPDD has facilitated strategic plan development for the region, and transportation infrastructure has been a consistent priority identified for the region's future economic growth and improved quality of life. The action alternatives would support EAPDD-identified priorities, as infrastructure development is an important strategy identified for the region (EAPDD, 2015a).

A discussion of induced growth is provided in Section 3.29.

Induced growth are changes in the location, magnitude, or pace of future development that result from changes in accessibility caused by a project. An example of an induced growth effect is commercial development occurring around a new interchange and the environmental impacts associated with that development.

Environmental Consequences

Construction of the proposed project would result in the direct conversion of land from its present use to highway ROW. The most substantial land use impact for all the action alternatives, in terms of total area converted to highway ROW, is to agricultural land (see Section 3.3 for additional details regarding farmland impacts). The acreages of each land use that would be converted to highway ROW by each action alternative's 400-foot wide conceptual ROW footprint is discussed below and shown in **Figure 25** through **Figure 29**. Due to rounding, the sum of the land cover values and percentages shown in Figures 25-29 may not equal the total acreage of the alternative footprints.

No Action Alternative

Under the No Action Alternative, the proposed project would not be constructed, resulting in no direct impacts to existing land uses. The No Action Alternative would not affect current zoning or support priorities identified for the region's future economic growth and improved quality of life. Development would continue to occur in the region, but without any major infrastructure improvements, it would likely be at a similar pace as what has been seen since the 2015 Highway 67 Improvement Study completed by ARDOT, well below the state average.

Alternative 2

As shown in **Figure 25**, Alternative 2 would require the conversion of approximately 2,249 acres of land to maintained highway ROW. Cultivated cropland comprises approximately 93% of the impacted land uses. Alternative 2 would impact approximately 113 acres of developed area, approximately 5% of its total 2,249-acre footprint. Most of the developed area impacted is of open space (see descriptions in side bar on page 34). The southern-most 1.6 miles of Alternative 2 occur within the planning area boundary of Walnut Ridge, and this section is fully compatible with the comprehensive land use plans for the city. The remainder of the alignment does not occur within any identified city or planning area boundaries.

Alternative 3

As shown in **Figure 26**, Alternative 3 would require the conversion of approximately 2,337 acres of land to maintained highway ROW. Cultivated cropland comprises approximately 94% of the impacted land uses. Alternative 3 would impact approximately 91 acres of developed area, approximately 4% of its total 2,337-acre footprint. Most of the developed area impacted is open space. The southern-most 1.6 miles of Alternative 3 occur within the planning area boundary of Walnut Ridge, and this section is fully compatible with the comprehensive land use plans for the city. The remainder of the alignment does not occur within any identified city or planning area boundaries.

Figure 25: Land Cover Types Converted to Highway ROW under Alternative 2

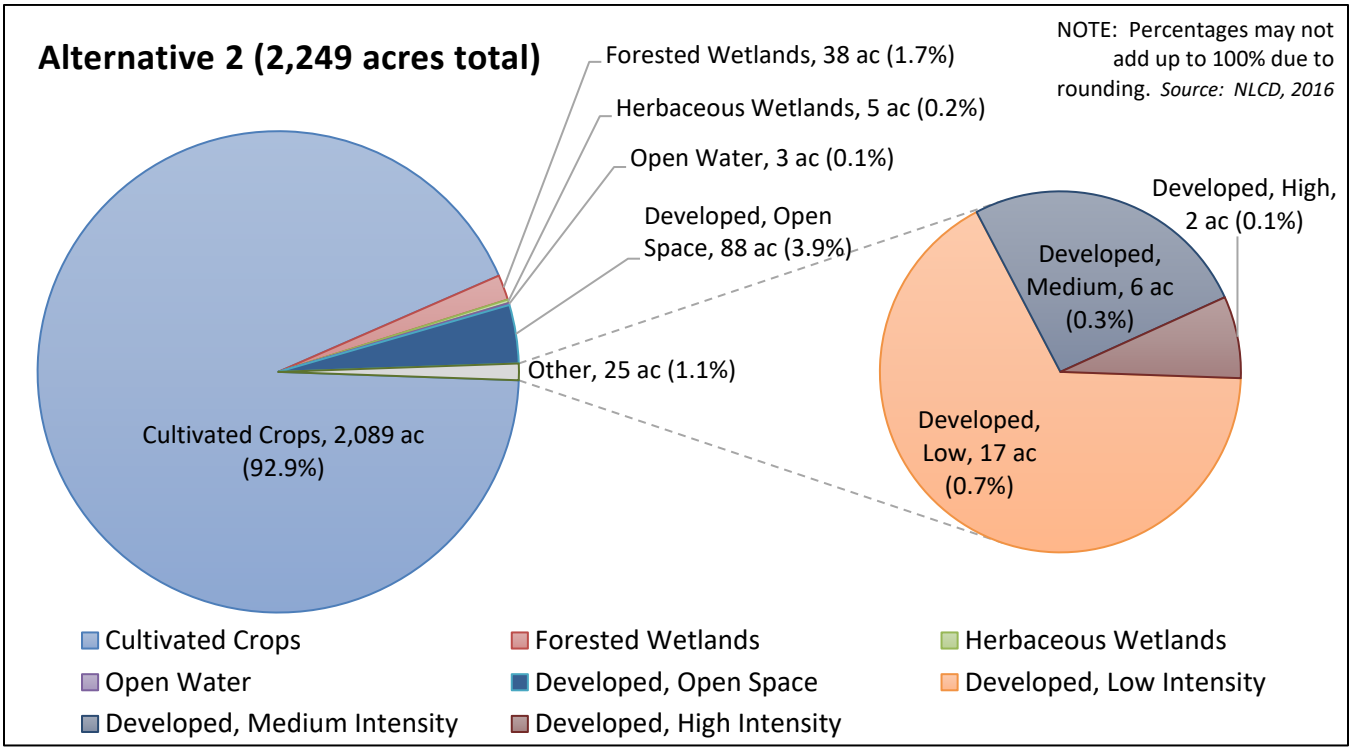
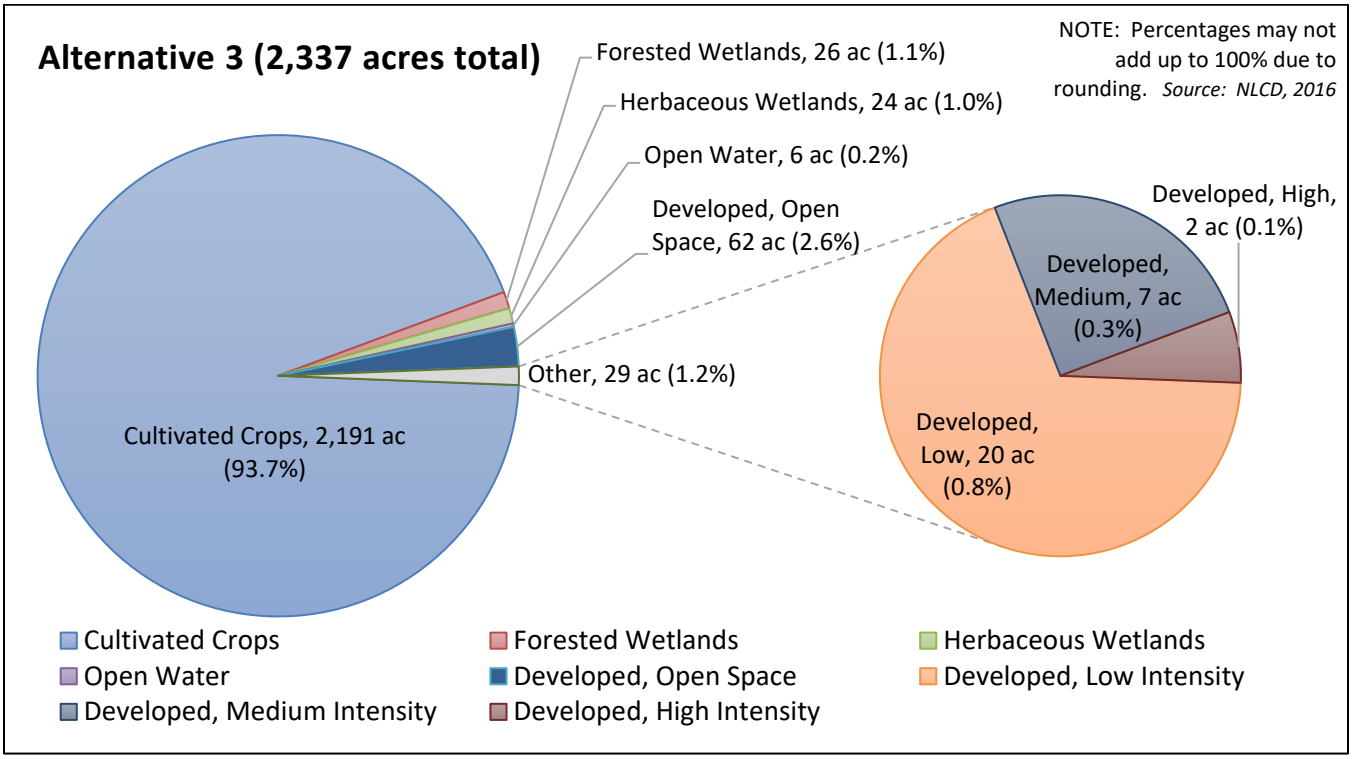


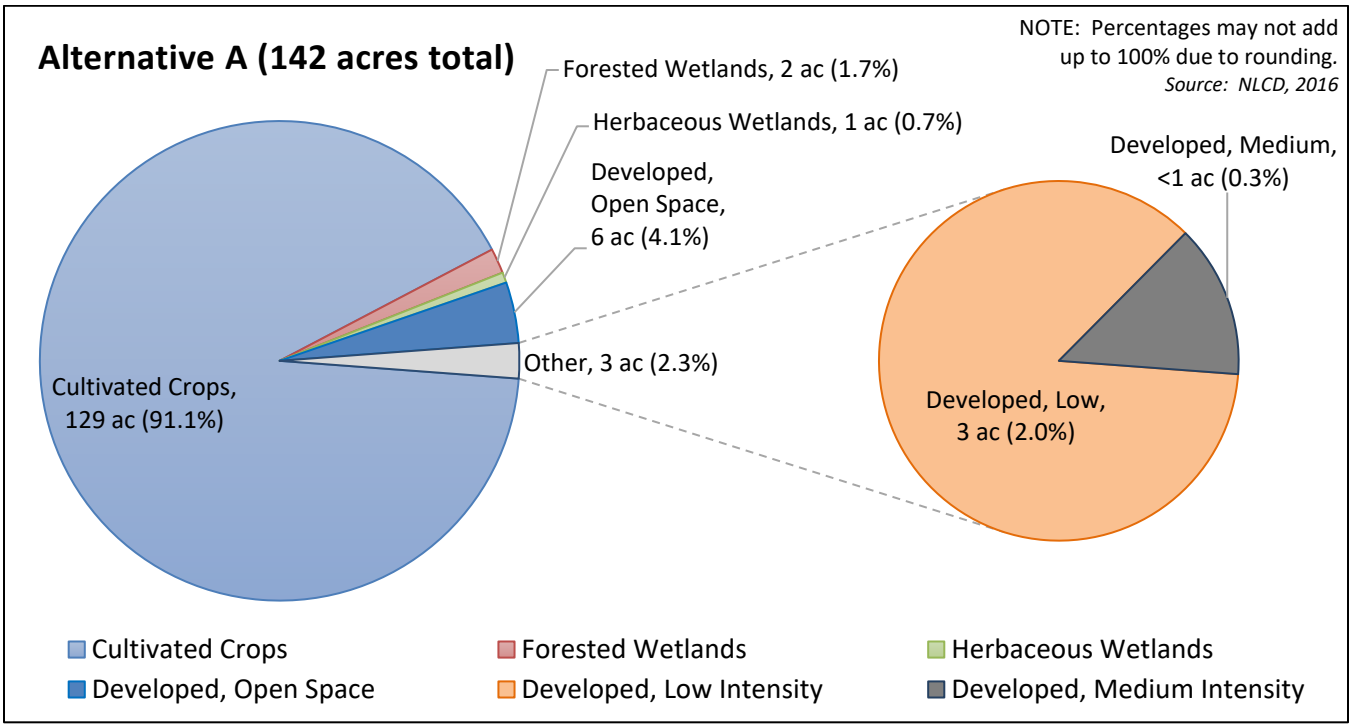
Figure 26: Land Cover Types Converted to Highway ROW under Alternative 3



Alternative A

As shown in **Figure 27,** Alternative A would require the conversion of approximately 142 acres of land to maintained highway ROW. Cultivated cropland comprises approximately 91% of the impacted land uses. Alternative A would impact approximately nine acres of developed area, approximately 6% of its total 142-acre footprint. Most of the developed area impacted is of open space. Alternative A does not occur within any identified city or planning area boundaries.

Figure 27: Land Cover Types Converted to Highway ROW under Alternative A



Alternative B

As shown in **Figure 28**, Alternative B would require the conversion of approximately 139 acres of land to maintained highway ROW. Cultivated cropland comprises approximately 75% of the impacted land uses. Alternative B would impact approximately 27 acres of developed area, approximately 19% of its total 139-acre footprint. This alternative requires the conversion of more developed area compared to Alternatives A and C because it is partially located along the existing Hwy. 67 corridor where development is concentrated. Most of the developed area impacted is open space development (7%), followed by medium (5%) and low intensity development (5%), then by high intensity development (2%). Alternative B does not occur within any identified city or planning area boundaries.

Alternative C

As shown in **Figure 29,** Alternative C would require the conversion of approximately 159 acres of land to maintained highway ROW. Cultivated cropland comprises approximately 92% of the impacted land uses. Alternative C would impact approximately seven acres of developed area, approximately 4% of its total 159-acre footprint. Most of the developed area impacted is of open space. Alternative C does not occur within any identified city or planning area boundaries.

Overall, no substantial land use compatibility impacts are anticipated that would create the need for mitigation of any of the action alternatives.

Figure 28: Land Cover Types Converted to Highway ROW under Alternative B

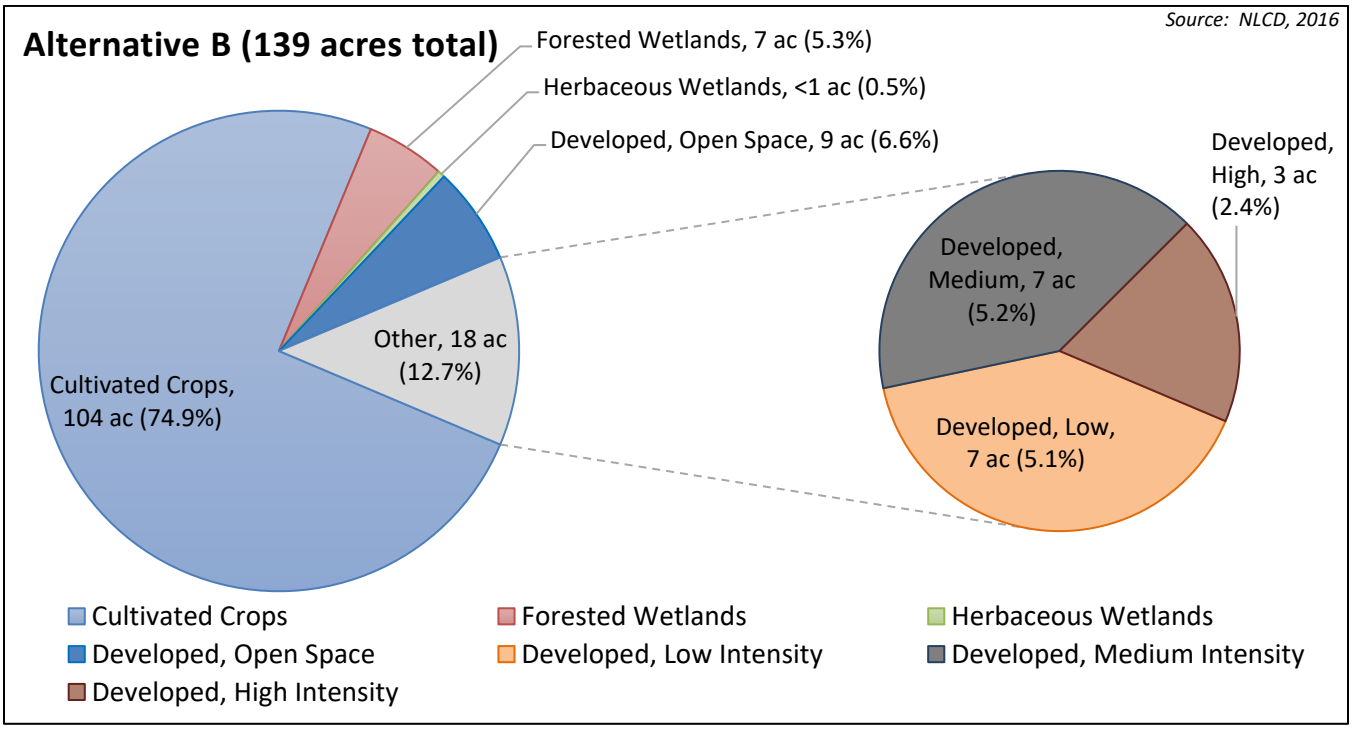
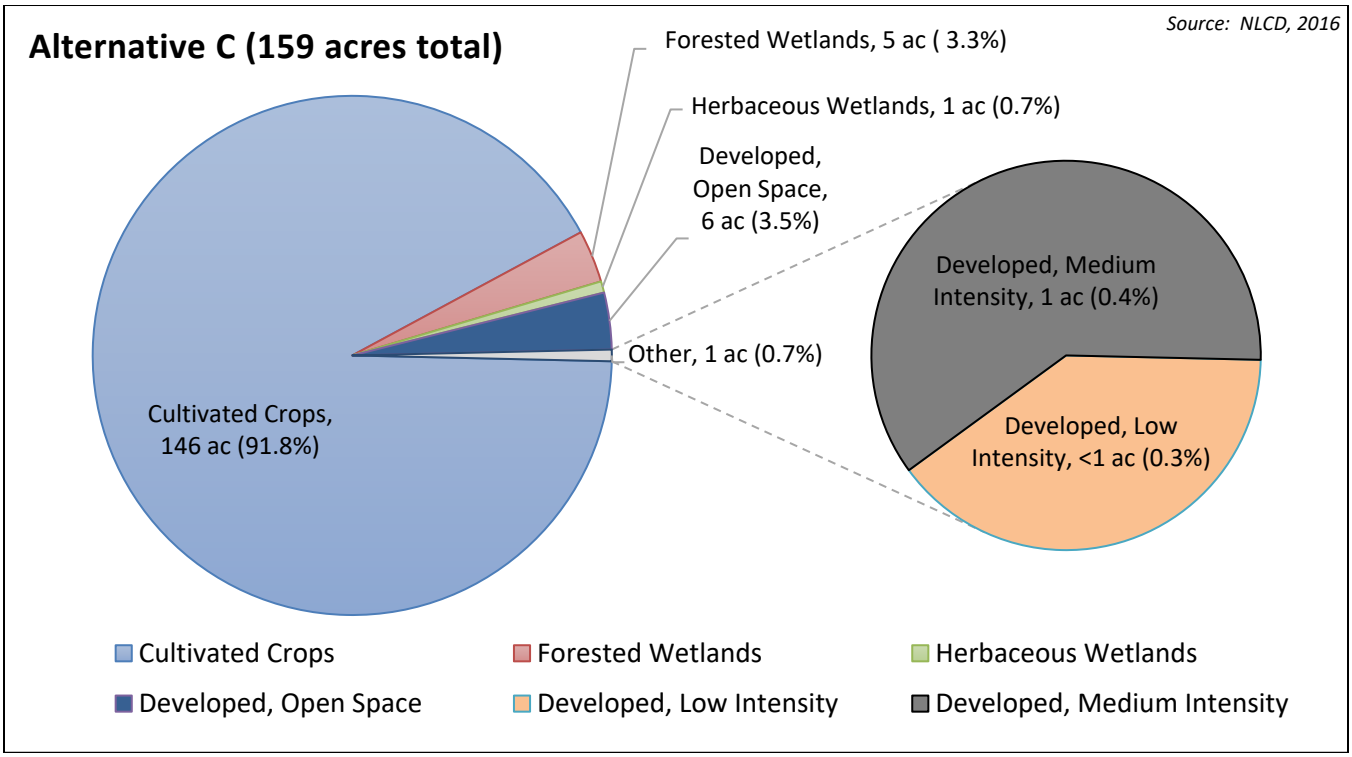


Figure 29: Land Cover Types Converted to Highway ROW under Alternative C



3.3 How would farmlands be affected?

Introduction and Methodology

As previously outlined (see Section 3.2 on land use and zoning), cultivated crops are the main land use within the project area. The dominant land use of agriculture is due to a combination of ideal topography (i.e., level land) and the presence of soils conducive to agriculture. Soils classified as "important farmland" by the NRCS are protected by the Farmland Protection Policy Act (FPPA) of 1981. The USDA, through NRCS, administers the FPPA to ensure that federal programs minimize unnecessary and irreversible conversion of these important soil types to non-agricultural uses. Project impacts on important farmland have been quantified by NRCS, a NEPA cooperating agency on this project. To help determine the extent of project-related farmland impacts, each action alternative was preliminarily evaluated with the Farmland Conversion Impact Rating Form (NRCS Form CPA-106) using a weighted average (per NRCS direction). A finalized Farmland Conversion Rating Form would be completed and submitted to NRCS for the Preferred Alternative in the FEIS/ROD. **Appendix D** provides a copy of the initial Farmland Conversion Rating Form (CPA-106) that was submitted to and received back from the NRCS.

The USDA also sponsors the Conservation Reserve Program (CRP), which is administered by USDA through the Farm Service Agency. In exchange for a yearly rental payment, farmers enrolled in the program agree to remove environmentally-sensitive land from agricultural production and plant species that would improve environmental health and quality. Contracts for land enrolled in CRP are 10-15 years in length. The long-term goal of this voluntary-participation program is to re-establish valuable land cover to help improve water quality, prevent soil erosion, and reduce loss of wildlife habitat. **Appendix D** also provides a copy of NRCS correspondence regarding these agricultural easements.

What are the different types of important farmland?

Prime farmland is defined by the USDA 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 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.

Soils classified as "prime farmland if drained" are also considered **prime farmland** by NRCS if they are currently being farmed.

Due to the extensive agricultural practices in the project area, NRCS considers any soil containing the "prime farmland if drained" caveat as being **prime farmland**.

As authorized through the 2008 Farm Bill, NRCS manages the Wetland Reserve Program (WRP), which is a voluntary incentive program offering landowners technical and financial support to protect, restore, and enhance wetlands on their property (NRCS, 2021). All action alternatives have been designed to avoid WRP sites.

Affected Environment

Agriculture is prevalent within each of the four counties where the proposed project occurs, especially Clay County. According to the Census of Agriculture (USDA, 2017), the percentage of land in farms of these counties is reported to be 27% for Randolph County, 55% for Lawrence County, 63% for Green County, and 73% for Clay County. The number of farms is 657 for Randolph County, 535 for Lawrence County, 631 for Green County, and 542 for Clay County (USDA, 2017). The average farm size is smallest in Randolph County, with farms averaging 339 acres, and greatest in Clay County, with farms averaging 529 acres. Acres of irrigated farmland range from 59,478 in Randolph County, 147,230 in Lawrence County, 164,821 in Green County, and 208,808 in Clay County (USDA, 2017). Based on the Census of Agriculture, soybeans are the major crop reported for all four counties.

The vast majority of the land within the project area is protected from flooding (see Section 3.27 on levees within the study area) and currently farmed. Thus, all of the following soils within the footprints of the action alternatives are considered by NRCS to be important farmland soils:

- Farmland of statewide importance
- Prime farmland
- Prime farmland if drained and/or either protected from flooding or not frequently flooded during the growing season

At the time of the March 2021 site investigation, rice was the dominant crop observed in the project area with some soybean and corn also observed. It is likely these crops are rotated between seasons and years. Numerous farm-related structures such as barns, grain bins (i.e., silos), and irrigation systems were also observed in the project area.

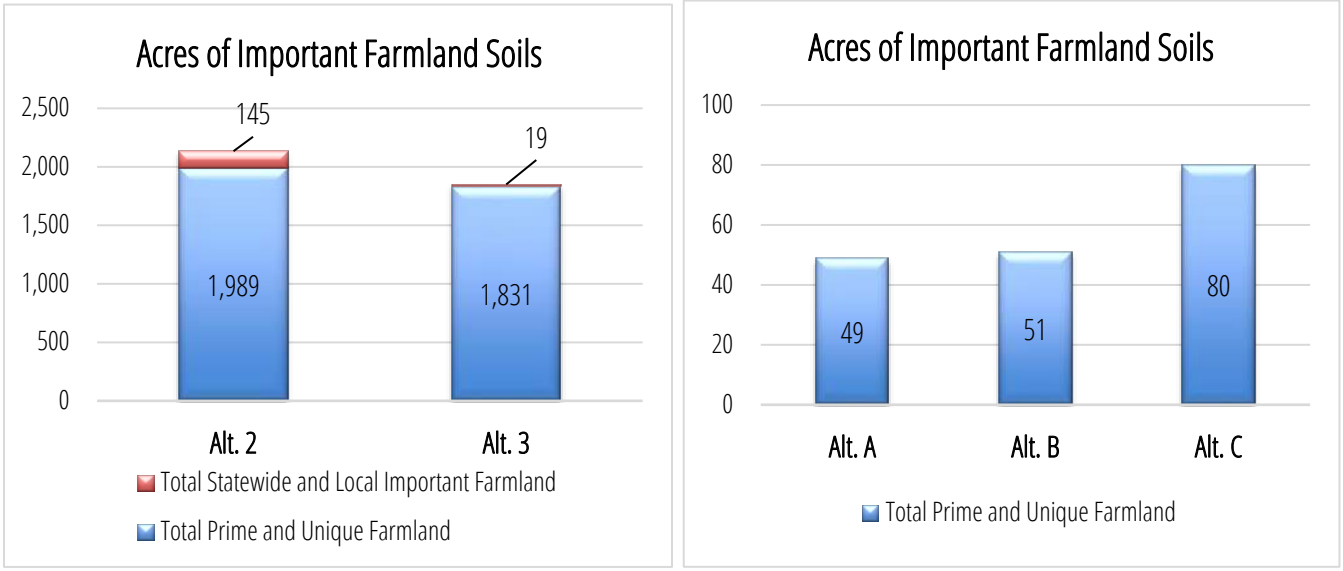
According to NRCS, 95% of the farmers in the project area use irrigation wells as a water source. Groundwater is pumped out of these wells, with pumps typically fueled by a nearby aboveground storage tank containing petroleum fuel, to flood the desired field. Each well may supply several different reaches of belowground pipelines for its irrigation system and they may cross fields directly, be routed around field edges, or they may transfer water to distant fields. Water is drained off the fields by nearby agricultural ditches, which are also prevalent throughout the project area. The locations of irrigation wells were determined based on Arkansas Natural Resources Commission (ANRC) well data (ANRC, 2021) combined with aerial imagery. Drainage ditches were located using aerial imagery and most confirmed during the site investigation.

The project area also contains two CRP sites near the town of Biggers. One WRP site is located approximately 1.3 miles south-southeast of Biggers but is avoided by the project.

Environmental Consequences

Figure 30 shows the number of acres of important farmland soils, as reported by NRCS, that would be converted to highway ROW by each action alternative. Compared to each alternative's total footprint, important farmland comprises approximately 95% of Alternative 2, 79% of Alternative 3, 35% of Alternative A, 37% of Alternative B, and 50% of Alternative C.

Figure 30: Acreages of Important Farmland Soils Converted by each Action Alternative



Source: NRCS, 2021

Specific project impacts include a loss of prime farmland (see above) and a reduction in the amount of land held by some farmers. For all action alternatives, any existing farm roads and/or haul routes impacted may have to be relocated.

Other impacts may include removal of agricultural structures such as barns and grain bins, disruptions to existing irrigation and/or drainage systems, farmland access changes, and the splitting/bisection of some farms. Splitting farms would not only convert farmland to highway ROW but may also result in the disruption of some farm operations. Although split farmland is expected to remain in production through lease, trade, or sale to adjacent landowners, these are still important impacts to farmers in the region that need to be considered. Grain storage facilities and barns

(equipment sheds) may have to be relocated in their general vicinity. It is anticipated the construction of the project would not create the loss of employment for farm workers. As detailed in Section 3.29, there is limited expected induced growth and redevelopment of land along the corridor and frontage roads. For all action alternatives, the proposed facility would provide easier farm to market access and more efficient transportation of farm supplies with the increased connectivity the new interstate would provide. Additional impacts of each alternative are discussed below.

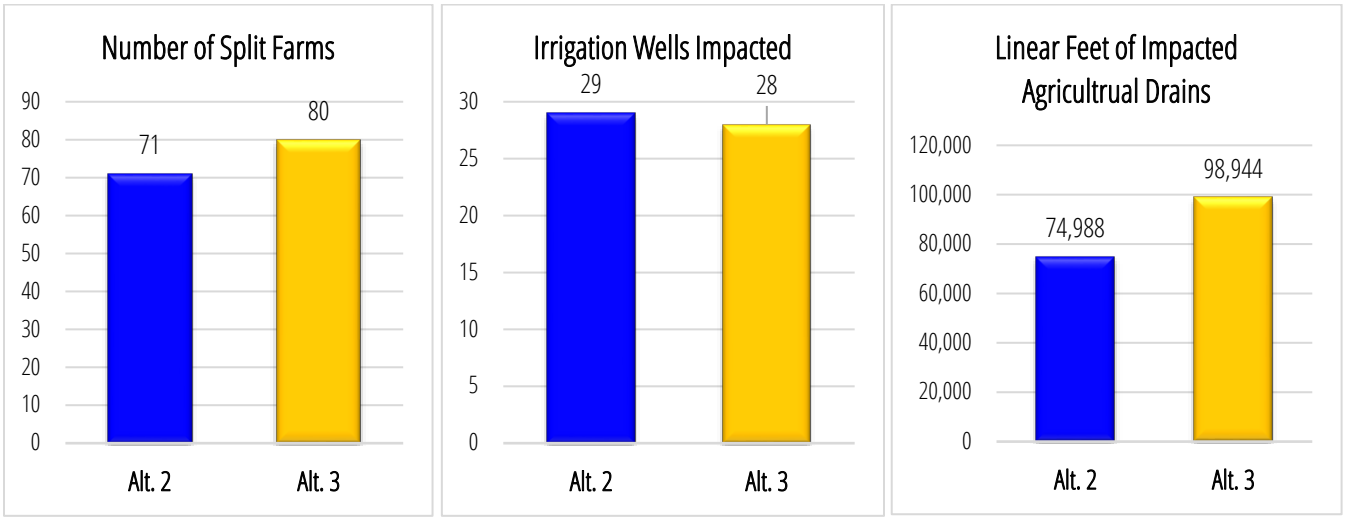
No Action Alternative
The No Action Alternative would not involve construction, thus no impacts on prime farmland or agricultural activities would occur.

Alternative 2
Alternative 2 would convert a total of 2,134 acres of important farmland soils (**Figure 30**) and impact approximately 2,053 acres that are currently being farmed. Based on preliminary calculations, Alternative 2 generated 158 total points for the Farmland Conversion Rating Form. As shown in **Figure 31**, Alternative 2 would also split approximately 71 farms and impact 78 farm owners. Additionally, Alternative 2 would impact approximately 29 irrigation wells and a total of approximately 74,988 LF of ditches or streams that appear to function to drain adjacent fields (**Figure 31**). Well abandonment would comply with procedures pursuant to the Arkansas Department of Agriculture's Water Well Construction Commission regulations. The construction of Alternative 2 would also result in some positive impacts to farm operations by providing easier farm to market access and more efficient transportation of farm supplies with the increased connectivity to the new interstate.

The **total points** generated using the Farmland Conversion Rating Form can range from 0-260. According to NRCS, 160 points is designated as the "affect threshold" above which alternatives should be considered.

Alternative 2 would impact approximately 7.7 acres of a CRP site located 1.6 miles south of the town of Biggers.

Figure 31: Farmland Impacts Incurred by Alternatives 2 and 3



Source: Project Team, 2021

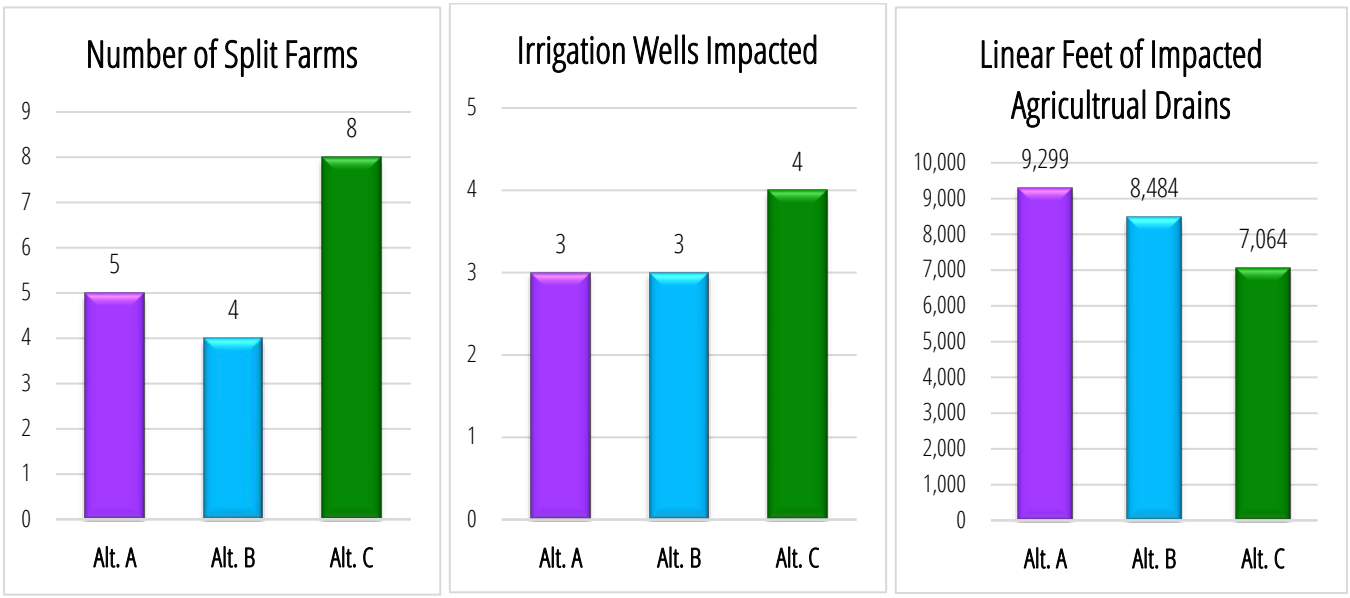
Alternative 3
Alternative 3 would convert a total of 1,850 acres of important farmland soils and impact approximately 2,166 acres that are currently being farmed. Based on preliminary calculations, Alternative 3 generated 149 total points for the Farmland Conversion Rating Form. Additionally, Alternative 3 would split approximately 80 farms and impact 92 farm owners (**Figure 31**). Alternative 3 would also impact 28 irrigation wells and a total of approximately 98,944 LF of ditches or streams that appear to function to drain adjacent fields. The construction of Alternative 3 would result in the same positive impacts described for Alternative 2.

Alternative A
Alternative A would convert a total of approximately 49 acres of important farmland soils (**Figure 30**) and impact approximately 128 acres that are currently being farmed. Based on preliminary calculations, Alternative A generated 142 total points for the Farmland Conversion Rating Form. As shown in **Figure 32**, Alternative A would also split approximately five farms and impact six farm owners. Additionally, Alternative A would impact three irrigation wells and a total of approximately 9,299 LF of ditches or streams that appear to function to drain adjacent fields (**Figure 32**).

Alternative B
Alternative B would convert a total of approximately 51 acres of important farmland soils and impact approximately 106 acres that are currently being farmed. Based on preliminary calculations, Alternative B generated 135 total points for the Farmland Conversion Rating Form. Additionally, Alternative B would split approximately four farms and impact five farm owners. Additionally, Alternative B would impact three irrigation wells and a total of approximately 8,484 LF of ditches or streams that appear to function to drain adjacent fields.

Alternative C
Alternative C would convert a total of approximately 80 acres of important farmland soils and impact approximately 143 acres that are currently being farmed. Based on preliminary calculations, Alternative C generated 139 total points for the Farmland Conversion Rating Form. Additionally, Alternative C would split approximately eight farms and impact 11 farm owners. Alternative C would also impact four irrigation wells and a total of approximately 7,064 LF of ditches or streams that appear to function to drain adjacent fields.

Figure 32: Farmland Impacts Incurred by Alternatives A, B, and C



Source: Project Team, 2021

Mitigation

The splitting of farmland was minimized to the extent possible by placing the proposed alignments parallel and adjacent to existing property lines. Additionally, existing highway ROW was utilized to every extent practicable. Split farms may have the opportunity to restore access by the use of private farm roads if agreements are worked out between landowners. The impact of splitting farms could be mitigated through the construction of frontage roads and overpasses, or by severance damages paid to affected owners if damages are established through the appraisal process. Restoration of access would be analyzed through the use of frontage road studies during final design. In many cases,

frontage roads would allow farming to continue with only minor adjustments. Severance payments compensate farm owners for access to any portion of their farm where the reestablishment of access would be cost prohibitive.

To protect farmland soils, management and design practices would be incorporated into the project to limit adverse effects to designated soils by implementing proper control of sedimentation and erosion during construction.

Mitigation to the CRP impacts under Alternative 2 would include financial compensation to remove the land from the remaining contract schedule.

3.4 How would visual resources be affected?

Introduction and Methodology

Visual resources are those physical features within a viewshed, or area of visual effect (AVE), that comprise the visual landscape. Visual resources include features such as roadway elements like cross sections and construction materials, buildings and other manmade structures, land, water, and vegetation. These elements are the stimuli upon which a person's visual experience is based. Consideration of visual impacts from the project was in accordance with FHWA's Guidance for Visual Impact Assessment of Highway Projects (2015). A Visual Impacts Assessment (VIA) Memo (including a scoping questionnaire and visual impact definitions) is provided in **Appendix E.**

Desktop evaluation of satellite imagery, in combination with a site visit, were used to identify the visual character along each action alternative and assess the potential effects of the proposed project on the AVE.

A **viewshed** is the area that is visible from a specific location. The viewshed may be from the point of view of a highway traveler or a highway neighbor. The area of a project's visibility is referred to as the area of visual effect (**AVE**). The AVE is determined by the physical environment and the limits of human sight.

Travelers can be drivers, bicyclists, and pedestrians with views *from* the road and **project neighbors** can be residents and businesses with views *to* the road.

Affected Environment

The project's AVE occurs within a flat, rural landscape in northeast Arkansas. Extensive agricultural practices throughout the region have created a patchwork-like and largely homogenous landscape bisected by long and linear features such as roadways, railroads, and waterways. Long distance views are uncommon due to a combination of elevation uniformity and the screening effect of wooded areas along waterways and transportation features. The typical viewshed of each alternative extends up to one quarter of a mile as most features within these extents were visible if unobstructed. Few native natural areas exist, although the large river in the area (Black River) acts as a vegetated, sinuous, deciduous corridor located between Alternatives 2 and 3. Other narrow wooded riparian zones are present within the project area as well. The Black River WMA is located between Alternatives 2 and 3 but only a few small portions of this WMA are visible from Alternative 2. Overall, the landscape through which the proposed improvements occur is considered typical of what occurs across the region and is therefore not considered to be aesthetically or visually unique. There are no officially designated scenic areas or visually sensitive resources within the project limits. The existing visual character of each alternative is described below and includes photographs showing typical views seen by highway travelers and neighbors.

Alternatives 2 and 3

Features within the project area that would be visible by travelers along Alternatives 2 and 3 include existing structures (primarily residential and commercial buildings, grain bins, and barns), cemeteries, the UPRR, and local and county roads. Additionally, the southern terminus of Alternative 2 and 3 in Walnut Ridge includes the Hwy. 67/Hwy. 412 interchange (**Figure 33**). Along their shared route near Corning, Alternatives 2 and 3 also cross existing Hwy. 67 to the west and north of Corning (see **Figure 34** for the northern crossing).

Figure 33: Existing Hwy. 67 at the Hwy. 67/Hwy. 412 Interchange at Start of Alternatives 2 and 3

View of the existing Hwy. 67 at the Hwy. 67/Hwy. 412 interchange. Photograph 1 was taken below the Hwy. 412 overpass at the beginning point of Alternatives 2 and 3; facing northeast. Photograph 1 also shows a lane of Hwy. 67 that is currently closed but would be extended by the proposed project. The Hwy. 67 southbound ramp is located nearby but not visible in the photograph. Photograph 2 was taken between the Hwy. 67 northbound ramp from Hwy. 67 and the Hwy. 67 northbound on ramp from Hwy. 412. This photograph shows the view a future traveler would have when facing east along the alignment of Alternative 2 or 3.

Figure 34: Agricultural and Residential Area North of Corning where Alternatives 2 and 3 Cross Hwy. 67

Photograph 3 shows the view from a potential Alternative 2 and 3 traveler of the existing agricultural field that is located on the west side of Hwy. 67. Alternatives 2 and 3 would cross this field. Photograph 4, which was taken facing northeast along the proposed alignment of Alternatives 2 and 3, shows the view from a potential Alternative 2 and 3 traveler of typical low-density residential areas that are scattered along Hwy. 67. The homes visible in the photograph would be relocated by the proposed project. Alternatives 2 and 3 would construct an interchange at this location.

The estimated number of neighboring structures would have partial or complete views of the proposed roadways and would be visible to highway travelers is provided in **Table 10**. All residential neighbors within the AVE are single-family homes and rural structures associated with the surrounding agricultural fields. Many of the residences feature trees, grassy lawns, and other conventional landscaping elements. However, most of these rural residences also have multiple adjacent or nearby outbuildings such as barns, grain bins, or sheds. Additionally, some of the farming operations within the AVE contain multiple outbuildings and scattered equipment. Existing infrastructure, much of which are unpaved county roads, lack curbs and gutters or sidewalks.

Table 10: Neighboring Structures Having Partial or Complete Views of the Proposed Roadways

Neighbor Type	Main Corridor Alternatives		MO Connector Alternatives		
	2	3	A	B	C
Residential	63	79	31	19	24
Commercial/Retail*	4	5	6	2	4
Farming Operation	12	9	0	0	1
Cemetery	6	3	0	0	0

*Includes non-profit facilities; *Source: Project Team, 2021*

Natural resources that would be visible by highway travelers along Alternatives 2 and 3 primarily include farmland. As wooded areas are relatively sparse within the project area, agricultural fields within the AVE would afford often complete views of the proposed roadway and would be visible to highway travelers. While individual farmstead views would be considered visually appealing, the extreme uniformity and repetitiousness of land use may not be appealing to some viewers. Alternative 2 would cross the Black River on new location east of Pocahontas, while Alternative 3 would cross the Black River on new location south of Corning. Several other small watercourses are present in the AVE, but many are not visible simply because there are no neighbors present. A few stock ponds, small patches of wooded areas, and agricultural ditches are also present throughout the AVE.

Photographs showing representative, existing views along each alignment and the overall existing characters of Alternatives 2, 3, A, B, and C are provided in **Appendix E**.

Alternatives A and C

Features that would be visible by travelers along Alternatives A and C include local roads and existing structures such as single-family homes, commercial buildings, grain bins, and barns. Most of the residences have multiple adjacent or nearby outbuildings such as barns or sheds. The estimated number of neighboring structures would have partial or complete views of the proposed roadways and would be visible to highway travelers is provided in **Table 10**. Besides Hwy. 67, existing infrastructure consists of unpaved county roads that lack curbs and gutters, shoulders, and sidewalks. Non-residential neighbors are surrounded by large parking lots (the church's is unpaved), but also feature some trees and grasses. The Arkansas Tourist Information Center, which is within the Alternative A viewshed, also has some conventional landscaping elements adjacent to the building and covered public-use pavilions.

Natural resources that would be visible by travelers are similar along the Alternative A and C corridors and primarily include farmland. As wooded areas are relatively sparse within the project viewshed, agricultural fields would afford often complete views of the proposed roadway and in turn would be visible to travelers. Small patches of wooded areas and agricultural ditches are also present along Alternatives A and C.

Alternative B

Most of the structures visible along Hwy. 67 appear compatible with their surroundings. Features that would be visible by travelers along the Alternative B corridor include existing structures (residential and retail; see **Table 10**), driveways, and local crossroads. The residential neighbors in the AVE are single-family homes clustered along Hwy. 67, and some appear to be associated with the surrounding agricultural fields. Many structures lack an architecturally uniform appearance and have little or no landscaping. Existing infrastructure within the AVE of Alternative B, which includes Hwy. 67, typically lacks curbs and gutters and sidewalks.

Natural resources along Alternative B include farmland, a small pond, and a few small patches of wooded areas.

Environmental Consequences

Construction of any of the action alternatives would temporarily alter the area's visual character due to the short-term presence of construction vehicles and equipment, grading and excavation, and vegetation clearing throughout the project footprint. However, much of the temporary construction impacts along these four alternatives would not be viewed by anyone. For Alternatives 2, 3, A, and C, project construction would only be visible from existing roadways or

to the existing project neighbors. Highway travelers would not be allowed on the new alignment roadways during construction. For Alternative B, which partially occurs along existing Hwy. 67, temporary construction impacts would be much more visible due to the presence of more viewers (existing travelers and site-specific neighbors). Ground disturbance impacts along the proposed highway ROW would be short/medium-term (1-5 years) until new vegetation becomes established. Overall, temporary visual impacts from construction activities would have minor short-term impacts on views, are not expected to result in an adverse response by typical viewers, and would be localized to viewers for whom exposure would be increased. Adverse impacts to visual quality are not expected for any alternative.

Alternatives 2, 3, A, and C

Project visual resource impacts for Alternatives 2, 3, A, and C consist of the construction of the new interstate, including proposed interchanges and bridges, and would alter the current appearances of these corridors. As described in Chapter 2 and shown in **Figure 15**, proposed project visual resources include construction of a four-lane divided highway with a depressed grass median within an approximately 400-foot-wide ROW. In addition to improving safety, the divided grass median is considered a visual streetscape enhancement and would be seeded with a wildflower seed mix. Overall, the proposed project's scale and form (i.e., cross sections) and materials (i.e., construction materials) would be compatible with the visual character of the project environment. Project visual resources uncommon in the area would not be introduced. As applicable, local planning and development guidelines would be taken into consideration during final design to ensure visual compatibility of the Selected Alternative. Based on the factors described above, the project visual resources of Alternatives 2, 3, A, and C are expected to be beneficial to the existing overall visual character of the project area.

Alternatives 2, 3, A, and C would also alter natural visual resources and other features. The addition of a roadway would introduce new infrastructure to nearby residential neighbors and would create new views for potential travelers. Construction along these new location sections would modify visual resources by removing some existing structures and replacing farmland, some trees, and vegetation with infrastructure or ROW. Additionally, Alternatives 2 and 3 would each construct a new bridge over the Black River. The heights of these proposed bridge structures would increase neighbors' views of them, which would include any boaters on the river or within nearby portions of the Black River WMA. Only five residential neighbors are within one mile of the proposed Alterative 2 bridge, and none are present at the Alternative 3 bridge location. The proposed bridge structures would expand traveler views of the surrounding area, which would be almost all undeveloped natural areas including the Black River and surrounding forested wetlands. The proposed bridge over the Black River for Alternative 2 would make the Black River WMA more visible to travelers for Alternative 2. These new elevated structures would represent a moderate change from the existing visual character of the project area. Other bridges and interchanges are proposed along these alternatives and are anticipated to have similar visual impacts as the proposed bridge over the Black River. Farmland reduction is anticipated to result in only minor adverse changes to viewer exposure or awareness as its abundance within the project area makes it unlikely that changes are discernable. The increased visibility of the Black River WMA is anticipated to be a minor beneficial change to travelers. The addition of a roadway near the Black River WMA is anticipated to result in only minor adverse changes to users of the Black River WMA as viewer exposure is anticipated to be very low. The visible portions of the Black River WMA contain dense wooded areas and wetlands. There are no building structures, public gathering areas, or other recreational establishments within the visible portions of the Black River WMA. Overall viewer sensitivity to alterations to cultural and natural visual resources is anticipated to be low as viewer exposure would be low (i.e., there are few project neighbors present to detect changes), viewer awareness would be low to moderate (i.e., the proposed improvements are not unique to the region), travelers would be moving quickly along the roadway, and the uniformity in elevation limits the distance that changes are visible.

Visual quality impacts are anticipated to range from neutral to adverse for the cemeteries within the corridors of Alternatives 2 and 3. For the church and information center within the viewshed of Alternative A, visual quality impacts may be beneficial due to increased visibility and exposure to travelers. Permanent adverse impacts are anticipated for the few residential neighbors for whom exposure would be substantially increased. Visual quality impacts are anticipated to be beneficial for most travelers.

Alternative B

Project visual resource impacts consist of widening approximately a 0.5-mile of Hwy. 67 along its existing alignment and adding an interchange and frontage roads that were not previously present. These proposed visual resources would alter the current appearance of the Alternative B corridor. As described in Chapter 2 and shown in **Figure 15**, proposed project visual resources include construction of a new interstate. These proposed improvements would result in similar project visual resource impacts as described for the other four action alternatives and the proposed project's scale, form, and materials also would be compatible and coherent with the visual character of the existing environment. Project visual resources uncommon in the area would not be introduced. Based on the factors described above, the project visual resources of Alternative B are expected to be beneficial for viewers to the existing overall visual character of the project area.

Alternative B would also alter natural resources and other features. Along the approximately 1.8 miles on new alignment, the addition of a roadway would introduce new infrastructure to nearby residential neighbors and would create new views for potential travelers. Construction along these new location sections would modify visual resources by removing some existing structures and replacing farmland, some trees, and vegetation with infrastructure or ROW. Along the approximately 0.5-mile on existing alignment, the increase in roadway width and profile would modify the appearance of the existing roadway and would represent a minor change from the project area's existing visual character. Removing some of the existing structures and clearing adjacent farmland and vegetation along Alternative B would also alter the appearance of the corridor. Proposed improvements to the existing Hwy. 67 facility would enhance the corridor by adding positive visual resources such as the grass median. Farmland reduction is anticipated to result in only minor adverse changes to viewer exposure or awareness as its abundance within the project area makes it unlikely that changes would be discernable. Few impacts to other natural resources are anticipated.

As a result of widening the roadway, some project neighbors along existing Hwy. 67 would be in closer proximity to the roadway and would have a more direct view of the roadway. For all neighbors, the proposed improvements would be coherent with existing facilities and compatible with surrounding land development principles. Nevertheless, impacts may be adverse for residential neighbors for whom views of the roadway would become prominent. For the retail neighbor, visual quality impacts may be beneficial due to its increased visibility and exposure to travelers. For travelers, Alternative B would not create substantial adverse impacts on visual quality as only minor adverse changes to the natural and man-made environments are anticipated.

Mitigation

Best management practices (BMPs) would be implemented, including reseeding, natural re-vegetation, and erosion prevention that would aid in reducing visual impacts along the route while meeting the project objectives. Considerations given to design quality during early project planning include the proposed divided grass median, which is considered a visual streetscape enhancement and would act as a minimization/mitigation measure for visual impacts. Aesthetic considerations such as "branding" or painting the new bridges in complementary colors would be considered at the time of design. Additional minimization and/or mitigation measures are not anticipated as project visual resources would be compatible with existing structures, viewer exposure would be low due to the rural nature of the project area, and the overall changes to visual quality would be predominantly neutral.

3.5 Would the project require relocations and property acquisitions?

Introduction and Methodology

To construct the proposed interstate facility, all action alternatives would require property acquisition for new ROW. Property acquisition may necessitate the relocation of a building structure and/or may require acquisition of all, or only a portion of, unoccupied land.

Acreages of required property acquisition were determined based on the conceptual ROW plans that estimate a 400-foot-wide ROW for each action alternative. Publicly available parcel data obtained from DataScout, OneMap,

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 ROW acquisition requires removing a structure, taking most of a business's parking, or severing access to a property.

and Clay County was used to quantify ROW acquisition and costs, and to determine the likelihood of renter-occupied dwellings. Estimated ROW costs were also based on estimates from Zillow, Marshall and Swift (a private company commonly relied upon by ARDOT that provides building cost data), and on established value per acre estimates provided by ARDOT. Renter-occupied dwellings were identified to be those that had a physical address different from their tax billing address and/or those not identified as a homestead parcel by county assessor data. All renter-occupied dwellings were also considered a landlord business. Structures identified as requiring relocation were those within the proposed ROW footprint or those located 10 feet or less from an action alternative's ROW footprint. Excluding grain bins (i.e., silos), structures less than 500 square feet in size were not assessed for relocation. Homes or businesses that would no longer be accessible and where frontage roads do not appear feasible were also counted as a relocation. For this project, relocations are classified into one of the following six types:

- Residential Owner – A home owned by its resident
- Residential Tenant – A home occupied by a renter
- Landlord Business – A home operating as a landlord business
- Business – A retailer or service provider such as a food vendor or an automotive repair shop
- Farm Operation – Aggregated structures such as barns and grain bins associated with an operational agricultural farm
- Nonprofit Organization – A church or public visitor's center

Personal property relocations were also quantified. Personal property relocations consist of individual grain bins or a small group of grain bins at a single location, barns and/or equipment sheds, and abandoned residential and commercial structures.

A Conceptual Stage Relocation Statement (CSRS) was completed to identify comparable replacement residential and commercial properties within an approximate eight-mile radius of each displacement and is included in **Appendix F**. The available housing inventory indicates that at least 10 comparable (i.e., those listed from $50,000 to $150,000) replacement dwellings are available for sale at the time of the inventory for the relocations required by Alternative 2, 24 comparable (i.e., those listed from $50,000 to $150,000) are available for the relocations required by Alternative 3, and 22 comparable (i.e., those listed up to $200,000) are available for Alternatives A, B, and C. Additional details are provided in the CSRS.

Affected Environment

The affected environment consists of residential, commercial, agricultural, and tax-exempt parcel types. The UPRR also passes through the study area, primarily running parallel to Hwy. 90, and Alternatives 2 and 3 each cross the UPRR once. Alternatives 2 and 3 each also cross a privately-owned airstrip north of Corning that functions for personal use by the landowner.

For all alternatives, U.S. Census data (2015-2019 ACS) indicates that the majority (71-81%) of homes within block groups containing the relocations associated with each alternative are owner-occupied rather than renter-occupied, with the exception of one block group in Randolph County for Alternative 2 that is 44% owner-occupied.

For most of the action alternatives on new location, little to no existing highway ROW is present. For Alternative B, which would widen approximately a half of a mile of existing Hwy. 67, the proposed roadway requires more ROW than currently exists on Hwy. 67. Therefore, additional ROW would be purchased from property owners to accommodate the wider roadway.

Parcel sizes along the action alternatives vary in size from small residential lots to large agricultural tracts. Due to the rural nature and dominance of agricultural crops within the project area along Alternatives 2 and 3, there are few residential dwellings present. Thus, for most of the parcels requiring property acquisition, only a portion of farmland would be required, and the remaining useable land, and associated homestead if present, is retained by the property owner. For Alternatives A, B, and C, which are located near Hwy. 67, the average parcel sizes are smaller than those associated with Alternatives 2 and 3 and there are more structures present along these alternatives.

Environmental Consequences

Table 11 outlines the cost, number, and type of relocations; cost and acreage of ROW that would be acquired; and the number of landowners impacted for each alternative. Impacted landowners include those affected by relocations or property acquisition. Property acquisition would include the purchase of residential land, homes, commercial land, businesses, nonprofit facilities, and/or agricultural lands.

As described in the CSRS (**Appendix F**), the supply of replacement housing is expected to be adequate for all relocated residents. In addition, for some of the relocated residents or businesses, adequate land to rebuild or move structures would remain after ROW acquisition. In these cases, relocated residents or businesses may choose to stay on their remaining properties to rebuild or relocate a site-built-home, mobile home, or warehouse/garage structure.

All parcels would continue to have access to Hwy. 67/future I-57 via new interchanges, frontage roads, or county roads. In addition to ROW acquisition, the project would potentially require temporary or permanent easements for construction or utility location; however, these details would not be determined until final design. Details on property acquisition impacts required by each alternative are provided below.

Table 11: Preliminary ROW and Relocations Required for Each Alternative

Impact Type		No Action Alt.	Main Corridor Alternatives		MO Connector Alternatives		
			2	3	A	B	C
Relocations	Residential Owner	0	3	6	0	0	2
	Residential Tenant	0	1	3	1	6	0
	Landlord Business	0	1	3	1	6	0
	Business	0	0	0	0	1	0
	Farm Operation	0	0	0	1	1	0
	Nonprofit Organization	0	0	0	0	0	0
	TOTAL	0	5	12	3	14	2
Personal Property Impacts		0	10	7	0	11	5
Estimated Relocation Cost in Thousands		$0	$193.5	$382.5	$77	$350	$105
Landowners Affected by ROW Acquisition*		0	81	103	9	19	20
Acres of Required ROW Acquisition	Residential**	0	9	26	<1	12	8
	Business and Nonprofit	0	0	<1	1	14	<1
	Agricultural	0	2,173	2,248	140	108	149
	TOTAL	0	2,182	2,274	141	135	157
Estimated ROW Cost in Millions		$0	$16.896	$17.708	$1.242	$1.726	$1.339
Total Cost in Millions (Relocation + ROW)		$0	$17.089	$18.091	$1.319	$2.076	$1.444

* Affected landowners includes those affected by relocations; ** ROW acquired from any residential parcels, regardless of owner vs. tenant occupied; ***Total may not equal sum of parts due to rounding; *Source: Project Team, 2021*

No Action Alternative

The No Action Alternative would not require existing residences, businesses, or other structures to be relocated and no new ROW would be acquired.

Alternative 2

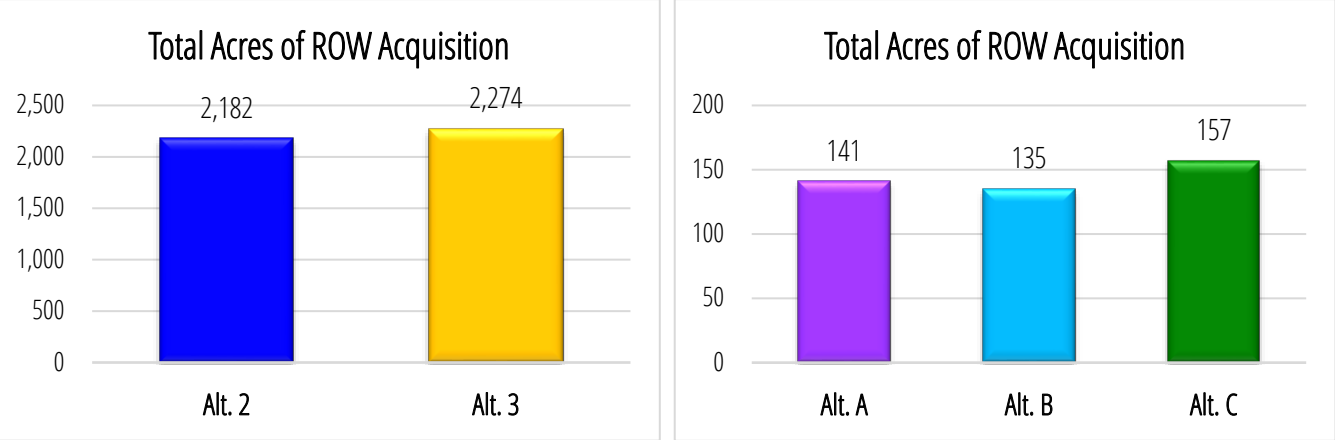
Alternative 2 is anticipated to require a total of five relocations consisting of three residential owners, one residential tenant, and one landlord business (**Table 11**). Alternative 2 also requires 10 personal property relocations, the majority of these being barns and grain bins but one is an airstrip described as follows. Where Alternatives 2 and 3 follow the same alignment at the north end of the project area, they come into close proximity to an unnamed airfield located 3.2 miles north of Corning. Neither alternative impact structures associated with this feature, but they are located approximately 200 feet east of the east end of the runway pavement and are atop the grass portion of the airstrip, which is also used by the landowner. According to the owner, the close proximity of Alternatives 2 and 3 would render this

airstrip non-functional due to safety concerns. As there is a hangar immediately west of the landing strip, the user primarily only takes off to the east and lands to the west, making the east end of the airfield more critical.

As shown in **Figure 35**, a total of approximately 2,182 acres of ROW from an estimated 81 landowners would be acquired under Alternative 2. The vast majority (99.6%) of ROW acquisition is of agricultural lands. Total cost of the ROW acquisition is estimated to be $17,089,300. This value does not equal the sum of parts presented in **Table 11** due to rounding.

Approximately 3.6 miles northeast of Walnut Ridge, Alternative 2 would require an overpass bridge spanning the UPRR tracks. As UPRR presumably owns the ROW along the railroad tracks, if ROW was required at this crossing, it would require a joint use agreement to be executed.

Figure 35: Total Acres of ROW Acquisition



Source: Project Team, 2021

Alternative 3

Alternative 3 is anticipated to require a total of 12 relocations consisting of six residential owners, three residential tenants, and three landlord businesses (**Table 11**). Alternative 3 also requires seven personal property relocations. One of the personal property relocations is of the same privately-owned airstrip as described for Alternative 2.

As shown in **Figure 35**, a total of approximately 2,274 acres of ROW from an estimated 103 landowners would be acquired under Alternative 3. The vast majority (98.8%) of ROW acquisition is of agricultural lands. Total cost of the acquisition is estimated to be $18,090,700.

Approximately 2.2 miles north-northeast of Knobel, Alternative 3 would require an overpass bridge spanning the UPRR tracks. Requirements/impacts would be the same as described for Alternative 2.

Alternative A

Alternative A is anticipated to require a total of three relocations consisting of one residential tenant, one landlord business, and one farm operation (M & M Ahrent Farms LLC). Burdens associated with relocating the farm operation may include moving equipment and constructing new facilities. It is anticipated the farm owner has sufficient adjacent land available to relocate the farm operation nearby. The residential landlord would need to purchase another property nearby in order to continue the rental business. A total of approximately 141 acres of ROW from nine landowners would be acquired under Alternative A. The vast majority (98.7%) of ROW acquisitions consist of lands identified as agricultural. Total cost of the ROW acquisition is estimated to be $1,319,000.

Alternative B
Alternative B is anticipated to require a total of 14 relocations consisting of six residential tenants, six landlord businesses, one business (Hog Wild Tire and Truck Repair), and one farm operation (M & M Ahrent Farms LLC). Alternative B would also require 11 personal property relocations. Most of the relocations resulting from Alternative B occur along existing Hwy. 67 within the 0.5-mile section that the alternative proposes to widen and improve. A total of approximately 135 acres of ROW from an estimated 19 landowners would be acquired under Alternative B. Despite being partially located along Hwy. 67, the majority (80.3%) of ROW acquisition is still of agricultural lands. Total cost of the ROW acquisition is estimated to be $2,076,400.

Alternative C
Alternative C is anticipated to require a total of two residential owner relocations. Alternative C would also require five personal property relocations. A total of approximately 157 acres of ROW from an estimated 20 landowners would be acquired under Alternative C. The vast majority (95.0%) of ROW acquisition is of agricultural lands. Total cost of the ROW acquisition is estimated to be $1,443,900.

Mitigation
When avoidance is not possible, relocation assistance would be provided to displaced persons in accordance with Public Law 91-646, the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act). The Relocation Program provides advisory assistance and payments to minimize the adverse impact and hardship of displacement upon such persons. No lawful occupant shall be required to move without receiving a minimum of 90 days' advance written notice. All displaced persons; residential, business, farm, nonprofit organization, and personal property relocations are eligible for reimbursement for actual reasonable moving costs.

The units contained in the housing inventory are in Lawrence, Randolph, Clay, and Butler Counties. The dwellings and number of dwellings are comparable and adequate to provide replacement housing for the families displaced on the project. The housing market should not be detrimentally affected and there should be no problems with insufficient housing at this time. In the event housing cannot be found or can be found but not within the displacees' economic means at the time of displacement, Section 206 of Public Law 91-646 (Housing of Last Resort) would be utilized to its fullest and practical extent.

At the time of displacement another inventory of available housing in the subject area would be obtained and an analysis of the market made to ensure that there are dwellings adequate to meet the needs of all displacees. Also, special relocation advisory services and assistance will be administered commensurate with displacees' needs, when necessary. Examples of these include, but are not limited to, Housing of Last Resort as previously mentioned and consultation with local officials, social and federal agencies, and community groups.

It is ARDOT policy that adequate replacement housing would be made available, built if necessary, before any person is required to move from their dwelling. All replacement housing must be fair housing and offered to all affected persons regardless of race, color, religion, sex, or national origin. Construction of the project would not begin until decent, safe, and sanitary replacement housing is in place and offered to all affected persons.

3.6 Does the project have environmental justice concerns?

Introduction and Methodology
An Environmental Justice (EJ) analysis focuses on identifying and addressing disproportionately high and adverse human health or environmental effects of the agency's programs, policies, and activities on minority populations and/or low-income populations to the greatest extent practicable and permitted by law. Effects considered include direct, indirect, and cumulative impacts. As described in greater detail in **Appendix G**, this analysis has been

Environmental Justice at the FHWA means identifying and addressing disproportionately high and adverse effects of the agency's programs, policies, and activities on minority populations and low-income populations to achieve an equitable distribution of benefits and burdens.

prepared to meet the federal requirements defined by EO 12898 – Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, dated February 11, 1994, FHWA Order 6640.23A, effective June 14, 2012, and DOT Order 5610.2C, dated May 14, 2021. Additionally, an analysis was performed to ensure the project complies with Title VI of the 1964 Civil Rights Act and EO 13166, Improving Access to Services for Persons with Limited English Proficiency (LEP). This analysis was conducted to ensure all populations had equitable access to project information and language barriers were avoided. Under Title VI and related statutes, each federal agency is required to ensure that no person is excluded from participation in, denied the benefit of, or subjected to discrimination under any program or activity receiving federal financial assistance on the basis of race, color, national origin, age, sex, disability, or religion. These are generally underserved populations. Details on the regulatory context of the analysis are provided in **Appendix G**.

The DOT and FHWA Orders defines **minority populations** as: Black, African American or of African descent, of Hispanic or Latino origin regardless of race, Asian-American, American Indian, Alaskan Native, Native Hawaiian, or Pacific Islander. This is used in conjunction with the Title VI statute of the Civil Rights Act of 1964 which prohibits discrimination based upon race, color, and national origin.

Individuals that have a limited ability to read, write, speak, or understand English are considered to have limited English proficiency, or "**LEP**."

The analysis area included all U.S. Census block groups within a one-quarter mile of the action alternatives. Six additional block groups comprising the heart of Walnut Ridge and four additional block groups comprising Corning were also added to the analysis area. Although the action alternatives do not pass through these 10 additional block groups, they represent much of the population that would likely utilize the proposed interstate facility. In conformance with EO 12898, FHWA Order 6640.23A, and FHWA Guidance memorandum, American Community Survey (ACS) census block group data was used to determine if there are any readily identifiable groups of low-income persons who live in the analysis area. The ACS Five-Year Estimates (2016-2020), obtained from the U.S. Census Bureau, were used to collect age, poverty, employment, housing, and language data for each block group. Disability and median household income data from the ASC (2016-2020) were collected at the census tract level, which is the smallest geographic unit available for these datasets. To ensure small clusters or dispersed populations of minorities were not overlooked, race data from the 2020 Decennial Census (DEC Redistricting Data; PL 94-171) were collected at the block level, which is the smallest geographic unit available for this dataset and the smallest geographic unit identified by the Census. **Figure 36** and **Figure 37** show the location of the block groups included in the analysis area.

A **census block group** is a geographical unit used by the U.S. Census Bureau. It is smaller than a census tract and larger than a census block. Not all data are available at the block group level.

To identify low-income populations, the USDOT and FHWA use the Department of Health and Human Services (HHS) poverty guidelines. For this analysis, a low-income population was defined as a census block group whose median household income is at or below the 2020 HHS poverty guidelines for a family of three, which is $21,720. A family of three was selected as a conservative estimate because the average household size for Clay, Greene, Lawrence, Randolph, and Butler Counties is 2.4 people. The 2020 poverty guidelines were selected to match the 2020 income data used.

Within the analysis area, a minority population was identified as any census block whose minority population percentage is meaningfully greater than the minority population percentage in the county. As some census blocks within the study area contain minority population percentages of up to 25 times higher than the county average, meaningfully greater was defined conservatively as any minority percentage greater than two times the county percentage, with counties selected as the reference communities since minority populations were lower at the county level than the state. The use of "more than two times" as the meaningfully greater threshold equates to census blocks having minority percentages that are 5-11% greater than the reference communities. A disproportionately high and adverse effect on minority and low-income populations is defined by the FHWA (2012) as an impact that:

- Would be predominately borne by a minority and/or low-income population, or
- Would be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that would be suffered by the nonminority population and/or non-low-income population.

According to the 2011 Guidance on Environmental Justice (FHWA, 2011a), groups or clusters of minority or low-income persons in the EJ analysis area have been identified. Small clusters or dispersed populations have not been overlooked. This was accomplished through public involvement efforts and by using localized census block and block group data, which are the smallest geographic units available for these datasets, to detect readily identifiable groups or clusters of EJ populations in the analysis area.

Affected Environment

Much of the general population, demographics, and educational characteristics of the project area have been detailed in Chapter 2. Data from 20 block groups within the analysis area surrounding the action alternatives were gathered for a more detailed characterization of the existing conditions of the populations that may be affected by the proposed project. The location of each block group is shown in **Figure 36** and **Figure 37**. These data, which are presented in **Table 12**, includes metrics at the county, state, and national levels for comparison. The block groups are labeled #1-20 and are arranged below the county in which they preside.

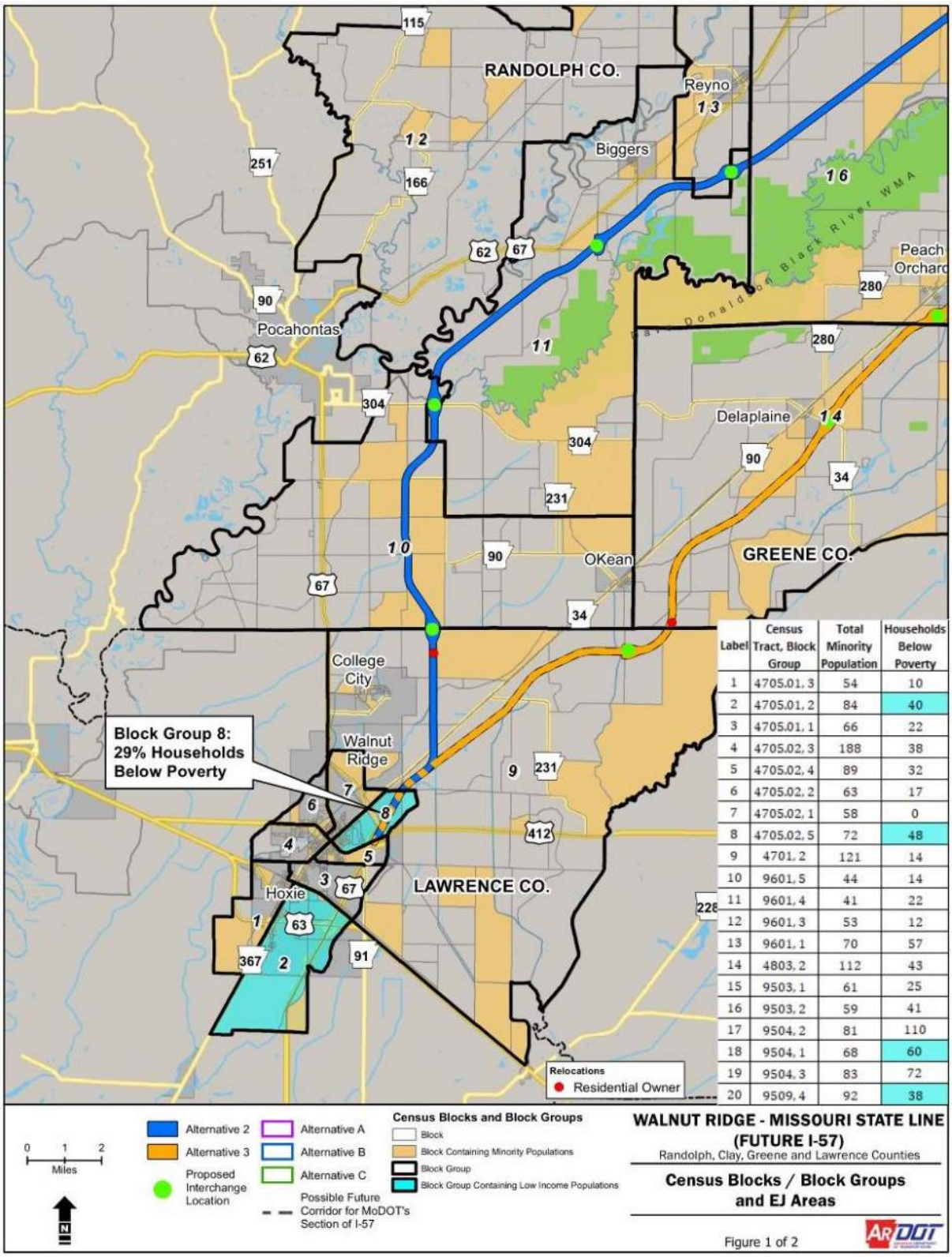
As can be seen from **Table 12** in combination with **Figure 36** and **Figure 37**, most residents live in the block groups associated with Walnut Ridge and Pocahontas. The overwhelming majority of the residents within the project boundary primary mode to work is by vehicle (ASC 2016-2020 Table B08134). Bolded values in the table indicate block groups with poverty or unemployment values meaningfully greater than (more than two times) the county level. None of the census tracts within the analysis area have a median household income below the HHS-poverty level. However, four block groups (#2, #8, #18, and #20) have percentages of households below the poverty level that appear meaningfully greater than the percentages observed at the county levels and for this reason, these block groups are also evaluated as EJ population areas.

Of the 20 block groups within the analysis area, the percentage of individuals unemployed in the civilian labor force range from 0-18%. Two of these block groups (#8 and #19) appear meaningfully greater than the percentages observed at the county levels. The percentages of elderly individuals (those over the age of 64) and children (those under the age of 18) within the analysis area ranged from 11-32% and 10-29%, respectively. Both categories appear to be within the range observed within the general population at the county levels.

Of the 1,576 census blocks within the analysis area, 354 are considered EJ population areas. The number of individuals identifying as minority within these 354 census blocks range from 1-61 and primarily consist of Hispanics or Latinos, African Americans, and Native Hawaiians or other Pacific Islanders. The locations of these EJ blocks are shown in **Figure 36** and **Figure 37**.

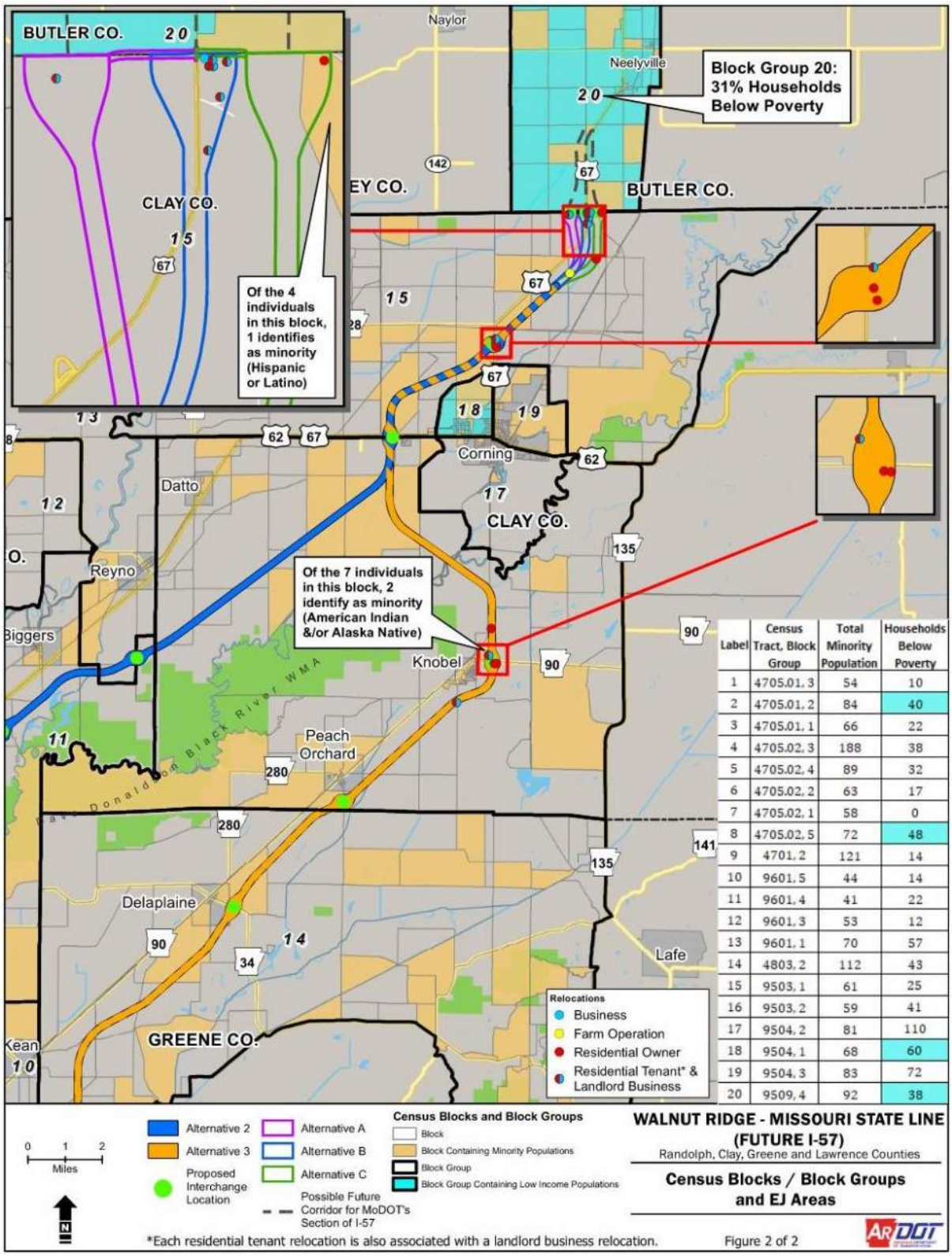
Other characteristics analyzed but not presented in **Table 12** include disability, language, and gender. The percent of the total civilian non-institutionalized population with a disability ranges from 20-27% for the census tracts within the Arkansas analysis area and is 35% for the Missouri census tract. These values appear comparable to the county percentages, which range from 22-25%. The percent of the total civilian non-institutionalized population with a disability is 18% for Arkansas, 14% for Missouri, and 13% for the United States. Regarding language, none of the analysis area would be considered to have populations with language barriers as the percent of individuals that speak English less than very well ranges from 0-1.1% among the 20 block groups. Regarding gender, the ratio between males and females within each of the 20 block groups appears to be typical and ranges from 0.6 to 1.4.

Figure 36: Location of Minority and Low-Income Populations (1 of 2)



Label	Census Tract, Block Group	Total Minority Population	Households Below Poverty
1	4705.01, 3	54	10
2	4705.01, 2	84	40
3	4705.01, 1	66	22
4	4705.02, 3	188	38
5	4705.02, 4	89	32
6	4705.02, 2	63	17
7	4705.02, 1	58	0
8	4705.02, 5	72	48
9	4701, 2	121	14
10	9601, 5	44	14
11	9601, 4	41	22
12	9601, 3	53	12
13	9601, 1	70	57
14	4803, 2	112	43
15	9503, 1	61	25
16	9503, 2	59	41
17	9504, 2	81	110
18	9504, 1	68	60
19	9504, 3	83	72
20	9509, 4	92	38

Figure 37: Location of Minority and Low-Income Populations (2 of 2)



Label	Census Tract, Block Group	Total Minority Population	Households Below Poverty
1	4705.01, 3	54	10
2	4705.01, 2	84	40
3	4705.01, 1	66	22
4	4705.02, 3	188	38
5	4705.02, 4	89	32
6	4705.02, 2	63	17
7	4705.02, 1	58	0
8	4705.02, 5	72	48
9	4701, 2	121	14
10	9601, 5	44	14
11	9601, 4	41	22
12	9601, 3	53	12
13	9601, 1	70	57
14	4803, 2	112	43
15	9503, 1	61	25
16	9503, 2	59	41
17	9504, 2	81	110
18	9504, 1	68	60
19	9504, 3	83	72
20	9509, 4	92	38

Table 12: Population Characteristics of EJ Analysis Area

Geographic Area[1] (Associated Alternative)	Total Population	Minority Population	% Minority[2]	Median Household Income	% Below Poverty[3]	% Un-employed[4]	% Over Age of 64	% Under Age of 18
United States (Alts. 2, 3, A, B, & C)	326,569,308	96,608,495	30%	$64,994	9%	5%	16%	22%
Arkansas (Alts. 2, 3, A, B, & C)	3,011,873	741,914	25%	$49,475	12%	5%	17%	23%
Lawrence Co., AR (Alts. 2 & 3)	16,511	875	5%	$40,587	9%	8%	20%	22%
Block Group 1	869	54	6%	$30,414	5%	10%	20%	27%
Block Group 2	859	84	10%	$30,414	**22%**	12%	20%	17%
Block Group 3	943	66	7%	$30,414	7%	8%	18%	29%
Block Group 4	1,454	188	13%	$47,782	8%	2%	23%	22%
Block Group 5 (Alts. 2 & 3)	878	89	10%	$47,782	16%	12%	12%	24%
Block Group 6	835	63	8%	$47,782	8%	9%	32%	13%
Block Group 7	733	58	8%	$47,782	0%	0%	11%	14%
Block Group 8 (Alts. 2 & 3)	679	72	11%	$47,782	**29%**	**17%**	21%	26%
Block Group 9 (Alts. 2 & 3)	780	121	16%	$40,179	10%	12%	14%	11%
Randolph Co., AR (Alts. 2 & 3)	17,934	1,175	7%	$42,844	14%	4%	20%	24%
Block Group 10 (Alts. 2 & 3)	537	44	8%	$45,657	11%	3%	31%	13%
Block Group 11 (Alt. 2)	472	41	9%	$45,657	17%	3%	30%	13%
Block Group 12	899	53	6%	$45,657	3%	8%	25%	17%
Block Group 13 (Alt. 2)	1,124	70	6%	$45,657	16%	7%	26%	18%
Greene Co., AR (Alt. 3)	45,197	2,873	6%	$50,083	14%	7%	16%	24%
Block Group 14 (Alt. 3)	1,661	112	7%	$58,092	9%	10%	16%	22%
Clay Co., AR (Alts. 2, 3, A, B, & C)	14,710	657	4%	$37,933	16%	6%	21%	21%
Block Group 15 (Alts. 2, 3, A, B, & C)	886	61	7%	$57,586	9%	2%	17%	22%
Block Group 16 (Alts. 2 & 3)	813	59	7%	$57,586	14%	3%	25%	10%
Block Group 17	1,380	81	6%	$30,268	23%	5%	21%	24%
Block Group 18	873	68	8%	$30,268	**34%**	9%	25%	24%
Block Group 19	929	83	9%	$30,268	31%	**18%**	23%	27%
Missouri	6,124,160	1,146,114	19%	$57,290	9%	5%	17%	23%
Butler Co., MO	42,570	4,293	10%	$42,227	14%	7%	19%	24%
Block Group 20 (Alts. A & C)	598	92	15%	$41,627	**31%**	5%	19%	14%

[1] Geographic areas labeled 1-20 represent census block groups and are arranged below the county in which they preside. The location of each block group is shown in **Figure 36** and **Figure 37**. [2] Minority populations were identified using census blocks rather than larger block groups. The location of each minority block is shown in **Figure 36** and **Figure 37**.
[3] Percentage of households below the poverty level. **Bolded values** indicate block groups with values meaningfully greater than (more than two times) values for the county levels.
[4] Percentage of individuals unemployed in the civilian labor force. **Bolded values** indicate block groups with values meaningfully greater than (more than two times) values for the county levels. *Source: Project Team, 2022*

Environmental Consequences

The four block groups evaluated as low-income populations are depicted in blue in **Figure 36** and **Figure 37**. Two of these occur within the city of Walnut Ridge, one is in Corning, and one is in southern Butler County, Missouri. The 354 census blocks evaluated as minority populations are depicted in orange in **Figure 36** and **Figure 37**. These low-income and minority populations were combined to identify the "EJ Populations" listed in **Table 13**.

Table 13: Impact Comparison between EJ vs. Non-EJ Areas

Resource Category	No Action Alt.	Main Corridor Alts.		MO Connector Alts.		
		2	3	A	B	C
Acres ROW from EJ Populations (% of total ROW)	0	631 (29%)	661 (29%)	2 (1%)	<1 (1%)	14 (9%)
Acres ROW from Non-EJ Populations (% of total ROW)	0	1,551 (71%)	1,613 (71%)	139 (99%)	134 (99%)	143 (91%)
Relocations from EJ Populations	0	0	2	0	0	1
Relocations from Non-EJ Populations	0	5	10	3	14	1

No Action Alternative

The No Action Alternative would not require property acquisition or relocations within any of the block groups in the analysis area. However, by failing to construct an interstate facility, the No Action Alternative would not have a beneficial impact on the area's economy or provide additional routes or increased connectivity within the transportation network.

Action Alternatives

Relocations and property acquisitions, including impacts to EJ populations, have been actively avoided wherever possible while still providing accessible connections to populations centers. As seen in **Figure 36**, **Figure 37**, and **Table 12**, Alternatives 2, 3, A, and C occur within two of the four block groups identified as low-income population areas. These action alternatives would each require some ROW from low-income block groups but require no relocations within low-income block groups. The ROW acquisition from Alternatives A and C within block group #20 would be used for the temporary interim highway connecting Alternatives A and C to Hwy. 67.

As seen in **Figure 36** and **Figure 37**, Alternatives 2, 3, and C occur within 21 of the 354 census blocks identified as having minority populations. These 21 EJ census blocks have very low minority populations that range from 1-4 individuals per block and total populations that range from 1-21 individuals. Alternatives 2, 3, and C would each require some ROW from EJ census blocks and Alternatives 3 and C would require relocations from EJ census blocks. Alternative 3 would require one residential tenant and corresponding landlord business relocation from an EJ census block. The EJ census block where the Alternative 3 residential tenant relocation and corresponding landlord business relocation occurs has a total population of seven individuals with two individuals identifying as belonging to two or more races that include white and American Indian and/or Alaska Native. Alternative C would require one homeowner relocation from an EJ census block. The EJ census block where the Alternative C homeowner relocation occurs has a total population of four individuals with one individual identifying as Hispanic or Latino. Mitigation measures associated with relocations and property acquisition (i.e., those outlined in Section 3.5) would apply to all affected individuals, including those identified as EJ populations, to ensure equitable treatment of minority and low-income populations adversely impacted by the proposed project.

As detailed in Section 3.29 and **Appendix M**, all action alternatives are anticipated to result in some induced growth around the proposed interchanges. Such induced growth may result in temporary negative construction impacts such as detours, traffic, or construction noise in the immediate area. Of Alternative 2's six interchanges, four occur within census blocks identified as containing EJ populations. Of Alternative 3's six interchanges, five occur within census blocks identified as containing EJ populations. Alternatives A, B, and C each have a single interchange that occurs within areas identified as containing EJ populations. Direct and indirect effects to EJ populations were minimized where possible by proposing the minimum number of interchanges to achieve adequate connectivity. As detailed in Section 3.30 and **Appendix M**, overall impacts from reasonably foreseeable actions combined with the proposed project's impacts and impact of other projects identified by local planners were analyzed; no substantial impacts were identified. One of the

reasonably foreseeable actions includes MoDOT's portion of future I-57 in Butler County. As stated in the January 2021 re-evaluated EIS covering approximately 10 miles of four-lane improvements stopping two miles north of the Arkansas-Missouri State line, the MoDOT project would not result in disproportionately high and adverse effects to EJ populations. For the two-mile section of future I-57 directly north of the Arkansas-Missouri State line, direct, indirect, and cumulative impacts to minority and low-income populations would be analyzed by MoDOT at the time of their environmental studies. Overall, while EJ populations may incur temporary indirect impacts resulting from induced growth due to other projects, direct impacts to EJ populations from the project are minor and not disproportionate; therefore, no substantial indirect or cumulative impacts to EJ populations are anticipated. Induced growth at interchanges may benefit travelers or nearby residents, including EJ populations, by providing more convenient access to facilities such as gasoline stations or retail stores.

As documented in Section 3.7, an analysis of community impacts was conducted. All action alternatives would substantially change access for most of the property owners immediately adjacent to the proposed project, including some EJ populations; however, roadway plans would be designed to minimize these impacts. No community facilities or services within EJ populations would be impacted by the action alternatives. Additionally, none of the action alternatives would alter neighborhoods or subdivisions. As only minimal induced growth is anticipated, gentrification and other conditions that may alter minority and low-income neighborhoods are not anticipated to occur.142

As shown in **Table 13**, the amount of required ROW from EJ populations is substantially less than the amount required from non-EJ populations for all action alternatives.

While some temporary negative construction impacts such as detours, traffic, or construction noise may be borne by EJ/Title VI populations along crossroads and side roads located along the project length, these would not be considered disproportionate to EJ/Title VI populations as these impacts would affect all populations near the proposed roadway. EJ/Title VI populations would also receive all the benefits the proposed roadway would offer. In general, the construction of an interstate facility would have a positive impact on the area's economy (as detailed in Section 3.8 for economic impacts) and provide additional routes and increased connectivity within the transportation network, which would benefit all residents, including minorities and low-income populations. No disproportionately high and adverse effects to EJ populations or other special consideration groups are anticipated from Alternatives 2, 3, A, B, or C.

Public Involvement

A public involvement program was implemented to ensure equitable access to information, to ensure meaningful opportunities for public participation, and to allow for citizen participation throughout the project area. Due to COVID-19 restrictions, a traditional in-person public involvement meeting was not possible. As detailed in Chapter 4 – Coordination, a virtual public involvement meeting was held to gather feedback from the local communities. The virtual meeting was held August 13 through September 2, 2020. Notification of the public meeting was made through letters/emails sent to public officials and stakeholders, notifications published on ARDOT's website and through ARDOT news releases, advertisements in the local newspapers, and through social media posts. Postcards were also mailed to attendees of past public meetings for the project. Throughout this public involvement process, no indication of adverse effects to minority populations, low-income populations, or other special consideration groups were noted.

Additional public involvement opportunities would occur throughout the NEPA process (see Section 5.4). Public outreach efforts would include the above-described notifications as well as sending informational flyers to affected homes and to neighborhood centers and/or churches. In order to ensure equitable access to information, the public was afforded opportunities to request accommodations, such as free language assistance, prior to the public meeting and the same accommodations would be offered for any future public involvement. Similarly, equal opportunity to access information was provided and would continue to be provided to all individuals regardless of race, sex, color, age, national origin, religion (not applicable as a protected group under the Federal Motor Carrier Safety Administration Title VI Program), disability, LEP, or low-income status.

Mitigation

No disproportionately high and adverse effects are anticipated to affect EJ populations; therefore, no mitigation would be required.

Conclusion

Based on the above discussion and analysis, the action alternatives would not cause disproportionately high and adverse effects on any minority or low-income populations in accordance with the provisions of EO 12898, DOT Order 5610.2C and FHWA Order 6640.23A. No further EJ analysis is required.

3.7 Would the project have community impacts?

Introduction and Methodology

Community impacts are defined as consequences of public or private actions that alter a community's facilities, services, cohesion, character, stability, or public safety. To assess community impacts, an inventory of community resources, such as emergency services, nursing homes, hospitals, libraries, museums, schools, and places of worship within the study area were gathered as an indicator of community interactions and connections. The locations of established neighborhoods and common transportation routes were also identified. Data from the USGS Geographic Names Information System were used to identify community structures. ArcGIS, a geographic information system, was used to overlay community resource locations with the action alternatives to analyze proximity and potential disruption to services. Although parks and other public recreational areas are also considered community facilities, the assessment of these resources is provided in Section 3.15 on public lands. Similarly, the assessment of cemeteries and historic properties is provided in Section 3.16 on cultural resources.

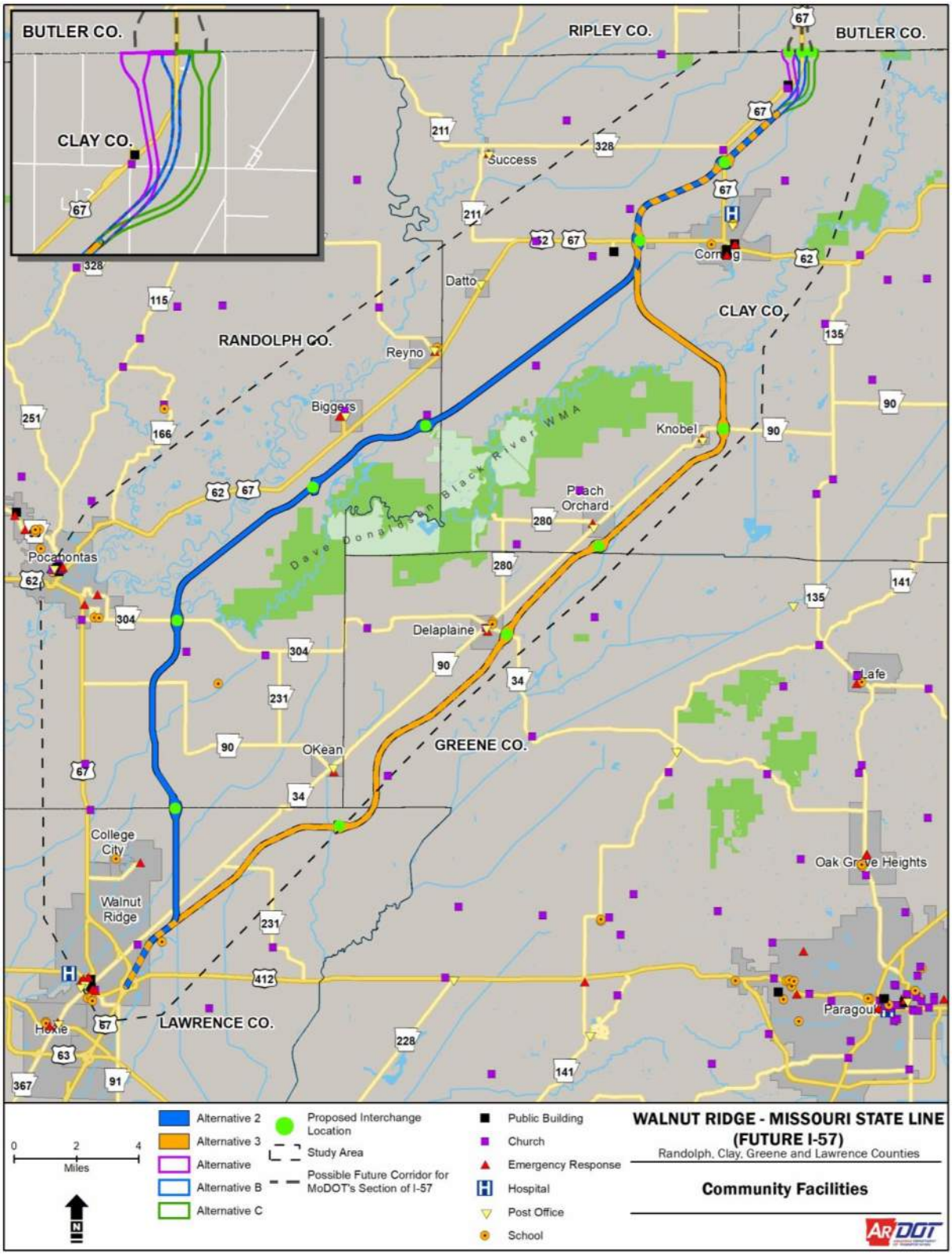
Community impacts may be observed as a reduction in perceived quality of life (e.g. due to loss of access to community services), a disruption in daily routine (e.g., due to changes in access), and/or a changed attitude towards local community or level of satisfaction with one's neighborhood (e.g., due to reduced community cohesion).

Affected Environment

Populated places within the project vicinity include Walnut Ridge, O'Kean, Pocahontas, Delaplaine, Peach Orchard, Knobel, Biggers, Reyno, and Corning. Based on data collected from the U.S. Census Bureau's ACS 2019 estimates, populations of these places range in size from 118 to 6,528 persons and each has established residential communities. As detailed in Section 3.6, low-income populations were the only populations of special concern (i.e., those groups protected under EO 12898, EO 13166, or Title VI of the 1964 Civil Rights Act) identified within the project area. Community facilities are located within the populated places of the project area and along existing roadways. Examples of some of these facilities include schools, post offices, hospitals, churches, public buildings such as city halls, courthouses, and libraries, and emergency response facilities such as police, sheriff, fire departments, and ambulance services. **Figure 38** illustrates the proximity of these identified communities and features to the alternatives.

Development in the project area has principally occurred along Hwy. 67, Hwy. 62, Hwy. 90, and Hwy. 304. These routes are used as the principal connection between communities and for access to community services. Pedestrian and bicycle activity throughout the alternative alignment corridors is very low and no existing accommodations for these users are present near the proposed improvements. Some public transportation services are present in the study area and include the Walnut Ridge Amtrak train station in Walnut Ridge and the Black River Area Development Corporation public bus service that operates in Clay, Lawrence, and Randolph Counties. None of these public transit resources are present near the proposed improvements.

Figure 38: Community Facilities



An overview of the types of community facilities identified in the study area is provided below along with the approximate number of each type of facility. As can be seen from **Figure 38**, additional community facilities are located beyond the study area.

- Churches/Places of Worship – Approximately 27 places of worship occur within the study area. Like the other community facilities, higher concentrations of churches are located near city/town centers; however, these structures are also scattered across the rural landscape as well.
- Emergency Response Facilities – Approximately 19 emergency response facilities are located within the study area. These include two ambulance services, four fire departments, seven volunteer fire stations, three police departments, two county sheriff's offices, and one law enforcement center.
- Schools – Approximately 15 schools are located within the study area. These include elementary, middle, and high schools, as well as Williams Baptist College, Black River Vocational Technical School, and Black River Technical College Law Enforcement Training Academy.
- Post Offices – Approximately 10 post offices are located within the study area, which are primarily located near city/town centers.
- Public Buildings – Approximately 10 public buildings are located within the study area. These include three courthouses, three public libraries, two city halls, one nursing home, and the Arkansas Tourist Information Center.
- Hospital – While only one hospital is located within the study area, the cities of Walnut Ridge, Pocahontas, and Paragould also have hospitals at their city centers.

Environmental Consequences

Transportation projects can affect communities in a variety of both positive and negative ways. One beneficial impact of the proposed project could include increased mobility for emergency response teams. Another beneficial affect is increased roadway safety. As the proposed facility would be a fully-controlled access interstate, all of the action alternatives would improve highway/traffic safety as well as overall public safety by reducing the number of conflict points. Conflict points on roadways, such as driveways and street intersections, are associated with an increase in crash risk. When conflict points are numerous and dense, drivers have more information to process and less time to react to unexpected situations. As travel volumes increase, the safety performance of roadways with numerous conflict points can be poor. All action alternatives would also provide positive economic impacts by providing temporary and long-term jobs and labor income, adding value to the gross domestic product, increasing industrial output, and increasing tax revenues. Details on the economic value added to the project area by the proposed improvements are presented in Section 3.8.

Conflict points are where a roadway user can cross, merge, or diverge with another roadway user.

All action alternatives would substantially change access for most of the property owners immediately adjacent to the proposed project. Access impacts can be caused by road closures, roadway relocations, or driveway relocations. Access changes can affect homeowners and businesses by altering travel patterns or routes and by increasing or decreasing travel times to destinations; however, roadway plans would be designed to minimize these impacts. These types of impacts occur to varying degrees with all of the action alternatives. As there are currently no sidewalks or multi-use paths within the project area, and as none are proposed by the project, no changes to access would occur for bicyclists or pedestrians.

No churches, schools, libraries, emergency services, medical facilities, or public transit systems would be negatively impacted by any of the action alternatives. Additionally, none of the action alternatives would alter geographically or defined neighborhoods or subdivisions. With the exception of Alternative B described below, none of the action alternatives would adversely affect community cohesion nor disrupt community services. Some relocations and loss of access to homes and businesses would occur to citizens along each of the action alternatives. Viewshed alterations and the number and types of relocations associated with the action alternatives are detailed in Sections 3.4 and 3.5, respectively. For each alternative, the number and type of community facilities impacted and any additional changes to travel patterns and accessibility are described below.

No Action Alternative
The No Action Alternative would not result in any study-related construction and therefore would not directly impact communities or community facilities within the project area.

Alternatives 2 and 3
No community facilities or services were identified to be impacted as a result of constructing a new interstate facility along Alternative 2 or Alternative 3. At the Hwy. 67/Hwy. 412 interchange, both Alternatives 2 and 3 may cause temporary increases in traffic congestion, disruption of traffic patterns, and/or changes in access during the construction period. Similar traffic and access impacts can be expected at crossroads and proposed interchange locations for these alternatives. For landowners adjacent to either of these proposed facilities, many would have revised access to their land or home via frontage roads. No changes to community cohesion are anticipated under either Alternative 2 or 3 as neither alignment impacts residential groups or neighborhoods. For rural residents living close to proposed interchanges, decreased travel time to other locations along the proposed interstate route would be anticipated. Similarly, increased mobility for emergency response teams is also expected for both Alternatives 2 and 3 by providing additional resources within the existing roadway network. Redundancy and resiliency in the roadway network are particularly important in flood prone areas such as the project study area.

Alternatives A and C
No community facilities or services were identified to be impacted as a result of constructing a new interstate facility along Alternative A or Alternative C. At the north end of each of these alternatives, temporary increases in traffic congestion, disruption of traffic patterns, and/or changes in access may occur along State Line Road (County Road 278) during the construction period. For landowners adjacent to either of these proposed facilities, many would have revised access to their land or home via county roads and/or frontage roads. No changes to community cohesion are anticipated under either Alternative A or C as neither alignment impacts residential groups or neighborhoods.

Alternative B
Unlike the other alternatives, Alternative B would impact a 0.5-mile section of the existing Hwy. 67 facility, which is spotted with clusters of homes and a few businesses along its length. No community facilities or services would be impacted by Alternative B.

Because the proposed facility would be a fully-controlled access interstate, access to existing properties along the 0.5-mile section of Hwy. 67 that Alternative B would widen would change from direct access from Hwy. 67 via driveways to indirect access via frontage roads. This could result in increased travel times and changes in travel patterns. Additionally, emergency services to/from this area would potentially be delayed because of indirect access. However, no access to any property or facility would be eliminated. During construction, Alternative B would cause temporary increases in traffic congestion and disruption of traffic patterns in the 0.5-mile section on existing alignment.

While there are no established neighborhoods, existing residents clustered along each side of Hwy. 67 in the 0.5-mile section on existing alignment likely feel a sense of community cohesion due to their close proximity with one another. Therefore, Alternative B is anticipated to have a minor negative impact on community cohesion by further separating those residents on the east and west sides of Hwy. 67 by converting Hwy. 67 to a fully-controlled access facility.

Mitigation

Construction-related impacts could be mitigated using BMPs, such as maintaining active public involvement, providing clearly marked detour routes, and maintaining access to adjacent businesses and community facilities. Compensation for loss would also occur; upon completion of the proposed project, any homes or community facilities where access cannot be effectively restored would be purchased.

3.8 Would the project have economic impacts?

Introduction and Methodology

One of the seven national performance goals under Moving Ahead for Progress in the 21st Century (MAP-21) is to "*improve the national freight network, strengthen the ability of rural communities to access national and international trade markets and support regional economic developments*" (FHWA, 2012). The Fixing America's Surface Transportation Act (FAST Act), signed into law in 2015, builds on the changes made by MAP-21. Setting the course for transportation investment in highways, one of the three primary goals of the FAST Act is to support economic growth (FHWA, 2016). Both travel time and travel distance can affect the efficiency of transportation systems therefore having an economic impact. This DEIS looked at the impact of the proposed project to the economic vitality of the project area in two ways: the long-term improvements to connectivity and mobility, specifically travel times and the economic benefit of the construction of the project.

To evaluate the long-term economic impacts of each alternative, travel time was used as an indicator of mobility. Existing information from the ARDOT Statewide Travel Demand Model (TDM) 2040 Long Range Transportation Plan (LRTP) was used for the analysis because the analyzed alignment was very similar in location and length to our Alternative 3 and therefore the results are comparable. These metrics and methodologies are discussed in detail in the Traffic and Safety Analysis Technical Report found in **Appendix C**.

To evaluate the short-term economic impacts of the construction of each alternative, an analysis was conducted to determine the dollar value created by each alternative. The analysis included the project cost estimates and the contribution of economic development activities from anticipated job creation and industry growth and consequently the impact to the economic vitality of the study area and region. The full Economic Impact Analysis can be found in **Appendix H**.

Changes in project alternatives have occurred since the referenced Economic Impact Analysis was completed. Alternative 1 was included in the initial economic analysis but has since been removed from further consideration (see Chapter 2 for detail on Alternative 1). Also, the final approximately two miles of the project where it terminates at the Missouri State line has been split into three optional connecter alternatives. Neither of these changes have any impact on the results of the study relative to Alternatives 2 and 3. Since the report was completed, inflation costs have been adjusted consequently increasing the construction costs. Therefore, the relative impact described in the analysis would be greater, reflecting the increased construction investment.

The economic impact analysis used IMPLAN (Impact Analysis for Planning), which is designed to predict the ripple effect of an economic activity, such as a transportation system investment, by using data based on previous industry spending. The IMPLAN analysis is based on reported 2019 industry sector data for the 546 industries contained in the IMPLAN datasets. Except as otherwise noted in the text, the results of the analyses are reported in 2021 dollars. The investments for each alternative were analyzed using three scenarios for the duration of the construction phase of the project. Scenario 1 assumes a 6-year construction phase beginning in early 2026 and extending through 2031. Scenario 2 extends for a 7-year construction period from 2026 through 2032, and Scenario 3 extends for 8 years from 2026 through 2033. For discussions below, only information for Scenario 3 is provided because it is the most conservative and realistic in terms of available funding.

The spending to construct the project represents a direct effect with the analysis. Indirect effects are mostly purchases of local goods and services and business spending that results from the construction investment. IMPLAN reports values for the following economic indicators: Employment, Industry Output, Value Added to the Economy, and Tax Impacts. Definitions for each of these indicators can be found in the Economic Impact Analysis in **Appendix H**.

Because it is difficult to forecast the permanent, long-term return on investment provided by the proposed project through improved mobility, the economic impact analysis focuses primarily on the short term to midterm economic return on investment provided by the construction phase of the project.

The Northeast Arkansas Regional Intermodal Authority (NEA) is an economic development organization that primarily serves Clay, Lawrence, and Randolph Counties and includes the three largest cities (Corning, Pocahontas, and Walnut Ridge) in the project area. While a small area of Greene County is in the project area, the majority of the current and planned economic development in Greene County is in the Paragould area, which is well outside the project area. The only town from Green County in the project area is O'Kean. Consequently, the discussion below about the current project area business environment focuses on Randolph, Clay, and Lawrence Counties and was gathered mostly from the NEA 2020 Annual Report.

Affected Environment

General population and economic data for the project area was provided for reference in Chapter 1. According to the NEA, Randolph County, and Pocahontas in particular, has seen the most growth within the project area in terms of labor force, business development, and employment opportunities over the past decade. There is very little new business development or planned economic development along the Hwy. 34/90 corridor from O'Kean to Knobel. Farming is the primary source of jobs and income for many of the other smaller towns such as O'Kean and Delaplaine located on the east side of the project area. Consequently, the discussion on existing businesses and development below focuses primarily on the existing Hwy. 67 corridor from Walnut Ridge to Corning.

In the past 10 years, poultry-related industries that have located in the project area including processing facilities, hatcheries, and a feed mill near Corning that employs over 2,000 people. Some additional new businesses focused on export of peanuts and rice, such as Ag Headquarters, Birdsong Peanuts, and Black River Commodities, have opened in Pocahontas and Walnut Ridge. Both manufacturing and agricultural processing employers have expanded in the project area adding more than 500 jobs in the cities of Pocahontas and Walnut Ridge in 2020 alone. Riceland and Peco Foods, Inc. are expanding operations in Pocahontas creating an additional 250 jobs for the Randolph County area. Since 2020, five new businesses have opened in the Pocahontas historic town square area. Several additional businesses are under construction or planned in the near future in Pocahontas and Walnut Ridge. Detailed employment by industry is provided in the Economic Impact Analysis (**Appendix H**).

There has been a substantial increase over the past few years in large truck traffic throughout the project area related to agriculture, manufacturing, and transportation. Peco Foods, Inc. now dispatches approximately 66,000 trucks per year, carrying feed and live product. More than 200 loads of feed and 80 loads of eggs travel through the area of influence each month on behalf of Vital Farms. Capital Quarriers and Atlas Asphalt, located outside of Pocahontas, have seen an influx in projects and shipments over the past few years. For example, Capital Quarries transported 27,978 loads of rock from the project area in 2020, which was nearly 1,500 truckloads more than the year prior.

The NEA Intermodal and the City of Corning are now partnering with the Arkansas Economic Development Commission to launch strategic planning for targeted commercial development and recruitment. First Choice Health Care is expanding their facilities in Corning. Walnut Ridge is working to complete the Lawrence County rail to trail bike path. Community leaders are also developing a prospectus and strategic plan to recruit new hotel and lodging businesses to the area. The City of Corning has a federally designated Opportunity Zone.

Opportunity Zones, which were created under the Tax Cuts and Jobs Act of 2017 (Public Law No. 115-97), are an economic development tool that allows people to invest in distressed areas in the U.S. Their purpose is to spur economic growth and job creation in low-income communities while providing tax benefits to investors.

Environmental Consequences

Travel Time

As noted above, Alternatives 2 and 3 are very similar in length and control of access to the ARDOT studied alternative, therefore the travel times from the ARDOT study can be logically assumed to be very similar to both Alternatives 2 and 3 in this study. **Table 14** shows the results from the ARDOT study travel time and distance for the future action and no action alternatives. The speeds were calculated by dividing the lengths by the travel time. Underlying assumptions concerning speed limit would be that the facility along the studied route would be access controlled with a speed limit of 70 mph and that the No Action Alternative would likely have a 55-mph speed limit with a few signals along the way.

Table 14: Travel Comparison

Alternative	Length (miles)	Speed (mph)	Travel Time (min)
2040 No Action Alternative	48	53	54.29
2040 ARDOT Studied Route	44	73	36.00

Source: Project Team, 2021

Alternative 2 is approximately 39 miles long and Alternative 3 is approximately 41 miles long, both shorter than the 44-mile ARDOT studied route. Based on the results shown above, both action alternatives would substantially improve the travel times over the no action condition. The improvement to travel time, the increased reliability of a fully-controlled interstate highway, and ultimately the increased interstate connectivity both north and south of northeast Arkansas would improve the efficiency for the movement of goods and services and potentially encourage economic development within the project area. Travel comparison details and supporting rationale are found in **Appendix C**.

Table 15 below summarizes the results of the Economic Impact Analysis for the selected economic indicators. The values represent the impact under the 8-year scenario. Since these estimates were derived from the anticipated future I-57 construction cost for each alternative there is not a relative comparison for the No Action Alternative. However, it can be expected that the economic indicators would change under the No Action Alternative based on future economic trends. The Economic Impact Analysis is provided in **Appendix H**.

Table 15: Summary of Economic Impact Analysis

Alternative	Employment (# jobs)	Labor Income (millions)	Value Added (millions)	Output (millions)	Taxes (millions)
No Action	NA	NA	NA	NA	NA
Alternative 2	3,843	$195	$319	$695	$61
Alternative 3	4,144	$210	$344	$750	$65

NOTE: See **Appendix H** for detailed Economic Impact Analysis. *Source: Project Team, 2021.*

Based on the analysis, the proposed transportation investment in the future I-57 corridor has positive economic impacts on the state and the four-county study area. Each alternative provides a return of about $0.41 in labor income, $0.67 in value added (this indicator is the sum of employee compensation, owner income, other property income, and taxes on production and imports), $1.45 worth of growth in total output (this indicator includes all industry production dollars), and $0.13 in tax revenue for each dollar invested in engineering and construction. Although the project clearly provides economic value to the state and the region, the economic impacts provide very little basis for differentiating among the two action alternatives.

In general, both action alternatives would provide an important link to a more efficient and reliable route between Arkansas and several large Midwestern economic hubs, such as St. Louis and Chicago. Furthermore, both action alternatives would provide better access to national and international trade markets from several rural communities along this corridor. As described in the Affected Environment section above, most of the project area population, industries, and economic development is on or near existing Hwy. 67 between Walnut Ridge and Corning. Alternative 2 would provide better access to Pocahontas and Randolph County than Alternative 3, while both Walnut Ridge and Corning would be similarly served by either action alternative.

3.9 How would the project affect traffic?

Introduction and Methodology

The Highway 67 Improvement Study (ARDOT, 2015; Executive Summary provided in **Appendix B**) was updated with regards to traffic volumes and safety analysis for the current Purpose and Need statement. The 2015 Highway 67 Improvement Study found that congestion levels were acceptable with existing traffic volumes at that time and would continue to be acceptable without improvements through 2035. For this study, the 2015 and 2035 volumes developed

in the previous planning study were updated to show 2019 and 2040 volumes. Annual growth rates used to calculate the 2040 No Action volumes were based on historical data. To determine the 2040 action alternative volumes, the previous study and information from the Statewide TDM were used.

Project goals related to traffic movement included improving connectivity, mobility, and reliability. The Traffic and Safety Analysis Technical Report (**Appendix C**) addresses these goals by evaluating existing and future traffic operations and crash data. A summary of the important traffic study findings is presented in the Environmental Consequences section below. Details on the methodologies and more in-depth discussions on the analysis can be found in the Traffic and Safety Analysis Technical Report.

Affected Environment

Local, Regional, and National Highway System

As noted in Chapter 1, Hwy. 67 in the study area is not consistent with the transportation system in the rest of this regional corridor (**Figure 8**). South of the study area, Hwy. 67 is a fully-controlled access facility from I-40 in North Little Rock to Walnut Ridge. North of the study area, Hwy. 67 and Hwy. 60 are either built or planned to be built to a four-lane fully-controlled highway from north of the Missouri State line to Sikeston, Missouri. From Sikeston, existing I-57 heads north as a four-lane fully-controlled access facility through Missouri and Illinois until it ends in Chicago, Illinois. Additionally, there is not a direct interstate connection between I-55 in Sikeston, Missouri and I-40/I-30 in Little Rock, Arkansas. See Chapter 1 for descriptions of the local and regional roadway network.

Hwy. 67 Current Operations within the Project Area

Hwy. 67 receives the most traffic of any roadway in the project area. Travelers along existing Hwy. 67 are currently required to pass through multiple cities with higher traffic volumes, lower speed limits, and occasional signalized intersections. Delays are often exacerbated by farm equipment traveling on the roadway. Even though traffic volumes are modest (as discussed below), motorists sometimes experience delay on the existing two-lane highway north of Pocahontas due to the limited passing opportunities inherent of two-lane highways.

Traffic volumes on highways in Arkansas are collected each year to provide a record of annual traffic characteristics from which historic growth rates can be determined. **Figure 39** shows the 2019 average daily traffic (ADT) volumes for Hwys. 67, 34, and 90 in the project area; detailed support can be found in the Traffic and Safety Analysis Technical Report (**Appendix C**).

The greatest traffic volumes occur in Pocahontas (26,000), Walnut Ridge (13,000), and Corning (6,900). The ADTs along Hwys. 90 and 34 between Knobel and Walnut Ridge are relatively low (760-820). The percentage of trucks is relatively high, ranging from a low of 11% inside the City of Pocahontas to a high of 40% between Pocahontas and Corning.

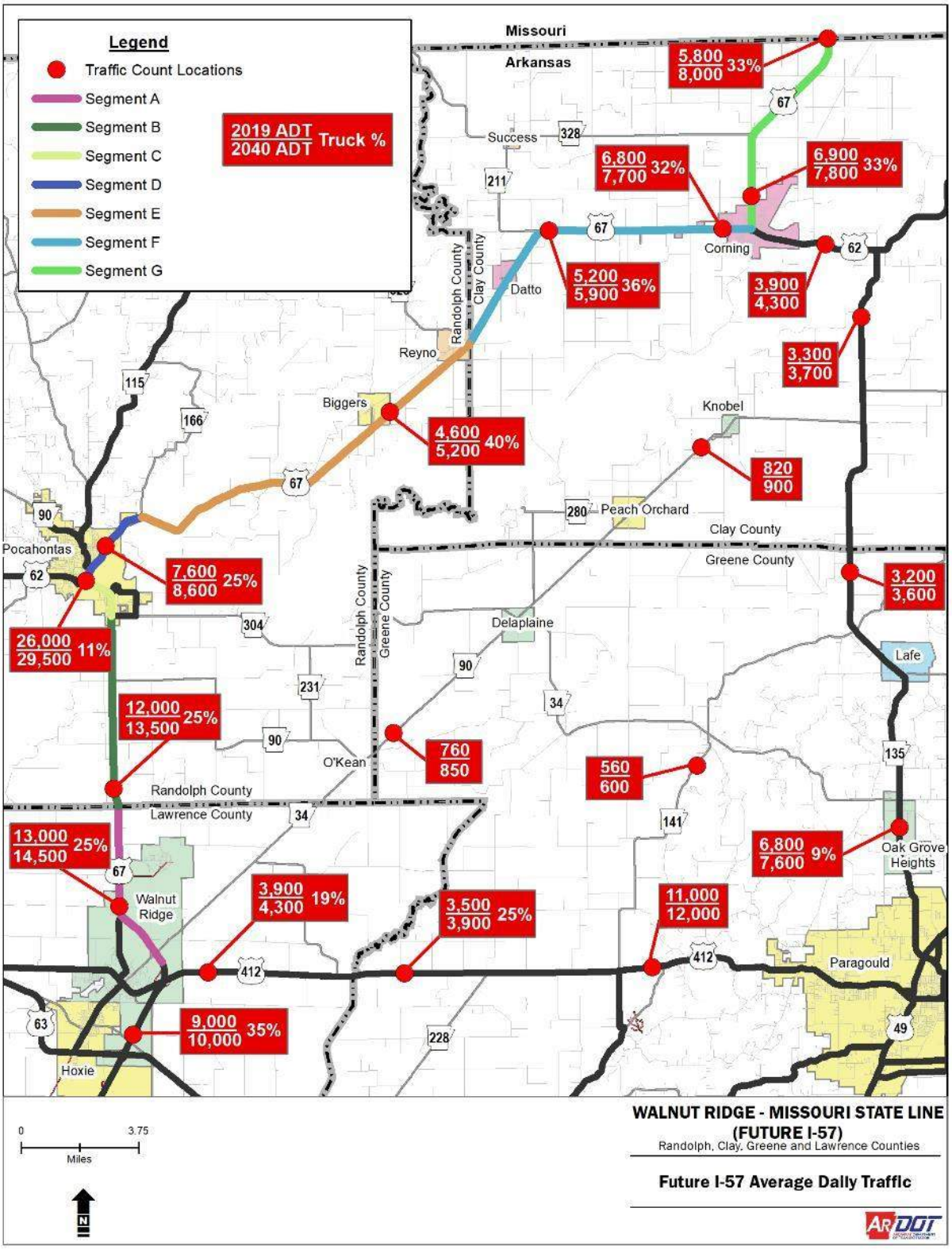
The results of an operational analysis of existing Hwy. 67 indicate that it currently operates at an acceptable condition with some noticeable, but not inconveniencing, delays in Pocahontas.

Environmental Consequences

Project Effects on Local, Regional, and National Connectivity

One of the primary goals in this study was to identify an interstate highway alternative that would improve system connectivity and mobility from Chicago to Little Rock. From a regional connectivity and system continuity perspective, both of the action alternatives would provide an important interstate link to future I-57 as well an alternative connection to I-40 and I-55.

Figure 39: Existing and Future Average Daily Traffic



Providing the region with a connection to I-55 and I-40 opens up an alternative route for either faster point to point travel or for times when one of the other facilities is impaired by natural or man-made disturbances. A recent example of this was the closure of the I-40 bridge over the Mississippi River in May of 2021. Traffic was required to divert to alternative routes in both directions for over 2 months. Streetlight data from ARDOT was evaluated for 30 days before and 30 days after the May 11, 2021 closing of the I-40 bridge over the Mississippi River. While there was a slight drop in total volume (typical Tuesday-Thursday data) from the pre-closure period to the post-closure period, the truck volume increased an average of 10.7%. It can be expected that if the I-57 corridor was operating as an interstate at the time of this closure, the diversion of truck traffic to this corridor would have been even greater.

Alternative 2 would provide better access to Randolph County, Pocahontas, Walnut Ridge and the airport, as well as other smaller communities and businesses along the existing Hwy. 67 corridor. Alternative 3 would provide better access to the smaller communities along the Hwy. 90/34 corridor such as Knobel and O'Kean.

Table 16 show the expected daily volumes along the new corridors for the years 2019 and 2040. Alternative 2 would provide better access for local traffic, serving more than 1,000 additional vehicles per day at all locations south of Hwy. 62.

Table 16: Daily Traffic Volumes on New Alignment (2019 and 2040)

Location	2019 Alternative 2	2019 Alternative 3	2040 Alternative 2	2040 Alternative 3
	ADT	ADT	ADT	ADT
Corning Bypass	4,700	5,100	6,100	6,600
South of Hwy. 62	6,900	5,900	8,300	7,400
Black River Bridge (Pocahontas)	7,000	5,900	8,600	7,400
North of Walnut Ridge	5,400	5,100	6,900	6,600

NOTE: Calculations and other relevant support for average daily traffic volumes provided in the Traffic and Safety Analysis Technical Report (**Appendix C**). *Source: Project Team, 2021.*

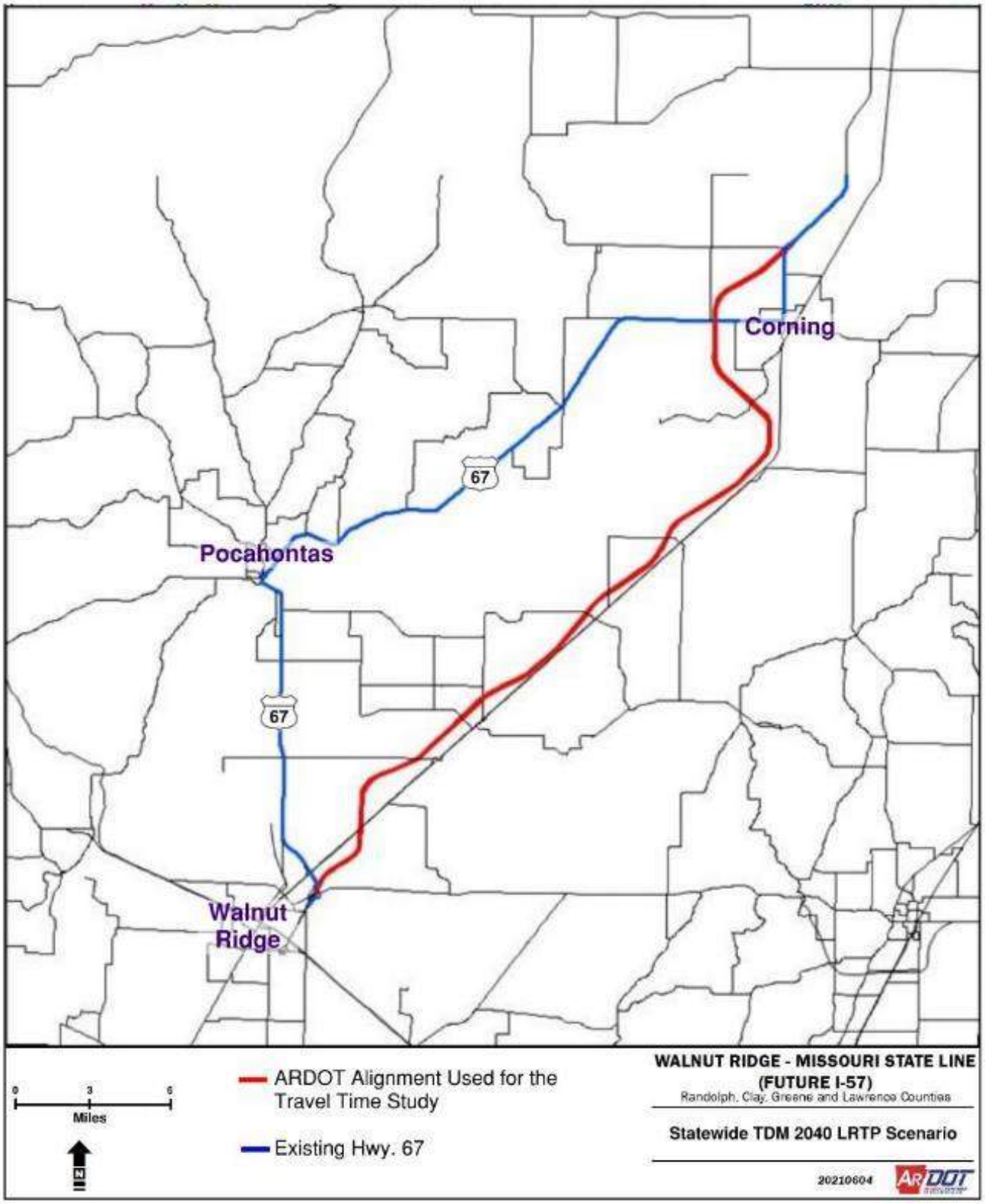
In addition to providing interstate linkages and continuity in the type of highway system, connectivity can be enhanced through improved travel times. Both action alternatives would substantially improve the travel times over the No Action condition. For this study, the vehicle miles traveled (VMT), vehicle hours traveled (VHT) and travel time were limited to information from the ARDOT Statewide TDM 2040 LRTP scenario and were not run specifically for this project. **Table 17** below shows the results for an alignment similar to Alternative 3 (shown in red in **Figure 40 and not to be confused with Alternative 3 currently under study in this document**) and the comparison with the 2040 No Action Alternative. The speeds presented in **Table 17** were calculated by dividing the lengths by the travel time. Underlying assumptions concerning speed limit would be that the facility along the ARDOT alignment would be access controlled with a speed limit of 70 mph and that the No Action Alternative would likely have a 55-mph speed limit with a few signals along the way. Travel comparison details and supporting rationale are found in **Appendix C**. As shown, the VMT along the existing corridor is reduced by approximately 15%. Based on the VMT shown along the new alignment, it is expected that some traffic would divert from Hwy. 67, plus there could be additional traffic drawn from other corridors such as I-55. Similar results would be expected for Alternatives 2 and 3, although the lengths would change to approximately 39 miles and 41 miles, respectively. The time savings from the Missouri State line to Walnut Ridge would be 18 minutes at a minimum.

Table 17: Travel Comparison

Alternative	Length (miles)	VMT	VHT	Speed (mph)	Travel Time (Min.)
2040 No Action (along existing Hwy. 67)	48.12	353,880	6,671	53	54.29
ARDOT Study Alignment	43.98	150,919	2,264	73	36.00

Source: Project Team, 2021

Figure 40: Statewide TDM 2040 LRTP Scenario



In addition to saving time traveling and travel distance, Alternatives 2 and 3 would remove some of the truck traffic from local road network that serve project area communities, which improves safety for travelers using these roadways.

Future Traffic Operations
Figure 39 shows the future 2040 ADT volumes and percentage of trucks compared to 2019 volumes for highways in the project area and beyond.

The recurring delay of each corridor segment or intersection on Hwy. 67 as shown in **Figure 39** was quantified in the same manner as for the Existing and 2040 No Action Alternatives. Based on the analysis, most of the existing corridor would operate at an acceptable condition through the year 2040. The exceptions are in Pocahontas and Corning where delays would be noticeable with declining speeds on through lanes and at intersections and an increased likelihood of risk-taking due to additional delays. Both Alternatives 2 and 3 are expected to operate at essentially free flow conditions in 2019 and 2040, therefore improving mobility.

The average crash rate along the existing Hwy. 67 corridor was considerably lower than the statewide average for the study period, consistent with previous crash studies for the same area. The average fatality crash rate was lower than the statewide average with the exception of an approximately 1.5-mile section of Hwy. 67 from Carter Lane north to the intersection of Hwy. 67/62 in Pocahontas. In this section of Hwy. 67 the fatality rate was slightly higher than the statewide average.

Although safety was not identified in the purpose and need as an issue for concern, safety is always an integral consideration for every transportation action. Consequently, the safety impacts of each alternative were evaluated qualitatively by comparing the relative values of applicable Crash Modification Factors of both Alternatives 2 and 3 and the No Action Alternative. This method provides the potential percent change in crashes rather the change in the number of crashes. The anticipated safety impact relative to the No Action Alternative is a 78.1% reduction in crashes for both Alternatives 2 and 3. Supporting tables for crash reductions are provided in the Traffic and Safety Analysis Technical Report (**Appendix C**).

By comparing crashes "before" implementation of a safety improvement against crashes "after" implementation, highway safety professionals have developed a method of measuring the crash reduction potential of various types of safety improvements. The measured change in crashes is used to develop a **crash modification factor, or CMF**. A CFM is used to compute the expected number of crashes after implementing a given countermeasure at a specific site.

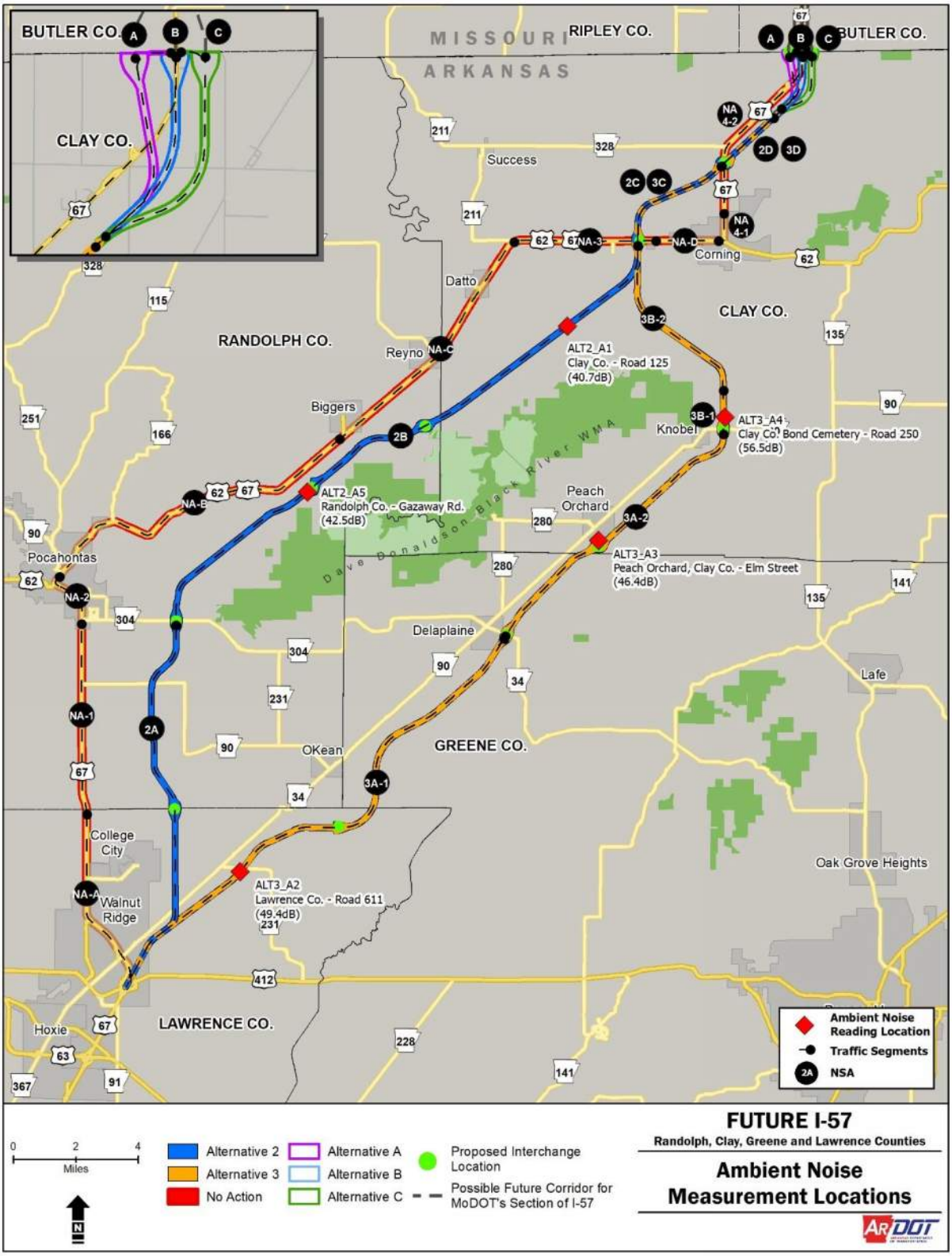
3.10 Would the project result in noise impacts?

Introduction and Methodology

The FHWA has established standards for evaluating traffic noise in compliance with 23 United States Code (USC) of Federal Regulations Section 109(h) and (i). These standards are found in 23 CFR Part 772. ARDOT's Policy on Highway Traffic Noise Abatement (ARDOT Noise Policy) was developed in accordance with requirements of these FHWA Noise Standards. This Noise Screening Analysis was completed in accordance with the ARDOT Noise Policy. The proposed improvements to the Hwy. 67 corridor in northeastern Arkansas between Walnut Ridge and the Missouri State line are shown in **Figure 41**. The Noise Screening Analysis serves to provide an overview of the existing and future noise environment and predict the potential effects the project would have on the noise environment.

The FHWA Traffic Noise Model Version 2.5 (TNM) software program was used to predict existing and future Leq(h) traffic noise levels. The TNM straight line model used in the screening level analysis uses the existing year and design year traffic and roadway information. This modeling allows for reasonable estimates of traffic noise using varying offset distances from the highway. Traffic data prepared for the project was applied to the TNM models developed for each Noise Study Area (NSA) and included proposed 2040 traffic for the action alternatives and both existing 2018 and proposed 2040 traffic for the No Action Alternative. Refer to the Noise Screening Technical Report located in **Appendix I** for details of the noise screening analysis.

Figure 41: Project Overview and Ambient Measurement Locations



It is the intent of the ARDOT to evaluate predicted, future traffic sound levels from highway traffic noise that could result in traffic noise impacts for federal Type I projects. Type I projects include those that meet the following criteria:

- Substantially alter the existing horizontal and vertical alignments and topography
- Add through traffic lanes
- Add and relocate interchanges or ramps

According to ARDOT Noise Policy, a screening level noise analysis (screening analysis) may be performed for projects that are unlikely to cause noise impacts and/or where noise abatement measures are likely to be unfeasible for acoustical or engineering reasons. Factors common to these types of projects include low traffic volumes, slower speeds, the presence of few or no receptors, and the need for roadway access points (e.g., driveways, roadway intersections, etc.). Noise studies may use the terms "receptor" and "receiver" that are similar but distinct. A receptor can represent a noise-sensitive area, such as the backyard of a single family, restaurant seating area or a park bench. A receptor can also represent the location of a group of receptors with similar land uses. Receivers are described as a TNM modeling point that can represent a single receptor site or a group of receptor sites with similar land uses. TNM receivers may representative several receptors where common noise environments exist. Noise screening methodologies are identified in the Noise Screening Technical Report located in **Appendix I**.

Affected Environment

The action alternatives are located within a primarily agricultural setting and sensitive noise receptors included residential dwellings and cemeteries. The No Action Alternative contains a mix of urban and rural (agricultural use) land uses. The action alternatives are 400 feet in width; however, the auditory study area extends outward from the proposed travel lanes up to 675 feet. The following alternatives were considered and evaluated in the screening analysis:

- No Action Alternative (Existing Hwy. 67)
- Alternative 2 (Central alignment on new location – 39 miles)
- Alternative 3 (Eastern alignment on new location – 41 miles)
- Alternative A (Western Missouri connector on new location – 2.2 miles, Interim connector – 0.5 mile)
- Alternative B (Middle Missouri connector on existing Hwy. 67 – 2.3 miles)
- Alternative C (Eastern Missouri connector on new location – 2.6 miles, Interim connector – 0.4 mile)

The NSA locations for each alternative are identified below in **Table 18** and shown in **Figure 41**. The number following NSA is the action alternative and the following letter represents the segment of that alternative (NSA 2A = "Alternative 2", "Segment A").

Five 15-minute ambient noise measurements, as shown on **Figure 41**, were collected on March 2 and 3, 2021 along Alternative 2 and Alternative 3, as identified in **Table 19,** that represented the ambient or background noise environment for these two alternatives and for Alternatives A and C. Based on coordination with ARDOT, the 15-minute ambient noise measurements collected are still within the ARDOT Noise Policy on rural projects with scattered noise receptors where modeling of existing noise levels along the entire project is not always necessary. Upon coordination with ARDOT, it was determined that applying one conservative ambient reading 42.5 dB (decibel) to identify any substantial increase impacts for Alternative 2 and Alternative 3 would provide a more realistic prediction of the noise environment in an area where the land use along both alternatives is consistent. TNM modeling results determined that the distance to the 66 dBA (A-weighted decibel) contour and the distance to identify substantial increase impacts was reasonably uniform along Alternative 2 and Alternative 3. Existing ambient sound levels were compared to the TNM predicted sound levels for each evaluated alternative to determine any substantial noise impacts. Substantial impacts were considered to be an increase of ≥ 10 dBA over the existing ambient noise level.

Table 18: Noise Study Area (NSA) General Locations

Alternative 2		Alternative B	
NSA 2A	Between the Hwy. 412 / Hwy. 67 interchange & Hwy. 304	NSA B	S. of Clay County Rd. 155 to the State Line
NSA 2B	Hwy. 304 to Hwy. 67 W. of Corning	Alternative C	
NSA 2C	Hwy. 67 W. of Corning to Hwy. 67 N. of Corning	NSA C	S. of Clay County Rd. 155 to the State Line, including portions of State Line Road
NSA 2D	Hwy. 67 N. of Corning to Connectors	No Action Alternative	
Alternative 3		NSA NA-A	Hwy. 67 and Hwy. 412 to County Line
NSA 3A-1	Hwy. 412 & Hwy. 67 to Delaplaine	NSA NA-1	County Line to Hwy. 304
NSA 3A-2	Delaplaine to Hwy. 90 E. of Knobel		
SA 3B-1	Hwy. 90 N. Approximately 2,500 feet (Adjacent to Existing Roadway)	NSA NA-2	Hwy. 304 to Hwy. 90
NSA 3B-2	Approximately 2,500 feet N. of Hwy. 90 to Hwy. 67	NSA NA-B	Hwy. 90 to Hwy. 67 Business (south of Biggers)
NSA 3C	Hwy. 67 W. of Corning to Hwy. 67 N. of Corning	NSA NA-C	Hwy. 67 Business to Hwy. 211
NSA 3D	Hwy. 67 to Missouri State Line	NSA NA-3	Hwy. 211 to Clay County Rd. 139
Alternative A		NSA NA-D	Clay County Rd. 139 to Hwy. 67 North (N. Missouri Ave.)
NSA A	S. of Clay County Rd. 155 to the State Line, including portions of State Line Road	NSA NA-4-1	From Hwy. 67 North (N. Missouri Ave.) to Clay County Rd. 140
		NSA NA-4-2	Clay County Rd. 140 to the State Line

Source: Project Team, 2021

Table 19: Ambient Noise Measurements and Location

Measurement Site	General Location	Recorded dB
Alt2_A1	Clay Co. - Road 125	40.7
Alt2_A5	Randolph Co. - Gazaway Rd.	42.5
Alt3_A2	Lawrence Co. - Road 611	49.4
Alt3_A3	Peach Orchard, Clay Co. - Elm St.	46.4
Alt3_A4	Clay Co. Bond Cemetery - Road 250	56.5

dB – Decibel; *Source: Project Team, 2021*

Environmental Consequences

The noise screening analysis includes the evaluation of the following sensitive noise receivers: single family residential properties; cemeteries; places of worship; and Section 4(f) public recreation properties. The Black River WMA was considered a recreation area and the WMA's Master Plan was reviewed during this noise analysis, which indicates that the highest public use for the WMA is waterfowl hunting within five Greentree Reservoirs (See page 10 and Map 4 on page 18 of the Master Plan). Based on TNM screening results, the common places of gathering within the Black River WMA would not be impacted. Therefore, no public lands would be impacted by the action alternatives. Cultural historic sites were also considered in completion of the noise screening. No historic sites would be impacted by noise. Noise modeling results for each of the NSAs are summarized in **Table 20** and those NSAs having impacts are summarized below. Refer to **Appendix I** for data results and detailed views of receptor locations.

Several receptors located within the proposed ROW are considered relocations for the purposes of this noise screening and not counted as receptors. A total of 201 receptors were evaluated in the noise screening for the alternatives identified above.

No Action Alternative

The No Action Alternative evaluated 170 receptors for potential noise impacts. Forty-five (45) receptors are located within the existing 66 dBA, 48 receptors are predicted to be exposed to the future 66 dBA noise level, and 128 receptors are predicted to be located with the future 63 dBA NBZ. A total of four places of worship, one cemetery, and one hotel are located within the 63 dBA NBZ. Three places of worship, one public park (in two locations), three hotels, and three restaurants would be impacted within the future 66 dBA NBZ.

Table 20: Noise Level Results Summary

NSA	NAC Impacted Receptors Existing 66 dB NBZ	NAC Impacted Receptors Proposed 66 dB NBZ	NAC Receptors Within Future 63 dB NBZ	Impacted Receptors by Substantial Increase
NSA 2A	0	0	0	3
NSA 2B	0	0	1	4
NSA 2C	0	0	0	0
NSA 2D	0	0	0	1
NSA 3A-1	0	0	0	4
NSA 3A-2	0	0	0	3
NSA 3B-1	0	0	2	0
NSA 3B-2	0	0	0	0
NSA 3C	0	0	0	0
NSA 3D	0	0	0	1
NSA A	0	0	0	3
NSA A Interim Connector	0	0	0	0
NSA B	0	0	3	9
NSA C	0	0	0	3
NSA C Interim Connector	0	4	4	4
NSA NA-A	10	10	7	0
NSA NA-1	14	15	12	0
NSA NA-2	5	5	1	0
NSA NA-B	2	2	5	0
NSA NA-C	0	1	15	0
NSA NA-3	6	6	27	0
NSA NA-D	1	1	24	0
NSA NA-4-1	0	0	4	0
NSA NA-4-2	7	7	33	0

NSA – Noise Study Area; NAC – Noise Abatement Criteria; dB – Decibel; NBZ – Noise Buffer Zone;
Source: Project Team, 2021

Access points such as driveways and intersections are needed along the No Action Alternative, it would not be possible to construct an effective noise barrier accommodating these access points. Major utilities, drainage structures, and other structures would require relocation as a result of the placement of any noise barriers along the existing Hwy. 67. Receptors are shown in detail sheets located in **Appendix I**.

Alternative 2

NSA 2A

Three receptors are predicted to experience future noise level increases ranging from 10 to 14 dBA as the receptors are located within the 560-foot substantial increase noise buffer zone (NBZ), which exceeds substantial increase criteria of ≥10 dBA.

NSA 2B

Four receptors are predicted to experience future noise level increases ranging from 10 to 17 dBA as these receptors are located within the 550-foot substantial increase NBZ, one of which is located within the 63 dBA NBZ.

NSA 2D

One receptor is predicted to experience future noise level increases ranging from 10 to 13 dBA as this receptor is located within the 675-foot substantial increase NBZ.

Alternative 3

NSA 3A-1

Four receptors are predicted to experience future noise level increases ranging from 10 to 17 dBA as these receptors are located within the 560-foot substantial increase NBZ.

NSA 3A-2

Three receptors are predicted to experience future noise level increases ranging from 10 to 12 dBA as these receptors are located within the 550-foot substantial increase NBZ.

NSA 3B-1

Two receptors are predicted to experience future noise level increases within the 63 dBA NBZ and substantial increase NBZ as these receptors are located within 215 feet and 550 feet, respectively, of the nearest travel lane.

NSA 3D

One receptor is predicted to experience future noise level increases ranging from 10 to 12 dBA as this receptor is located within the 550-foot substantial increase NBZ.

Alternative A

Three receptors are predicted to experience future noise level increases ranging from 10 to 18 dBA as these receptors are located within the 600-foot substantial increase NBZ.

Alternative B

Nine receptors are predicted to experience future noise level increases ranging from 10 to 20 dBA. Three of these receptors are within the 220-foot 63 dBA NBZ and six are located within 600-foot substantial increase NBZ.

Alternative C

Three receptors are predicted to experience future noise level increases ranging from 10 to 20 dBA as these receptors are located within the 550-foot substantial increase NBZ. Four receptors located along the interim connector are predicted to experience future noise level increases ranging from 10.7 to 26.9 dBA and are predicted to be exposed to the future 66 dBA noise level.

Access points such as driveways are needed along the interim connector and therefore, it would not be possible to construct an effective noise barrier accommodating these access points. Receptors are shown in detail sheets located in **Appendix I**.

CONCLUSIONS

Activity Categories identified within and adjacent to the alternative corridors include B, C, E, F and G receptors. Only Noise Abatement Criteria (NAC) B and C receptors were specifically identified in the screening analysis for consideration of potential noise impacts for the action alternatives. All action alternatives would result in substantial increase (≥ 10 dBA) and NAC B and C impacts (≥ 66 dBA). However, a detailed noise study is not warranted based on the results of the screening level analysis. The costs per benefited receptor is not reasonable given the sparse nature of the impacted receptors.

Mitigation

Based on general screening guidance in evaluating potential noise barriers, a noise barrier would need to be four times the length of the distance between the receptor and the nearest travel lane to meet the noise reduction design goal of 8 dBA for an impacted and benefited receptor. The impacted receptors in all action alternatives were evaluated with regards to potential noise mitigation. The length and height of noise barriers required to meet both the noise reduction design goal (8 dBA) and benefited receptor (i.e., 5 dBA noise reduction) was not found reasonable due to costs to construct such walls.

Access points such as driveways and intersections are needed along the No Action Alternative. Therefore, noise barriers would not prove effective or feasible. Major utilities, drainage structures, and other structures would require relocation as a result of the placement of any noise barriers along the existing Hwy. 67.

Commitments

The ARDOT encourages local communities and developers to practice noise compatibility planning. As presented in **Table 21**, noise level predictions for future build conditions at which 66 dBA or higher noise levels could be experienced were made at incremental distances as measured from the centerline of the direction of travel lanes for the action alternatives. Rural Activity Categories B and C exterior areas would be impacted within variable distances as a result of substantial increases; however, these predictions do not represent noise levels at every location at a particular distance back from the roadway. Noise levels would vary with changes in terrain and other site conditions.

This information is included to inform local officials and planners of anticipated noise levels so that future development would be compatible. In compliance with federal guidelines, a copy of this screening analysis would be transmitted to the cities and towns located along the alternative corridors for land use planning purposes. Guidance documents on noise compatible land use planning are available from FHWA.

Construction equipment would be maintained with appropriate mufflers to aid in minimizing construction noise levels.

Table 21: Noise Level Results for Compatibility Planning

NSA	66 dBA NBZ Distance (ft) from Center of the Nearest Travel Lane*	NSA	66 dBA NBZ Distance (ft) from Center of the Nearest Travel Lane*
NSA 2A	170	NSA NA-A	155
NSA 2B	170	NSA NA-1	162
NSA 2C	162	NSA NA-2	125
NSA 2D	170	NSA NA-B	60
NSA 3A-1	165	NSA NA-C	85
NSA 3A-2	165	NSA NA-3	85
NSA 3B-1	166	NSA NA-D	60
NSA 3B-2	166	NSA NA-4-1	38
NSA 3C	163	NSA NB-4-2	100
NSA 3D	166	*The center of the existing Hwy. 67 was utilized to determine the 66 dBA NBZ for the No Action Alternative.	
NSA A	170		
NSA A Interim Connector	160		
NSA B	166		
NSA C	166		
NSA C Interim Connector	150		

NSA – Noise Study Area; dBA – A-weighted Decibel; NBZ – Noise Buffer Zone; *Source: Project Team, 2021*

3.11 Are energy impacts anticipated?

Introduction and Methodology

Section 1502.16(a) of the CEQ Regulations require that federal agencies consider energy requirements, natural depletable resource requirements, and the conservation potential of alternatives and mitigation measures. Agencies are tasked to prioritize actions that reduce waste, cut costs, and enhance the resilience of federal infrastructure and operations. Under EO 13211, proposed actions must be evaluated to determine if they have significant energy requirements and if they have potential to cause adverse effects on the supply, distribution, or use of energy.

Energy consumption for this project is defined as the use of resources to fuel vehicles and trucks or to construct and maintain roadways. Fuel efficiency and construction practices contribute to the levels of energy needs in transportation. A range of building materials and machinery are involved in the construction of transportation infrastructure. In addition, future maintenance and use of the roadway by the traveling public results in additional future energy needs such as fuel consumption. Various energy resources are not discussed in this section due to the wide range of sources and availability. Actual sources of materials and energy resources at this phase of project development would be difficult to evaluate; however, this section discusses energy consumption further and is evaluated between the Action and No Action Alternatives.

Affected Environment

Various existing roadways connect the towns and cities within the study area; however, no direct routes exist between Walnut Ridge and the Arkansas-Missouri State line. The existing network of roadways consists of multiple access points, varying speed limits, and varying roadway configurations. These factors influence fuel efficiency (i.e., energy efficiency). Multiple access points and limited lanes in some areas create inconsistent travel times that pose as a threat to fuel/energy efficiency. Varying speeds caused by slow-downs and braking from slow incoming traffic attribute to inconsistent and slower travel times that reduce fuel/energy efficiencies. With adjacent properties having direct access to main thoroughfares, more potential for disruption and halting through traffic can result. The same existing roadways in the study area may serve all types of users such as farm equipment drivers, local rural and city drivers, and through traffic. Little to no other routes to travel can create disruption and potential for accidents. If lane closures occur from traffic accidents or backups from traffic movement, little to no alternatives are present to avoid or travel around such blocked areas. This in turn results in increases in fuel and energy consumption from idling and from traveling farther distances to move around blocked roadways. These factors also produce inconsistent and longer travel distances and travel times that result in inefficient energy usage and increased energy consumption.

Environmental Consequences

Traffic data for the design year of 2040 range from 4,000 – 13,000 vehicles per day for the action alternatives. Energy consumption would be required to construct and maintain any of the proposed action alternatives as well as to fuel the vehicles estimated to travel on these roadways. The action alternatives would result in a traffic route on new location and the No Action Alternative would not result in construction of a new roadway and maintain existing conditions. Energy needs and consumption are evaluated for action alternatives and the No Action Alternative.

No Action Alternative

Under the No Action Alternative, the proposed project would not be constructed and would not require the processing of materials, construction of the new location roadway, and would not result in energy consumption for these purposes. However, existing roadways would still require maintenance and associated energy consumption for such activities. The No Action Alternative would not improve travel efficiency or increase energy efficiency through the construction of a controlled access interstate highway. The existing roadways would maintain multiple access locations that impede traffic flow and not provide improvements to fuel efficiency.

Action Alternatives

Alternatives 2, 3, A, B, and C would all be controlled access facilities; therefore, there are no decipherable differences between system and energy efficiency potentials among action alternatives. All action alternatives would require energy for processing of materials needed for construction and maintenance activities. Yet overall, the action alternatives would improve transportation system efficiency for local and through traffic and thereby reduce energy consumption for travelers and increase energy efficiency to connect to existing roadways. In compliance with EO 13211, all action alternatives would not result in a significant adverse effect on the supply, distribution, or use of energy. The proposed project would not affect any facilities associated with energy supply or sources of energy supplies.

Mitigation

Construction practices, such as the efficient use of machinery and the use of local materials to reduce long-distance material transport, would help reduce energy consumption and increase energy efficiency during construction. Other

measures to be determined during the construction phase of the project would be considered and implemented to increase energy efficiency and reduce energy resource consumption.

3.12 Would the project affect air quality?

Introduction and Methodology

The Clean Air Act (CAA) requires the EPA to set National Ambient Air Quality Standards (NAAQS) for six criteria pollutants (carbon monoxide, ozone, particulate matter, lead, sulfur dioxide, and nitrogen dioxide). The CAA is codified at 42 USC 7401-7671q, and the statute pertains to transportation conformity and to general conformity. Section 7506(c) prohibits federal agencies from providing funding or approving any activity that does not conform to an applicable State Implementation Plan (SIP). It also prohibits Metropolitan Planning Organizations from giving their approval to any "project, program, or plan" that does not conform to a SIP. A SIP is developed for EPA designated non-attainment or maintenance areas (NA/MA) of the state and is combined into a statewide SIP. Attainment areas are exempt from conformity requirements. Clay, Greene, Randolph, and Lawrence Counties are in attainment for all NAAQS; therefore, the project is not subject to transportation conformity requirements.

If the air quality in a geographic area meets or is cleaner than the national standard, it is called an **attainment area**. State and local governments with nonattainment areas must develop implementation plans outlining how areas will attain and maintain the standards by reducing air pollutant emissions.

Affected Environment

The future I-57 has been determined to potentially increase traffic on the existing Hwy. 67 and on the action alternative to an average annual daily traffic (AADT) of 10,027. The four counties of the project corridor are in attainment for the NAAQS; therefore, conformity rules do not apply. The entire study area is located within an attainment area and, therefore, the SIP does not require any transportation control measures. Consequently, the conformity procedures of 23 CFR 770 do not apply to this project. Current air quality in the area is regarded to be high. The proposed project would have no substantial mobile source air toxics (MSAT) effects; therefore, a quantitative analysis would not be required and a qualitative analysis is performed for the project based on the projected AADT.

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.

A qualitative analysis provides a basis for identifying and comparing the potential differences among MSAT emissions, if any, from the various alternatives. The qualitative assessment presented below is derived in part from a study conducted by FHWA entitled *A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives*, found at: www.fhwa.dot.gov/environment/air_quality/air_toxics/research_and_analysis/mobile_source_air_toxics/msatemissions.cfm.

Under 40 CFR Part 81, Subpart D, Class I Federal Areas shall be considered for any expected air quality and visibility impacts. No applicable federal areas are within the study area of the action alternatives and therefore would not be impacted by the proposed project.

Environmental Consequences

Potential air quality impacts that may be associated with the proposed project are short-term effects that are limited to the construction phase and are discussed in Section 3.28. Traffic data for the design year of 2040 are less than 10,000 vehicles per day, as shown in **Table 22**. The table provides data for the new location roadway (Action Alternative) and the existing Hwy. 67 facility. The data for the existing Hwy. 67 facility is included for two scenarios: if no construction is completed (Existing Hwy. 67 - No Action Alternative) and if a new location roadway is built (Existing Hwy. 67 - Action Alternative). The AADT projections for the project are well below 20,000 vehicles per day; therefore, a Traffic Air Quality Analysis was not required. Forecasted traffic volumes generally range from 3,700 to 7,400 AADT for the design year 2040; therefore, the project is exempt from additional air quality analysis.

Table 22: VMT and VHT Comparison for Design Year 2040

Alternative	Length (miles)	VMT	VHT	Average ADT
Existing Hwy. 67 (No Action Alternative)	48	353,880	6,671	7,373
Existing Hwy. 67 (Action Alternative)	48	300,189	5,657	6,254
Action Alternative	40	150,919	2,264	3,773

VMT – Vehicle Miles Traveled; VHT – Vehicle Hours Traveled. Note: Data based on 2040 LRTP. Average ADT was calculated by dividing VMT by length. *Source: Project Team, 2021.*

No Action Alternative

The No Action Alternative would experience lower levels of service in the design year compared to the action alternatives, which in turn would represent something less than free-flow conditions. These conditions could lead to congested conditions, which could potentially result in poorer air quality.

Action Alternatives

Compared to the No Action Alternative, the action alternatives represent free-flow operating conditions. For each action alternative, the amount of MSAT emitted would be proportional to the VMT, assuming that other variables such as fleet mix are the same for each alternative. The VMT for the existing Hwy. 67 facility and the proposed action alternative as included in the 2040 LRTP are combined to be higher than that for the No Action Alternative in 2040 as shown in **Table 22**. This is because the additional capacity increases the efficiency of the roadways and attracts rerouted vehicles from elsewhere in the transportation network. This increase in VMT would lead to higher MSAT emissions for the action alternatives, along with a corresponding decrease in MSAT emissions along the parallel routes. The emissions increase is offset somewhat by lower MSAT emission rates due to increased speeds; according to the EPA's MOVES2014 model, emissions of all of the priority MSAT decrease as speed increases. While the VMT for the existing Hwy. 67 in 2040 is higher than the action alternatives, it is likely due to the traffic from the proximity to the cities along the corridor. As shown in **Table 22**, lower VHT and VMT numbers shows an overall improved travel efficiency on the proposed action alternative compared to the No Action Alternative.

Because the VMT and VHT estimated for the No Action Alternative are near to or higher than the levels for the existing Hwy. 67 and action alternatives as included in the LRTP, substantially higher levels of MSAT are not expected from any of the action alternatives compared to the No Action Alternative (**Table 22**).

Regardless of the alternative chosen, emissions would likely be lower than present levels in the design year as a result of the EPA's national control programs that are projected to reduce annual MSAT emissions by over 90% from 2010 to 2050 (Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents, FHWA, October 12, 2016). Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

Mitigation

Construction activity may generate a temporary increase in MSAT emissions. A number of technologies and operational practices help lower short-term MSAT. The FHWA has supported a host of diesel retrofit technologies in the Congestion Mitigation and Air Quality Improvement Program provisions – technologies that are designed to lessen a number of MSATs (FHWA, 2013).

Construction mitigation includes strategies that reduce engine activity or reduce emissions per unit of operating time, such as reducing the numbers of trips and extended idling. Operational agreements that reduce or redirect work or shift times to avoid community exposures can have positive benefits when sites are near populated areas. Verified emissions control technology retrofits or fleet modernization of engines for construction equipment could be appropriate mitigation strategies. Technology retrofits could include particulate matter traps, oxidation catalysts, and other devices that provide an after-treatment of exhaust emissions. Implementing maintenance programs per manufacturers'

specifications to ensure engines perform at EPA certification levels, as applicable, and to ensure retrofit technologies perform at verified standards, as applicable, could also be deemed appropriate. The use of clean fuels, such as ultra-low sulfur diesel, biodiesel, or natural gas also can be a cost-beneficial strategy. The EPA has listed a number of approved diesel retrofit technologies; many of these can be deployed as emissions mitigation measures for equipment used in construction. This listing can be found at: https://www.epa.gov/verified-diesel-tech/verified-technologies-list-clean-diesel.

Incomplete or Unavailable Information for Project-Specific MSAT Health Impacts Analysis

In FHWA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

The EPA is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the CAA and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSAT. The EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain the Integrated Risk Information System (IRIS), which is "a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects" (EPA, https://www.epa.gov/iris). Each report contains assessments of non-cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute (HEI). A number of HEI studies are summarized in Appendix D of FHWA's Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents. Among the adverse health effects linked to MSAT compounds at high exposures are: cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations (HEI Special Report 16, https://www.healtheffects.org/publication/mobile-source-air-toxics-critical-review-literature-exposure-and-health-effects) or in the future as vehicle emissions substantially decrease.

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts – each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable.

It is particularly difficult to reliably forecast 70-year lifetime MSAT concentrations and exposure near roadways; to determine the portion of time that people are actually exposed at a specific location; and to establish the extent attributable to a proposed action, especially given that some of the information needed is unavailable.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI (Special Report 16, https://www.healtheffects.org/publication/mobile-source-air-toxics-critical-review-literature-exposure-and-health-effects). As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. The EPA states that with respect to diesel engine exhaust, "[t]he absence of adequate data to develop a sufficiently confident dose-response relationship from the epidemiologic studies has prevented the estimation of inhalation carcinogenic risk

(EPA IRIS database, Diesel Engine Exhaust, Section II.C. https://cfpub.epa.gov/ncea/iris/iris_documents/documents/subst/0642.htm#quainhal)."

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the EPA as provided by the CAA to determine whether more stringent controls are required in order to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires EPA to determine an "acceptable" level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA's approach to addressing risk in its two step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than deemed acceptable (https://www.cadc.uscourts.gov/internet/opinions.nsf/284E23FFE079CD59852578000050C9DA/$file/07-1053-1120274.pdf).

3.13 Would the project affect greenhouse gases?

Introduction and Methodology

Consideration of greenhouse gases (GHGs) and climate change in NEPA analysis has seen many changes in the past several years. After recognizing that federal agencies needed assistance in determining the appropriate level of analysis for GHGs and climate change in NEPA, the CEQ issued final guidance on greenhouse gas (GHG) considerations in NEPA decisions, the Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews (2016 Final Guidance), in August 2016. The goal of the guidance was to make the federal agencies' consideration of climate change impacts in NEPA documents as consistent as possible. A 2019 update to the guidance was issued; however, it has since been rescinded. In accordance with the January 2021 EO 13990, the 2016 Final Guidance is currently under review.

Greenhouse gases (GHGs) are gases that trap heat in the atmosphere like a greenhouse. These gases include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated gases (such as hydrofluorocarbons).

Climate change refers to any substantial change in measures of climate (such as temperature, sea level or precipitation) lasting for an extended period (decades or longer). It may result from natural factors and processes or from activities (EPA, 2014).

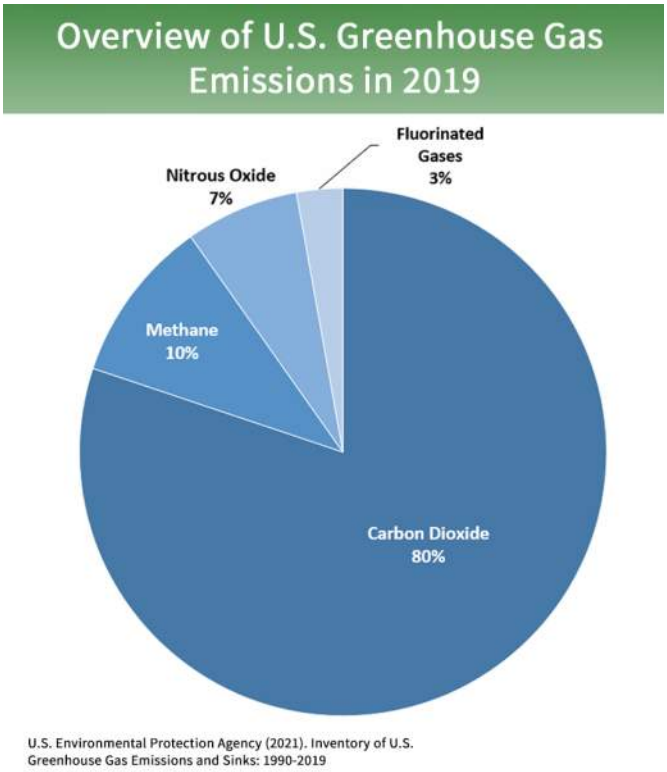
Carbon dioxide (CO_2) accounts for 80% of all U.S. anthropogenic GHG emissions (EPA, 2021). CO_2 is naturally present in the atmosphere, but is also emitted by human activities, including fossil fuel combustion, industrial processes, and land use changes.

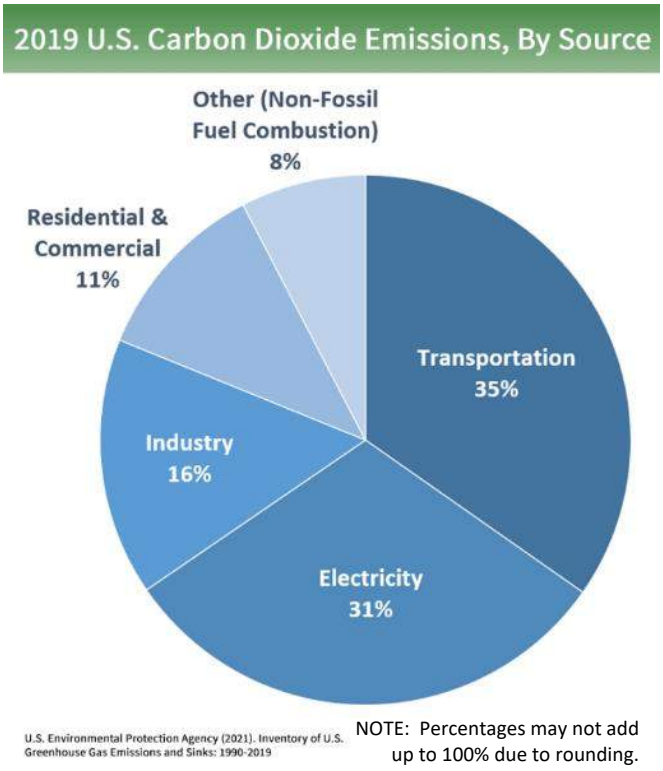
Anthropogenic sources are considered all human activity sources. All point sources, non-road and on-road sources are anthropogenic sources of emissions. Most non-point sources, except for biogenic sources, are considered anthropogenic sources.

According to the EPA, the main human activity that emits CO_2 is the combustion of fossil fuels (coal, natural gas, and oil) for energy and transportation, although certain industrial processes and land use changes also emit CO_2 (https://www.epa.gov/ghgemissions/overview-greenhouse-gases). As stated, one of the main sources of CO_2 emissions in the U.S. is transportation as shown in **Figure 42**. The transportation sector is a large source of CO_2 emissions and not a large contributor to emissions of the other GHGs, so CO_2 emissions tend to be the focus for transportation-related activities.

The combustion of fossil fuels such as gasoline and diesel to transport people and goods was the largest sources of CO_2 emissions in 2019, accounting for about 35% of the total U.S. CO_2 emissions and 28% of the total U.S. GHG emissions. This category includes transportation sources such as highway and passenger vehicles, air travel, marine transportation, and rail.

Figure 42: 2019 U.S. Emissions





NOTE: Percentages may not add up to 100% due to rounding.

Carbon dioxide emissions in the U.S. increased by about 3% between 1990 and 2019. From 1990 to 2019, GHG emissions from transportation ranged from 1500-2000 million metric tons of carbon dioxide equivalent (CO2E) (EPA, 2021). Since the combustion of fossil fuel is the largest source of GHG emissions in the U.S., changes in emissions from fossil fuel combustion have historically been the dominant factor affecting total U.S. emission trends. Changes in CO_2 emissions from fossil fuel combustion are influenced by many long-term and short-term factors, including population growth, economic growth, changing energy prices, new technologies, changing behavior, and seasonal temperatures. Between 1990 and 2019, the increase in CO_2 emissions corresponded with increased energy use by an expanding economy and population, including overall growth in emissions from increased demand for travel.

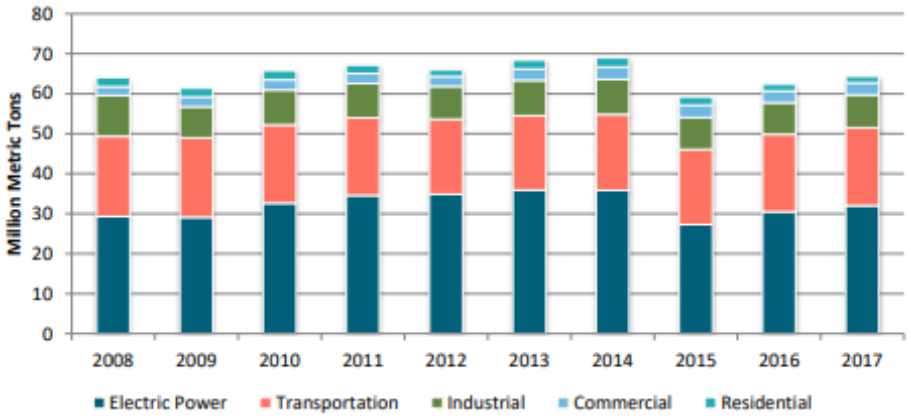
CO2E is carbon dioxide equivalent. It is a unit of measure used to compare emissions from various GHGs. It is the number of metric tons of CO_2 emissions with the same global warming potential as one metric ton of another GHG.

There is a certain amount of uncertainty when estimating a proposed project's effect on climate change and the level of effort an agency should pursue when considering climate change within the NEPA context. Contributing to the difficulty is the global scope of climate change and making the causal linkage associated with any one project. The 2016 CEQ guidance recognized that inherent in NEPA and the CEQ regulations is a rule of reason that ensures agencies are afforded the discretion, based on their expertise and experience, to determine whether and to what extent to prepare an analysis based on the availability of information, the usefulness of that information to the decision-making process and the public, and the extent of the anticipated environmental consequences. The expectation of the NEPA process to disclose and inform has led to climate change considerations and GHG emissions for NEPA project-level decisions. This assessment does not include modeling data from MOVES; however, it is intended to present the analysis of GHGs and emissions at the project level in the NEPA context using the best available data from Arkansas DEQ data and the EPA equivalency calculator.

Affected Environment

For the purposes of this study, available data gathered includes state level data using Arkansas DEQ available data. State-level information was used to provide a general characterization of the emissions for the proposed project area. The DEQ provides a state of the air report recently published for 2021 and included **Figure 43**, which shows the CO_2 emissions from 2008 to 2017 by sector.

Figure 43: CO2 Emissions from Fossil Fuel Consumption in Arkansas (2008-2017)



Source: ADEQ State of the Air Report, 2021.

Overall, CO_2 emissions in Arkansas have increased by 0.2 million metric tons between 2008 and 2017. Over the past decade, CO_2 emissions from the electric power sector in Arkansas have increased, reaching a peak of 35.9 million metric tons in 2013. Emissions from Arkansas's power sector declined in 2015 but have trended upward since 2016. CO_2 emissions from the transportation sector decreased from 2008-2013 but have increased slightly each year since. The industrial sector in has decreased its CO_2 emissions over the past decade. The residential sector and commercial sector make up much smaller portions of the energy-related CO_2 emissions inventory in Arkansas. The largest source of anthropogenic CO_2 emissions in Arkansas is the electric power sector followed by the transportation sector. The transportation sector accounts for approximately 30% of the 64.3 million metric tons of CO_2 emissions in 2017 in Arkansas (DEQ, 2021).

Environmental Consequences

Translating abstract measurements into converted terms such as annual emissions from cars was considered a realistic comparison between alternatives for the proposed project. These equivalencies would help explain abstract measurements using more understandable, concrete terms. Using the EPA equivalencies calculator, the No Action Alternative and action alternatives are discussed with GHG equivalencies calculated in terms of metric tons CO2E. To provide a project level comparison among alternatives considered for the proposed project, estimated annual average daily traffic (AADT) data was used to determine GHG emissions. These comparisons also show the differences in emissions at the project level. The EPA equivalencies calculator also provides other ways to interpret the emissions data (see **Table 23**), which are included in the discussion for the purpose of providing a different understanding on the emission data. Emissions associated with construction are discussed further in Section 3.12.

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.

No Action Alternative

As shown in **Table 23**, the GHG emission for the No Action Alternative is estimated to be approximately 33,902 metric tons CO2E. This total would be equivalent to emissions resulting from 85.2 million miles driven by an average passenger vehicle, 78,490 barrels of oil consumed, 3.81 million gallons of gasoline consumed, or 449 tanker trucks worth of gasoline.

Table 23: GHG Emission Equivalent and Equivalent Emission Sources

Roadway (Condition Assessed)	2040 AADT	Metric Tons CO2E	Equivalent to:	Miles Driven by an Average Passenger Vehicle	Barrels of Oil Consumed	Gallons of Gasoline Consumed	Number of Tanker Trucks' worth of gasoline
Existing Hwy. 67 (No Action Alternative)	7,373	33,902		85.2 million	78,490	3.81 million	449
Existing Hwy. 67 (Action Alternative)	6,254	28,757		72.3 million	66,578	3.24 million	381
New Alignment Alternatives (Action Alternative)	3,773	17,349		43.6 million	40,166	1.95 million	230

Sources: AADT (Project Team) and CO2E and equivalents (U.S. EPA, https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator), 2021.

Action Alternative

As shown in **Table 23**, the GHG emissions are based on the projected 2040 AADTs. The GHG emission for the action alternative is estimated to be approximately 17,349 metric tons CO2E. This total would be equivalent to emissions resulting from 43.6 million miles driven by an average passenger vehicle, 40,166 barrels of oil consumed, 1.95 million gallons of gasoline consumed, or 230 tanker trucks worth of gasoline. Based on the 2040 AADT, the GHG emissions for the existing Hwy. 67 facility are estimated to be approximately 28,757 metric tons CO2E, which is less than the No Action Alternative emissions. This total would be equivalent to emissions resulting from 72.3 million miles driven by an average passenger vehicle, 66,578 barrels of oil consumed, 3.24 million gallons of gasoline consumed, or 381 tanker trucks worth of gasoline.

Although the new location roadway and the existing Hwy. 67 facilities would be lower individually than the No Action Alternative, the combined 2040 projected AADT is 10,027, which is estimated to be 46,106 CO2E. This would be equivalent to 115.9 million miles driven by an average passenger vehicle, 106,744 barrels of oil consumed, 5.19 million gallons of gasoline consumed, or 611 tanker trucks worth of gasoline.

If the action alternative is constructed, the projected AADTs in 2040 would be distributed between the new location roadway and the existing Hwy. 67 facility. Overall, the GHG emissions resulting from the construction of the action 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.

3.14 Would impacts to hazardous materials or sites of concern occur?

Introduction and Methodology

Hazardous materials refer to a broad category of hazardous wastes, hazardous substances, and toxic chemicals with the potential to negatively impact human health or the environment. Hazardous materials may become hazardous wastes if discarded. The presence or suspected presence of hazardous materials could present an environmental liability during the acquisition of ROW of the Selected Alternative.

Examples of hazardous material sites and issues commonly encountered on a transportation project could include:
- Industrial sites
- Petroleum storage tank sites
- Oil and gas well sites
- Landfills
- Pipelines
- Structures with asbestos containing materials
- Contaminated soil and groundwater associated with any of the above listed concerns

The term 'site of concern', as used in this evaluation, includes hazardous materials or petroleum products, even under conditions in compliance with applicable laws. A site of concern does not include *de minimis* conditions that generally do not present a material risk of harm to public health or the environment and are not generally the subject of an enforcement action if brought to the attention of appropriate governmental agencies (ASTM, 2013).

In accordance with FHWA guidance, an evaluation of the potential for hazardous materials or contamination to be encountered during construction was considered. The evaluation included a regulatory database review of EPA and Arkansas DEQ records, historical mapping, aerial imagery, and a non-intrusive field reconnaissance from existing ROW. Potential hazardous materials were investigated within a one-quarter mile of the centerlines of the proposed action alternatives. This search for hazardous material sites was not all inclusive but is a useful guide to the sites that may require avoidance.

Hazardous waste sites are regulated by the Resource Conservation and Recovery Act (RCRA) and/or the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986. The RCRA was established to set up a framework for the proper management of hazardous waste.

Affected Environment

Inspection and database record searches revealed eight potential hazardous materials sites or sites of concern within the evaluation area. Some of these features, which are summarized in **Table 24**, occur at multiple locations. No RCRA/CERCLA sites were identified along the action alternatives. No known leaking underground storage tank (LUST) sites were identified.

Table 24: Known and Potential Hazardous Material Sites within a Quarter Mile of an Action Alternative

Facility Description	Alternative
Hwy. 412 Salvage Yard. This facility, which is located approximately 0.23 mile west-southwest of the Hwy. 67/Hwy. 412 interchange in Walnut Ridge, possesses an Industrial Stormwater General Permit and has aboveground storage tanks (ASTs) on site.	2 and 3
Closed Underground Storage Tank (UST). According to EPA data, an unmarked site on Hwy. 304, approximately 4.1 miles southeast of Pocahontas, identified as "SE Incorporated" historically had one UST. The 2,000-gallon capacity UST was installed in 1987, removed in 1992, and contained diesel.	2
Knobel Wastewater Treatment Plant (WWTP). This facility, which is located on County Road 222 approximately 0.7 mile southeast of Knobel, has an active municipal NPDES permit for the authorization to discharge wastewater. The facility has past effluent violation and records of non-compliance.	3
Farm Service, Inc. This facility, which is located approximately 3.4 miles west of Corning on Hwy. 67, has registered ASTs and is classified as a pesticide producer and bulk plant. The facility also has a past minor source air permit.	2 and 3
Hog Wild Tire and Truck Repair. This facility, which is on the east side of Hwy. 67 and immediately south of the Missouri State line, currently operates as a vehicle service station and appears to have historically operated as a gasoline or service station. It is likely that this site has petroleum fuels on site or historically had USTs or ASTs containing petroleum fuels.	B and C
Stateline Truck Stop/Travel Center. This facility, which is on the east side of Hwy. 67 and immediately north of the Missouri State line, currently operates as a gasoline station possessing ASTs and historically possessing USTs.	B
ASTs Associated with Irrigation Wells. As detailed in Section 3.3, numerous irrigation wells are present within the project area and each typically has an AST associated with it. These ASTs presumably contain petroleum fuels and appear active.	2, 3, A, B, and C
Natural Gas Transmission Pipelines. These active transmission lines are primarily present between existing Hwy. 67 and the Black River WMA. These pipelines are owned by Natural Gas Pipeline Company of America LLC (NGPL) Gulf Coast Line; Enable Mississippi River Transmission, LLC; Ozark Gas Transmission, LLC; and Enmark Energy, Inc. and range from 6-inch to 36-inch diameter pipelines. The diameter of the Ozark Gas Transmission, LLC pipeline is unknown.	2 and 3

Source: Project Team, 2021

Environmental Consequences

Potential impacts to the sites identified above are summarized below for each alternative. Construction of the roadway is not anticipated to generate substantial quantities of solid or hazardous wastes. However, it is anticipated that during the acquisition of ROW of the Selected Alternative, a number of structures would be acquired and demolished prior to construction. These structures, especially the older facilities, have the potential to contain asbestos.

Prior to acquisition of ROW and construction, detailed analysis would be conducted to further investigate properties within and in the vicinity of the final limits of disturbance that have a high potential for mobilization of contaminated materials from construction activities.

No Action Alternative
The No Action Alternative would not impact any hazardous materials or sites of concern.

Alternative 2
No impacts to the Hwy. 412 Salvage Yard or to Farm Service, Inc. would occur as a result of Alternative 2. The historical UST location on Hwy. 304 is within the ROW footprint of a proposed interchange. As the UST is recorded as being removed, no impacts to existing tanks are anticipated, though there is a potential for contaminated soils to exist at this location. Alternative 2 would impact 29 irrigation wells and would require the removal of any ASTs or hazardous materials associated with these well sites.

Alternative 2 would cross a total of 12 natural gas pipelines at six different locations. Four of the six crossing locations contain pipelines with diameters greater than 24 inches. For these larger pipeline crossings, a bridge would be constructed to avoid impacting the pipeline. One of the six crossing locations, which is northwest of Corning, involves a 6-inch diameter pipeline owned by Enmark Energy. For this crossing, the pipeline would be modified as needed (e.g., provided with stronger casing or buried deeper) to meet federal safety standards. The sixth crossing, located approximately 5.5 miles northeast of Walnut Ridge, involves one Ozark Gas Transmission pipeline with an unknown diameter. If the Ozark Gas Transmission pipeline is determined to have a diameter greater than 24 inches, a bridge would be constructed to avoid impacting the pipeline, otherwise the pipeline would be modified as needed.

Alternative 3
No impacts to the Hwy. 412 Salvage Yard, Knobel WWTP, or to Farm Service, Inc. would occur as a result of Alternative 3. Alternative 3 would impact 28 irrigation wells and would require the removal of any ASTs or hazardous materials associated with these well sites.

Alternative 3 would cross two natural gas pipelines at two different locations—one owned by Enmark Energy and one owned by Ozark Gas Transmission. Alternative 2 required crossings for these same two pipelines. The 6-inch diameter, Enmark Energy pipeline located northwest of Corning would be modified as needed (e.g., provided with stronger casing or buried deeper) at the crossing location to meet federal safety standards. Alternative 3 crosses the Ozark Gas Transmission pipeline, which has an unknown diameter, approximately 11 miles northeast of Walnut Ridge. If the Ozark Gas Transmission pipeline is determined to have a diameter greater than 24 inches, a bridge would be constructed to avoid impacting the pipeline; otherwise, the pipeline would be modified as needed.

Alternative A
Alternative A would impact three irrigation wells and would require the removal of any ASTs or hazardous materials associated with these well sites.

Alternative B
The Hog Wild Tire and Truck Repair facility would be relocated under Alternative B. Closure and/or removal of any onsite petroleum storage tanks would be required. No impacts to the MNP Taylor's Stateline Travel Center would occur as a result of Alternative B. Alternative B would impact three irrigation wells and would require the removal of any ASTs or hazardous materials associated with these well sites.

Alternative C
Approximately 0.2 acre of property acquisition would be required from the Hog Wild Tire and Truck Repair facility, but no impacts to any onsite petroleum storage tanks would be required. Alternative C would impact four irrigation wells and would require the removal of any ASTs or hazardous materials associated with these well sites.

Mitigation

For historical UST locations such as the one present within Alternative 2, or for current gasoline/service stations such as the ones present within Alternatives B and C, it is possible that future excavations could encounter pockets of subsurface contamination in or near these sites. All USTs would be removed by a DEQ licensed contractor qualified for UST removal operations. If hazardous materials are identified, observed, or accidentally uncovered by any personnel,

contracting company(s), or state regulating agency, work would be halted, and the appropriate entities would be notified. Prior to resuming construction, the type of contaminant and extent of contamination would be identified. If necessary, a remediation and disposal plan would be developed. 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 each 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.

Hazardous wastes encountered during construction would be handled according to all applicable state and federal guidelines.

It is currently anticipated that most pipeline impacts would be avoided by bridging or would be mitigated.

3.15 How would public lands be affected?

Introduction and Methodology

Section 4(f) resources are those protected by the USDOT Act and include publicly owned parks, national wildlife and refuge areas, and significant historic properties. Any site receiving Land and Water Conservation Fund (LWCF) Act funds would also require consideration under Section 6(f) of the Land and Water Conservation Fund Act of 1965. A public lands study area, shown on **Figure 44**, was used to investigate potential areas of impact to public lands within one mile of the action alternatives. LWCF sites were identified in coordination with the Division of Arkansas State Parks and the Land and Water Conservation Fund Coalition online database updated through April 2020.

The **LWCF** is a federal program that provides funds for acquisition of land and water for the benefit of all Americans. Parks receiving LWCF grants are prohibited from conversion to non-recreational purposes without proper approval from the National Park Service which administers the LWCF.

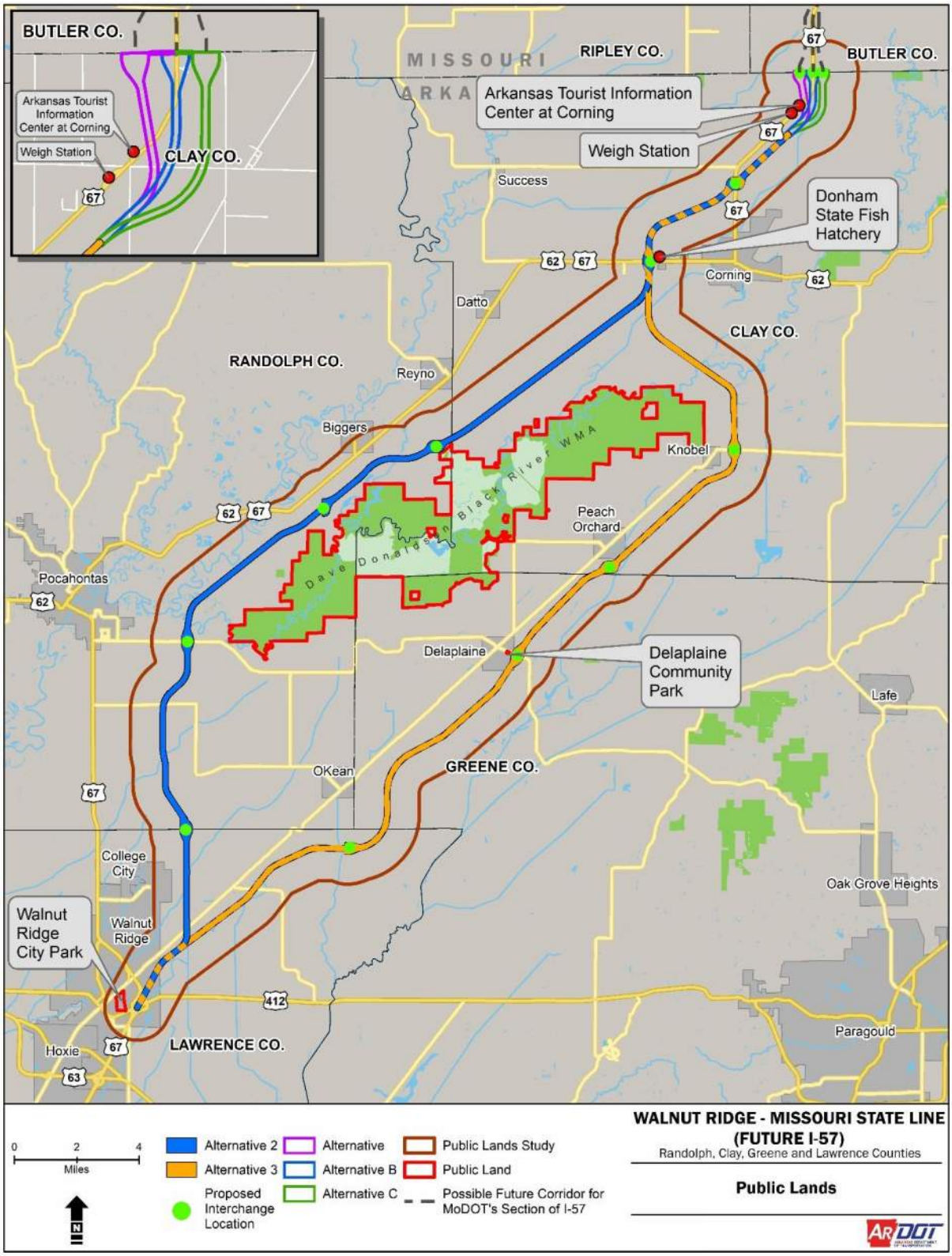
Affected Environment

State-owned land, including a weigh station, the Arkansas Tourist Information Center at Corning, and the William Donham State Fish Hatchery, are found within the public lands study area. Although considered public land, these facilities are not historic and their primary function is not for recreational or refuge purposes; therefore, Section 4(f) protections would not apply to these sites. LWCF funds were not identified to support these facilities; therefore, Section 6(f) also would not apply to these facilities. Other local and state government facilities are discussed in Section 3.7 of the DEIS. Although not located along the project corridors of the action alternatives, the following public land sites located within the study area would fall under Section 4(f) or Section 6(f) protections and are discussed as follows:

- Walnut Ridge City Park (Stewart Park)
- Delaplaine Community Park
- Black River WMA

Walnut Ridge City Park is located within the City of Walnut Ridge and in the southern edge of the study area. Approximately 89 acres, it consists of public playgrounds, a pool, lake, walking trail, sports fields, and other associated recreational facilities. It is approximately 0.3 mile west of the southern limit of Alternatives 2 and 3. Also referred to as Stewart Park, Walnut Ridge City Park received LWCF funding for development and acquisition; therefore, Section 6(f) applies to this resource. Section 4(f) also applies to this resource because it is primarily used for recreational purposes, publicly owned, open to the public, and an important park for the city. No impacts to Walnut Ridge City Park would occur.

Figure 44: Public Lands



Delaplaine Community Park is located within the City of Delaplaine in the central portion of the study area. The park includes some open spaces and covered facilities for gathering and covers approximately three acres, approximately 0.2 mile west of Alternative 3. Section 4(f) applies to this resource because it is primarily used for recreational purposes, publicly owned, open to the public, and an important park for the city. Section 6(f) does not apply since no LWCF funds have been used to improve this park. No impacts to Delaplaine Community Park would occur.

The Black River WMA is a 25,000-acre publicly-owned wildlife management area located between Alternatives 2 and 3. The Black River WMA is managed by the AGFC and consists of several recreational areas and provides hunting, fishing, and other recreational activities for the public. The closest location to the proposed alternatives is at Vinegar Hill Road along the Randolph/Clay County line where the Black River WMA boundary is approximately 400 feet east of Alternative 2. The closest boundary of the Black River WMA to Alternative 3 is approximately 0.8 mile away near Knobel, Arkansas. A project within the Black River WMA, the Swift Ditch Weir project, received LWCF funding sponsored by the AGFC; therefore, Section 6(f) applies to this resource. Section 4(f) also applies to the Black River WMA as it includes recreational areas in various areas within the WMA. All alternatives were designed to avoid impacts to the Black River WMA.

Environmental Consequences

No public lands were identified that would be traversed or potentially impacted by the proposed action alternatives. Coordination with the Arkansas Forestry Division of the Arkansas Department of Agriculture, the AGFC, the Division of Arkansas State Parks, ANHC, and the USFWS has been done through agency coordination letters, project meeting, and stakeholder notices. Coordination letters are included in **Appendix D**.

No Action Alternative

Under the No Action Alternative, the proposed project would not be constructed and would not impact any public lands.

Action Alternatives

Alternatives 2, 3, A, B, and C would not require the acquisition of or result in an impact to any public lands identified within the study area; therefore, considerations under Section 4(f) and Section 6(f) would not be applicable to any sites for these action alternatives.

3.16 Are impacts to cultural resources anticipated?

Introduction and Methodology

The term "Cultural Resources" covers a wider range of resources than historic properties, such as sacred sites, archeological sites not eligible for the National Register of Historic Places (NRHP), and archeological collections.

Historic properties in this project area include, but are not limited to, cultural resources such as cemeteries, homes, farms, and even certain historically important crops and agricultural fields.

Section 106 of the National Historic Preservation Act requires agencies to consider the effects of federal actions to historic properties. A historic property can include any prehistoric or historic district, site, building, or object included in or eligible for the NRHP. Additionally, in compliance with Section 106 requirements, the FHWA is conducting ongoing consultation with the appropriate Native American tribes.

The initial architectural constraints review for the proposed project was principally based on examination of AHPP and NRHP databases. A preliminary assessment of the architectural resources located in the project vicinity was completed in April and May 2018 before the identification of specific alignments. A more detailed and complete examination of all alternative corridors was conducted using the same databases prior to the fieldwork, which was conducted April 6-9, 2021. The Architectural Resources Survey (ARS) is provided in **Appendix J**.

For archeological resources, a standard review for previously recorded archeological sites was conducted using the Automated Management of Archeological Site Data in Arkansas (AMASDA) online database, which is maintained by the Arkansas Archeological Survey. Following database review, fieldwork was conducted between April 22 and

May 14, 2021 within the two sections where Alternatives 2 and 3 share an alignment. Shovel testing at 20-meter intervals was the primary site detection method, and 1,816 shovel tests have been recorded, including 1,614 that were sterile (i.e., no artifacts) and 198 that were not excavated due to water or other disturbances. Due to changes in conceptual design that increased the proposed ROW width, additional survey work along these two sections will be conducted. The remainder of the Preferred Alternative will be subjected to an intensive Phase I archeological survey once selected.

Affected Environment

The architectural assessment recorded a total of 90 individual structures, building groups, and facilities located along and near the action alternatives. Post-field data analysis using the Lawrence, Randolph, Greene, and Clay Counties Assessor's records, the Arkansas Spatial Data Infrastructure map, as well as archival map and other sources, revealed that there are 47 extant or recently recorded structures or structure groups (identified as properties 1-38) within or close to the alternative footprints that warranted description based on their date of construction, architectural details, historic associations, or location relative to the proposed ROW.

In the ARS **Appendix J**, the 38 recorded structures/structure groups plus assessment of 11 previously recorded structures was submitted on June 2021 to the State Historic Preservation Officer (SHPO) for concurrence on NRHP eligibility determinations. On July 15, 2021, SHPO concurred that seven properties had been demolished, one is listed, one is eligible, three are undetermined, and the remaining properties are not eligible for inclusion in the NRHP (AHPP Tracking No. 106363.02; **Appendix D**). In August 2021, an ARS addendum covering twelve bridges and culverts was submitted to SHPO for concurrence on NRHP eligibility determinations. On August 11, 2021, SHPO concurred that the twelve additional properties were not eligible for inclusion in the NRHP. After supplying SHPO with additional information on one of the undetermined properties, on April 21, 2022, SHPO concurred the property was not eligible for inclusion in the NRHP (AHPP Tracking No. 106363.05; **Appendix D**). The listed, eligible, and two remaining undetermined properties are listed in **Table 25**; all of these properties are also assessed as Section 4(f) resources in Section 3.17.

As shown in **Table 25**, no architectural properties would be impacted by the project.

Table 25: Historic Architectural Properties within the Action Alternatives

Name / AHPP Resource No.	SHPO / NRHP Determination	SHPO Recommended Action	Nearest Alternative	Project Impact
American Legion Post No. 72 / CY0071	Listed	Avoidance	Alt. 3	None
Knobel Grain Facility / CY0079	Eligible	Avoidance	Alt. 3	None
Old Reyno Community / RA0007; Archeology Site 3RA0417	Undetermined	Archeological survey needed*	Alt. 2	None
McKnelly-Getson Farm (Property 1)	Undetermined	Document with archeological site form*	Alt. 3	None

*As direct impacts will not occur to these sites, additional information was not obtained. *Source: SHPO, 2021*

For archeological resources, the AMASDA database revealed that there are nine previously recorded archeological sites within the alternatives. Within the areas that have been surveyed to date, two archeological sites were newly recorded during the Phase I archeological survey. Both Field Site (FS)-1 and FS-2 are preliminarily assessed as not eligible for the NRHP. Additionally, the Gilchrist Cemetery within the proposed interchange near Knobel on Alternative 3 was briefly field checked. Two headstones were found that have been knocked down but are currently being plowed around. The Gilchrist Cemetery was determined not to be eligible for the NRHP due to a lack of integrity. The recommended management action for the Gilchrist Cemetery is avoidance. All currently known archeological sites are described in **Table 26** and additional information on these sites is provided in **Appendix J**. Based on survey findings, none of the currently known archeological sites are expected to be eligible for preservation in place and therefore will not require Section 4(f) evaluation. Additional archeological resources may be identified upon completion of the Phase I archeological survey, which would be provided to SHPO. Due to the sensitive nature of these sites, a copy of the survey would not be provided to the public. However, copies of all relevant SHPO coordination are provided in **Appendix D**.

Table 26: Known Archeological Sites within the Action Alternatives

Site No. / Name	Source	Site Type/Description (Component)	Preliminary NRHP Determination	Location
3LW394	Previously Recorded	A 30-x-50 m scatter recorded in 1976 on Transect 168 during the Village Creek project (Late Mississippian)	Field investigations are required to determine the NRHP eligibility status of these 10 sites	Alt. 2
3LW395	Previously Recorded	A 4,000 m^2 scatter recorded in 1976 on Transect 168 during the Village Creek project (Woodland)		Alt. 2
3LW396	Previously Recorded	A 10-x-10 m scatter recorded in 1976 on Transect 168 during the Village Creek project (Undifferentiated Prehistoric)		Alt. 2
3LW397	Previously Recorded	A 40-x-25 m scatter recorded in 1976 on Transect 168 during the Village Creek project (Woodland)		Alt. 2
3LW398	Previously Recorded	A 30-x-15 m scatter recorded in 1976 on Transect 168 during the Village Creek project (Undifferentiated Prehistoric)		Alt. 2
3LW399	Previously Recorded	A 15-x-10 m scatter recorded in 1976 on Transect 168 during the Village Creek project (Undifferentiated Prehistoric)		Alt. 2
3LW400	Previously Recorded	A 100-x-25 m scatter recorded in 1976 on Transect 168 during the Village Creek project (Archaic)		Alt. 2
3RA540	Previously Recorded	A 150-x-550 m low-density scatter in a land leveled field. It was identified by Jack Ray during a survey following a crevasse in the Running Water Levee.		Alt. 2
3GE148	Previously Recorded	Pitchers Site: A 0.5 to 1.0 ac. scatter on a low knoll; reported in 1969 it may have been excavated by ASU Museum (Archaic, Mississippian)		Alt. 3
Field Site-1	2021 Initial Survey	Prehistoric lithic surface scatter extensively disturbed by past land leveling	Not Eligible	Alts. 2 and 3
Field Site-2	2021 Initial Survey	Historic surface scatter	Not Eligible	Alts. 2 and 3
Gilchrist Cemetery	2021 Initial Survey	Headstones from 1915-1932	Not Eligible	Alt. 3

Source: AMASDA Database and Initial 2021 Phase I Archeological Survey

Environmental Consequences

Alternative 2

No impacts to the Old Reyno Community property would occur under Alternative 2 as this property is avoided by the project. The eight previously recorded archeological sites have been recommended as not eligible; however, SHPO has not yet concurred with this determination. Impacts to the eight previously recorded archeological sites, or to any newly recorded archeological sites would be determined upon completion of an archeological survey.

Alternative 3

No impacts to the American Legion Post No. 72, Knobel Grain Facility, or McKnelly-Getson Farm would occur under Alternative 3 as these properties are avoided by the project. Similarly, impacts to the Gilchrist Cemetery, which would be located within an undisturbed area of an interchange, would be avoided. Impacts to the previously recorded archeological site (3GE148) or to any newly recorded archeological sites would be determined upon completion of an archeological survey.

Alternatives A and B

No architectural resources would be impacted by Alternatives A or B. Impacts to any newly recorded archeological sites would be determined upon completion of an archeological survey.

Alternative C

No architectural resources would be impacted by Alternative C. Impacts to any newly recorded archeological sites would be determined upon completion of an archeological survey.

Mitigation

Once a final action alternative has been selected, an intensive cultural resource survey will be conducted of the entire route. Prior to and during cultural resources survey fieldwork, consultation between the FHWA and any appropriate Native American tribes will be maintained according to 36 CFR Part 800.4 of the National Historic Preservation Act. All phases of the fieldwork, site evaluation, and report production will conform to the Secretary of the Interior's Standard and Guidelines for Archeology and Historic Preservation (48 CFR 44716), the "A State Plan for the Conservation of Archeological Resources in Arkansas" (Davis, 1994), and all other pertinent state or federal laws and regulations. A full report documenting the results of the survey and the recommendations of ARDOT will be submitted to the SHPO for review. All sites identified will be evaluated to determine if Phase II testing is required to determine eligibility to the NRHP. All eligibility determinations will be made by the FHWA in consultation with the SHPO and any appropriate Native American tribes.

Should any sites be recommended for Phase II testing, additional archeological work and any future commitments would be handled under a Programmatic Agreement among SHPO, the FHWA, ARDOT, and the appropriate Native American tribes. For sites recommended as eligible for nomination to the NRHP and avoidance is not possible, site-specific treatment plans would be submitted to the SHPO and appropriate Native American tribes for review and comment as specified in the Programmatic Agreement. The draft Programmatic Agreement is provided in **Appendix J**. The Section 106 Programmatic Agreement will be completed and signed prior to the issuance of the FEIS / ROD. The appropriate treatment plan would be carried out at the earliest practicable time.

3.17 Would there be any Section 4(f) Impacts?

Introduction and Methodology

Section 4(f) of the USDOT Act of 1966 as amended (49 U.S.C. 303[c] and 23 USC 138) is a Federal law that protects significant publicly-owned parks, recreation areas, wildlife and/or waterfowl refuges, or any significant public or private historic sites. Regulations at 23 CFR 774.17 define a "historic site" to include any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP. Section 4(f) properties are those above-described features that are protected by the USDOT Act. Section 4(f) stipulates that a transportation project that uses Section 4(f) property cannot be approve unless it is determined that:

- There is no feasible and prudent avoidance alternative to the use of land from the property, and the action includes all possible planning to minimize harm to the property resulting from such use (23 CFR 774.3[a][1] and [2]); or
- The use of the Section 4(f) properties, including any measures to minimize harm (such as avoidance, minimization, mitigation, or enhancements measures) committed to by the applicant, will have a *de minimis* impact on the property (23 CFR 774.3[b]).

Use of a Section 4(f) property occurs when land is permanently incorporated into a transportation facility, when there is a temporary occupancy of land that is adverse in terms of the statute's preservation purpose, or when there is a constructive use of a Section 4(f) property. An impact to a significant public park, recreation area, or wildlife and waterfowl refuge may be determined to be *de minimis* if the use of the Section 4(f) property will not adversely affect the activities, features, or attributes that qualify the resource for protection under Section 4(f). For historic sites, a *de minimis* impact means that FHWA has received written concurrence from the SHPO of a finding of "no adverse effect" or "no historic properties affected" in accordance with 36 CFR Part 800.

A **constructive use** occurs when the transportation project does not incorporate land from a Section 4(f) property, but the project's proximity impacts are so severe that the protected activities, features, or attributes that qualify the property for protection under Section 4(f) are substantially impaired.

As described in Section 3.15, publicly-owned parks, recreation areas, wildlife and/or waterfowl refuges were identified within the public lands study area shown on **Figure 44**. As described in Section 3.16, historic sites were identified within or adjacent to the 400-foot-wide footprint of the action alternatives.

Affected Environment

As summarized in **Table 27**, seven Section 4(f) properties occur in the project vicinity; however, none occur within the action alternatives.

Table 27: Inventory of Section 4(f) Properties and Potential Impacts

Section 4(f) Property	Potential Impacts (Nearest Alternative)	Type of Section 4(f) Property	Type of Section 4(f) Approval
Walnut Ridge City Park (Stewart Park)	None (Alts. 2 and 3)	Public Park	N/A (no use)
Delaplaine Community Park	None (Alt. 3)	Public Park	N/A (no use)
Black River WMA	None (Alts. 2 and 3)	Wildlife Refuge	N/A (no use)
American Legion Post No. 72 / CY0071 (NRHP Listed)	None (Alt. 3)	Historic Site	N/A (no use)
Knobel Grain Facility / CY0079 (NRHP Eligible)	None (Alt. 3)	Historic Site	N/A (no use)
Old Reyno Community / RA0007; Archeology Site 3RA0417 (Assumed to be NRHP Eligible)	None (Alt. 2)	Historic Site	N/A (no use)
McKnelly-Getson Farm / Property 1 (Assumed to be NRHP Eligible)	None (Alt. 3)	Historic Site	N/A (no use)

N/A – Not applicable

Environmental Consequences

All seven Section 4(f) properties identified within the project limits would be avoided by the project (**Table 27**).

Impacts to any newly recorded archeological sites would be determined upon completion of an archeological survey. Any site identified as eligible for listing in the NRHP would qualify as a Section 4(f) property.

Mitigation

An intensive cultural resource survey will be conducted of the entire Preferred Alternative, once selected. All sites identified will be evaluated to determine if Phase II testing is required to determine eligibility to the NRHP. All eligibility determinations will be made by the FHWA in consultation with the SHPO and any appropriate Native American tribes. For sites recommended as eligible for nomination to the NRHP and avoidance is not possible, the appropriate Section 4(f) evaluation would be conducted and included with the combined FEIS/ROD.

3.18 How would terrestrial ecology, vegetation, and wildlife be affected?

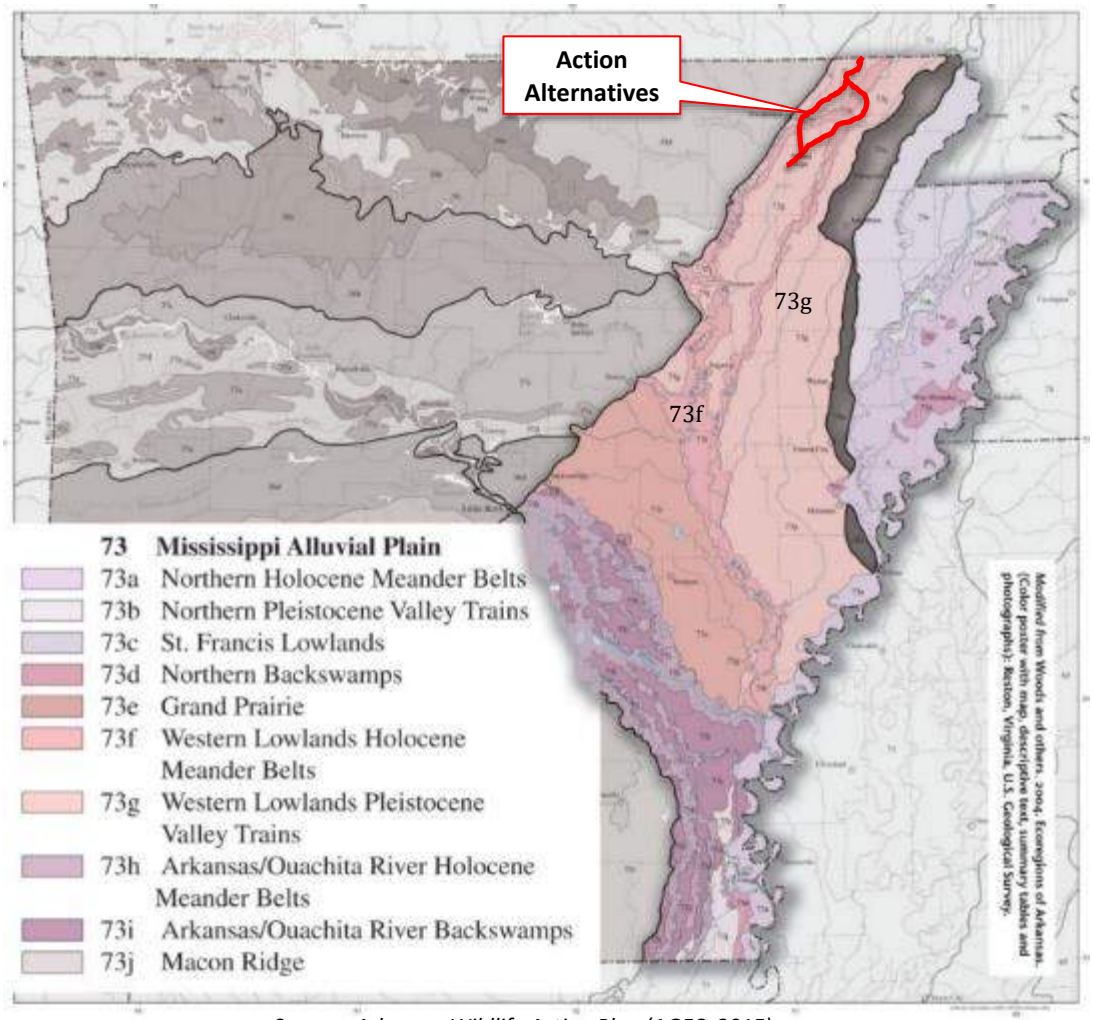
Introduction and Methodology

Ecoregion data (Woods et al., 2004) was used to qualify the terrestrial and aquatic habitats within the general project study area. Aerial imagery, topographic maps, and field investigations were used to delineate land cover types. Specific accounts of terrestrial and aquatic vegetation were based on information collected during field investigations, literature reviews, and on accounts provided by the AGFC. Wildlife travel corridors, which were identified based on aerial photography, were defined as any wooded or densely vegetated area that was not maintained and at least 10 feet in width. Project impacts were quantified based on the anticipated ROW footprint of each action alternative. Additionally, to inform the assessment on impacts to wildlife travel corridors, identified corridors were compared to 2015-2022 wildlife-vehicle collision data provided by the Arkansas Department of Public Safety, Arkansas State Police (ECrash Database) and the ARDOT, Traffic Safety Section (Crash Database). For additional details on methodology, refer to the Biological Resources Technical Report (**Appendix K**).

Affected Environment

Arkansas has been divided into 32 Level IV ecoregions based on areas of general similarity in ecosystems and in the type, quality, and quantity of environmental resources. As shown in **Figure 45**, the project occurs within two Level IV ecoregions of the Mississippi Alluvial Plain. Approximately 84% of the alternative footprints occur within Ecoregion 73g (the Western Lowlands Pleistocene Valley Trains) and 16% within Ecoregion 73f (Western Lowlands Holocene Meander Belts).

Figure 45: The Mississippi Valley Alluvial Plain (Ecoregion 73) and Component Ecoregions



Source: Arkansas Wildlife Action Plan (AGFC, 2015).

The Mississippi Alluvial Plain, which extends from southern Illinois at the confluence of the Ohio and Mississippi rivers southward to the Gulf of Mexico, provides important habitat for fish and wildlife, includes the largest continuous system of wetlands in North America, and is also a major bird migration corridor used in fall and spring migrations (Woods et al., 2004). Historically the region contained substantially more wetlands than exist today. From the 1780s to the 1980s, Arkansas lost about 72% of their original wetland acreage (Dahl, 1990). Holder (1969) estimated that 90% of the wetland loss in the last 40 years was due to the expansion of soybean production.

Native vegetation in the Western Lowlands Pleistocene Valley Trains (Ecoregion 73g) is bottomland hardwood forest. Examples of typical tree species within this ecoregion are provided in the Biological Resources Technical Report (**Appendix K**). Sand ponds, which are interdunal depressions with silty bottoms that are either in contact with the water table or have a perched aquifer, also occur in the ecoregion. Sand ponds are known habitats for the pondberry (*Lindera melissifolia*), which is a shrub species listed by USFWS as endangered (details provided in the following section). This ecoregion is a wintering ground for waterfowl and duck hunting is widespread.

Sand ponds occur in areas of sandy soils that were deposited by the waters of melting glaciers 2.6 million to 11,700 years ago. Then, about 18,000 to 22,000 years ago, winds swept the land and formed these sands into dunes and swales, or ponds.

The Western Lowlands Holocene Meander Belts ecoregion (Ecorgeion 73f) contains some of the most extensive remaining tracts of native bottomland hardwood forest in the Mississippi Alluvial Plain although cropland also occurs. These bottomland forests provide important roosting and foraging habitat for bat species, including the federally-listed gray bat (*Myotis grisescens*), Indiana bat (*Myotis sodalis*), and northern long-eared bat (*Myotis septentrionalis*). Native vegetation is bottomland hardwood forest and woodland dominated by oak communities. Examples of typical tree species within this ecoregion are provided in the Biological Resources Technical Report (**Appendix K**).

Despite its length, the project limits contain a relatively homogeneous landscape due to its flat topography and abundance of agricultural practices. Most of the land cover identified within the project limits consists of cropland. Some cropland, in the form of farmed wetlands, provides foraging habitat for migratory birds. Also, croplands/farmed wetlands with some remaining crop residue, or those that are managed for waterfowl, are generally more valuable foraging habitat for migratory birds than croplands where the residue has been burned or tilled under. The second most dominant land cover type identified within the footprints of the action alternatives is developed areas (see Section 3.2 on land use for additional details). Developed areas, such as maintained ROW and residential areas, provide habitat for very few species of wildlife compared to natural cover types. The dominant vegetated land cover types within the action alternatives consist of forested wetlands, herbaceous wetlands, and upland woods. Examples of dominant plant and wildlife species likely to occur within each land cover type are provided in the Biological Resources Technical Report (**Appendix K**).

Forested wetlands within this ecological system are more accurately defined as bottomland hardwood wetlands, which are primarily present along riparian zones associated with the Black and Current Rivers, and as narrow wooded riparian zones of their tributaries. Bottomland hardwood wetlands often harbor a higher biodiversity of animals than most other habitat types. Exemplary bottomland hardwoods and their associated wildlife occur within the Black River WMA, which is located between Alternatives 2 and 3. While the Black River WMA is not impacted directly by the action alternatives, its close proximity makes it probable that its documented wildlife also occur within the woodlands of the action alternatives, especially within the vegetated wildlife corridors directly connected to the Black River WMA. Many of these vegetated corridors function as passageways for traveling wildlife. Bottomland hardwood wetlands in the alternative footprints also provide habitat to many species of Neotropical migrants and particularly to wintering waterfowl (**Figure 46**); additional details provided in Section 3.21 on migratory birds. Details on wetlands within the project limits are provided in Section 3.26.

Figure 46: Waterfowl at Black River WMA

Herbaceous wetlands within the alternative footprints are primarily present within the floodplains associated with the Black River or other large waterbodies. Herbaceous wetlands can provide nesting/roosting, loafing, and/or foraging habitat for many of the same species of wildlife utilizing forested wetlands.

Environmental Consequences

Although some minor mortality could occur to the less mobile species during construction, permanent habitat loss remains the primary impact to terrestrial communities. All action alternatives would involve the physical removal and disturbance of vegetated areas, due to the clearing and grading of land needed to accommodate the proposed ROW, interstate facility, service roads, and interchanges. This direct vegetation removal reduces the amount of habitat available to wildlife. Other impacts to terrestrial wildlife as the result of roadway construction include increases in vehicle-animal collisions (FHWA, 2011b). Most wildlife-vehicle collisions reported in the U.S. involve deer, as they are most likely to cause human injury and vehicle damage due to their size, prevalence, and their common use of edge habitats adjacent to roadways (FHWA, 2008). When wildlife-vehicle collision data for the project area was compared to

the locations of the identified wildlife travel corridors within the alternative footprints, no discernable correlation was observed and the data seem to instead reflect areas with highest traffic volumes.

Construction of the action alternatives would also involve some habitat fragmentation to an already highly fragmented area. Many wildlife species in fragmented landscapes such as the study area rely on natural vegetated corridors to move safely within an environment that is otherwise void of vegetated cover. This is especially true for smaller and less mobile species and less important for avian species. Due to the limited quantity of vegetated cover within the alternative footprints, these travel corridors are particularly important to wildlife. Habitat fragmentation is also well known to reduce biodiversity. Basic conservation theory states that large habitat patches have more species than small ones and connected patches have more species than isolated ones (MacArthur and Wilson, 1967). There is also evidence that roads and highways represent substantial barriers to wildlife movement (Jackson and Griffin, 2000). The approximately 400-foot-wide ROW of the proposed project is anticipated to impede or restrict most wildlife movement through the area; however, it is expected that most species would be able to cross below proposed span bridges and some culverts.

For the above-described reasons, project impacts to terrestrial vegetation and wildlife are quantified based on the acreage of natural habitat types removed and the number of vegetated travel corridors fragmented by each alternative. Impacts to these resources are summarized below for each alternative.

Upon completion of the project, future impacts to terrestrial communities may occur near interchanges from new development years later as a result of increased accessibility. Because the proposed project would function as a fully-controlled access facility, the areas surrounding the proposed interchanges are the primary locations where induced growth may occur. A discussion of these induced growth impacts is provided in Section 3.29.

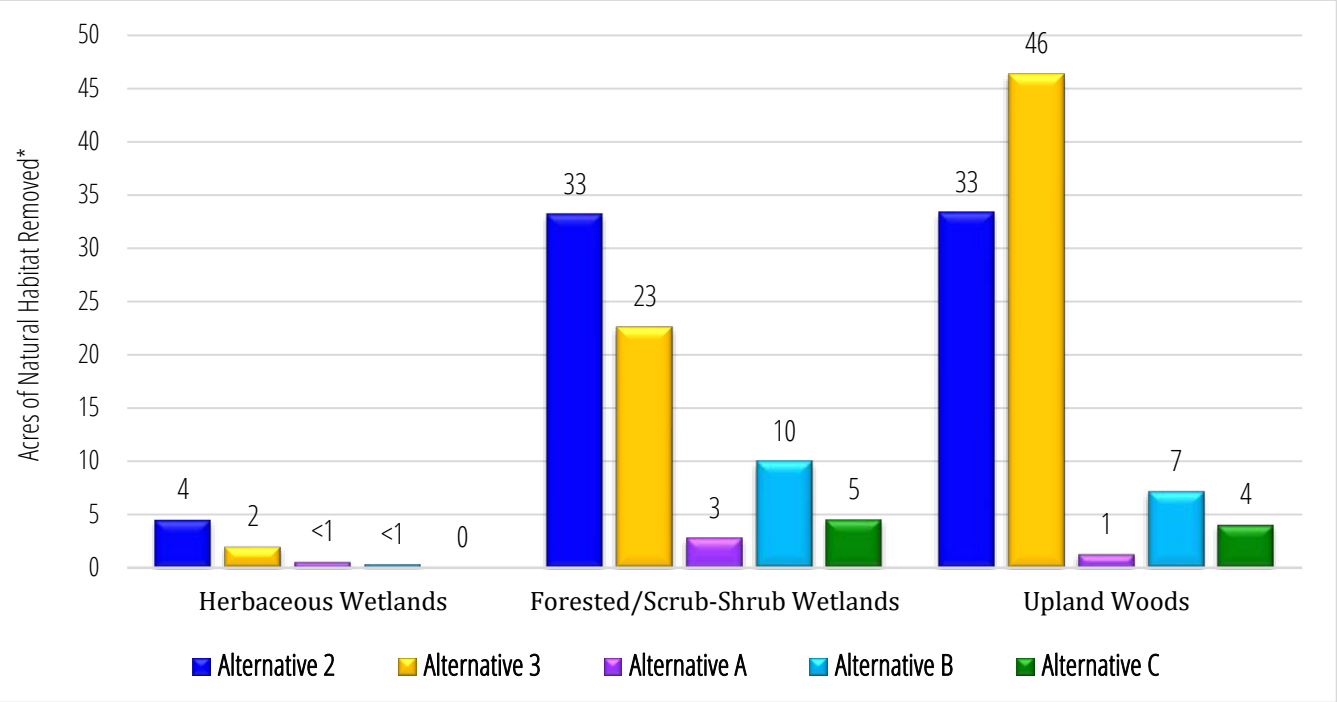
No Action Alternative
No impacts to terrestrial vegetation or wildlife would occur as a result of the No Action Alternative.

Alternative 2
Alternative 2, which has a proposed ROW footprint of 2,249 acres, would remove a total of 71 acres of natural habitat. Approximately 33 acres of the habitat impacted are forested wetlands, 33 acres are upland woods, and four acres are herbaceous wetlands (**Figure 47**). Alternative 2 would also remove approximately 2,053 acres of cropland. As detailed in **Appendix K**, each of these habitat types provide foraging and living spaces to numerous species of mammals, birds, reptiles, and amphibians. Details on forested impacts associated with federally-listed bat species are provided in the Biological Resources Technical Report. Additionally, Alternative 2 would sever 24 wildlife travel corridors (**Figure 48**). These corridors range from 15 to 763 feet in width. The average width of the corridors being impacted by Alternative 2 is 199 feet and the median width is 49 feet.

Alternative 3
Alternative 3, which has a proposed ROW footprint of 2,337 acres, would also remove a total of 71 acres of natural habitat. Approximately 23 acres of the habitat impacted are forested/scrub-shrub wetlands, 46 acres are upland woods, and two acres are herbaceous wetlands. Alternative 3 would also remove approximately 2,166 acres of cropland. Additionally, Alternative 3 would sever 28 wildlife travel corridors. These corridors range from 23 to 792 feet in width. The average width of the corridors being impacted by Alternative 3 is 194 feet and the median width is 123 feet.

Alternative A
Alternative A, which has a proposed ROW footprint of 142 acres, would remove a total of five acres of natural habitat, consisting of approximately three acres of forested wetlands, 0.6 acre of herbaceous wetlands, and one acre of upland woods (**Figure 47**). Alternative A would also remove approximately 128 acres of cropland. Additionally, Alternative A would sever one wildlife travel corridor that is approximately 34 feet in width.

Figure 47: Comparisons of Natural Habitat Types Removed by each Action Alternative



* Due to rounding, the sum of each habitat type may not equal the total acres reported in the text of natural habitat removed or in other sections of the document. *Source: Project Team, 2021*

Alternative B

Alternative B, which has a proposed ROW footprint of 139 acres, would remove a total of 17 acres of natural habitat, consisting of approximately 10 acres of forested wetlands, 0.3 acre of herbaceous wetlands, and seven acres of upland woods. Alternative B would also remove approximately 106 acres of cropland. Additionally, Alternative B would sever one wildlife travel corridor that is approximately 46 feet in width.

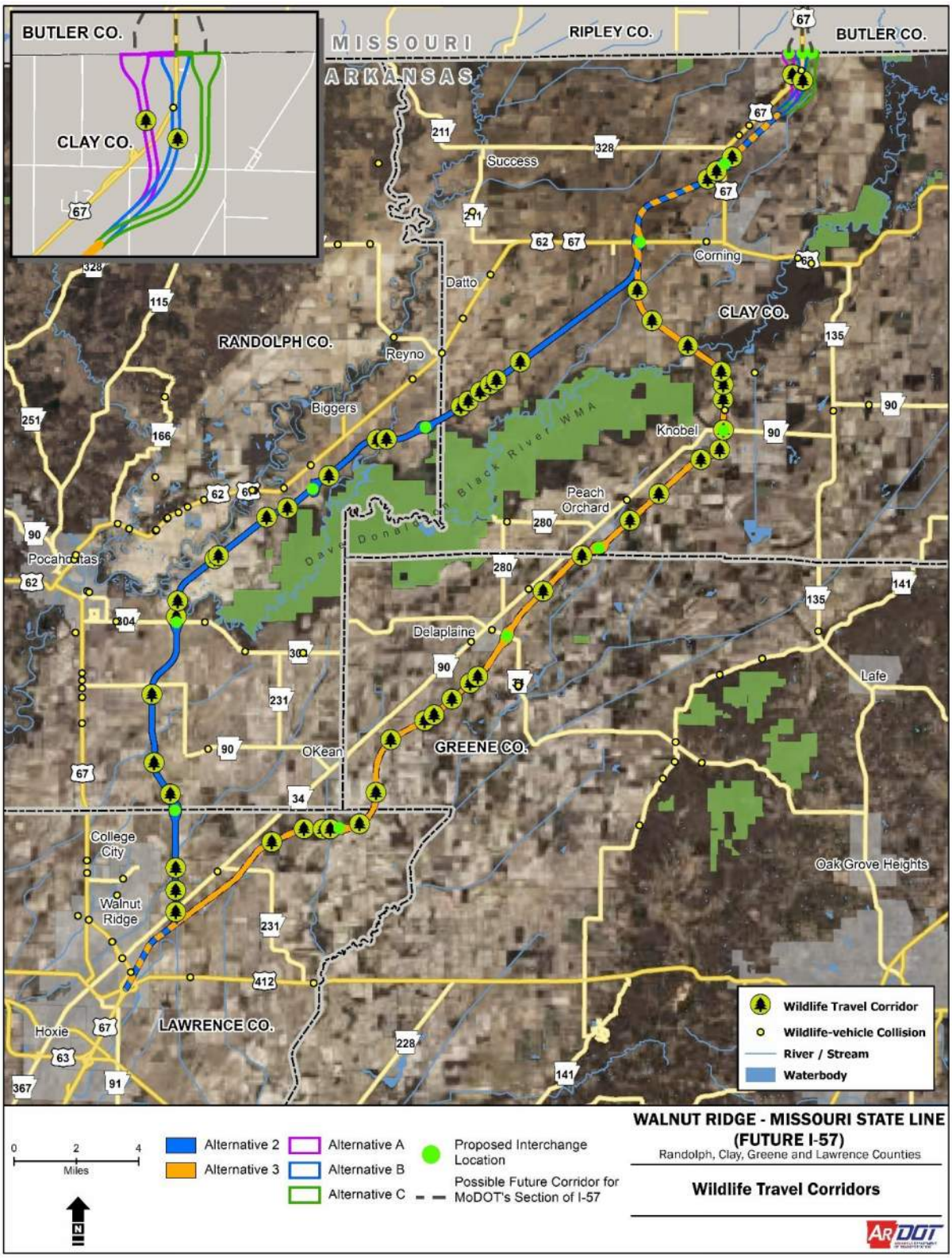
Alternative C

Alternative C, which has a proposed ROW footprint of 159 acres, would remove a total of nine acres of natural habitat, consisting of approximately five acres of forested wetlands and four acres of upland woods. Alternative C would also remove approximately 143 acres of cropland. Alternative C would not sever any wildlife travel corridors.

Mitigation

Impacts to terrestrial wildlife would be unavoidable under any of the action alternatives primarily due to the associated reduction in the availability of vegetated habitat. However, impacts to important wildlife habitat such as forested wetlands were avoided during initial route selection by positing alternatives around forested habitat to the extent possible and by avoiding the Black River WMA completely. Impacts to wildlife travel corridors and riparian habitat were minimized where possible by selection of routes that perpendicularly crossed these features. Further review of wildlife crossing opportunities of the proposed roadway and/or assurance of wildlife passage at bridges and culverts would be conducted at the time of design. Moreover, during the design phase(s) of the project, the most current hydraulic and environmental data would be used to inform the culvert structure types and sizes to handle a minimum of a 100-year storm event and additionally include consideration to maintaining aquatic connections. Impacts to terrestrial communities would be minimized by limiting construction to the minimum width necessary to meet design safety standards. Additionally, erosion and sediment control would follow ArDOT's BMPs to minimize sedimentation during construction and help to minimize sediment and pollutant runoff into surrounding wildlife habitat. Mitigation for T&E species habitat loss is discussed in the following section (Section 3.19).

Figure 48: Wildlife Travel Corridors Fragmented by each Action Alternative



3.19 How would federally-protected species be affected?

Introduction and Methodology

In accordance with the Endangered Species Act (ESA) of 1973, federally-protected T&E species were identified for the action area (AA) using the USFWS online Information for Planning and Consultation (IPaC) decision support system. A review of the federally-listed T&E species and their suitable habitats was performed to evaluate potential impacts to these species.

The **action area** means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02).

The AA boundaries were established by incorporation of all areas where direct and indirect impacts to T&E species could occur. Establishment of the AA also considered potential indirect impacts such as noise, visual, and water quality effects. The AA includes the 400-foot-wide corridor that was developed as a conservative impact footprint. This corridor was used because the area encompasses all potential direct impacts by the proposed project and would also encompass many indirect impacts as it is larger than the actual required ROW. Additionally, a 600-foot-wide buffer of the proposed roadway is included in the AA to account for noise impacts associated with project construction. Based on the noise analysis (Section 3.10; **Appendix I**), 600 feet was found to be the maximum distance from the proposed roadway where a noise impact could occur. Noise impacts were calculated out to a conservative ambient noise level measured for the land uses in the surrounding areas. The AA also includes 300 feet downstream and 100 feet upstream of the proposed crossings at the Black River and proposed crossings of direct tributaries to the Black River to account for potential indirect impacts due to aquatic disturbances. However, none of these additional up and downstream areas extend beyond the 600-foot-wide buffer.

A total of 14 threatened or endangered species were identified on the Official Species Lists, generated from IPaC, for the AA. The federally-protected T&E species identified by the USFWS include the gray bat (*Myotis grisescens*), Indiana bat (*Myotis sodalis*), northern long-eared bat (*Myotis septentrionalis*), eastern black rail (*Laterallus jamaicensis* ssp. *jamaicensis*), piping plover (*Charadrius melodus*), red knot (*Calidris canutus rufa*), Curtis pearlymussel (*Epioblasma curtisii*), pink mucket (*Lampsilis abrupta*), rabbitsfoot (*Theliderma cylindrica*), scaleshell mussel (*Potamilus leptodon*), Hine's emerald dragonfly (*Somatochlora hineana*), Missouri bladderpod (*Physaria filiformis*), pondberry (*Lindera melissifolia*), and Ozark hellbender (*Cryptobranchus alleganiensis bishopi*). Additionally, the monarch butterfly (*Danaus plexippus*) is listed as a candidate species, the alligator snapping turtle (*Macrochelys temminckii*), western fanshell (*Cyprogenia aberti*), and pyramid pigtoe (*Pleurobema rubrum*) were recently proposed for listing as threatened species. Bald eagles (*Haliaeetus leucocephalus*) were removed from the federal list of threatened and endangered species in 2007 and are no longer protected under the ESA. However, bald eagles remain protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. Details on bald and golden eagles are provided in Section 3.21.

The action alternatives were evaluated for the presence of potentially suitable habitat for the above-listed species. Site investigations were conducted March 2-3, 2021 for the habitat assessment. Potentially suitable habitats identified are shown in Detail Sheets 1-42 of **Appendix K.** Additionally, environmental inventory review and research and coordination with the ANHC, AGFC, and USFWS regarding the AA were conducted. Results of these efforts are compiled in a Biological Resources Technical Report provided in **Appendix K.** Summaries of federally-listed species habitat requirements and habitat within the AA are identified in **Table 28**.

Presence/absence surveys were conducted for federally-listed bat species for 12 nights (August 1-12, 2021) at 25 locations along Alternative 2 and Alternative 3 (Redman, 2021). One mist net for two nights was deployed at each location. The USFWS Range-Wide Indiana Bat Survey Guidelines were followed throughout the project area. A total of 26 bats representing four species were captured in mist nets. No federally-listed bats species were captured with mist nets during the study. Details on survey methods are provided in **Appendix K.**

A mussel survey was performed at the Black River crossings of Alternatives 2 and 3 to determine if federally protected mussel species exist within either of the proposed 400-foot-wide corridors (Harris, 2022). The Alternative 2 corridor was surveyed on October 16-17 and November 6, 2021. The Alternative 3 corridor was surveyed on October 30-31, 2021. Surveys were conducted along the entire channel width of the Black River at both alternative crossings by

establishing transects perpendicular to river flow at approximately 50-foot intervals from the downstream to the upstream termini for each alternative. A total of 16 dive searches were conducted during the survey. Details on survey methods are provided in **Appendix K.**

A presence/absence survey of the Preferred Alternative (Alternatives 2 and C) was conducted for pondberry on April 19, 2022 within suitable habitat. No pondberry was found during the survey. The survey memo is provided in **Appendix K.**

Table 28: Federally-protected Species' Suitable Habitats

Species (Status)	Habitat Requirements	Habitat Present within the AA
Gray bat (Endangered)	Primarily use caves throughout the year, although they move from one cave to another seasonally. Males and young of the year use different caves in summer than females. Smaller colonies also occasionally roost under bridge structures.	No caves were observed in or near the AA. Bridge* and other structures that provide potentially suitable summer roosting habitat are located within the AA. Forested areas are present that provide foraging habitat.
Indiana bat (Endangered)	Primarily use caves for hibernacula, although they are occasionally found in old mine portals. During summer, colonies are found behind slabs of exfoliating bark of dead trees, often in bottomland or floodplain habitats, but also in upland situations. Indiana bats may also occasionally roost under bridge structures.	The AA contain forested areas providing trees potentially suitable for roosting**. No caves or mine portals were observed in or near the AA. Bridge* and other structures are located within the AA that provide potentially suitable summer roosting habitat.
Northern long-eared bat (Threatened)	In winter, the species use caves, mine portals, abandoned tunnels, protected sites along cliff lines, and similar situations that afford protection from cold. Northern long-eared bats may also occasionally roost under bridge structures. During the summer, they roost singly or in colonies underneath bark, in cavities or in crevices of both live trees and snags (dead trees). They are easily overlooked as they often wedge themselves back into wall cracks.	The AA contains trees potentially suitable for roosting. No caves or mine portals were observed in or near the AA. Bridge* and other structures are located within the AA that provide potentially suitable summer roosting habitat.
Eastern black rail (Threatened)	Eastern black rails occupy wetlands and marshes in areas of moist soil or shallow flooding. They require dense vegetative cover such as rushes, sedges, and grasses. Shallow (0-3 cm) water level during breeding season is required as high water levels can flood nests and drown chicks. The species is likely a vagrant in Arkansas, passing through during migration.	The AA contains emergent wetlands and vast amounts of farm fields that occasionally flood. Potential habitat associated with these farm fields is confined to field edges.
Piping plover (Threatened)	Piping plovers are small, migratory shorebirds that inhabit beaches, shorelines, dry lakebeds, sandbars of major rivers, salt flats, and mudflats of reservoirs.	Most of the AA contains farm fields that are seasonally farmed leaving the large mud flats; however, no reservoirs are located within the AA. Several field levees act as impoundments and could serve as temporary stopover habitat. There are no exposed sandbars along the Black River within the AA.
Red knot (Threatened)	Red knots are usually found along mudflats associated with reservoirs.	Most of the AA contains farm fields that are seasonally farmed leaving the large mud flats; however, no reservoirs are located within the AA. Several field levees act as impoundments and could serve as temporary stopover habitat.
Curtis pearlymussel (Endangered)	Curtis pearlymussels are found in large creeks to medium sized rivers with good water quality. They prefer riffles within transitional zones of clean streams and rivers that often occur between headwaters and meandering currents with sand or gravel substrates.	The Black River could provide suitable habitat for the Curtis pearlymussel. Approximately 408 LF of the Black River flows through Alternatives 2 and 421 LF flow through Alternative 3. No other large creeks or medium sized rivers with good water quality were located within the AA.

Species (Status)	Habitat Requirements	Habitat Present within the AA
Pink mucket (Endangered)	Pink muckets are found in mud and sand and in shallow riffles and shoals swept free of silt in major rivers and tributaries. This mussel buries itself in sand or gravel, with only the edge of its shell and its feeding siphons exposed.	The Black River could provide suitable habitat for the pink mucket. Approximately 408 LF of the Black River flows through Alternatives 2 and 421 LF flows through Alternative 3. No other large streams or rivers are located within the AA.
Rabbitsfoot*** (Threatened)	Rabbitsfoot generally inhabit small to medium sized streams and some larger rivers. It occurs in shallow water areas along the bank and in shoals with reduced water velocity. Individuals have also been found in deep water runs (9-12 ft.). Bottom substrates generally include gravel and sand, but they have been found in riprap as well. In Arkansas, rabbitsfoot populations have been documented to occur in the Black River and Current River.	The Black River could provide suitable habitat for the rabbitsfoot. Approximately 408 LF of the Black River flows through Alternatives 2 and 421 LF flows through Alternative 3. No other large streams or rivers are located within the AA.
Scaleshell mussel (Endangered)	Scaleshell mussels are found in medium and large sized rivers with stable channels and good water quality.	Potential habitat for the scaleshell mussel exists in the Black River. Approximately 408 LF of the Black River flows through Alternatives 2 and 421 LF flows through Alternative 3. No other streams with stable channels and good water quality were identified within the AA.
Pyramid pigtoe (Proposed Threatened)	This mussel typically inhabits large rivers with gravel and rock substrates. It tends to occupy riffles or shoals in relatively shallow water and coarse-particle substrates, along sand bars, or in deep water (>4 m) with stable mud and muddy sand bottoms.	The Black River could provide suitable habitat for the pyramid pigtoe. Approximately 408 LF of the Black River flows through Alternatives 2 and 421 LF flows through Alternative 3. No other large streams or rivers are located within the AA.
Western fanshell (Proposed Threatened)	This mussel is found on rock, gravel, and soft mud bottoms in medium sized rivers in flowing water only. It is generally confined to shallow riffles and runs in predominantly clean, moderately compacted substrates.	The Black River could provide suitable habitat for the western fanshell. Approximately 408 LF of the Black River flows through Alternatives 2 and 421 LF flows through Alternative 3. No other medium sized rivers are located within the AA.
Hine's emerald dragonfly (Endangered)	This dragonfly species inhabits calcareous spring-fed marshes and sedge meadows overlying dolomite bedrock.	No calcareous spring-fed marshes or sedge meadows overlying dolomite bedrock were identified within the AA.
Monarch butterfly (Candidate)	Presence of milkweed (*Asclepias* sp.), flowering or potentially flowering nectar plants (defined as forbs that can provide nectar for monarchs at some point in the growing season), and additional native habitat.	Few areas of herbaceous native habitat are present in the AA. Riparian habitat is predominantly large trees and scrub-shrub species and does not include milkweed or other flowering nectar plants. However, some habitat is present in the form of fallow fields and emergent wetlands that have the potential to contain milkweed and other flowering plants.
Missouri bladderpod (Threatened)	Primarily open limestone glades and dolomite glades, which are naturally dry treeless areas with shallow, loose soils and exposed rock. This species can also be found in open highway ROW and pastures where glades are present. It occasionally occupies open rocky woods.	No open limestone glades with exposed bedrock or open rocky woods were identified within the AA.
Pondberry (Endangered)	Pondberry is found within shaded areas and is associated primarily with bottomlands with hardwoods in their interior areas, margins of sinks, pond and sand pond edges, and depressions.	Forested wetland habitat exists within the AA and could provide suitable habitat.
Ozark hellbender (Endangered)	This salamander species needs cool, clear streams and rivers with many large flat rocks.	The Current River likely provides habitat for this species, but is not within the AA.

Species (Status)	Habitat Requirements	Habitat Present within the AA
Alligator snapping turtle (Proposed Threatened)	Habitat consists of slow-moving, deep water of rivers, sloughs, oxbows, canals or lakes associated with rivers, swamps, and ponds near rivers.	Potential habitat exists in the Black River as well as within a few other perennial waterbodies. Alternative 2 has approximately 3.9 acres of suitable habitat and Alternative 3 has 3.8 acres.

*Bridge structures with gaps >0.5-inch are considered to provide suitable summer roosting habitat. **USFWS defines suitable roosting habitat as forest patches with trees of 5-inches diameter at breast height (DBH) or larger that have exfoliating bark, cracks, crevices, and/or hollows. ***Critical Habitat for the rabbitsfoot is located in the Black River approximately seven river miles downstream of Alternative 2. *Source: Project Team, 2021*

Affected Environment

Federally-listed Species Habitat

Although not directly impacted, the Black River WMA is located between the action alternatives, is a 25,510-acre AGFC-managed WMA, and is one of the largest remaining tracts of mature bottomland hardwood forests in the Mississippi Alluvial Valley. The contiguous nature of these bottomland hardwood forests provides a greater degree of suitable bat habitat than fragmented forested areas common to all action alternatives, which is supported by occurrence records for the northern long-eared bat and Indiana bat species. None of the action alternatives are located within the Black River WMA. The USFWS Official Species Lists indicate that Critical Habitat for the rabbitsfoot is located in the Black River approximately seven river miles downstream of Alternative 2.

Two major landscapes dominating the AA include agricultural fields and fragmented bottomland hardwoods. These fragmented bottomland areas within the action alternatives provide limited suitable bat habitat in the form of summer roosting trees and foraging areas. Additionally, bottomland hardwood forests found within the proposed AA would be suitable habitat for the pondberry. Agricultural fields with emergent wetlands at their edges may provide suitable habitat for the eastern black rail. As the migration period for the piping plover and the red knot through Arkansas coincides with the summer growing season, agricultural fields are not considered suitable stopover habitat. A habitat assessment was completed for the action alternatives that included review of online governmental databases, coordination with the USFWS and ANHC, and field confirmation of potentially suitable habitats within the alternative footprints. Results of the habitat assessment are summarized in Chapter 3 of the Biological Resources Technical Report provided in **Appendix K**. Suitable habitat was identified within the AA for the following 13 federal species: northern long-eared bat, gray bat, Indiana bat, eastern black rail, Curtis pearlymussel, pink mucket, rabbitsfoot, scaleshell mussel, pyramid pigtoe, western fanshell, monarch butterfly, pondberry, and alligator snapping turtle. Detailed views of the locations of potential habitat for these listed species can be seen in the figures provided in **Appendix K**.

No suitable habitats for the red knot, piping plover, Missouri bladderpod, Hine's emerald dragonfly, or Ozark hellbender were identified within the AA. Closest known occurrences for each species that have the potential to be impacted is also documented in **Appendix K**.

Potentially suitable summer roosting and foraging bat habitat was identified within all action alternatives for the Indiana bat, gray bat, and northern long-eared bat. This habitat consisted of structures (barns, sheds, and abandoned buildings), bridges, and forested corridors near intermittent or perennial streams/ditches. Based on coordination with the USFWS through a request for technical assistance, high probability suitable summer roosting habitat has been evaluated as those forested areas that are contiguous and connected to larger tracts of forested areas as well as forested riparian corridors such as those forests nearest the Black River WMA. Suitable summer roosting forested habitat within these high probability areas includes dead or live trees of five inches or more in DBH that are hollow, have peeling or loose bark, and/or contain cavities or cracks. Tree species composition within the alternative corridors consisted of cherrybark oak (*Quercus pagoda*), post oak (*Quercus stellata*), pecan (*Carya illinoinensis*), sweetgum (*Liquidambar styraciflua*), tupelo-gum (*Nyssa sylvatica*), bald cypress (*Taxodium distichum*), cottonwood (*Populus deltoides*), and hackberry (*Celtis occidentalis*).

The most prominent perennial surface water feature in the AA is the Black River, which is surrounded by bottomland hardwood forests. The river is approximately 200 feet in width with substrates that consists of silt, sand, gravel, and

cobbles, and ranges in depth from 2.5 feet near the Alternative 2 proposed crossing to over 5 feet deep near the Alternative 3 proposed crossing. The Black River provides suitable habitat for federal and state-listed mussel species. The Black River supports important mussel resources (Harris, 1999; Neves, 1999) as evidenced by documented reports of 42 species inhabiting the river, including confirmed specimens of the pink mucket, rabbitsfoot, scaleshell mussel, pyramid pigtoe, and western fanshell (Hutson and Barnhart, 2004; S.E. McMurray, unpublished data; J.L. Harris, unpublished data; Christian et al., 2021). In larger rivers such as the Black River, most mussels are found along the outside of a bendway in the river (Harris, 2021).

Federally-listed Species Locations

ANHC provided documentation on the occurrence records of federally-listed species. These records included occurrences for the Indiana bat and northern long-eared bat within the Black River WMA. Indiana bat and northern long-eared bat maternity colonies have also been confirmed to exist within the Black River WMA (Redman, 2018, personal communication). An occurrence record for the pondberry was identified within Alternative 3. Suitable habitat for the Curtis pearlymussel, pink mucket, rabbitsfoot, scaleshell mussel, pyramid pigtoe, and western fanshell was identified at Alternative 2 and Alternative 3 proposed crossings of the Black River.

Environmental Consequences

The habitat assessment for known occurrences of T&E species have been coordinated with the USFWS, ANHC, and biologists contributing to this document. Environmental consequences related to construction of the project include indirect, direct, and temporary effects. Each alternative's effects on suitable habitat of the 13 previously identified federal species is discussed below and summarized in **Table 29**. A draft Biological Assessment (BA) is provided in **Appendix K**. Effects determinations presented in the draft BA and impacts summarized below are based on the current plan for the Black River to be completely spanned. However, there is no current funding for this project and if the plan to avoid in-channel work changes as the project moves to final design and construction, then consultation with USFWS would be re-initiated.

No Action Alternative

The No Action Alternative would have no effects on federally-protected species beyond what would be proposed for improvements deemed necessary by governing officials.

Alternative 2

Alternative 2 would directly impact an estimated 65.2 acres of forested areas and 23 structures, which includes four existing bridge structures, that provide potentially suitable summer roosting habitat for the Indiana bat, gray bat, and northern long-eared bat species. The forested summer roosting habitat and 20 of the structures would be directly impacted by the project as a result of complete removal by clearing, grubbing, and/or demolition activities. For the three existing bridges at the Hwy. 67/Hwy. 412 interchange that are to remain during construction, temporary and indirect impacts to these potentially suitable summer roosting habitats could occur within the AA as a result of construction noise and other activities, although evidence of bats was not observed during field investigations. These indirect impacts could include night work, sign mounting, vibration from construction equipment, and demolition required for expanding the facilities. Based on coordination with USFWS and ANHC, review of the Northern Long-eared Bat Consultation Area map, and Final 4(D) Rule Guidance document, no known occupied bat maternity roost trees were identified within 150 feet of Alternative 2; however, potentially suitable roost trees are present within the corridor. Results from the bat survey indicated that no federally-listed bat species were captured in the mist nets.

Suitable habitat associated with the Curtis pearlymussel, pink mucket, rabbitsfoot, scaleshell mussel, pyramid pigtoe, and western fanshell is located within the Black River. As documented in ANHC records, the rabbitsfoot and pink mucket are known to occur within the Black River at the existing Hwy. 67 crossing, which is approximately 7.35 river miles downstream of the proposed Alternative 2 crossing location. Occurrence records for the scaleshell and Curtis pearlymussel have also been identified in the Black River near the mouth of the Spring River (Ecological Consultants, Inc., 1983, 1984). As the Black River would be spanned, no direct impacts to mussel species or suitable habitat would occur. Temporary and indirect impacts to potentially suitable habitat within the AA include downstream sedimentation occurring during construction within the banks of the river and water quality effects from post-construction

stormwater runoff. Goldsmith et al. (2020) found that increases in suspended solids could impact mussels by decreasing food availability, physically interfering with filter feeding and respiration, and impeding various aspects of the mussel-host relationship.

Results from the mussel survey indicated that 609 live mussels representing 23 taxa were encountered along Alternative 2. The federally-protected rabbitsfoot, listed as a threatened species, was represented at Alternative 2 by two live specimens that accounted for 0.3% of the live mussels collected. Additionally, one live specimen of the western fanshell, which is proposed for listing as threatened, was collected. Alternative 2 and Alternative 3 occur in relatively different riverine habitats for mussels. Alternative 2 provides more physical habitat diversity potentially accounting for its greater species richness. Alternative 3 provides less habitat diversity and is almost lentic in its physical characteristics. The survey report is provided in **Appendix K**.

Table 29: Federally-protected Species Preliminary Habitat Impacts

Species/Status	Potentially Suitable Habitat	Action Alternatives*				
		2	3	A	B	C
Northern long-eared bat Threatened	Forested acreage	65.2	63.2	3.8	16.0	8.3
	Roosting structures	23	27	13	26	15
Gray bat Endangered	Forested acreage	65.2	63.2	3.8	16.0	8.3
	Roosting structures	23	27	13	26	15
Indiana bat Endangered	Forested acreage	65.2	63.2	3.8	16.0	8.3
	Roosting structures	23	27	13	26	15
Eastern black rail Threatened	Emergent wetland acreage	4.5	2.0	0.6	0.3	0
Curtis pearlymussel Endangered	LF of Black River	Indirect Only**	Indirect Only**	0	0	0
Pink mucket Endangered	LF of Black River	Indirect Only**	Indirect Only**	0	0	0
Rabbitsfoot* ** Threatened	LF of Black River	Indirect Only**	Indirect Only**	0	0	0
Scaleshell mussel Endangered	LF of Black River	Indirect Only**	Indirect Only**	0	0	0
Pyramid pigtoe Proposed Threatened	LF of Black River	Indirect Only**	Indirect Only**	0	0	0
Western fanshell Proposed Threatened	LF of Black River	Indirect Only**	Indirect Only**	0	0	0
Monarch butterfly Candidate	Acres of fallow fields and emergent wetlands	9.4	2.0	0.6	2.1	0
Pondberry Endangered	Acres of forested wetland habitat	33.2	19.7	2.8	10.0	4.5
Alligator snapping turtle Proposed Threatened	Acres of river and large waterbody habitat	2.5	2.2	0	0	0

LF – Linear Feet, calculated by nautical miles. *Habitat impacts are based on a 400-foot-wide proposed ROW for each action alternative. **The current plan is to completely span the Black River and avoid direct impacts. ***There is designated Critical Habitat for the rabbitsfoot, as listed in 50 CFR part 17, located in the Black River approximately seven river miles downstream of the AA. *Source: Project Team, 2021*

Potentially suitable habitat, in the form of emergent wetlands, was observed for the eastern black rail. Although the use of herbicides to maintain cropland edge habitats reduces the likelihood of emergent wetland vegetation from becoming dense or overgrown, it is anticipated this alternative would impact an estimated 4.5 acres of emergent wetlands containing possible summer dense vegetation cover. Alternative 2 would directly impact these wetlands by removal due to fill. Indirect impacts resulting from off-site sediment migration also could occur within the AA. These direct and

indirect wetland impacts would impair emergent wetland habitat required by the eastern black rail and may also affect the species foraging abilities.

Potentially suitable habitat, in the form of fallow fields and emergent wetlands that have the potential to contain milkweed and other flowering plants, was observed for the monarch butterfly within Alternative 2. It is anticipated this alternative would directly impact 9.4 acres of potentially suitable habitat by clearing during construction. However, a portion of these impacts are anticipated to be temporary as areas within the proposed ROW would return to herbaceous habitat and be planted with a wildflower seed mix.

No known pondberry occurrence records were found within Alternative 2; however, known populations have been identified by ANHC within a forested area located approximately 1.8 miles south of O'Kean and 0.17 mile west of Lawrence County Road 603 (Main Street). Alternative 2 would impact an estimated 33.2 acres of suitable depressional, forested wetland habitat. Direct impacts to suitable habitat would include clearing, grubbing, and filling for both roadway embankment and ROW. No pondberry was observed during the survey conducted for the species.

Approximately 3.9 acres of potentially suitable habitat within the Black River and Murray Creek was observed for the alligator snapping turtle. As the Black River would be spanned, no direct impacts to suitable habitat would occur within the Black River. For the approximately 2.5 acres of Murray Creek, which is low quality habitat, it is anticipated that Alternative 2 would directly impact this area by removal due to fill. Indirect impacts resulting from off-site sediment migration also could occur within the AA as sedimentation may reduce visibility of the turtles' prey.

Alternative 3

Alternative 3 would potentially impact an estimated 63.2 acres of forested areas and 27 structures, which includes five existing bridge structures, that provide potentially suitable summer roosting habitat for the Indiana bat, gray bat, and northern long-eared bat species. The same three existing bridges identified in Alternative 2 at the Hwy. 67/Hwy. 412 interchange, would also be temporarily and indirectly affected during construction activities required by Alternative 3. No known occupied bat maternity roost trees within 150 feet of Alternative 3 were identified. However, potentially suitable roost trees are present within the proposed ROW footprint. Results from the bat survey indicated that no federally-listed bat species were captured in the mist nets.

Suitable habitat associated with the Curtis pearlymussel, pink mucket, rabbitsfoot, scaleshell mussel, pyramid pigtoe, and western fanshell is located within the Black River and would be impacted by the project. Alternative 3 is over 40 river miles upstream from known occurrences within the Black River of the rabbitsfoot and pink mucket, and approximately 1 river mile downstream from known occurrences within the Black River of the pink mucket. The western fanshell is known to occur within the Black River approximately 4.26 river miles upstream of the proposed Alternative 3 crossing location. As the Black River would be spanned, no direct impacts to mussel species or suitable habitat would occur. Indirect impacts to downstream suitable habitat within the Black River would occur as a result of sediment migration within the AA during construction and to water quality as a result of post-construction stormwater runoff. As described for Alternative 2, sedimentation may impact mussels by decreasing food availability, physically interfering with filter feeding and respiration, and impeding various aspects of the mussel-host relationship (Goldsmith et al., 2020).

Results from the mussel survey indicated that a total of 563 live mussels representing 16 taxa were found at the Alternative 3 crossing. No threatened or endangered mussels were identified along Alternative 3 by the survey. The mussel survey report is provided in **Appendix K**.

Alternative 3 would impact approximately 2.0 acres of potentially suitable emergent wetland habitat for the eastern black rail. As documented in the description of Alternative 2, the use of herbicides to maintain cropland edge habitats reduces the likelihood of emergent wetland vegetation from becoming dense or overgrown. Direct impacts to wetland habitat would occur from embankment and base fill required for the proposed highway. Indirect impacts of off-site sedimentation could occur within the AA. These direct and indirect wetland impacts would impair emergent wetland habitat required by the rail and may also affect the species' foraging abilities.

Potentially suitable habitat, in the form of fallow fields and emergent wetlands that have the potential to contain milkweed and other flowering plants, was observed for the monarch butterfly within Alternative 3. It is anticipated this alternative would directly impact 2.0 acres of potentially suitable habitat by clearing during construction. However, a portion of these impacts are anticipated to be temporary as areas within the proposed ROW would return to herbaceous habitat and be planted with a wildflower seed mix.

Alternative 3 would impact approximately 19.7 acres of suitable pondberry habitat. Known populations have been identified by ANHC within a forested area located approximately 1.8 miles south of O'Kean and 0.17 mile west of Lawrence County Road 603 (Main Street). An estimated 6.7 acres of the overall forested tract would be directly impacted as a result of clearing, grubbing, and/or direct fill for embankment and ROW required for the project. No pondberry was observed during the survey conducted for the species.

Approximately 3.8 acres of potentially suitable habitat within the Black River as well as within a few other perennial waterbodies was observed for the alligator snapping turtle. As the Black River would be spanned, no direct impacts to suitable habitat would occur within the 1.6 acres of the Black River. However, it is anticipated that Alternative 3 would directly impact by removal due to fill approximately 2.2 acres of suitable habitat found within other perennial waterbodies. Indirect impacts resulting from off-site sediment migration also could occur within the AA as sedimentation may reduce visibility of the turtles' prey.

Alternative A

There is approximately 3.8 acres of forest that could offer summer roosting bat habitat within Alternative A. None of these areas were determined by USFWS to have a high probability of federally-listed bat species use. Thirteen potentially suitable summer roosting structures are located within Alternative A and would be removed by the project.

Potentially suitable habitat, in the form of emergent wetlands, was observed for the eastern black rail. Although the use of herbicides to maintain cropland edge habitats reduces the likelihood of emergent wetland vegetation from becoming dense or overgrown, it is anticipated this alternative would impact an estimated 0.6 acre of emergent wetlands containing possible summer dense vegetation cover. Alternative A would directly impact these wetlands by removal due to fill. Indirect impacts resulting from off-site sediment migration also could occur within the AA. These direct and indirect wetland impacts would impair emergent wetland habitat required by the eastern black rail and may also affect the species foraging abilities.

Potentially suitable habitat, in the form of emergent wetlands that have the potential to contain milkweed and other flowering plants, was observed for the monarch butterfly within Alternative A. It is anticipated this alternative would directly impact 0.6 acres of potentially suitable habitat by clearing during construction. However, a portion of these impacts are anticipated to be temporary as areas within the proposed ROW would return to herbaceous habitat and be planted with a wildflower seed mix.

Alternative A would impact an estimated 2.8 acres of depressional, forested wetland habitat that may be suitable for the pondberry. Direct impacts to suitable habitat would include clearing, grubbing, and filling for both roadway embankment and ROW. No pondberry was observed during the survey conducted for the species.

Alternative B

Alternative B contains one large wooded area and otherwise very fragmented forested areas that are primarily associated with residences located along existing Hwy. 67. Approximately 16.0 acres of potentially suitable summer roosting forested bat habitat would be directly impacted by Alternative B. An estimated 26 structures potentially suitable for summer roosting are located within this alternative corridor and would be removed as a result of construction activities.

Potentially suitable habitat, in the form of emergent wetlands, was observed for the eastern black rail. Although the use of herbicides reduces the likelihood of emergent wetland vegetation from becoming dense or overgrown, it is

anticipated this alternative would impact an estimated 0.3 acre of emergent wetlands containing possible summer dense vegetation cover. Alternative B would directly impact these wetlands by removal due to fill. Indirect impacts resulting from off-site sediment migration also could occur within the AA. These direct and indirect wetland impacts would impair emergent wetland habitat required by the eastern black rail and may also affect the species foraging abilities.

Potentially suitable habitat, in the form of fallow fields and emergent wetlands that have the potential to contain milkweed and other flowering plants, was observed for the monarch butterfly within Alternative B. It is anticipated this alternative would directly impact 2.1 acres of potentially suitable habitat by clearing during construction. However, a portion of these impacts are anticipated to be temporary as areas within the proposed ROW would return to herbaceous habitat and be planted with a wildflower seed mix.

Alternative B would impact an estimated 10.0 acres of depressional, forested wetland habitat that may be suitable for the pondberry. Direct impacts to suitable habitat would include clearing, grubbing, and filling for both roadway embankment and ROW. No pondberry was observed during the survey conducted for the species.

Alternative C
Alternative C contains very fragmented forested areas that are primarily associated with isolated residences located along County Road 154 and County Road 278, comprising approximately 8.3 acres. An estimated 15 structures potentially suitable for providing summer roosting habitat are located within this alternative and includes grain silos and barns. Direct impacts to potentially suitable summer roosting bat habitat include removal of structures and suitable forested areas along the highway as a result of construction activities.

Alternative C would impact an estimated 4.5 acres of depressional, forested wetland habitat that may be suitable for the pondberry. Direct impacts to suitable habitat would include clearing, grubbing, and filling for both roadway embankment and ROW. No pondberry was observed during the survey conducted for the species.

Mitigation
Initial avoidance and minimization of potential impacts to federally-listed species habitat in the early stages of project planning included desktop review of potentially suitable habitat locations and refining wide corridors to 400-foot-wide ROW footprints. Development of the 400-foot-wide ROW for the action alternatives considered construction limitations and other environmental constraints such as forested wetlands, conservation areas, and major gas pipelines. Locations of other resources within and near the action alternatives were also considered, such as floodplains and the ability to achieve near perpendicular crossings of the Black River. Proposed Black River crossings were selected based on both crossing orientation and avoidance of impacts to forested riparian zones.

For the monarch butterfly, a wildflower seed mix will be included in the permanent seeding for the project with the intent of establishing habitat that would benefit the monarch and other pollinator species. Additional assessment and conservation/mitigation measures regarding the monarch butterfly would be considered in the design phase of the project and are summarized in the draft BA provided in **Appendix K**.

Further avoidance, minimization, and mitigation measures would be evaluated and implemented into the project for the Preferred Alternative. These measures may include: providing mitigation for impacted bat habitat, implementing sediment and erosion control BMPs such as turbidity curtains and silt fence, and water quality monitoring during construction. Additional avoidance, minimization, and mitigation measures will be identified during Section 7 consultation.

3.20 How would national domestic listing workplan species be affected?

Introduction and Methodology
The National Domestic Listing Workplan (Workplan) was developed, and updated every five years, by the USFWS for species needing conservation and for addressing ESA listing and critical habitat designation priorities (USFWS, 2021b).

The Workplan also serves as a plan for addressing public outreach of studied species that could be afforded ESA protection in the future, ESA listing decisions, and critical habitat decisions (USFWS, 2021).

Affected Environment

There are 30 species identified in the fiscal year 2021-2025 Workplan that occur in Arkansas. These species are identified in **Table 30** along with a brief description of their preferred habitat. Detailed accounts of the species on the Workplan that could potentially be located within the action alternatives are discussed in **Appendix K**.

Table 30: Workplan Species and Preferred Habitat

Species or Habitat Type	Common Name	Scientific Name	Preferred Habitat
Plant	**Small-headed pipewort**	***Eriocaulon kornickianum***	**Sandy perm. moist seeps, depressions over granite**
	Texas trillium	***Trillium pusillum texanum***	**Hardwood bottoms, seeps, borders of streams**
Mussel, Aquatic	**Western fanshell**	***Cyprogenia aberti***	**Rivers with gravel and rock substrates**
	Ouachita fanshell	***Cyprogenia cf. aberti***	**Rivers with gravel and rock substrates**
	Pink (pyramid) pigtoe	***Pleurobema rubrum***	**Rivers with gravel and rock substrates**
	Salamander mussel	***Simpsonaias ambigua***	**Rivers, under large, flat rocks, fine mud**
	Snuffbox	***Epioblasma triquetra***	**Small to medium sized creeks, swift current**
	Spectaclecase	***Cumberlandia monodonta***	**Large rivers, firm mud, under rock slabs and roots**
Aquatic	Mammoth spring crayfish	*Orconectes marchandi*	Medium, clear streams with well-defined riffles
Fish, Aquatic	**Longnose darter**	***Percina nasuta***	**Large streams or small rivers with cobble/gravel**
	Paleback darter	*Etheostoma pallididorsum*	Shallow pools, gravel bottoms, spring-fed streams
	Caddo madtom	*Noturus taylori*	Shallow, gravel bottom pools, clear upland streams
	Colorless shiner	*Notropis perpallidus*	Deep pools in moderate, warm clear rivers
	Ozark shiner	***Notropis ozarcanus***	**High-gradient stream sections below riffles**
	Rocky shiner	*Notropis suttkusi*	Moderate-high gradient, clear rivers/streams
Reptile	**Alligator snapping turtle**	***Macroclemys temmincki***	**Deep rivers, steep banks, lakes, swamps**
	Blanding's turtle	***Emydoidea blandingii***	**Wetlands, marshes, creeks, sloughs, pond edges**
	Western chicken turtle	***Deirochelys reticularia miaria***	**Lakes, swamps, ephemeral bodies of water**
Amphibian	**Illinois chorus frog**	***Pseudacris illinoensis***	**Sand prairies, sandy agricultural fields**
	Streamside salamander	***Ambystoma barbouri***	**Upland forests close to streams**
Mammal, Terrestrial	Prairie gray fox	*Urocyon cinereoargenteus ocythous*	Forested areas, grasslands, riparian zones along tributaries
	Plains spotted skunk	***Spilogale putorius interrupta***	**Open grasslands, brushy areas, cultivated land**
Mammal, Volant	**Little brown bat**	***Myotis lucifugus***	**Buildings, caves, trees, rocks and wood piles**
	Northern long-eared bat	***Myotis septentrionalis***	**Caves, mines, trees, cliffs, buildings, barns, bridges**
	Tricolored bat	***Perimyotis subflavus***	**Caves, trees, cliffs, buildings, barns**
Bird	**Golden-winged warbler**	***Vermivora chrysoptera***	**Shrubby habitat near tall forests, close to water**
Flying Insect	**Monarch butterfly***	***Danaus plexippus***	**Open fields, meadows, weedy areas roadsides**
	Linda's roadside skipper	***Amblyscirtes linda***	**Woodland streams**
	Regal fritillary	***Speyeria idalia***	**Tall-grass prairie, damp meadows, wet fields**
	Frosted elfin butterfly	***Callophrys irus***	**Open woods, forested edges, fields, scrub areas**

Bolded entries are species with suitable habitat within the action alternatives.
*Habitat impacts for the monarch butterfly are covered in Section 3.19. *Source: Project Team, 2021*

Environmental Consequences

No Action Alternative

The No Action Alternative would have no effect on Workplan-listed species beyond what would be proposed for improvements deemed necessary by governing officials.

Alternative 2

For Workplan-listed bat and aquatic species with suitable habitat within the action alternatives, Alternative 2 would have the same direct and indirect impacts as those identified for federally-listed bat and aquatic species. Approximately three acres of suitable streamside salamander habitat would be directly impacted by clearing and grading activities for roadway construction and ROW clearing. Approximately 2,086 acres of suitable habitat for the habitat generalist species (plains spotted skunk, regal fritillary, frosted elfin butterfly) would be directly impacted by clearing and grading activities for roadway construction and ROW. An estimated 40 acres of suitable Blanding's turtle and western chicken turtle habitat would be directly impacted by clearing and grading activities. An estimated 834 acres of suitable Illinois chorus frog habitat would be directly impacted by clearing and grading activities for roadway construction and ROW. Approximately 46 acres of suitable Texas trillium habitat would be directly impacted by clearing and grading activities.

Alternative 3

For Workplan-listed bat and aquatic species with suitable habitat within the action alternatives, Alternative 3 would have the same direct and indirect impacts as those identified for federally-listed bat and aquatic species. Approximately seven acres of suitable streamside salamander habitat would be directly impacted by clearing and grading activities for roadway construction and ROW. Approximately 2,213 acres of suitable habitat for the habitat generalist species (plains spotted skunk, regal fritillary, frosted elfin butterfly) would be directly impacted by clearing and grading activities for roadway construction and ROW. An estimated 28 acres of suitable Blanding's turtle and western chicken turtle habitat would be directly impacted by clearing and grading activities for roadway construction and ROW. An estimated 19 acres of suitable Illinois chorus frog habitat would be directly impacted by clearing and grading activities. Approximately 41 acres of suitable Texas trillium habitat would be directly impacted by clearing and grading activities.

Alternative A

For Workplan-listed bat and aquatic species, Alternative A would have the same direct and indirect impacts to suitable habitat as those identified for federally-listed bat and aquatic species. Approximately 128 acres of suitable habitat for the habitat generalist species (plains spotted skunk, regal fritillary, frosted elfin butterfly) would be directly impacted by clearing and grading activities. An estimated three acres of suitable Blanding's turtle and western chicken turtle habitat would be directly impacted by clearing and grading activities. Approximately 11 acres of suitable Illinois chorus frog habitat would be directly impacted by clearing and grading activities. Approximately three acres of suitable Texas trillium habitat would be directly impacted by clearing and grading activities. Impacts to other Workplan-listed species are not anticipated due to lack of habitat within Alternative A.

Alternative B

For Workplan-listed bat and aquatic species, Alternative B would have the same direct and indirect impacts to suitable habitat as those identified for federally-listed bat and aquatic species. Approximately 113 acres of suitable habitat for the habitat generalist species (plains spotted skunk, regal fritillary, frosted elfin butterfly) would be directly impacted by clearing and grading activities for roadway construction and ROW. An estimated 10 acres of suitable Blanding's turtle and western chicken turtle habitat would be directly impacted by clearing and grading activities. Approximately 11 acres of suitable Texas trillium habitat would be directly impacted by clearing and grading activities. Impacts to other Workplan-listed species are not anticipated due to lack of habitat within Alternative B.

Alternative C

For Workplan-listed bat and aquatic species, Alternative C would have the same direct and indirect impacts to suitable habitat as those identified for federally-listed bat and aquatic species. Approximately 147 acres of suitable habitat for the habitat generalist species (plains spotted skunk, regal fritillary, frosted elfin butterfly) would be directly impacted by clearing and grading activities for roadway construction and ROW. An estimated five acres of suitable Blanding's turtle and western chicken turtle habitat would be directly impacted by clearing and grading activities. Approximately

six acres of suitable Texas trillium habitat would be directly impacted by clearing and grading activities. Impacts to other Workplan-listed species are not anticipated due to lack of habitat within Alternative C.

3.21 Are impacts to migratory birds anticipated?

Introduction and Methodology

The Migratory Bird Treaty Act of 1918 (16 U.S. Code 703–712; MBTA) prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the USFWS, such as through permits obtained through legal hunting. The MBTA protects nearly all native birds in the U.S., covering more than 1,000 species including bald eagles (*Haliaeetus leucocephalus*). Both bald and golden eagles (and their nests) are protected under the MBTA and the Bald and Golden Eagle Protection Act. Both laws prohibit "take" and possession of eagles, their parts, nests, and eggs. Both acts prohibit intentional injury, harassment, and death. Under the Eagle Act, "take" also includes disturbance and unintentional (incidental) take.

Some migratory birds use not only natural vegetation for habitat, but man-made structures as well. Therefore, existing bridges that were accessible via public ROW and within the alternative footprints were inspected for evidence of past or present use by migratory birds. Other man-made structures such as culverts, barns, sheds, grain bins (i.e., silos), or abandoned buildings also may function as suitable nesting habitat for migratory birds. The number of these structures present with each action alternative was assessed using aerial imagery. For additional details on migratory birds, refer to the Biological Resources Technical Report provided in **Appendix K.**

Affected Environment

The study area occurs within the Mississippi Flyway, which extends from the headwaters of the Mississippi River to the Gulf of Mexico. More than 325 bird species make the round-trip each year along the Mississippi Flyway, migrating from their breeding grounds in Canada and the northern U.S. to their wintering grounds along the Gulf of Mexico and in Central and South America (National Audubon Society, 2021). It is highly likely that many of these migratory bird species pass through the project area during their annual migrations. The flooded and even the dry croplands within the action alternatives are used extensively in the winter by foraging waterfowl. Waterfowl hunting within the nearby Black River WMA and on private lands is a major recreational activity in the study area.

Migratory birds that are likely to occur in the alternative footprints are barn swallows (*Hirundo rustica*) and cliff swallows (*Petrochelidon pyrrhonota*). Barn swallows use man-made structures for semi-colonial nesting and live in close association with humans. Cliff swallows, whose nests are shown in **Figure 49**, nest communally in mud nests under bridges and in barns and caves. Both species commonly use bridges and culverts in Arkansas for nesting. Other migratory birds can also nest on man-made structures.

Figure 49: Cliff Swallow Nests at the Hwy. 67 / Hwy. 412 Interchange in Walnut Ridge

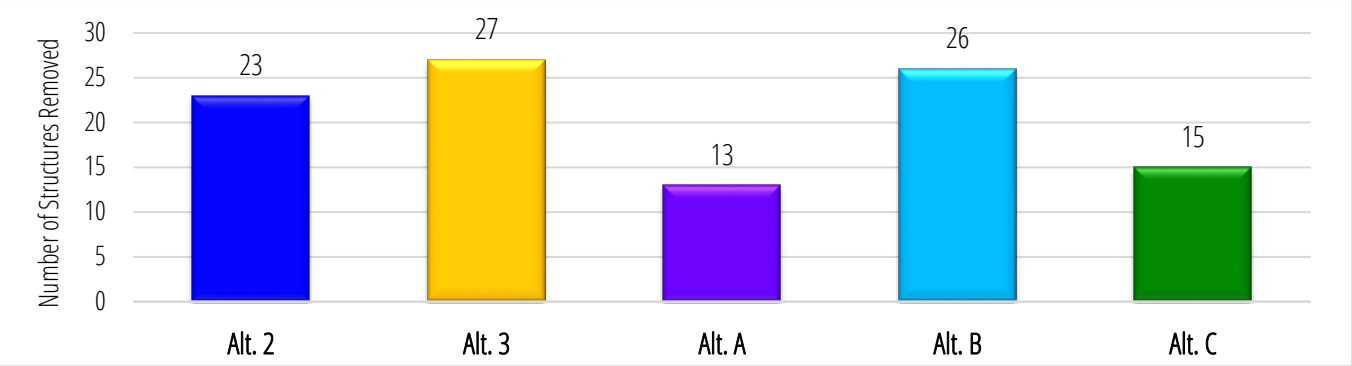
Bald eagles are large predatory birds that typically build their nests in large trees near rivers or coasts. A typical nest is around five feet in diameter and can be much larger. Wooded areas surrounding the Black River are the only areas within the project to contain potentially suitable habitat for the bald eagle. However, no nests or eagles were observed within the project area during the site visits. According to ANHC occurrence data, one bald eagle nest is recorded within the Black River WMA, approximately 4.2 and 3.3 miles from Alternative 2 and Alternative 3, respectively.

Environmental Consequences

Most birds utilizing the Mississippi Flyway during migration are anticipated to use more natural areas, such as the Black River WMA, as opposed to fragmented areas located within an action alternative. However, the natural vegetative cover

types in the project limits still offer foraging and nesting habitat for many species of migratory birds. Additionally, the project limits primarily contain cropland, which is heavily used by wintering waterfowl, and these available foraging areas would be removed. Swallow nests and nests of other migratory birds were observed at each bridge structure at the Hwy. 67/Hwy. 412 interchange in Walnut Ridge (**Figure 49**). Additionally, all action alternatives contain outbuildings such as sheds, barns, abandoned buildings, and grain bins (i.e., silos) that may be utilized for nesting by some migratory birds and would be removed. The number of potentially suitable structures impacted by each action alternative is shown in **Figure 50** and a discussion of each alternative's impacts to migratory birds is provided below.

Figure 50: Number of Potential Suitable Migratory Bird Nesting Structures Impacted



Source: Project Team, 2021

No Action Alternative

The No Action Alternative would not result in any study-related construction and would, therefore, not directly impact migratory birds.

Alternative 2

The Hwy. 412 overpass as well as the Hwy. 67 northbound and southbound ramps at the Hwy. 67/Hwy. 412 interchange in Walnut Ridge provide suitable nesting habitat for migratory birds. These three bridge structures would not be removed but disturbance to migratory birds from construction noise or the presence of workers and machinery would occur and impacts to species may result. Where Alternatives 2 and 3 share an alignment and cross Hwy. 67 west of Corning, the bridge over Oak Creek Ditch would be impacted by a proposed interchange at this location, which can be seen on detail sheet 20 of Attachment A (**Appendix K**). This structure may be replaced or extended. Additionally, Alternative 2 would remove a total of approximately 19 structures that may be utilized for nesting by some migratory birds (**Figure 50**). Alternative 2 may also create future habitat for migratory birds by construction of proposed span bridges, such as the one that would be located over the Black River. Conceptual design indicates approximately 18 proposed bridges along Alternative 2; these new structures could provide nesting habitat for migratory birds such as cliff and barn swallows. Cropland suitable as foraging habitat for migratory birds, particularly waterfowl, would also be impacted, with Alternative 2 converting approximately 2,053 acres of agricultural fields to a transportation use. Approximately 5.0 acres of potentially suitable bald eagle habitat surrounding the Black River is present within Alternative 2 and would be removed by the project.

Alternative 3

Alternative 3 would result in the same impacts to the three structures at the Hwy. 67/Hwy. 412 interchange in Walnut Ridge as Alternative 2, as well as to the bridge over Oak Creek Ditch. Alternative 3 would also impact one existing reinforced concrete box (RCB) culvert along Hwy. 90 east of Knobel. During the site investigation, evidence of use by migratory birds was observed at this RCB. This RCB would likely be impacted by Alternative 3 through replacement or widening as an interchange is proposed at this location. This proposed interchange is shown on detail sheet 39 of Attachment A (**Appendix K**). Additionally, Alternative 3 would remove a total of approximately 22 structures that may be utilized for nesting by some migratory birds. Alternative 3 may also create future habitat for migratory birds by construction of proposed span bridges, such as the one that would be located over the Black River. Conceptual design

indicates approximately 11 proposed bridges along Alternative 3; these new structures could provide nesting habitat for migratory birds such as cliff and barn swallows. Alternative 3 would convert to a transportation use approximately 2,166 acres of cropland that may be suitable foraging habitat for some migratory birds. Approximately 1.3 acres of potentially suitable bald eagle habitat surrounding the Black River is present within Alternative 3 and would be removed by the project.

Alternative A
Alternative A would remove 13 structures that may be utilized for nesting by some migratory birds. Alternative A may also create future habitat for migratory birds by construction of the proposed span bridges that would be located over existing Hwy. 67 and County Road 154. Alternative A would convert to a transportation use approximately 128 acres of cropland that may be suitable foraging habitat for some migratory birds. No trees large enough to provide nesting habitat for bald eagles were observed.

Alternative B
Alternative B would remove 26 structures that may be utilized for nesting by some migratory birds. Alternative B may also create future habitat for migratory birds by construction of the proposed span bridge that would be located over County Road 154. Alternative B would convert to a transportation use approximately 106 acres of cropland that may be suitable foraging habitat for some migratory birds. No trees large enough to provide nesting habitat for bald eagles were observed.

Alternative C
Alternative C would remove 15 structures that may be utilized for nesting by some migratory birds. Alternative C may also create future habitat for migratory birds by construction of the proposed span bridge that would be located over County Road 154. Alternative C would convert to a transportation use approximately 143 acres of cropland that may be suitable foraging habitat for some migratory birds. No trees large enough to provide nesting habitat for bald eagles were observed.

Mitigation
The ARDOT Nesting Sites of Migratory Birds special provision (SP) would be implemented as part of the project. This special conservation measure will ensure the protection of migratory bird nest sites by either 1) the placement of net barriers during the non-breeding season (generally after August 31 to March 1) on any existing colonized bridges or culverts that will be affected prior to construction taking place; or 2) the removal of inactive nests outside of the breeding/nesting season. Additionally, no activities should occur within 1,000 feet of an active migratory bird nesting colony. In order to avoid impacts to bald eagles, a survey for eagles and their nests will be conducted for the Selected Alternative within one year of the start of construction. If bald eagle nests are found, further coordination with USFWS may be necessary and project activities would implement conservation/mitigation measures in accordance with the Bald and Golden Eagle Protection Act. No activities would take place within 1,000 feet of a bald or golden eagle nest without first seeking assistance or permits from the USFWS and/or following approved guidelines.

Impacts to foraging areas, such as cropland, would be unavoidable under any of the action alternatives. However, impacts wildlife habitat would be minimized by limiting construction to the minimum width necessary to meet design safety standards.

3.22 How would species of state concern be affected?

Introduction and Methodology
This section covers the analysis of state-listed species resources identified by the ANHC and the AGFC. These lists and details on state-listed species are provided in the Biological Resources Technical Report (**Appendix K**). The ANHC is an agency within the Department of Arkansas Heritage and maintains known locations of these species and natural community types as occurrence data within their Natural Diversity Database. The ANHC was consulted regarding known records for state-listed species, which includes endangered, threatened, rare, peripheral, or status undetermined species in the project area. A habitat assessment for the state-listed species was conducted and included

desktop resource evaluation and limited site investigations, see **Appendix J**. The site investigations were conducted March 2-3, 2021 and were limited to public access points along alternative footprints. The habitat assessment did not include official surveys for state-listed species; however, known occurrences have been coordinated with the ANHC.

Affected Environment

ANHC Natural Diversity Database records identified a total of 39 species that have been confirmed on the occurrence level and/or observation level. Of the 39 species, five (northern long-eared bat, Indiana bat, pink mucket, rabbitsfoot, and pondberry) were federally-listed and, therefore, were not assessed in this section as they are included in Section 3.19. The remaining 34 ANHC state-listed species are presented in **Table 31** with details in **Appendix K.** Many of the state-listed species have a status of "inventory element" (INV in **Table 31**) meaning ANHC is currently conducting active inventory work on those species.

Occurrence level information includes "records that have been fully processed into the ANHC data system". **Observation** level information includes "records such as museum specimen, that have not been fully processed into the ANHC system".

Environmental Consequences

No Action Alternative

The No Action Alternative would have no effect on ANHC or state-listed species beyond what would be proposed for improvements deemed necessary by governing officials.

Action Alternatives

Impacts to ANHC or state-listed species from the action alternatives are summarized in **Table 31** with details provided in **Appendix K**. Species listed in **Table 31** with a "P" or "P+" are habitat generalists; a more detailed analysis for the Preferred Alternative would be conducted in the FEIS.

Table 31: ANHC State-listed Species, Preferred Habitat, and Preliminary Habitat Impacts

ANHC Species and State Status	Preferred Habitat	Action Alternatives*				
		2	3	A	B	C
Rafinesque's big-eared bat (*Corynorhinus rafinesquii*), INV	Caves, mines and hollows of trees in bottomland forests and old buildings	65.2 AC 23 STR	63.2 AC 27 STR	3.8 AC 13 STR	16.0 AC 26 STR	8.3 AC 15 STR
Southeastern bat (*Myotis austroriparius*), INV	Caves and tree hollows in bottomland hardwoods, abandoned buildings	65.2 AC 23 STR	63.2 AC 27 STR	3.8 AC 13 STR	16.0 AC 26 STR	8.3 AC 15 STR
Little brown bat (*Myotis lucifugus*), INV	Buildings, caves, trees, rocks, and wood piles	65.2 AC 23 STR	63.2 AC 27 STR	3.8 AC 13 STR	16.0 AC 26 STR	8.3 AC 15 STR
Round pigtoe (*Pleurobema sintoxia*), INV	Small to large rivers with mud, sand and gravel substrate	0 LF**	0 LF**	NP	NP	NP
Little spectaclecase (*Villosa lienosa*), INV	Small to medium sized streams with sand or gravel substrate	0 LF**	0 LF**	NP	NP	NP
Ozark fanshell (*Cyprogenia aberti*), INV	Rivers with gravel and rock substrates	0 LF**	0 LF**	NP	NP	NP
Western sand darter (*Ammocrypta clara*), INV	Medium to large streams with moderate current and sand substrate	0 LF**	0 LF**	NP	NP	NP
Current darter (*Etheostoma uniporum*), INV	Large rivers and tributaries	0 LF**	0 LF**	NP	NP	NP
Slenderhead darter (*Percina phoxocephala*), INV	Medium sized rivers and large creeks with gravel and rocky riffles	0 LF**	0 LF**	NP	NP	NP
Stargazing darter (*Percina uranidea*), INV	Medium sized rivers with gravel substrates and deep riffles	0 LF**	0 LF**	NP	NP	NP
Saddleback darter (*Percina vigil*), INV	Medium sized rivers with fine gravel or sand substrates	0 LF**	0 LF**	NP	NP	NP
Gilt darter (*Percina evides*), INV	Large creeks, small to medium rivers with clean, clear water and deep riffles	NP	NP	NP	NP	NP

ANHC Species and State Status	Preferred Habitat	Action Alternatives*				
		2	3	A	B	C
Blue sucker (*Cycleptus elongatus*), INV	Large riverine systems with deep fast-moving rivers and deep lakes	0 LF**	0 LF**	NP	NP	NP
Highfin carpsucker (*Carpoides velifer*), INV	Clear streams and rivers with firm substrates	0 LF**	0 LF**	NP	NP	NP
Goldeye (*Hiodon alosoides*), INV	Medium to large rivers with moderate to swift currents and firm sand	0 LF**	0 LF**	NP	NP	NP
Mooneye (*Hiodon tergisus*), INV	Large, clear streams river and lakes with firm	0 LF**	0 LF**	NP	NP	NP
Shoal chub (*Macrhybopsis hyostoma*), INV	Large streams with shifting sand and shallow riffles	0 LF**	0 LF**	NP	NP	NP
Silver redhorse (*Moxostoma anisurum*), INV	Medium to large rivers with deep sluggish pools over rock or gravel	0 LF**	0 LF**	NP	NP	NP
Pealip redhorse (*Moxostoma pisolabrum*), INV	Medium to large rivers with clear sediment-free water	0 LF**	0 LF**	NP	NP	NP
Blackspot shiner (*Notropis atrocaudalis*), INV	Small, clear streams	NP	NP	NP	NP	NP
Sabine shiner (*Notropis sabinae*), INV	Streams and rivers with fine, silt-free, sand substrates	0 LF**	0 LF**	NP	NP	NP
Channel shiner (*Notropis wickliffi*), INV	Large rivers and mouths of tributaries with silt, sand or gravel substrates	0 LF**	0 LF**	NP	NP	NP
Smith's longspur (*Calcarius pictus*), INV	Prairies, fields, shortgrass plains, pastures and airport fields	6.5 AC	1.8 AC	NP	1.8 AC	NP
Bald eagle (*Haliaeetus leucocephalus*), INV	Near rivers, lakes, reservoirs and marshes, super canopy trees	5 AC	1.3 AC	NP	NP	NP
Hairy wood mint (*Blephilia hirsute*), INV	Floodplains, forests, meadows, and fields	P		P		
False hop sedge (*Carex lupuliformis*), INV	Marshes, shores of rivers or lakes and swamps	P	P +	NP		
Opaque prairie sedge (*Carex opaca*), SE	Low areas of prairies, roadside ditches, and poorly drained sites	P		P		
Woolly sedge (*Carex pellita*), INV	Roadside ditches and other early successional habitats	P		P		
Wolf's spike-rush (*Eleocharis wolfii*), INV	Ephemeral pools in open grasslands, oak forests, and river terraces	P		P		
Corkwood (*Leitneria floridana*), INV	Forested or open swamps, wet thickets and roadside ditches	P	P +	P		
Brand's scorpion-weed (*Phacelia gilioides*), INV	Bottomland hardwood forests, streambanks, roadsides, glades	P		P		
Purple fringeless orchid (*Platanther peramoena*), ST	Bottomland forests along streams and lakes, mucky or rocky soil	P	P +	NP		
Big mock Bishop's-weed (*Ptilimnium costatum*), INV	Swamps, sloughs, streambanks and ditches	P	P +	P		
Virginia spiderwort (*Tradescantia virginiana*), INV	Mesic to dry upland forests, open rocky woods, railroads	P		P		

INV - Inventory Element that the ANHC is currently conducting active inventory work on this species. SE - State Endangered. ST - State Threatened.

* Habitat based on a 400-foot-wide proposed ROW. **The current plan is to completely span the Black River and avoid direct impacts; only indirect impacts are anticipated. AC - Acres; STR - Potentially suitable existing bridge structures or building structures (barns, sheds, abandoned buildings, or silos); LF - Linear Feet, calculated by nautical miles; NP - No potentially suitable habitat is present within the action alternatives; P - Potentially suitable habitat is present within the action alternatives; P+ - Potentially suitable habitat is present

within the action alternatives and there is an ANHC-known occurrences within the action alternatives. The closest known occurrence of these species relative to Alternatives A, B and C is approximately 1.8 miles to the west. *Source: Project Team, 2021*

3.23 Are impacts to aquatic ecology and biota anticipated?

Introduction and Methodology

Aquatic habitats present within each action alternative occur primarily at river and stream crossings, but also within agricultural canals, wetlands, and ponds. Each of these habitats contains a variety of aquatic biota; e.g., plants, fish, macroinvertebrates, and other aquatic organisms. Aquatic ecosystems within the study area were delineated using ecobasins established by the AGFC. Ecobasins are a version of the level III ecoregions described by Woods and others (2004) that are then further subdivided by major river basins to form the 18 ecobasins in Arkansas. For additional details on methodology, refer to the Biological Resources Technical Report provided in **Appendix K**.

Affected Environment

The project occurs entirely within with the Mississippi Alluvial Plain-White River ecobasin. According to the AGFC, streams in this ecobasin are some of the most productive, species rich, bottomland hardwood, low gradient systems in the state. Riparian zones are dense, having some of the largest hardwood trees in the state. Currently, land use changes have decreased riparian zones substantially and caused substantial increases in turbidity due to sedimentation. The Black River (**Figure 51**), which occurs within the footprints of both Alternatives 2 and 3, is an example of a stream in this ecobasin and represents the largest stream in the project area. The Black River's source is in southeast Missouri. It flows south and crosses the Arkansas border in Clay County northeast of Corning. From there, the Black River flows generally southwest and passes through the Black River WMA, through Randolph County to Pocahontas, and then beyond the study area.

Low gradient streams have wider channels and floodplains than high gradient streams and have a tendency for the stream to meander.

Figure 51: Black River

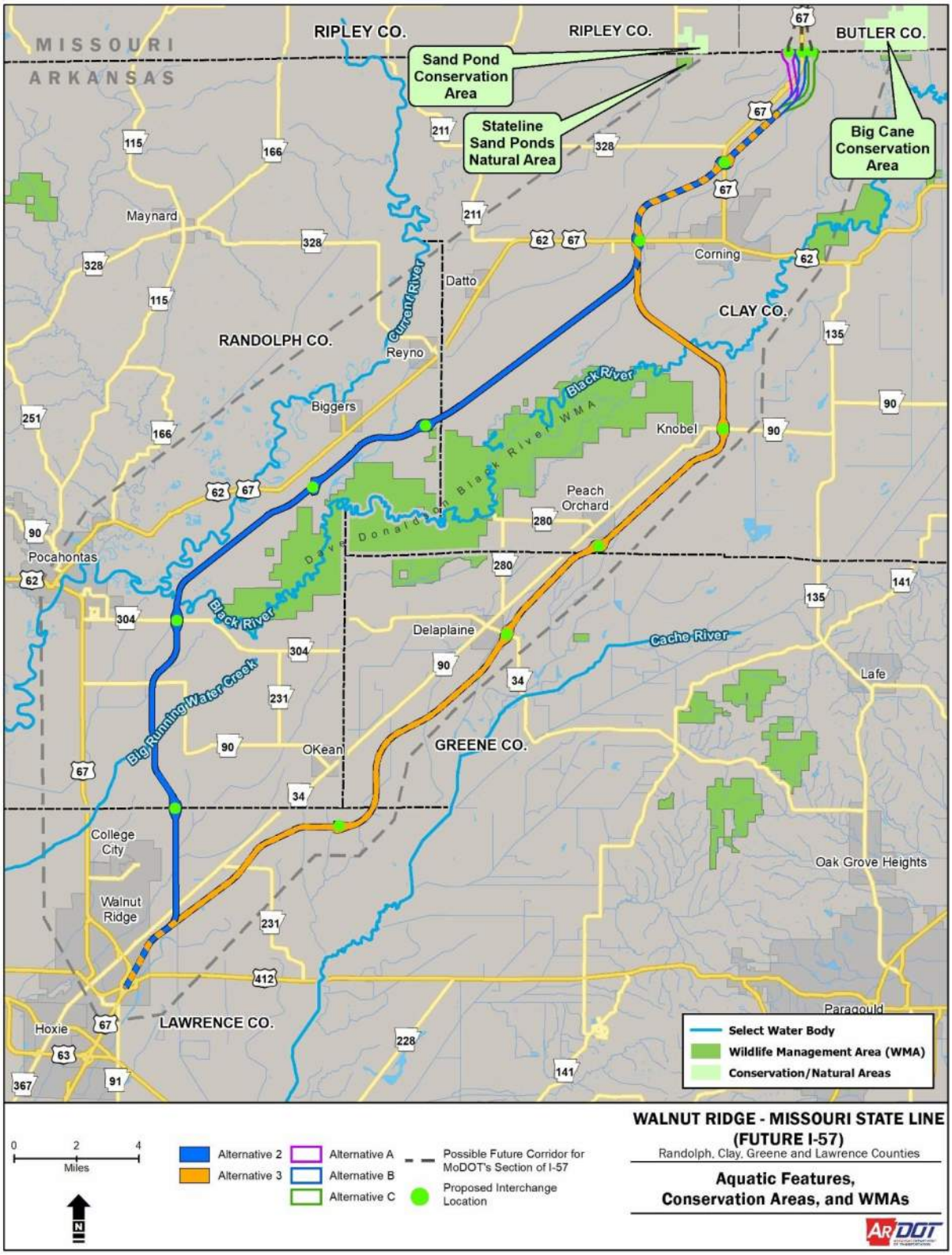
The Black River passes through both Alternatives 2 and 3 and contains the greatest source of aquatic biota within the alternative footprints (**Figure 51**). Historically, the Black River had large populations of river mussels; however, overharvesting and silt in the river caused by farming and dredging drastically reduced mussel populations (Cavaneau, 2018). Examples of fish and federally-protected mussel species potentially occurring in the Black River are provided in the Biological Resources Technical Report (**Appendix K**).

The Current and Cache Rivers are two other large perennial waterbodies located nearby (**Figure 52**). The Current River is located within the project study area while the Cache River is not; neither river is impacted by an action alternative. The Current River is located west of Alternative 2 and is listed by the DEQ as an Extraordinary Resource Water (ERW). See Section 3.25 on water quality for additional details on this river. Other major streams in the project area and their hydrologic characteristics, as well as quantitative information on wetlands, are detailed in the Waters Technical Report (**Appendix K**).

Environmental Consequences

For the proposed project, aquatic biota could be impacted by roadway construction and its future operation through direct alteration of aquatic habitat, siltation/sedimentation, and pollutant loading. For stream crossings where culverts are used, impacts to fish passage may result if species cannot easily pass through the culvert. During culvert installation or during bridge construction, temporary changes in water quality are likely to occur. Additionally, the natural substrate of the stream is changed at these crossings and where four-sided box culverts are used, the substrate is converted to concrete. Direct mortality during construction would be limited to those less mobile species such as aquatic macroinvertebrates and amphibians.

Figure 52: Major Aquatic Features in the Study Area



Disturbances within forested riparian zones can also damage aquatic habitats. Both stream crossings and riparian zone removal would directly alter aquatic habitat, increase the probability that silt and sediment would enter a stream during construction, and increase the likelihood of pollution entering the watercourse. Increases in sedimentation rates can clog gill filaments of fish and macroinvertebrates, potentially leading to disease or even death. Once the proposed highway is operational, pollution from highway runoff, such as heavy metals (Barber et al., 2006), could also impact aquatic communities. Highway runoff also regularly includes inorganic salts and hydrocarbons. These pollutants can harm fish and wildlife populations, kill native vegetation, and foul drinking water supplies (EPA, 2003).

Forested riparian areas provide shading over a stream, affecting water temperature; provide habitat for vertebrates and invertebrates; provide bank stability and thus, better sediment control and filtering capability and provide an energy source for the aquatic species ecosystem (AGFC, 2015).

For the above-described reasons, the proposed project impacts to aquatic biota are estimated based on the number of stream crossings required by each alternative and by the acreage of forested riparian areas removed. Stream crossings were defined as any ephemeral, intermittent, or perennial watercourse that fully crosses a proposed alignment. Ephemeral and intermittent ditches were also counted as crossings as they can also affect aquatic habitats and biota. Riparian zones were defined as wooded areas within 328 feet (100 meters) of each side of a stream reach, which is how the AGFC defined the term in their 2015 Wildlife Action Plan.

No Action Alternative

No impacts to aquatic species or aquatic features would occur as a result of the No Action Alternative as it would require no stream crossings and would not remove any riparian zone vegetation.

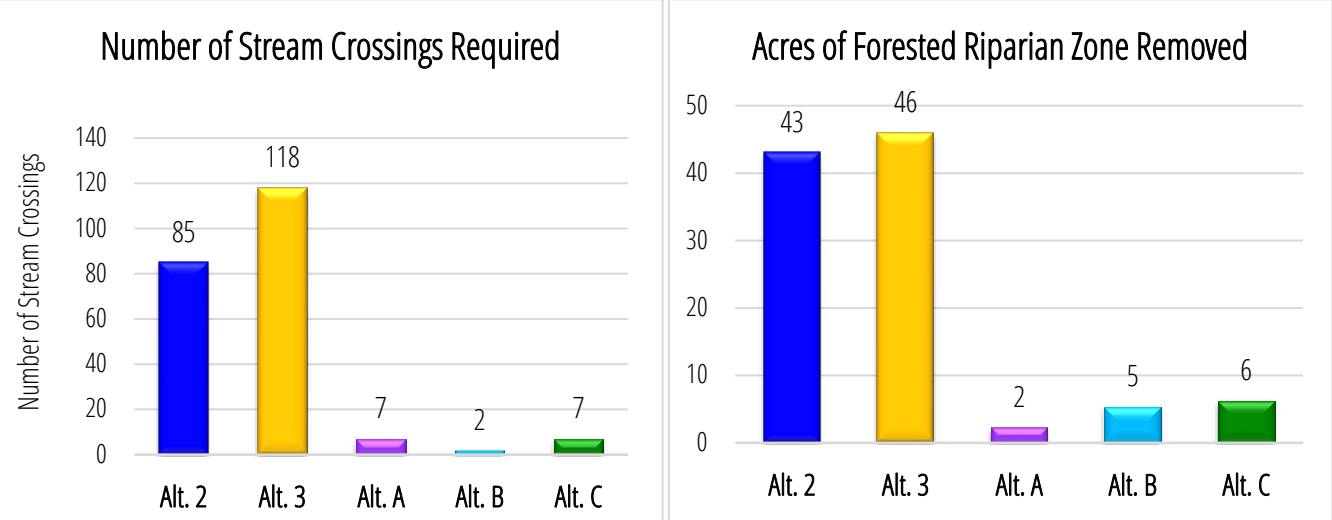
Alternative 2

As shown in **Figure 53**, Alternative 2 requires 85 stream crossings and removal of approximately 43 acres of forested riparian zone. Of the 85 crossings, 47 are considered ephemeral or intermittent ditches. Alternative 2's ROW footprint also occurs within a 0.25-acre of open water, most of which represents the Black River.

Alternative 3

Alternative 3 requires 118 stream crossings and removal of approximately 46 acres of forested riparian zone. Of the 118 crossings, 58 are considered ephemeral or intermittent ditches. Alternative 3's ROW footprint also occurs within a 0.85-acre of open water, most of which represents the Black River.

Figure 53: Stream Crossings and Riparian Zone Impacts



Source: Project Team, 2021

Alternative A
Alternative A requires seven stream crossings and removal of approximately two acres of forested riparian zone. Of the seven crossings, six are considered ephemeral ditches. No open water areas would be impacted by Alternative A.

Alternative B
Alternative B requires two stream crossings and no impacts to open water areas. Both crossings are considered ephemeral ditches. Alternative B would require removal of approximately five acres of forested riparian zone.

Alternative C
Alternative C requires seven stream crossings and no impacts to open water areas. All crossings are considered ephemeral ditches. Alternative C would require removal of approximately six acres of forested riparian zone.

Mitigation
Avoidance and minimization measures would be implemented through ARDOT's Water Pollution Control SP. Erosion and sediment control would follow ARDOT's BMPs to minimize sedimentation during construction, helping to minimize sediment and pollutant runoff into surrounding wildlife habitat and/or from entering the Black River or other surrounding streams. BMPs would also include protecting natural stream buffers where feasible.

Impacts to aquatic communities would be minimized by limiting construction to the minimum width necessary to meet design safety standards. The use of bridges or properly sized and placed culverts can facilitate the movements of aquatic organisms.

3.24 Would the project affect invasive species and noxious weeds?

Introduction and Methodology
The USFWS (2022) defines an invasive species as one that is not native to an ecosystem and which causes, or is likely to cause, economic or environmental harm or harm to human health. Invasive species usually have no natural enemies to limit their reproduction and spread (Westbrooks, 1998). Many noxious weeds are also considered invasive species. A noxious weed is also commonly defined as a plant that grows out of place and is competitive, persistent, and pernicious (James et al., 1991). Information on invasive species and noxious weeds known to occur or with the potential to occur within the project limits was obtained from the AGFC and the Arkansas Department of Agriculture. For additional details on invasive species and noxious weeds, refer to the Biological Resources Technical Report provided in **Appendix K**. Agency coordination is provided in **Appendix D**.

Legally, a **noxious weed** is any plant designated by a Federal, State, or county government as injurious to public health, agriculture, recreation, wildlife, or property (Sheley et al., 1999).

Affected Environment
Invasive and exotic plant species thrive in vegetative edge and fragmented forest environments, competing with and often displacing native plant species. This results in a reduction in diversity of native plant and animal species and overall health of the ecological community (Swearingen et al., 2010).

According to the Black River WMA Master Plan, the nutria (*Myocastor coypus*) is an invasive species reported to reside in very small numbers on the WMA. Feral hogs also have been documented to exist on the WMA in small numbers. The WMA staff is exhausting all efforts at their disposal to eliminate all feral hogs within the WMA and its borders to keep small populations from becoming established.

The **nutria** is a large semi-aquatic rodent that lives in colonies along rivers, lakes, and wetlands. Native to South America, nutria can cause damage to levees and vegetative communities.

According to the AGFC, the only known aquatic invasive species within the Black River are silver carp (*Hypophthalmichthys molitrix)*, bighead carp (*H. nobilis*), and alligator weed (*Alternanthera philoxeroides*).

The zebra mussel (*Dreissena polymorpha*) is an exotic species that is threatening native aquatic life. The zebra mussel is not known to currently occur in the Black River.

According to the Arkansas Department of Agriculture, the project area is currently outside of the USDA Imported Fire Ant Quarantine, which extends only as far north as White County. Any dirt moving equipment that has been used within the USDA Imported Fire Ant Quarantine must be cleaned of mud/dirt before moving into areas outside of the quarantine so as to not introduce fire ants into areas that do not yet have them.

Figure 54: Purple Loosestrife

According to the AGFC and the Arkansas Department of Agriculture, there is an historic population of purple loosestrife (*Lythrum salicaria;* **Figure 54**) in the project vicinity. Purple loosestrife is a highly invasive species and is listed as a prohibited plant in Arkansas. This European native was imported as an ornamental and quickly spread throughout the Great Lakes Region of the U.S. and Canada. It is a tall, perennial plant with a spike of showy purple flowers that bloom most of the summer. The plant is usually found growing in shallow water along the banks of bodies of water and its seeds can remain dormant for many years. The known historic population of purple loosestrife is located in Big Running Water Creek, which is located just north of Walnut Ridge and shown in **Figure 52**. Alternative 2 crosses Big Running Water Creek approximately 2.5 miles north of the Lawrence-Randolph County line. This plant was discovered in Big Running Water Creek in the late 1990's and with help from the state plant board, a section of the creek was hand sprayed (by boat and foot) for about three consecutive years to the point that AGFC felt it had been removed. However, according to the AGFC, there could be dormant seeds in the creek sediment or along the banks that may be able to re-establish if the soil is disturbed through construction or vegetation removal.

No species surveys were conducted during the March 2021 site visit, and the site visit was limited to existing ROW. During the site visit, the most common noxious weeds observed within the alternative footprints were johnsongrass (*Sorghum halepense*) and giant foxtail (*Setaria faberi*). No purple loosestrife or aquatic invasive species were observed.

Environmental Consequences

No Action Alternative

Because construction activities or changes to the natural environment related to the proposed project would not occur under the No Action Alternative, there would be no impacts to invasive species or noxious weeds.

Alternative 2

Construction of this new location alternative may benefit invasive plant species and/or noxious weeds by creating areas of new ground disturbance, fragmenting woodlands, and introducing additional edge environments. Native plant species may be displaced in these areas. It is likely the ROW along this action alternative would contain a lower biodiversity of native plant species than compared to what previously existed in the natural area. As Alternative 2 crosses 475 LF of Big Running Water Creek, which is where the historic population of purple loosestrife occurred, construction of this action alternative could promote the re-establishment of this invasive plant in aquatic environments.

Construction of a new bridge over the Black River may cause sedimentation and habitat disturbance that may be more detrimental to native fish than to invasive fish species. However, these construction impacts would be temporary and are not anticipated to cause substantial long-term changes that would reduce native aquatic species. Alternative 2 is not anticipated to benefit other invasive animal species, such as nutria, feral hogs, or fire ants, in ways that would cause them to proliferate.

Alternative 3
Similar to Alternative 2, Alternative 3 may benefit invasive plant species and/or noxious weeds and reduce plant biodiversity in areas of proposed disturbance. Alternative 3 is not anticipated to affect the area in which purple loosestrife was noted as historically occurring by the AGFC.

Construction of a new bridge over the Black River may cause sedimentation and habitat disturbance that may be more detrimental to native fish than to invasive fish species. Alternative 3 is not anticipated to benefit other invasive animal species, such as nutria, feral hogs, or fire ants, in ways that would cause them to proliferate.

Alternatives A and C
These new location alternatives may benefit invasive plant species and/or noxious weeds and reduce plant biodiversity in these areas. Neither the construction of Alternative A nor C would affect the area in which purple loosestrife was noted as historically occurring by the AGFC. Alternatives A and C are not anticipated to benefit invasive animal species, such as nutria, feral hogs, or fire ants, in ways that would cause them to proliferate.

Alternative B
This alternative may benefit invasive plant species and/or noxious weeds and reduce plant biodiversity within the approximately 1.8-mile-long section on new location. Within the 0.5-mile-long section along existing Hwy. 67 and in an already developed environment, Alternative B would not create additional edge habitat or fragmentation and few changes would occur in plant and animal compositions, including invasive species and noxious weeds. Construction of Alternative B would not affect the area in which purple loosestrife was noted as historically occurring by the AGFC. Alternative B is not anticipated to benefit invasive animal species, such as nutria, feral hogs, or fire ants, in ways that would cause them to proliferate.

Mitigation
The spread of invasive species within terrestrial and aquatic communities would be minimized by limiting construction to the minimum width necessary to meet design safety standards. Additionally, ARDOT Standard Specifications governing seeding, mulching, etc. contain provisions for testing to prevent or minimize the risk of spreading noxious weeds. Any regulated articles (such as equipment or hay/straw) entering the project area that originated from within the USDA Imported Fire Ant Quarantine would follow recommended guidelines or compliance agreements so as to not introduce fire ants into areas that do not yet have them.

The ARDOT Standard Specification for Zebra Mussel Containment would be implemented for the construction of the bridge over the Black River to slow the spread of zebra mussels within Arkansas.

3.25 How would water quality be affected?

Introduction and Methodology
The project area is located within the Mississippi Alluvial Plain of Arkansas. This area of eastern Arkansas is predominantly dedicated to farming and is dependent on both surface and groundwater resources for irrigation and public water supplies. Thousands of water wells are used daily.

A desktop level analysis was used to determine the presence of water resources located within or flowing through the project area. This included a review of USGS topographic maps and aerial photography. A review of various technical reports prepared by the USGS provided general and specific information about the water quality of surface water and groundwater resources. Secondary sources prepared by the USGS and the Arkansas Geological Survey provided specific information about the hydrogeologic nature of the underlying geological units. The DEQ website was used to obtain information about any streams that did not meet the water quality standards for the state. A preliminary visual assessment of the hydrologic features within the action alternatives was performed the week of March 1, 2021. Hydrologic features identified during the desktop analysis were then field confirmed to the extent practicable at public ROW locations where the action alternatives intersect these hydrologic features.

Federal and state governments have enacted laws that help to avoid or minimize impacts to waters of the United States. Two laws, the CWA of 1972 and the Safe Drinking Water Act, have been established to help protect the water quality of surface water and groundwater. Sections of the CWA govern discharge of pollutants into Waters of the United States which include traditional navigable waters as defined in 33 CFR 328. The following sections of the CWA and Rule 2 of the Arkansas Pollution Control and Ecology Commission (APC&EC) must be followed to minimize impacts to water quality during construction projects:

- Section 303(d) requires states to prepare a list of impaired waters on which total maximum daily loads (TMDLs) or other corrective actions must be implemented based on priority ranking. The Arkansas DEQ compiles a list of impaired waterbodies and waterbodies with an assigned TMDL to comply with Section 303(d) of the CWA. Streams within the study area were reviewed to identify any potential listings on the approved 303(d) list. The 303(d) report contains three assessment categories of waters, each of which is described within the Waters Technical Report in **Appendix L**.
- Rule 2 of the APC&EC outlines water quality standards and designated uses under Arkansas law.
- Section 401 requires that any federally-permitted project that may result in a discharge into water of the United States be issued a water quality certification to ensure the discharge complies with applicable water quality requirements.
- Section 402 forms the NPDES, which regulates pollutant discharges, including stormwater, into waters of the United States. NPDES permits set specific discharge limits for point-source pollutants and outline special conditions and requirements for projects to reduce water quality impacts. Permits require that projects be designed to protect waters of the United States. Construction projects that disturb one acre of land or more must comply with the requirements of the NPDES permits issued by the DEQ for stormwater discharges.
- Section 404 regulates discharges of dredged or fill materials from construction activities into waters of the United States, including wetlands. This project would require an individual Section 404 permit issued by the USACE before dredged or fill material may be discharged into Waters of the United States.

A **TMDL** is a calculation of the maximum amount of a specific pollutant that a waterbody can receive and still meet its water quality criteria and maintain its designated uses without violating water quality standards.

Under the Safe Drinking Water Act, each state must assess its sources of drinking water to identify significant and potential sources or threats of contamination. Monitoring the quality of drinking water is the joint responsibility of the Arkansas Department of Health (ADH) and the state's public water supply systems. The ADH was contacted to determine the location of public water supply systems within five miles of the project study area. Twelve community entities and one food plant (Peco Foods) have public water systems near the alternatives. Pocahontas receives its water source from the Black River. A total of 25 water wells provide a source of water for local communities and the Peco Food Plant. Additionally, water well locations were identified based on well data from the ANRC website (https://wise.er.usgs.gov/driller_db/index.php) and aerial photography.

Affected Environment

Surface Water Resources and Associated Water Quality

The project area is in the White River Basin and within the Mississippi Alluvial Plain. Topographic analysis indicates that surface water flow is generally to the southwest from the east side to the west side of the project area. Details on groundwater flow direction are provided in the Waters Technical Report in **Appendix L**. Elevations are relatively flat and vary only by 150 feet from the Missouri to the Louisiana border with streams that are shallow, meandering, and have a low gradient.

Medium to large sized streams in the project area include Big Running Water Creek, Oak Creek Ditch, Post Oak Ditch, Water Oak Slough, Cache River Ditch Number 1, Little Village Creek Ditch, Little Running Water Ditch, Murray Creek, and Cypress Overcup Lateral. The primary pollutants in an area of agriculture would be turbidity, total phosphorous, nitrogen, and orthophosphate. Bank erosion and resulting sedimentation and turbidity would be a common issue in this area of land use. Typical causes of bank erosion are due to a lack of riparian vegetation and runoff. Surface water quality

at any location is mostly related to the type of land use practices upstream of that location. Nutrients and sediment lost in irrigation runoff from agricultural fields can impact water quality in downstream waterways (Reba et al., 2020).

The project area is located within five watersheds based on the 8-digit watershed hydrologic unit code (HUC). The 8-digit HUC is the most widely used hydrological unit for water resource planning and for identification of 303(d) impaired streams in Arkansas. This watershed approach is advantageous because it considers all activities within a landscape that affect watershed health. The 8-digit HUC watersheds located within the project area include the Cache, Upper-White-Village, Upper Black, Lower Black, and the Current.

Three impaired waterbodies that may receive stormwater flows were identified. The Fourche River is on the 303(d) list for turbidity (category 5). The Cache River and Village Creek are listed as having turbidity impairments and have been assigned a TMDL (303(d) category 4a). **Figure 55** shows the locations of the impaired waterbodies. Village Creek is shown to extend from Hwy. 304 south of the Black River and flows to the southwest toward College City and then through Walnut Ridge, crossing Alternative 2. The Fourche River is in the western portion of the study area but does not cross any of the alternatives. The Cache River forms the Lawrence/Greene County line and is in the southern portion of the figure but outside of the study area.

Per DEQ's February 2021 response during agency coordination for the proposed project, it is imperative that best available measures be taken to minimize sedimentation and turbidity from entering these waterbodies during this project. Agency coordination letters are provided in **Appendix D**.

The most prominent perennial surface water feature in the project area is the Black River. The Black River extends the entire length of the project area, passes through the central portion of the project area, is about 200 feet in width with substrates consisting of silt, sand, gravel, and cobble, and ranges in depth from 2.5 feet near the Alternative 2 proposed crossing to over 5 feet deep near the Alternative 3 proposed crossing. The Black River is surrounded by wetlands encompassed with bottomland hardwood forest located in the Black River WMA. The Black River provides clear and good water quality and provides suitable habitat for all the federal and state-listed mussel species. Typical intermittent stream systems flowing through the action alternatives range from 2-16 feet in width with estimated depths of 1-5 feet.

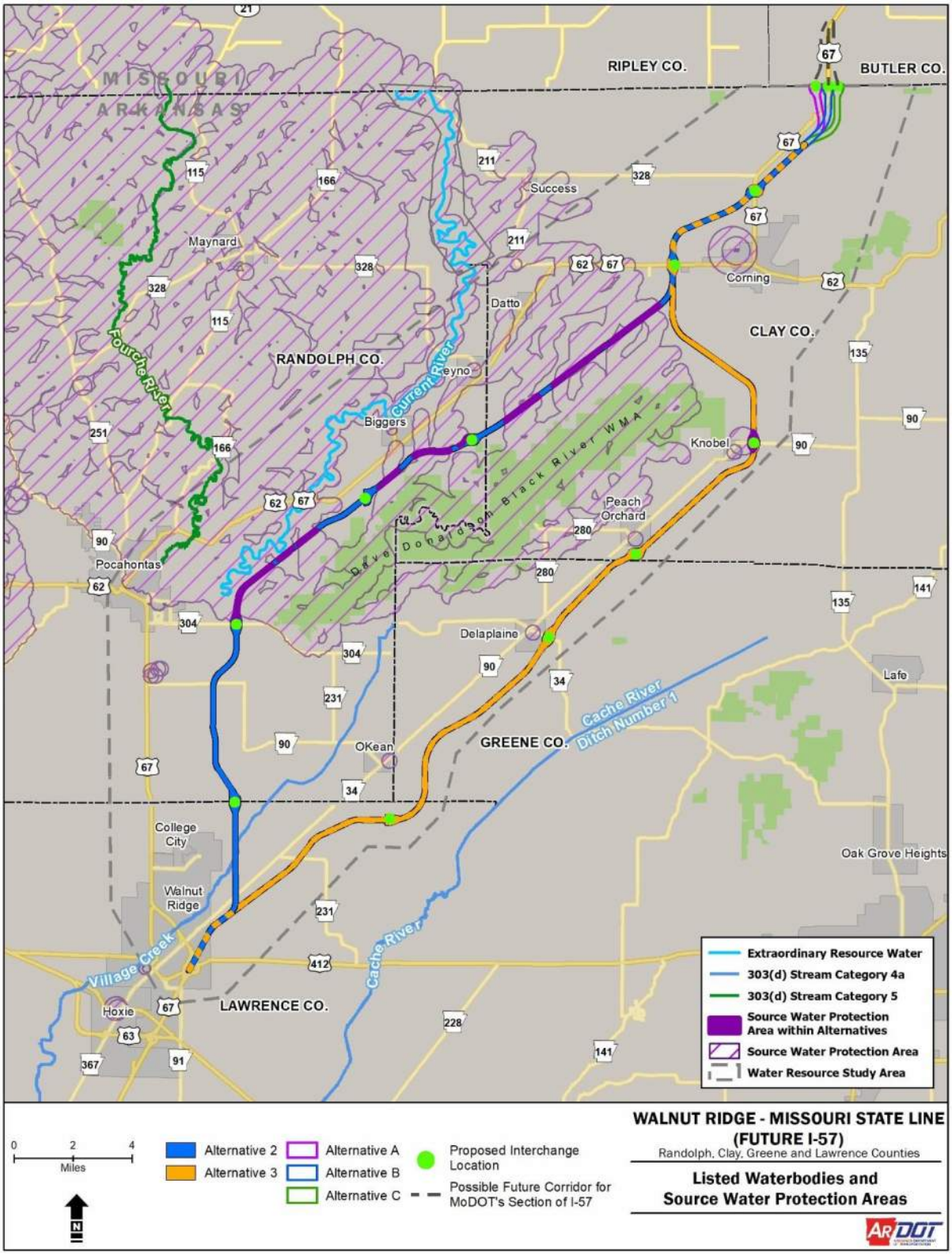
One ERW, the Current River, extends from Pocahontas to the Arkansas-Missouri State line. A waterbody is classified as an ERW based on a combination of its chemical, physical, and biological characteristics and its watershed which is characterized by scenic beauty, aesthetics, scientific values, broad scope recreation potential, and intangible social values. No Wild and Scenic Rivers are located within the study area.

Groundwater Resources and Associated Water Quality - Aquifers

Arkansas is the fourth largest user of groundwater in the United States. The largest groundwater use occurs in northeast Arkansas where row-crop agriculture is prevalent and widespread (Kresse et al., 2014). Additionally, eastern Arkansas relies heavily on groundwater for public water supply, which is obtained from underlying aquifers. Four aquifers occur within the project study area: the Mississippi River Valley Alluvial aquifer, Sparta aquifer, Nacatoch aquifer, and Wilcox aquifer. A brief summary of these aquifers are provided below; refer to the Waters Technical Report in **Appendix L** for additional details.

The Mississippi River Valley Alluvial aquifer of Arkansas accounts for approximately 94% of all groundwater used in the state, with water predominantly used for agriculture (Kresse et al., 2014). This aquifer has become one of the most important agricultural regions in the United States. Annual water withdrawn from the aquifer in 2010 ranged from 150-450 million gallons per day (mgd). Use of the Mississippi Embayment Aquifer System Regional Groundwater Availability Study (USGS, 2021) indicates that in 2015, the total self-supplied groundwater withdrawals were 232 mgd in Lawrence County, 131 mgd in Randolph County, 819 mgd in Clay County, and 367 mgd in Greene County. Besides agriculture, the Mississippi River Valley Alluvial aquifer serves over 70 municipalities as a public water supply (Kresse et al., 2014). In areas of eastern Arkansas, water was withdrawn from the Mississippi River Valley Alluvial aquifer at rates that exceeded recharge; therefore, those rates could not be sustained indefinitely. In some areas, deeper wells were required into underlying aquifers.

Figure 55: Listed Waterbodies and Source Water Protection Areas



The Sparta aquifer is the second most important aquifer in terms of use, and the aquifer was used in the past dominantly as a water source for public and industrial supply, although increasing irrigation use is occurring because of critically declining water levels in the Mississippi River Valley Alluvial aquifer.

Pumping from the Mississippi River Valley Alluvial and Sparta aquifers has led to declining water levels, reduced well yields, and the deterioration of the water quality in areas throughout eastern and southern Arkansas. These aquifers are the principal sources of water for irrigation, industrial, and public drinking-water supplies in this region. Since enactment of the Arkansas Ground Water Protection and Management Act, the ANRC has designated three critical groundwater areas in Arkansas, one of these areas encompasses a portion of the Mississippi River Valley Alluvial and Sparta aquifers west of Crowley's Ridge within parts of Clay, Craighead, Cross, Greene, Lee, Poinsett, and St. Francis Counties. Water-level data from this area continue to show declines.

Clay County Regional Water District is the largest user of the Nacatoch aquifer for public supply with a total of 0.64 mgd, which accounted for approximately 19% of total Nacatoch water use in 2010.

Water use from the Wilcox aquifer has been greatest in Greene County within the project area. The annual water withdrawn for the Wilcox aquifer in 2010 was 0.1-2.0 mgd for Clay County and 6.1-8.0 mgd for Greene County (Kresse et al., 2014).

Groundwater Resources – Public Water Supplies

As identified by the ADH, 12 community entities and one food plant (Peco Foods) have public water systems near the alternatives (**Figure 55**). The community entities include Walnut Ridge Waterworks, Biggers Waterworks, Reyno Waterworks, Success Waterworks, Corning Waterworks, O'Kean Waterworks, Delaplaine Waterworks, Peach Orchard Waterworks, Knobel Waterworks, Pocahontas Waterworks, Clay County Regional Water District, and Peco Foods. Each of these public water supplies has an associated source water assessment/protection area that surrounds it. Additionally, hundreds of ANRC-identified water wells occur within the project study area; details on those wells identified as irrigation wells are provided in Section 3.3.

Source water assessment areas are areas ADH define or delineate that could possibly be more harmful or sensitive to a water source if contaminated. They can depend on many things and cover larger or smaller areas depending on the type of source (well, lake, river, spring, etc.). These areas are referred to as "source water protection areas" in **Figure 55**.

Environmental Consequences

Surface Water Quality

Village Creek, which is on the 303(d) list as being impaired for silt and turbidity with an assigned TMDL, crosses through Alternative 2's alignment. Approximately 918 LF of Village Creek occur within Alternative 2. A bridge over Village Creek is proposed at this location; the precise quantity of stream impacts is not known at this point in the design process. No other 303(d) listed streams would be impacted by the action alternatives. The Current River, an ERW, flows adjacent to Alternative 2 but should not be impacted if Alternative 2 was selected.

Construction activities would include removal of existing vegetation during clearing and grubbing and would expose soils adjacent to stream crossings and within the ROW. Erosion and sediment control measures that minimize riparian grubbing as well as timing construction to reduce periods of exposed soil would be in place. As a result, a temporary increase in stream sedimentation could occur due to stormwater runoff and would be the greatest in the immediate vicinity of the crossings. All alignments would cross the same soil types and associated slopes adjacent to impacted streams. The substrate within stream segments crossed is nearly identical from location to location and therefore, potential construction impacts to the surface water quality would be non-alternative specific and could occur regardless of the alternative selected. Impacts from any action alternative would be temporary in nature and would be minimized through site specific erosion and sedimentation control measures at all stream crossings.

The operation and maintenance of a highway would produce additional sources of surface water pollutants. During highway operation, sources of potential pollutants from vehicles includes heavy metals such as copper, zinc, and lead

from tire and brake wear, motor oil additives, and roadway maintenance practicing such as sanding, deicing, and applications of herbicides on ROW. Additionally, highway runoff also regularly includes inorganic salts and hydrocarbons. These pollutants can harm fish and wildlife populations, kill native vegetation, and foul drinking water supplies (EPA, 2003). The rate of deposition and magnitude of these pollutants in highway runoff are site specific and are affected by traffic volumes, highway design, maintenance activities, surrounding land use, climate, and accidental spills.

Groundwater
Construction would increase the amount of impervious cover within the local watershed, which would reduce the amount of infiltration. However, the change in land use associated with the construction of the proposed project would have low to negligible effect on recharge to the underlying aquifer because of the remaining amount of the undeveloped land available for groundwater recharge.

With regards to public water supplies and wells, impacts are summarized below for each alternative.

No Action Alternative
No impacts to water resources would occur as a result of the No Action Alternative as it would require no impacts public water supplies or wells.

Alternative 2
Alternative 2 would impact a total of approximately 549 acres of the Pocahontas Waterworks source water protection area located northeast of Pocahontas. As Pocahontas's drinking water is surface water sourced, any stormwater from construction associated with Alternative 2 would have to travel many stream miles to have an impact on the water supply. The primary pollutant of concern would be turbidity. See Section 3.3 on farmlands for details pertaining to impacts to irrigation wells. Alternative 2 would impact one ANRC-identified domestic well (a private well). Well abandonment would comply with procedures pursuant to the Arkansas Department of Agriculture's Water Well Construction Commission regulations.

Alternative 3
Alternative 3 would impact a total of approximately 68 acres of the Clay County Regional Water District wellhead protection area located near the community of Knobel. A wellhead protection area SP would be required if this wellhead protection area is impacted. Coordination is required with the ADH to ensure no damage would occur to the well itself nor the water table/aquifer.

Alternatives A, B, and C
Alternative A, B, and C would not impact any public water supplies.

Mitigation

Erosion and sediment control would follow ARDOT's BMPs to minimize sedimentation during construction and help to minimize sediment and pollutant runoff into surrounding wildlife habitat and/or from entering the Black River or other surrounding streams. BMPs would also include protecting natural stream buffers where feasible.

During work near Village Creek, a 303(d) listed stream, best available measures would be used to minimize sedimentation and turbidity from entering the waterbody during construction activities. Avoidance and minimization measures would be implemented through the ARDOT SP for water pollution control.

Project construction would comply with all provisions of the NPDES Construction Stormwater General Permit ARR150000 and submit a Stormwater Pollution Prevention Plan (SWPPP) to the DEQ Office of Water Quality. A Short Term Activity Authorization from DEQ would be obtained for any instream activity associated with this project. This allows for the temporary exceedance of the water quality standards for activity that is essential to the protection or promotion of the public interest and where no permanent or long-term impairment of beneficial uses is likely to result.

ARDOT would take special measures during construction activities within public water supply assessment areas. Avoidance and minimization measures would be implemented through the ARDOT SP for wellhead protection. Appropriate coordination with the ADH will occur, if required, for the Preferred Alternative.

3.26 What stream and wetland impacts are anticipated?

Introduction and Methodology

There are five primary water resources addressed in this section: wetlands, streams, ponds, springs, and other surface waters (i.e., reservoirs). Federal and state statutes identified below are in place to regulate impacts to these water resources.

- EO 11990 – Protection of Wetlands
- Section 404 of the CWA
- Section 401 Water Quality Certification regulated within the purview of the CWA
- Section 402 NPDES, also within the purview of the CWA
- Rivers and Harbors Act of 1899
- 7 CFR Part 12 - Farmed Wetlands (FW) and Prior Converted (PC) Cropland
- Agricultural Act of 2014 – Agricultural Conservation Easement Program

These statutes aim to prevent or minimize the loss of wetlands, control discharges and pollution sources, establish water quality standards, protect drinking water systems, and protect aquifers and other sensitive ecological areas.

Discharges of dredged or fill material into waters of the U.S. are regulated under Section 404 of the CWA. Any such action proposed in wetlands or other waters (OWs) of the U.S. are subject to review by the USACE and other federal and state agencies. For jurisdictional purposes, USACE and the EPA jointly define wetlands as follows: "*Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas*" (USACE, 1987).

A desktop level analysis was initially completed to determine the presence of streams, wetlands, ponds, springs, and reservoirs located within or flowing through the proposed action alternatives. The desktop level analysis included detailed review of environmental databases and GIS resources including, but not limited to National Wetlands Inventory (NWI), NRCS soils, LIDAR mapping, historic aerial photography, and USGS historic topographic maps.

Possible Farmed Wetlands (PFW) were identified by overlaying NRCS hydric soils, topographic, land use data, and historic aerial data. By adjusting the transparency of these data and delineating areas saturated for multiple years that were cleared of trees prior to 1985, overlapping areas are shown, which revealed high confidence areas that are likely FW. As a result of the entire action alternatives being extensively farmed, farmland not identified as PFW, wetlands, streams, roads, upland forested areas, and structures are considered prior converted cropland (PC).

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 CWA because they provide flood control, aid in water quality, and provide wildlife habitat.

A **farmed wetland**, which is generally regulated by USACE, is "a wetland that prior to December 23, 1985, was manipulated and used to produce an agricultural commodity, and on December 23, 1985, did not support woody vegetation and met the following hydrologic criteria:

(i) Is inundated for 15 consecutive days or more during the growing season or 10% of the growing season, whichever is less, in most years (50% chance or more), or

(ii) If a pothole, playa, or pocosion, is ponded for 7 or more consecutive days during the growing season in most years (50% chance or more) or is saturated for 14 or more consecutive days during the growing season in most years (50% chance or more)."

Prior converted cropland must meet all of the following criteria to be designated as PC by USDA:

(i) Cropped prior to December 23, 1985 with an agricultural commodity (an annually tilled crop such as corn)

(ii) The land was cleared, drained or otherwise manipulated to make it possible to plant a crop

(iii) The land has continued to be used for agricultural purposes (cropping, haying or grazing)

(iv) The land does not flood or pond for more than 14 days during the growing season

Woodland, pasture and hayland without a history of annual tillage and cropping do not qualify.

Water resources identified during the desktop analysis were then field confirmed the week of March 1, 2021 through a preliminary visual assessment to the extent practicable at public ROW locations where the proposed action alternatives intersect water resources. Vegetation and hydrology characteristics of each wetland were documented and overlaid with NRCS hydric soils data, which resulted in high confidence data for identification of wetlands. Detailed wetland delineations shall be completed for the Preferred Alternative in accordance with the USACE Wetlands Delineation Manual (1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0; USACE, 2010).

Affected Environment

The proposed ROW of the proposed action alternatives has been extensively farmed, primarily confining wetlands to areas within field transitions, windrows, and within the floodplain associated with the Black River. Major crops in the area include cotton, rice, corn, soybeans, maize, and wheat. Seasonal variations and crop rotations are common farming practices, which result in different irrigation strategies depending on the crop planted in each field. The action alternatives contain numerous canals/ditches constructed to aid in water movement off or onto cropland. Natural stream courses that have been re-routed and channelized (term used interchangeably with "ditched") were observed to intersect drainage ditches created for the primary purpose of draining and/or retaining hydrology in agricultural fields. These manipulated hydrology schemes, mostly influenced by pumping activities, were observed throughout the region. Detailed views of the locations of water resources, including wetlands, are provided in the Waters Technical Report in **Appendix L**.

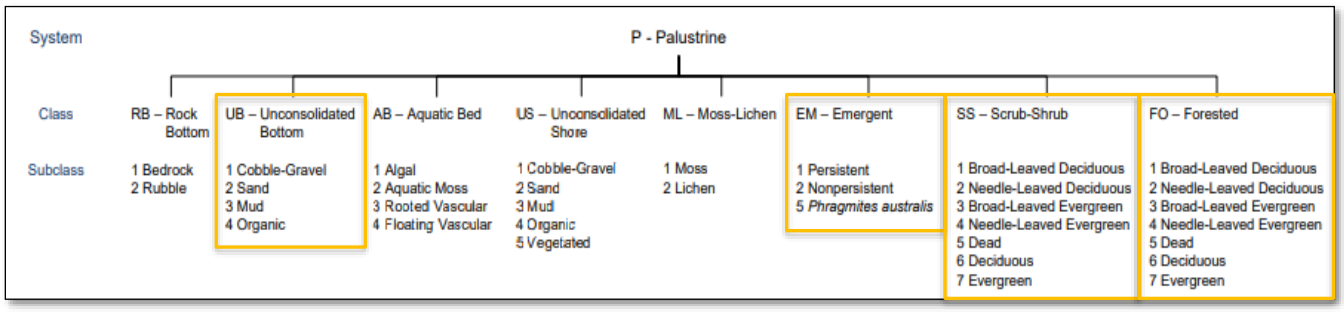
Streams

Several man-made ditches adjacent to roads and field divisions are present within the action alternatives, mostly associated with ditches along existing roadways. The streams or OWs within the action alternatives have been channelized in the past, many of which have been rerouted through a series of ditches and canals better suited for irrigation purposes. As result of the channelized nature of the OWs within the action alternatives, riparian zones are minimal to not present, which further reduces their ecological value. These OWs were observed to be turbid and contain sediment laden and clay substrates, which do not generally support good aquatic species diversity.

Wetlands

Several wetland types (emergent, scrub-shrub, unconsolidated bottom, and forested) were documented to occur within the alternative corridors and classified according to Cowardin et al. (1979). This naming system consists of classifying wetlands such as palustrine, which is one of the five hydrology systems identified by Cowardin. Palustrine wetland systems include all nontidal wetlands dominated by trees, shrubs, persistent emergent, emergent mosses, or lichens (Cowardin et al., 1979). Palustrine systems are broken down further into eight hydrological regimes, four of which are identified within the action alternatives and are highlighted in **Figure 56**.

Figure 56: Wetland and Deepwater Habitats Classification



Unconsolidated bottom wetlands (i.e., PUB wetlands) are those that have 25% ground cover of cobble or gravel, sand, mud, or organics with less than 30% vegetative cover. These wetland types are generally characterized by the lack of stable surfaces for plant establishment, which is also affected by temperature and light penetration. Only a few PUB

wetlands were identified within the action alternatives and were associated with ponds. These ponds have some ecological value such as providing foraging habitat for waterfowl. Due to the relatively isolated nature of the ponds in the AA in connection to streams or other wetlands and their small size, ecological contributions to the area as a whole are limited.

Emergent wetlands (i.e., PEM wetlands) are those wetlands characterized by rooted herbaceous vegetation that is adapted to wetter growing conditions and present for most of the growing season in most years. These wetlands are typically dominated by rooted perennial plant communities and can include both persistent and not persistent species. Due to the extensive farming of the landscape, there are few emergent wetlands within the action alternatives. These wetlands within the action alternatives provide some wildlife value for foraging, cover, and nesting habitat.

Scrub-shrub wetlands (i.e., PSS wetlands) are dominated by shrubs, young trees, and woody vegetation (that is stunted due to environmental conditions) that are less than 20 feet in height. These wetland types are often representative of the successional stage leading to forested wetlands. PSS wetlands within the action alternatives were minor and small. Although limited based on size, these wetlands would also provide habitat for wildlife. If left unmanaged or undisturbed, they would mature into forested wetlands.

Forested wetlands (i.e., PFO wetlands) consist of woody vegetation that is taller than 20 feet in height and are also known as bottomland hardwoods. Forested wetlands comprise the majority of wetland types within the action alternatives and are associated with lower areas in the landscape not suitable for farming. The forested wetlands within the action alternatives provide nesting, foraging, and protection habitat for wildlife.

Refer to the Biological Resources Technical Report (**Appendix K**) and Sections 3.18-3.22 of this document for descriptions of potential wildlife and respective habitats present in the action alternatives that may utilize wetlands. Other wetland benefits include storage of floodwaters, providing water filtration, carbon sequestration, and providing recreational opportunities.

The proposed action alternatives are located within the delta plains of the Mississippi River, which is extensively farmed. Although FWs are not identified in the Cowardin wetland classification system they could be categorized as a PEM wetland if the crop planted meets hydrophytic vegetation criteria. However, this is not always the case and, therefore, they were evaluated independently. Additionally, any FW can be considered a FW regardless of the vegetation being cultivated as the definition is based on the FW being likely to revert to hydrophytic vegetation if farming ceases. Coordination to obtain landowner permission for hundreds of properties within the action alternatives to acquire more detailed information regarding FW and PC areas would not fit the schedule associated with this EIS. Landowner rights prevented the use of USDA/NRCS data to be reviewed for locations of FW and PC; however, PFWs were identified by overlaying NRCS hydric soils, topographic, land use, and historic aerial data. By adjusting the transparency of these data, overlapping areas are shown and reveal high confidence areas that are likely FW or PC wetlands. Soils within all action alternatives are predominantly considered silt loam, loam, sandy loam, or fine sandy loam as classified by NRCS (USDA, 2021). All soil types identified within the action alternatives were identified on the NRCS hydric soils list for Arkansas. **Appendix L** shows detailed views of the preliminarily identified wetland locations, including PFWs.

The ecological values and functions that FWs provide is limited in comparison to fully functioning emergent, scrub-shrub, or forested wetlands. However, they do provide excellent foraging habitat for migratory birds and wildlife species that feed on grain produced in the various crops identified within the AA (wheat and rice). Also, croplands/farmed wetlands with some remaining crop residue, or those that are managed for waterfowl, are generally more valuable foraging habitat for migratory birds than croplands where the residue has been burned or tilled under. Wildlife utilization of grain fields is discussed in previous sections of this document and crops identified within the AA are discussed in **Appendix K**. Numerous waterfowl and mammal species utilize grain fields for foraging and cover and these are identified in **Appendix K**.

Environmental Consequences

Stream and wetland impacts are summarized per classification for each alternative in this section. Details related to each stream and wetland are provided in the Waters Technical Report and include location, channel dimensions, and classifications of each stream segment (**Appendix L**).

Streams

Direct and temporary impacts to fish and aquatic life movement may occur as a result of culvert installation or other grading activities required for conveyance of water under the proposed highway. Some stream crossings may require channelization, which would allow for more flood storage or movement but temporarily and directly impact existing low flow channels and riparian zones utilized by a variety of aquatic and wildlife species, respectively. Direct impacts are anticipated to be greater for perennial and intermittent streams as they provide a greater diversity of aquatic habitat. Stream ecological composition may be temporarily altered around proposed crossings; however, the partially functioning nature of the streams (except the Black River) is anticipated to remain constant due to their channelized state. Any proposed channelization could affect channel stability and contribute to bank erosion if riparian zones are removed.

Alternatives 2 and 3 contain ephemeral, intermittent, and perennial stream systems, all of which have been channelized or rerouted in the past, with the exception of the Black River and Murray Creek. Alternatives A, B, and C contain intermittent stream systems. **Table 32** summarizes stream quantities within the proposed ROW for each action alternative.

Table 32: Summary of Streams within Alternative Footprints

Alternative	Streams (LF)			
	Perennial	Intermittent	Ephemeral	Total
Alternative 2	3,769	26,879 (6,208 ditched)	47,314 (44,291 ditched)	77,963
Alternative 3	10,742	37,104 (5,161 ditched)	53,891 (50,149 ditched)	101,736
Alternative A	0	847	8,452 (8,452 ditched)	9,299
Alternative B	0	1,340	7,145 (7,145 ditched)	8,803
Alternative C	0	4,186	3,481 (3,481 ditched)	7,667

Source: Project Team, 2021

Wetlands

Wetland impacts were evaluated based on the acreage of anticipated wetland loss. The emergent and scrub-shrub wetlands identified within the AA have been directly or indirectly impacted in the past and are therefore considered partially impaired or partially functional. Forested wetland areas within the action alternatives appear to be relatively fully functional, although they may be influenced by offsite sediment runoff from adjacent farm fields. Direct wetland impacts include fill for embankment, temporary clearing, and grading. All action alternatives were determined to have wetlands of varying classifications and therefore the ecological impacts for each alternative are similar in varying degrees as discussed in this section. Wetland impacts (including impacts to PFW) include reductions in flood storage, water quality filtration area, wildlife foraging and nesting habitat, and aquatic ecology. **Table 33** provides a summary of open water and wetland impacts per action alternative, which are described in more detail for each action alternative.

PFWs comprise the vast majority of the wetland impacts for the project and are therefore called out specifically. PFW impacts are summarized below in **Table 34** for each alternative. More details regarding PFW impacts are provided in the Waters Technical Report. Ecological impacts associated with the loss of PFW include reduction in seasonal grain field foraging areas, temporary flooded field wildlife habitat, flood storage, and water filtration area. Numerous waterfowl species and wading birds frequent grain fields during crop production and offseason months for both foraging and stopover habitat during migration.

Table 33: Summary of Open Water and Wetlands within Alternative Footprints

Alternative	Wetlands (acres)				
	PEM	PSS	PFO	PUB	Total*
Alternative 2	4.5	0	33.2	0.3	37.9
Alternative 3	2.0	2.9	19.7	0.9	25.4
Alternative A	0.6	0	2.8	0.1	3.4
Alternative B	0.3	0	10.0	0	10.3
Alternative C	0	0	4.5	0	4.5

PEM - Emergent Wetland; PSS - Scrub-Shrub Wetland; PFO - Forested Wetland;
PUB - Pond or Open Water Wetland.
*Total may not equal sum of wetland types due to rounding. *Source: Project Team, 2021*

Table 34: Summary of Possible Farmed Wetlands (PFW) within Alternative Footprints

Alternative	PFW (acres)
Alternative 2	593.6
Alternative 3	552.3
Alternative A	58.7
Alternative B	30.9
Alternative C	25.0

Source: Project Team, 2021

No Action Alternative
The No Action Alternative would have no effects on water resources beyond what would be proposed for improvements deemed necessary by governing officials.

Alternative 2
Streams
Alternative 2 could have direct impacts to an estimated 77,963 LF of streams/OWs, approximately 50,499 LF would be considered ditched. Direct impacts to streams could include filling, grading, culvert installation, channel realignment, channel relocation, and channel widening improvements. A summary of stream quantities within the proposed ROW per classification is provided in **Table 32**. Indirect stream impacts related to T&E species, migratory birds, terrestrial wildlife, aquatic environments, and water quality are discussed in separate sections of this document.

Approximately 408 LF of the Black River is located within the alternative footprint. The Black River is proposed to be crossed with a near perpendicular crossing and spanned by a new bridge. The current plan is for the river to be completely spanned to avoid in-channel work. However, there is no current funding for this project and plans may change as the project moves to final design and construction. If bridge piers are placed within the ordinary high water mark (OHWM) of the river, direct disturbance by fill in the streambed would result. Regardless of bridge design, downstream sedimentation from stormwater runoff during construction activities could occur. Downstream sedimentation could affect substrates and biological composition of the streambed.

Wetlands
Alternative 2 would directly impact an estimated 37.9 acres of emergent, forested, and pond or open water wetlands. Additionally, an estimated 593.6 acres of PFWs would be impacted by Alternative 2. Direct impacts to all wetlands identified within this alternative would occur as a result of direct fill, temporary clearing, and grading. Indirect impacts would include sedimentation from runoff during construction and fragmentation of wetlands, which might alter

hydrologic connections to downstream waters. Indirect impacts could also include decreased stormwater capacity and reduction in surface water infiltration. **Table 33** provides a summary of the wetland impacts for Alternative 2.

Alternative 3

Streams

Alternative 3 could directly impact an estimated 101,736 LF of streams, approximately 55,310 LF would be considered ditched. Direct and indirect impacts include those identified in Alternative 2. A summary of LF of stream quantities within the proposed ROW per classification is provided in **Table 32**.

Approximately 421 LF of the Black River is located within the alternative footprint. As mentioned in Alternative 2, the current plan is for the Black River to be crossed with a relatively perpendicular crossing and completely spanned by a new bridge, avoid in-channel work. However, there is no current funding for this project and plans may change as the project moves to final design and construction. If bridge piers are placed within the OHWM of the river, direct disturbance by fill in the streambed would result. Regardless of bridge design, downstream sedimentation from stormwater runoff during construction activities could occur.

Wetlands

Alternative 3 would directly impact an estimated 25.4 acres of emergent, scrub-shrub, forested, and pond/open water wetlands. Additionally, an estimated 552.3 acres of PFWs would be impacted by Alternative 3. Direct and indirect impacts include those identified in Alternative 2. **Table 33** provides a summary of the wetland impacts for Alternative 3. Indirect impacts would include sedimentation from runoff during construction and fragmentation of wetlands, which might alter hydrologic connections to downstream waters. Indirect impacts could also include decreased stormwater capacity and reduction in surface water infiltration.

Alternative A

Streams

Alternative A would impact approximately 9,299 LF of streams, of which 8,453 LF would be considered ditched. Approximately 847 LF of an intermittent stream, Hobson Lateral, and six OWs would be impacted. Hobson Lateral has been redirected from its natural course, channelized, and does not have a riparian zone. The proposed crossing would be almost perpendicular to the stream's orientation, which would minimize impacts to the water course. Alternative A would also impact several man-made ditches as noted above and associated with road crossings and field divisions.

Wetlands

Alternative A would impact approximately 3.4 acres of forested and emergent wetlands, and an estimated 58.7 acres of PFW. Direct impacts to wetlands would include filling and clearing for roadway embankment and ROW clearing. Indirect impacts could include off-site sedimentation resulting from construction activities, decreased stormwater capacity and reduction in surface water infiltration.

Alternative B

Streams

Alternative B runs parallel to and would impact an estimated 1,340 LF of Lateral No. One, an intermittent stream located within the alternative. Several ephemeral man-made ditches (comprising 7,462 LF) adjacent to roads and field divisions are present within the Alternative B footprint, mostly associated with existing roadside ditches along Hwy. 67.

Wetlands

Alternative B would impact an estimated 10.3 acres of PEM and PFO wetlands. Approximately 30.9 acres of PFW would be impacted by Alternative B. Direct impacts to the PEM and PFO wetlands would include clearing, draining and/or filling for roadway embankment and ROW. Indirect impacts could include off-site sedimentation resulting from construction activities, decreased stormwater capacity, and reduction in surface water infiltration.

Alternative C

Streams

Alternative C is also parallel to and would impact approximately 4,187 LF of Moark Ditch and Cypress Creek Ditch, both are intermittent streams located within the alternative. Several ephemeral man-made ditches comprising 3,481 LF, associated with roadside ditches and field divisions are present within the Alternative C footprint.

Wetlands

Alternative C would impact approximately 4.5 acres of a forested wetland located near Clay County Road 155 and approximately 25.0 acres of PFW. Direct impacts to wetlands would include filling and clearing for roadway embankment and ROW clearing. Indirect impacts could include off-site sedimentation resulting from construction activities, decreased stormwater capacity and reduction in surface water infiltration.

Mitigation

The overall study area was first evaluated to identify large, 1,000-foot-wide corridors. Within the larger corridors, environmental and other constraining resources were identified, which allowed for further avoidance to narrow corridors to 400 feet in width. Avoidance measures evaluated during alternative alignment corridor selections included consideration for paralleling streams and larger forested wetlands. Minimization measures for streams and wetlands included spanning streams, culvert installation to keep wetlands hydrologically connected, and incorporating perpendicular stream crossings where possible. Additional minimization measures considered as design progresses include reducing construction impacts and using a divided median and/or cable median barriers rather than concrete barriers for the approaches and crossings of wetlands and streams.

Avoiding impacts to all streams and wetlands is not practical. Impacts to streams and wetlands would be minimized to the extent practicable. Once compliance (avoidance and minimization) with EPA's 404(b)(1) Guidelines has been demonstrated and the least environmentally damaging most practicable alternative has been selected, compensatory mitigation for unavoidable impacts to wetlands and streams must be addressed. Before USACE can issue a Section 404 standard permit, an approved mitigation plan must be in place. The 12 components of a mitigation plan can be found in the 2008 Compensatory Mitigation Rule at 33 CFR 332.4(c). Unavoidable impacts would be mitigated at an approved stream and wetland mitigation site(s). Compensatory mitigation shall be determined according to USACE approved methodology during the Section 404 permitting process. Submittal of a Section 404 permit application is anticipated to occur in 2023.

For work in or over the Black River, a Section 10 permit (USACE) will be required.

3.27 How would floodplains and levees be affected?

Introduction and Methodology

The protection of floodplains and floodways is required by EO 11988, Floodplain Management; USDOT Order 5640.2, Floodplain Management and Protection; and 23 CFR 650. The intent of these regulations is to avoid or minimize, where practicable, encroachments within the 100-year (base) floodplain and to avoid supporting land use development that is incompatible with floodplain values.

Floodplains have many natural and beneficial values. Floodplain beneficiaries include, but are not limited to, fish, wildlife, plants, open space, natural beauty, scientific study, outdoor recreation, agriculture, aquaculture, forestry, natural moderation of floods, water quality, maintenance, and groundwater recharge.

Floodplains are areas that become covered by water in a flood event. A 100-year floodplain would be covered by a flood event that has a 1% chance of occurring (or being exceeded) each year, and is the category 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.

In order to provide a national standard without regional discrimination, the 100-year flood has been adopted by the Federal Insurance and Mitigation Administration as the base flood for purposes of floodplain management measures. Encroachment on floodplains, such as placement of fill material, has the potential to reduce the flood-carrying capacity, increase the flood heights of streams, and increase flood hazards in areas beyond the encroachment itself. Under the National Flood Insurance Program (NFIP), the area of the 100-year flood is divided into a floodway and a floodway fringe. The NFIP permits up to a 1.0-foot rise in water surface elevation for the 100-year flood, provided that hazardous velocities are not produced.

The **NFIP** establishes the FIRM which correspond to the Flood Insurance Study Reports (FIS) that establish the 100-year recurrence flood elevation on flooding sources. The **FIRMs** are used to make flood insurance available for homes within the 100-year flood boundary.

Clay, Greene, Randolph, and Lawrence Counties participate in the NFIP. The Flood Insurance Rate Maps (FIRM), Flood Hazard Boundary Maps, and National Flood Hazard Layer were obtained for these communities. The ROW footprint of each action alternative was used to determine the anticipated area of floodplain impacts. Alternatives were analyzed for total floodplain area and stream crossings impacted.

Levees, which reduce flood risks for people and property, are present within the project extent and are civil works projects constructed by and under the jurisdiction of the USACE. Impacts to USACE civil works programs, such as these levees, are regulated under 33 USC 408 (Section 408). Review and encroachment permission under Section 408 would be required for impacts to the federal levee projects to ensure that the proposed roadway project would not be injurious to the public interest and the levees would continue to function as intended. Information on levees was obtained from the National Levee Database (USACE, 2016) and from USACE correspondence.

Affected Environment

There are several streams, creeks, tributaries, rivers, and their corresponding floodplains that occur within the ROW footprints of the action alternatives. Floodplains surrounding the action alternatives are shown in **Figure 57**. The roadway encroachments can be categorized as two different types, transverse or longitudinal. Transverse encroachments cross perpendicular to the direction of flow in the floodplain (often crossing the stream that is conveying the flow). Longitudinal encroachments run parallel to the flow direction of the floodplain and are associated with storage loss within the floodplain.

Transverse encroachments are likely to require a hydraulic structure (e.g., a bridge) to mitigate flooding impacts upstream of the encroachment due to blocking the floodplain in the direction of flood propagation.

Longitudinal encroachment mitigation is dependent on the area of storage loss and any tributaries that are contributing to the floodplain nearby.

Three levees occur in the project vicinity, each belonging to one of the following levee systems: Running Water Levee District, Western Clay Drainage District, and Big Gum Drainage District. Each of these levees and their associated protected areas are shown in **Figure 57**. The primary purpose of all three levees is flood risk reduction and each are USACE civil works projects requiring a Section 408 review if potentially impacted. Details on each levee are provided in the Waters Technical Report (**Appendix L**). No other USACE civil works projects occur within the alternative footprints.

Environmental Consequences

Impacts are based on conceptual design. During the final design process, specific impacts to floodplains would be considered and minimized to the greatest extent possible. No floodways (Zone AE) would be impacted by the proposed project.

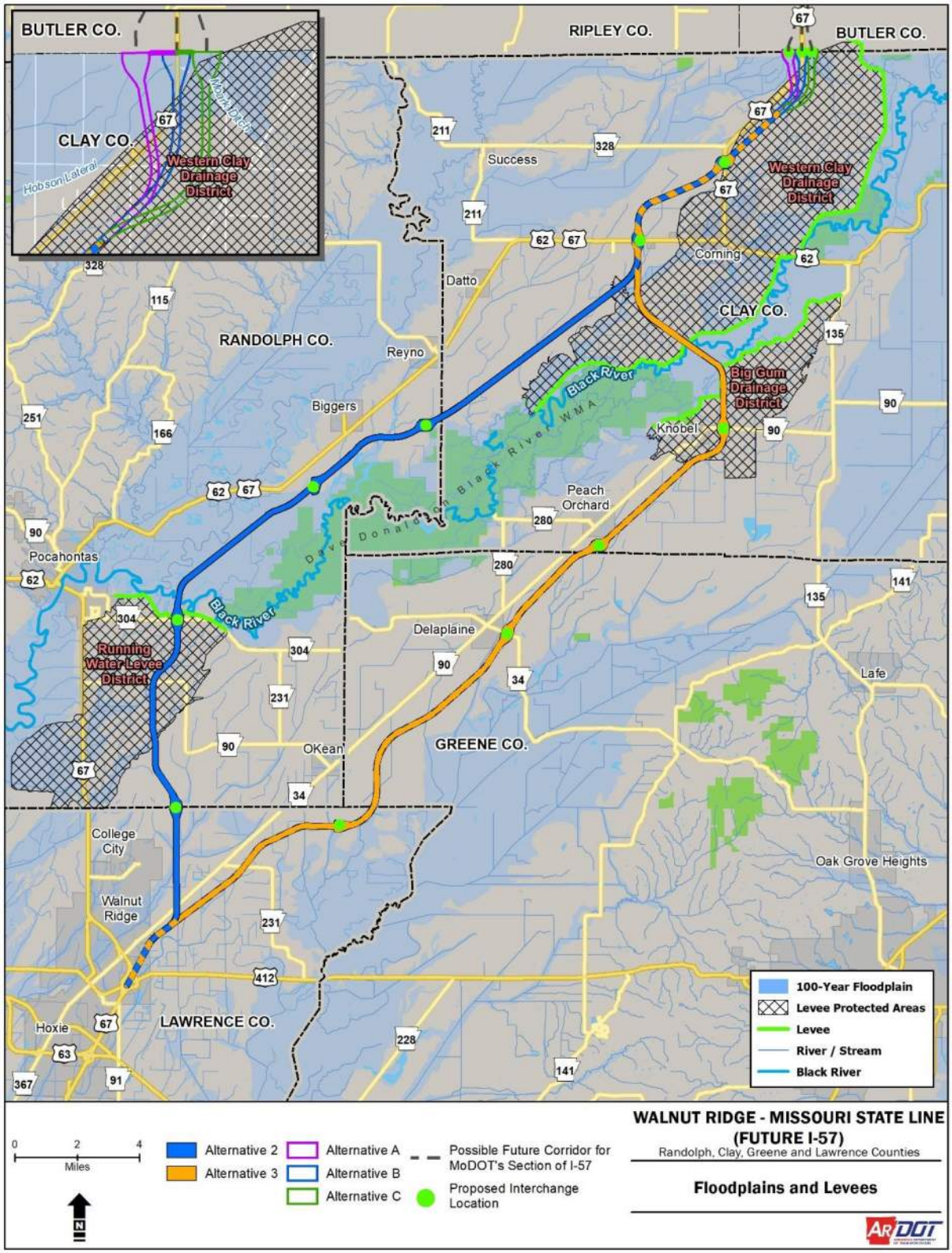
No Action Alternative

The No Action Alternative would not affect any floodplains or levees.

Alternative 2

Current mapping indicates that Alternative 2 would encroach on approximately 8.7 miles and approximately 423.1 acres of Zone A floodplain, 18.8% of its total 2,249-acre footprint. Alternative 2 floodplain impacts affect 15 different areas with nine transverse and six longitudinal encroachments.

Figure 57: Floodplains and Levees



Alternative 2 also crosses one levee associated with the Running Water Levee District in Randolph County, approximately four miles east of Pocahontas. This levee, which ties into Hwy. 304 roadway embankment near the proposed crossing, is not referenced by the Federal Emergency Management Agency (FEMA) on the FIRM or Flood Insurance Study (FIS) Report for Randolph County. The levee would most likely be spanned by a bridge.

Alternative 3

Alternative 3 would encroach on approximately 2.7 miles and approximately 117.5 acres of Zone A floodplain, 5.0% of its total 2,337-acre footprint. Alternative 3 floodplain impacts affect 10 different areas with seven transverse and three longitudinal encroachments.

Alternative 3 also crosses two levees associated with the Western Clay Drainage District located on the west side of the Black River and the Big Gum Drainage District levee on the east side of the Black River. East of Corning, the Western Clay Drainage District levee ties into the Hwy. 62 roadway embankment and the Big Gum Drainage District levee ties into the Hwy. 135 roadway embankment. These levees are currently shown on the FEMA FIRM panels and documented in the FIS report as providing flood protection. Levees that are shown to provide flood protection are designed in accordance with a minimum freeboard. As shown in **Figure 58**, a levee is freeboard deficient if it does not meet the minimum freeboard standard of 3 feet above the base flood (100-year) water surface elevation as required by 44 CFR 65.10(b)(1)(i). Furthermore, 44 CFR 65.10 also requires an additional 1 foot of freeboard above the minimum if within 100 feet of a structure such as bridge. Based on available data, the impacted levees would need to be treated as a regulatory floodway and be developed with a no-rise condition to the 100-year flood event to prevent a decrease in the freeboard of the levee. These levees would most likely be spanned by a bridge.

Freeboard is the distance between the 100-year flood event water surface elevation and the elevation of the top of the levee.

Figure 58: Example of a Levee that has a Freeboard Deficiency

Alternative A

Alternative A would encroach on approximately 0.87 mile and approximately 76.2 acres of Zone A floodplain, 53.7% of its total 142-acre footprint. This floodplain is associated with Hobson Lateral, which is a USGS-named stream that is part of the larger watershed of the Current River. There is one transverse encroachment for Alternative A. No levees or other USACE civil works projects would be impacted by Alternative A.

Alternative B

Alternative B would encroach on approximately 0.79 mile and approximately 67.2 acres of Zone A floodplain, 48.3% of its total 139-acre footprint. There is one transverse encroachment for Alternative B. This is the same floodplain and encroachment impacted by Alternative A. No levees or other USACE civil works projects would be impacted by Alternative B.

Alternative C

Alternative C would encroach on approximately 0.68 mile and approximately 66.5 acres of Zone A floodplain, 41.8% of its total 159-acre footprint. This floodplain is associated with Moark Ditch and the backwater from Hobson Lateral. Alternative C's ROW limits run parallel to the Moark Ditch channel and based on proposed ROW extents, could possibly require a channel change for approximately 1,900 feet. There is one transverse encroachment for Alternative C. No levees or other USACE civil works projects would be impacted by Alternative C.

A **channel change** would occur when a roadway embankment fills in part of a parallel channel that does not cross the alignment.

Mitigation

A detailed hydrologic and hydraulic study would be required for final design to determine existing storm event peak discharges and stage-discharge relationship for each affected floodplain. The designated Special Flood Hazard Zone A affected area would require the establishment of base flood elevations (BFEs) for the impacted floodplains. The existing conditions would then be used to design the type and size of structure to mitigate the impacts for Preferred Alternative footprint. To protect existing structures from increased flooding risks, the hydraulic design would include hydraulic structures such as bridges, culverts, open channel ditches, and/or detention/retention ponds to accommodate the storm discharges and limit the increases compared to the BFEs. Coordination with the Local Floodplain Administrator would be necessary to determine any allowable Zone A floodplain impacts. The proposed mitigation structures would be analyzed using modern hydraulic analysis methods to ensure existing flow regimes are maintained, limit upstream flooding, and preserve existing downstream flow rates. The hydraulic analysis would also be used to design scour and erosion mitigation.

The **BFE** is defined by FEMA as the computed elevation to which the flood is anticipated to rise during the base flood (100-year event).

Section 408 review by USACE would occur for any levees within the Preferred Alternative and Section 408 approval would be obtained from USACE prior to project construction.

3.28 What construction impacts are anticipated?

Introduction and Methodology

Impacts to the environment that would occur during construction are generally classified as temporary or "short-term" impacts. This section discusses these impacts associated with the construction phase of the project.

Affected Environment

Construction of the proposed project would be limited to the area immediately adjacent to and within the proposed highway ROW, but the area affected by the proposed construction process can also include offsite construction zones such as staging areas or borrow and waste sites. Staging areas are temporary areas beyond the project limits that would be identified and determined before construction begins. These areas are used during construction to store equipment, materials, supplies, and other activities related to the project.

Environmental Consequences

During the construction phase of the proposed project, there is the potential for noise, dust or light pollution, impacts associated with physical construction activities, temporary lane or road disruptions and closures (for certain alternatives), and other traffic disruptions.

No Action Alternative

Under the No Action Alternative, the proposed project would not be built and would not result in construction impacts.

Action Alternatives

Most construction impacts would be consistent for all the action alternatives. The action alternatives would not result in extensive lane closures because they are on new location. Some roadway detours and disruptions may occur when constructing intersections or connections with other existing roadways. In addition, coordination between ARDOT and MoDOT would be required for construction with Alternatives A, B, and C. The most common impacts associated with the construction of the proposed highway are noise, dust, and traffic disruption.

Construction Noise

Due to operations normally associated with road construction, there is a possibility that noise levels would be above normal in the areas adjacent to the ROW. Noise associated with construction is difficult to predict. Heavy machinery, a major source of noise in construction, is constantly moving in unpredictable patterns and would not be restricted to any specific location along the corridor. Although noise impact cannot be eliminated, it can be reduced by the

establishment of reasonable working hours. Sensitive noise areas, such as rural residences would be identified and work restricted in these areas to daylight hours when higher noise levels are more tolerable. Provisions would be included in the plans and project contract that require the contractor to make every reasonable effort to minimize construction noise through abatement measures such as work-hour controls and proper maintenance of muffler systems. In residential areas, major activity would be limited to normal work hours whenever practicable, to avoid noise and related impacts to the local population.

Construction Vibration Impacts

Construction activities would be limited to the proposed project footprint. Vibration from construction equipment would be of short duration; however, excessive vibration from construction is not anticipated.

Temporary Dust and Air Pollution

The dust associated with construction can be reasonably controlled with a watering program, and erosion from construction sites would be controlled utilizing standard erosion control measures.

During the construction phase of the project, temporary increases in vehicle emissions may occur from construction activities. The primary construction-related emissions of particulate matter are fugitive dust from site preparation, and the primary construction-related emissions of diesel are from construction equipment and vehicles. The potential impacts of particulate matter emissions would be minimized by using fugitive dust control measures contained in standard specifications, as appropriate. Non-road engines and equipment would be certified in compliance with the EPA Tier 4 regulations found at 40 CFR Parts 89 and 1039.

Considering the temporary and transient nature of construction-related emissions, the use of fugitive dust control measures, and compliance with applicable regulatory requirements; it is not anticipated that emissions from construction of this project would have any substantial impact on air quality in the area.

Light Pollution

Construction normally occurs during daylight hours; however, construction could occur during the night-time hours to minimize impacts to the traveling public during the daylight hours. If construction were to occur in close proximity to businesses and residents, construction would be limited to short durations during the night-time hours. Construction during the night-time hours would follow any local policies and ordinances established for construction activities, such as light limitations.

Temporary Lane, Road, or Bridge Closures (Including Detours)

During the construction phase, traffic would follow the existing traffic patterns. Traffic disruption would be minimal due to the large amount on new location and the development, coordination, and implementation of traffic control plans with the cities and the counties. Construction that would require cross street closures would be scheduled so only one crossing in an area is affected at one time. Where detours are required, clear and visible signage for an alternative route would be displayed. Access to businesses and residences would be maintained at all times and no detours are anticipated. However, in the event that road closures or detours are required, county and local public safety officials would be notified of the proposed road closures or detours. Detour timing and necessary rerouting of emergency vehicles would be coordinated with the proper local agencies. Motorists would be inconvenienced during construction of the project due to lane and cross-street closures; however, these closures would be of short duration and alternate routes would be provided.

Residents and businesses in the immediate construction area would be notified in advance of proposed construction activity using a variety of techniques that may include signage, electronic media, community newspapers, or other techniques. The proposed project would not restrict access to any existing public or community services, businesses, commercial areas, or employment centers.

Resources Encountered During Construction

Should unanticipated hazardous materials/substances be encountered during construction, ARDOT and the contractor would be notified, and steps would be taken to protect personnel and the environment. Unanticipated hazardous materials encountered during construction would be handled according to the applicable federal, state, and local regulations and project specifications, and any required coordination with regulatory agencies would be initiated immediately. The contractor would take appropriate measures to prevent, minimize and control the spill of hazardous materials.

Any structures requiring work must comply with applicable asbestos and lead-based paint inspections, specification, notification, license, accreditation, abatement and disposal, and would be in compliance with federal, state, and local regulations.

To minimize impacts to migratory birds, construction activities would include limiting construction during nesting season when feasibly possible.

If archeological resources or deposits are encountered during construction, work in the immediate area shall cease and appropriate ARDOT staff would be contacted to initiate appropriate discovery procedures.

Other permitting requirements shall be adhered to during construction. Any disturbed areas shall be stabilized to either a uniform perennial vegetative cover with a density of 80% or more of the native background vegetative cover for the areas established on pervious areas, or shall be stabilized with equivalent permanent stabilization measures (such as the use of riprap, gabions, or geotextiles). Landscaping and other aesthetic treatments would be determined at final design.

3.29 Are induced growth effects anticipated?

Introduction and Methodology

This assessment is based on a four-step approach from the American Association of State Highway and Transportation Officials (AASHTO) Practitioner's Handbook 12: Assessing Indirect Effects and Cumulative Impacts Under NEPA (August 2016). For gathering and analyzing data for the induced growth effects analysis, local planner interviews and GIS data were used in consideration of sources and data that were available at the time of analysis. The watershed boundaries that encompass all the action alternatives were used to delineate a geographic study area called the Area of Influence (AOI) to evaluate effects from the proposed project. See the Induced Growth and Reasonably Foreseeable Impacts Technical Report for further details (**Appendix M**).

Induced growth are changes in the location, magnitude, or pace of future development that result from changes in accessibility caused by a project. An example of an induced growth effect is commercial development occurring around a new interchange and the environmental impacts associated with that development.

Affected Environment

The AOI consists of 377,576 acres. According to the latest NLCD data (2016), the AOI is dominated by cultivated crop land use (approximately 72%). Woody and emergent herbaceous wetlands cover approximately 14% of the AOI and the remaining 13% consists of a combination of the other eight land use types.

All action alternatives were assessed for the potential for increased accessibility, which would determine the potential for induce growth. Discontinuous frontage roads are proposed at various locations along each alternative and primarily located at proposed interchange areas to maintain access to existing properties. These frontage roads would be discontinuous and would not create new or additional access along any of the alternatives. On the other hand, all action alternatives have interchanges proposed at various locations within each alternative. These interchanges would provide access points and would have the potential to increase accessibility within certain areas by intersecting with roadways that have limited or partial access control. These intersecting roads, in turn, provide access to adjacent properties, which is essential for development to occur. More discussion on the accessibility potential for each alternative and general assumptions determined for each action alternative is provided in **Appendix M**.

Environmental Consequences

Although the AOI includes much available land for development, other factors such as environmental constraints, past and existing population trends and a lack of reasonably foreseeable developments in the area were considered in determining potential induced growth areas from the proposed project. Increases in accessibility are primarily localized to the proposed interchanges; therefore, areas adjacent to the proposed interchanges are anticipated to have induced growth effects resulting from the proposed project. Sensitive resources are present within the induced-growth areas surrounding the proposed intersections. These resources include wildlife species habitat, prime farmland, and water resources. These resources would be impacted by developments in these induced growth areas. Within the AOI, approximately 18% of the total AOI is potential wildlife habitat. This potential habitat consists of a total of 69,366 acres made up of woody and emergent herbaceous wetlands (53,941 acres), deciduous, evergreen and mixed forests (14,497 acres), and herbaceous wetlands (470 acres). The induced growth areas surrounding the proposed interchanges would result in development of approximately 2,914 acres each for Alternative 2 and Alternative 3, and approximately 486 acres each for Alternatives A, B, and C.

The improved mobility and accessibility within the project limits could indirectly alter traffic operations and growth patterns on existing highways. Increased accessibility near Alternative 2 is anticipated by some city planners to increase the rate of future development within the AOI. These anticipated induced growth effects are expected to occur near and surrounding the proposed interchanges. Although local planners highly expect development resulting from Alternative 2 being constructed, all action alternatives have the potential for induced growth specifically surrounding proposed interchanges. The increased rate of development for residential, commercial, and mixed-use purposes in these areas could potentially impact biological resources from all action alternatives. 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 sensitive resources. The increased rate of development resulting from the proposed project could also result in positive economic impacts due to increased property taxes and sales tax revenues.

Alternative 2

For Alternative 2, the 2,914 acres of potential induced growth areas include potential wildlife habitat consisting of approximately 154 acres of woody and emergent herbaceous wetlands and one acre of mixed forests, which may be suitable habitat for wildlife. The induced growth areas also include 2,587 acres of cropland, which may be suitable foraging habitat used by migratory bird species and other wildlife. The induced growth areas along Alternative 2 include approximately 120 acres of PFW, 1,768 acres of prime farmland, 445 acres of floodplains, and 22 streams and creeks.

Alternative 3

For Alternative 3, the 2,914 acres of potential induced growth areas include potential wildlife habitat consisting of approximately 122 acres of woody and emergent herbaceous wetlands, which may be suitable habitat for wildlife. The induced growth areas also include 2,651 acres of cropland, which may be suitable foraging habitat used by migratory bird species and other wildlife. The induced growth areas along Alternative 3 include approximately 176 acres of PFW, 376 acres of prime farmland, 125 acres of floodplains, and 25 streams and creeks.

Alternative A

For Alternative A, the 486 acres of potential induced growth area includes habitat consisting of approximately 12 acres of woody and emergent herbaceous wetlands, which may be suitable habitat for wildlife. The induced growth area includes 463 acres of cropland, which may be suitable foraging habitat used by migratory bird species and other wildlife. The induced growth area for Alternative A also includes approximately 25 acres of PFW, 34 acres of prime farmland, 215 acres of floodplains, and three streams and creeks.

Alternative B

For Alternative B, the 486 acres of potential induced growth area includes habitat consisting of approximately four acres of emergent herbaceous wetlands, which may be suitable habitat for wildlife. The induced growth area includes 418 acres of cropland, which may be suitable foraging habitat used by migratory bird species and other wildlife. The

induced growth area for Alternative B also includes approximately nine acres of PFW, 51 acres of prime farmland, 214 acres of floodplains, and two streams and creeks.

Alternative C
For Alternative C, the 486 acres of potential induced growth area does not include potential wildlife habitat such as woody and emergent herbaceous wetlands and mixed forests. However, the induced growth area includes 424 acres of cropland, which may be suitable foraging habitat used by migratory bird species and other wildlife. The induced growth area for Alternative C also includes approximately 11 acres of PFW, 50 acres of prime farmland, 226 acres of floodplains, and two streams and creeks that can be used by wildlife.

Mitigation

For each of the action alternatives, general minimization and mitigation measures such as erosion and sedimentation BMPs as a part of the SWPPP would be required for developments and would be implemented by the developer or the contractor. These BMPs would help protect water quality within this region and as a result, also help protect stream/wetland habitats and/or habitats potentially utilized by T&E species. The SWPPP is a component of the NPDES Permit that would be required by Section 402 of the CWA. The Arkansas DEQ is the agency responsible with authorizing these General Construction Stormwater permits and their associated SWPPPs.

Furthermore, any development projects within the AOI would be required to comply with the CWA. Section 404 of the CWA is regulated by the USACE and protects Waters of the United States, such as streams and wetlands. Section 401 of the CWA may also be applicable for certain development projects. Section 401 requires water quality certification and is regulated by DEQ.

For potential loss of habitat and species potentially affected from increased magnitude of growth, Section 7 of the ESA may be applicable and requires an assessment of impacts to federally-listed species and consultation with USFWS. BMPs could be implemented to minimize impacts to these resources. Local entities and developers could be responsible for incorporating BMPs for potential development activities. Examples of BMPs would be requirements for contractors to avoid harming species if encountered, seeding, replanting, and landscaping with specifications that would minimize soil disturbance where possible. Unless specifically required by federal or state regulations, developments often only utilize the minimum BMPs required.

Land use planning and regulatory guidelines could help manage indirect impacts within the AOI, including impacts related to an accelerated rate of development and/or redevelopment. Examples of regulatory guidelines and planning techniques include subdivision regulations, land development regulations, zoning, and other applicable ordinances. However, it does not appear that any of the previously-listed management strategies are currently in place within, or would be applicable for, the induced-growth areas. The responsibility of transportation providers, such as ARDOT, local and regional transit agencies, and local municipalities, would be to implement a transportation system to complement land use or development management techniques currently in place.

3.30 Are other reasonably foreseeable impacts anticipated?

Introduction and Methodology

This assessment is based on a four-step approach from the AASHTO Practitioner's Handbook 12: Assessing Indirect Effects and Cumulative Impacts Under NEPA (August 2016). For gathering and analyzing data, local planner interviews and GIS data were used in consideration of sources and data that were available at the time of analysis. The watershed boundaries that encompass all the action alternatives were used to delineate a geographic study area identified as the AOI to evaluate effects from the proposed project. Resources evaluated for reasonably foreseeable effects analysis are water and ecological resources that include streams/wetlands, floodplains, wildlife habitat, and farmland. See the Induced Growth and Reasonably Foreseeable Impacts Technical Report, provided in **Appendix M**, for further details on resources determined for analysis.

Affected Environment

New transportation infrastructure projects have been proposed in the region based on the 2021-2024 STIP. Projects included on the STIP would be considered reasonably foreseeable actions as these projects are included as part of the overall statewide planning for priority investment and funding. There are three intersection improvement projects and seventeen structure (bridges and grade separations, etc.) projects within the four counties in which the AOI encompasses. There are also four major widening projects within Clay, Greene, Lawrence, and Randolph County, but only one project is within the AOI, which is a one-mile widening project on Hwy. 90 from Parks Street to Country Club Road in Pocahontas/Randolph County. One major widening and realignment project was also identified in Missouri within Butler County.

Some individual developments were identified by responders to the questionnaire; however, no large-scale major developments were identified. Individual developments mentioned included expansions from companies such as Peco and Vital Farms as well as developments in Walnut Ridge (airport, business park, and university) and in Pocahontas (college and school district). These are generally already developed areas and within existing urbanized areas. The area surrounding the Walnut Ridge Airport include the university and business park mentioned by responders as an area with capacity and potential for future development. Generally, anticipated growth and development is possible near and within urban areas of Pocahontas and Walnut Ridge and infill in between the cities and towns. There is a substantial amount of available land in the AOI that can be developed and converted for urban use. Anticipated growth can be further developed as a result of the potential growth in the agricultural processing industry due to existing farms and the proposed project could provide the increased accessibility needed to further influence the growth of this industry. Although growth is anticipated, the identified developments are not individually substantial. Furthermore, it is not reasonably foreseeable that these developments would be clustered to substantially change the urban area in which these are planned. Areas surrounding the urban centers could be developed. However, no reasonably foreseeable actions were determined to result in substantial changes combined with the proposed project alternatives. Other factors, also mentioned by questionnaire responders, are needed in order to create the developments. The proposed project has the potential to increase the rate and intensity of commercial and residential developments adjacent to or surrounding an action alternative. The responders contend that Alternative 2 would be more beneficial to existing developed areas for more growth potential whereas Alternative 3 could really slow that development and move future development to areas to the east and away from the growth in Randolph County.

Environmental Consequences

The transportation projects identified would result in impacts and are discussed in more detail in **Appendix M**. These reasonably foreseeable actions combined with the proposed project impacts would result in impacts to water and wildlife habitat. Overall, all the action alternatives would not impact resources in high intensity or magnitude in context of the AOI. A large portion of the AOI would not be impacted by the proposed project and reasonably foreseeable actions. Approximately 18% would be considered natural habitat available within the AOI and the impacts to wildlife habitat would affect less than 2% of that total area. In conclusion, reasonably foreseeable actions combined with the proposed project would result in impacts to natural resources that would require mitigation measures; however, overall impacts from the combined actions are not substantial. Protections for wildlife management areas and other federal, state, and local regulatory guidelines would help to avoid, mitigate and minimize proposed and future impacts within the AOI.

Mitigation

For each of the action alternatives, general minimization and mitigation measures such as erosion and sedimentation BMPs as a part of the SWPPP would be required for developments and would be implemented by the developer or the contractor. These BMPs would help protect water quality within the region and as a result, also help protect stream and/or wetland habitats potentially utilized by T&E species. The DEQ is the agency responsible with authorizing General Construction Stormwater permits and their associated SWPPPs.

Furthermore, any development projects within the AOI would be required to comply with the CWA. Section 404 of the CWA is regulated by the USACE and protects Waters of the United States, such as streams and wetlands. Section 401 of the CWA may also be applicable for certain development projects. Section 401 requires water quality certification and

is regulated by DEQ. Section 402 of the CWA is also regulated by DEQ and would require applicants to adhere to NPDES Permit situations. Any floodplain impacts would require a Floodplain Development permit be obtained from the local county.

For potential loss of habitat and species potentially affected from increased magnitude of growth, Section 7 of the ESA may be applicable and requires an assessment of impacts to federally-listed species and consultation with USFWS. BMPs could be implemented to minimize impacts to these resources. Local entities and developers could be responsible for incorporating BMPs for potential development activities. Examples of BMPs would be requirements for contractors to avoid harming species if encountered, seeding, replanting, and landscaping with specifications that would minimize soil disturbance where possible. Unless specifically required by federal or state regulations, developments often only utilize the minimum BMPs required.

Land use planning and regulatory guidelines would help manage any impacts within the AOI. Examples of regulatory guidelines and planning techniques include subdivision regulations, zoning ordinances, land development regulations, and other applicable ordinances. The responsibility of transportation providers, such as ARDOT, local and regional transit agencies, and local municipalities, would be to implement a transportation system to complement land use or development management techniques currently in place.

3.31 What is the Relationship of Local Short-term Uses vs. Long-term Productivity?

Implementation of any of the action alternatives would involve short-term uses of the environment as a means to achieve long-term productivity gains and benefits for the regional study area. All action alternatives would require similar resource use and short-term impacts to the local project area compared to the No Action Alternative. The short-term use of resources would generally occur during construction and involve labor, materials, and temporary construction easements. Short-term benefits would include job creation; an increase in local revenue may also occur during construction activities. Long-term use of the land for agricultural would be lost within the constructed roadway footprint for the life of the highway. Short-term and long-term impacts expected to result from the proposed project are detailed in Sections 3.1-3.30 of this DEIS, with Section 3.28 specifically covering temporary construction impacts.

Negative short-term effects are anticipated to be minor compared with the positive long-term effects of the proposed project. The long-term benefits of the proposed project would be improving mobility and connectivity of the local, regional, and national transportation system, providing reliable transportation infrastructure to support economic growth for the region, and increasing the resiliency of the transportation network against extreme weather events. The long-term benefits of the improvements are recognized in State and local comprehensive planning for the region. Improving surface transportation in the region is consistent with these plans.

3.32 Is there an Irreversible and Irretrievable Commitment of Resources?

All action alternatives would require a similar commitment of natural, physical, human, and fiscal resources. Land used in the construction of the proposed facility is considered an irreversible commitment during the time that the land is used for a highway facility. However, if a greater need arises for use of the land or if the highway facility is no longer needed, the land can be converted to another use. At present, there is no reason to believe such a conversion would ever be necessary or desirable.

Considerable amounts of fossil fuels, labor, and highway construction materials such as cement, aggregate, and bituminous material are expended. Additionally, large amounts of labor and natural resources are used in the fabrication and preparation of construction materials. These materials are generally not retrievable. However, they are not in short supply and their use would not have an adverse effect upon continued availability of these resources. Any construction would also require a substantial one-time expenditure of both state and federal funds which are not retrievable.

The commitment of these resources is based on the concept that residents in the immediate area, state, and region would benefit by the improved quality of the transportation system. These benefits, which would consist of improved mobility and connectivity, a transportation infrastructure to support economic growth, and a more climate-resilient transportation network, are anticipated to outweigh the commitment of these resources.

Chapter 4 – Coordination

4.1 How has the public been involved?

A virtual public involvement meeting was held online via the project website (Future57.TransportationPlanRoom.com) from August 13 through September 2, 2020. Maps showing the proposed alignments for the action alternatives (Alternatives 1, 2, 3, A, B, and C), including an interactive corridor map and environmental resources map, a presentation video, the draft purpose and need, a project summary sheet, study goals, and a project history sheet, were presented for review and comment. A total of 2,005 unique users visited the project website and 126 comment forms or letters were received. In addition, a public officials meeting was held via video conference on August 12, 2020. The primary area of controversy raised by the public involves alternative preference. The complete public involvement meeting synopsis is included in **Appendix N**.

A second virtual public involvement meeting was held online via the project website from July 1 through August 2, 2021 in order to solicit comments and advise the public, resource agencies, and stakeholders that the FHWA issued an NOI to prepare an EIS for the proposed project. Information and copies of the NOI were provided on the project website, in the Federal Register (Vol. 86, No. 124 / Thursday, July 1, 2021 / Notices), on Regulations.gov (Docket No. FHWA-2021-0009), and physical copies delivered to the Randolph County, Lawrence County, and Corning public libraries. An interactive corridor map showing the proposed alignments for the action alternatives (Alternatives 1, 2, 3, A, B, and C), a copy of the NOI, the supplementary NOI document, and the project schedule were presented for review and comment. Information presented at the August 2020 public meeting and project contact information was also provided on the website. A total of 226 unique users visited the project website and two comments were received. The NOI public meeting synopsis is included in **Appendix N** and the NOI materials are provided in **Appendix A**.

The project website will remain available to the public and continue to provide study information and updates throughout the NEPA process.

4.2 How have public agencies been involved and what is the scoping process?

In accordance with 40 CFR 1502.17, this section provides a summary identifying all alternatives, information, and analyses FHWA received from State, Tribal, and local governments and other public commenters. Copies of all agency and tribal comments received during scoping, as well as the 23 USC Section 139 Coordination Plan for the project, are provided in **Appendix D**. The 23 USC Section 139 Coordination Plan for the project was published as an appendix to the supplementary NOI document. The NOI was published on July 1, 2021 and a 30-day public comment period was provided, the NOI materials are provided in **Appendix A**. Summaries of all comments received from the public and agencies are provided in **Appendix N**. Consistent with 40 CFR 1502.17(a)(2), FHWA invites comments on the summary identifying all submitted alternatives, information, and analyses in this DEIS.

In May 2020 and February 2021, letters were sent describing the proposed NEPA study and soliciting input to the appropriate federal, tribal, state, and local agencies who have expressed or are known to have an interest or legal role in this project. Agency coordination is provided in **Appendix D**. The following agencies accepted the role as a cooperating agency and were invited to comment on the project's purpose, need, range of alternatives, and this DEIS document:

Pursuant to 23 USC Section 139, **cooperating agencies** are responsible for identifying, as early as practicable, any issues of concern regarding the project's potential environmental or socioeconomic impacts that could substantially delay or prevent an agency from granting a permit or other approval that is needed for the project.

- MoDOT
  - May 15, 2020 - Accepted the invitation to be a cooperating agency.
  - January 15, 2021 - Stated they concur with the purpose and need and alternatives presented but have no additional comments regarding the project.
  - February 19, 2022 - Concurred with the selection of Alternative C as a preferred and provided additional information about their section of future I-57.
  - August 17, 2022 - Stated they have no comments on the DEIS.

- USACE
  - November 10, 2020 - Accepted the invitation to be a cooperating agency.
  - January 28, 2021 - Stated they concur with the purpose and need and alternatives presented. Stated they concur that the three proposed alternatives meet the requirements within the defined termini and the regional and national highway network initiatives, and are sufficient for moving the study forward. Stated they would like to see any medium or high functioning wetland and stream tracts listed as major constraints and avoid, if possible. Stated they would prefer that compensatory mitigation for any unavoidable wetland and stream impacts be located in the same watershed.
  - April 19, 2021 - Provided confirmation that the three levee systems identified in Section 3.27 would likely require a Section 408 review if crossed.
  - March 10, 2022 - After review of the DEIS, stated they see no issues with the alternatives analysis and provided minor recommendations for clarification.
    - All recommendations were fully addressed and Sections 3.18 and 3.26 were revised accordingly.
  - September 6, 2022 - Stated they concur with the findings presented in the DEIS and that before they can issue a standard permit, an approved mitigation plan must be in place. Recommended adding language regarding compliance with EPA's 404(b)(1) Guidelines.
    - The recommended language was added to Section 3.26.
- USDA
  - June 3, 2020 - Accepted the invitation to be a cooperating agency.
  - January 25, 2021 - Stated they do not give concurrence on the need of the project or which corridor is preferred (per standard procedures), rather they just give information about the impact to agricultural easements, give information for the completions of Form NRCS-CPA-106, and any other relevant environmental or soils information.
- EPA
  - February 12, 2021 - Accepted the invitation to be a cooperating agency.
  - July 29, 2021 - Stated they reviewed the published NOI and provided detailed recommendations for consideration to assist in the scoping process. This EPA coordination is provided in **Appendix D**.
    - All recommendations were reviewed, and it has been verified that each topic has been sufficiently addressed in the DEIS.
  - August 23, 2022 - Stated they reviewed the DEIS and provided recommendations for improving the clarity of the DEIS.
    - All recommendations were reviewed to verify each topic is sufficiently clear in the DEIS. Specific recommendations incorporated include clarification of EJ analyses with regard to community, indirect, and reasonably foreseeable effects.
- USFWS
  - May 12, 2020 - Accepted the invitation to be a cooperating agency.
  - November 24, 2020 - Provided an official species list and technical assistance.
  - January 15, 2021 - Stated they concur with the purpose and need and the range of alternatives. Stated the information provided in the purpose and need statement and the range of alternatives is sufficient for this stage in the process and that the environmental review process may proceed. Stated they have no additional comments to provide at this time.
  - January 31, 2022 - Stated they reviewed the DEIS (dated January 2022) and do not have any current reason to oppose the preferred alternative and believe that either Alternative 2 or 3 would have similar effects on fish and wildlife resources. Recommended considering nine comments for inclusion within the DEIS. This USFWS coordination is provided in **Appendix D**.
    - All nine recommendations were fully addressed and Sections 3.19 through 3.23 were revised accordingly.
  - August 3, 2022 - Stated they reviewed the DEIS (dated July 2022) and believe that the reasoning behind the selection of the preferred Alternatives 2 and C are reasonable. Provided two recommendations for consideration of conservation measures for avoidance, minimization, and mitigation of effects from the action.

- Both recommendations would be followed as additional USFWS coordination and conservation planning for avoidance and minimization would be conducted as project designs and effects analyses are refined, or if new information on listed species becomes available, habitat effects change, new listings occur, and/or as species listing statuses change.

The following agencies have accepted the role as a participating agency:

- Arkansas DEQ
- AGFC
- AHPP
- ANHC

Other agencies that have provided comments regarding the proposed project include:

- Arkansas Department of Agriculture
- ADH
- Division of Arkansas State Parks
- U.S. Coast Guard
- Advisory Council on Historic Preservation

As shown in **Figure 12**, coordination with agencies, stakeholders, and the public will continue throughout the NEPA process. There are currently no major unresolved issues with governmental agencies.

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. The Osage Nation acknowledged their receipt of the tribal coordination letter and stated there are no known Osage cultural resources within the project area; however, a cultural resources survey of the Preferred Alternative was requested. The cultural resources survey, once complete and approved by SHPO, would be provided to the Osage Nation. The Quapaw Nation acknowledged their receipt of the tribal coordination letter and stated they do not anticipate the project will adversely impact any cultural resources or human remains. No other comments were received. A copy of the cultural resources report completed for the project would be provided to any other tribe that request it. The FHWA would continue consultation and coordination with Indian Tribal Governments as applicable. Tribal correspondence received to date is provided in **Appendix D**.

Chapter 5 – Summary and Comparison of Impacts

5.1 What are the results of this DEIS?

Studies were conducted to determine how the proposed project would potentially affect the natural, cultural, and social environments. The analyses were based on an anticipated consistent 400-foot-wide ROW footprint for each action alternative with expanded footprints at the proposed interchanges.

Table 35 summarizes impacts of the action alternatives for comparison purposes.

Table 35: Alternatives Comparison Table

Resource Category	No Action Alt.	Main Corridor Alts.		MO Connector Alts.		
		2	3	A	B	C
ENGINEERING						
Length (miles)	47.6	39.2	41.3	2.5	2.3	2.8
Required ROW (acres)	0	2,182	2,274	141	135	157
Required ROW from EJ Populations (acres)	0	631	661	2	<1	14
Landowners Impacted (#)	0	81	103	9	19	20
Landowners Impacted from EJ Populations (#)	0	34	45	4	2	10
ROW and Relocation Cost (millions)	0	17	18	1	2	1
Construction Cost (millions) [1]	0	498	496	31	37	26
Total Cost (millions) [1]	0	515	514	32	39	28
NATURAL RESOURCES						
Possible Farmed Wetland Impacts (acres) [2]	0	593.6	552.3	58.7	30.9	25.0
Total Wetland Impacts (acres) [3]	0	37.9	25.4	3.4	10.3	4.5
Stream Impacts (linear feet) [4]	0	77,963	101,736	9,299	8,803	7,667
Federally-protected Species with Habitat Impacted (#)	0	13	13	6	6	4
State-listed Species with Habitat Impacted (#) [5]	0	32	32	11	12	11
OTHER RESOURCES						
Economic Impacts [6]	(-)	(+)	(+)	(+)	(+)	(+)
Active Cropland Impacts (acres)	0	2,053	2,166	128	106	143
Active Cropland Impacts from EJ Populations (acres)	0	641	675	2	0	14
Split Farms (#)	0	71	80	5	4	8
Split Farms from EJ Populations (#)	0	22	28	1	1	2
Irrigation Wells Impacted (#)	0	29	28	3	3	4
Residential and Business Relocations (#) [7]	0	5	12	3	14	2
Relocations from EJ Populations (#) [7]	0	0	0	0	0	1
Major Pipeline Crossings (# >24" diameter) [8]	0	5	1	0	0	0
Section 4(f) Resources Impacted (#) [9]	0	0	0	0	0	0
NRHP Sites Impacted (#) [10]	0	9	1	0	0	0
Public Water Assessment Areas Impacted (acres)	0	549	68	0	0	0

Resource Category	No Action Alt.	Main Corridor Alts.		MO Connector Alts.		
		2	3	A	B	C
Floodplains Present (acres)	0	423.1	117.5	76.2	67.2	66.5
Flood Protection Levees (#)	0	1	2	0	0	0

[1] Costs are based on conceptual design with 25% contingency; utilities other than gas transmission lines greater than 24" in diameter are not included. [2] This is an estimate since USDA records are not releasable unless permission from landowner is granted. [3] Includes pond or open water, emergent, scrub-shrub, and forested wetlands. [4] Includes all ephemeral, intermittent, and perennial watercourses, some of which may not be jurisdictional features; many of these features also function as agricultural drains for adjacent fields. [5] Excludes federally-listed species. [6] Economic impacts are rated as (+) for positive and (-) for no impacts. [7] Includes residential owners, residential tenants/landlord businesses, businesses, and farm operations. [8] Pipelines with unknown diameters were assumed to be >24" in diameter. [9] Sites currently known/identified at this time that may be impacted; any NRHP-eligible archeological sites identified by the Phase I Archeological Survey would be added. [10] Number of NRHP sites or sites with undetermined eligibility currently known/identified at this time that may be impacted. *Source: Project Team, 2021*

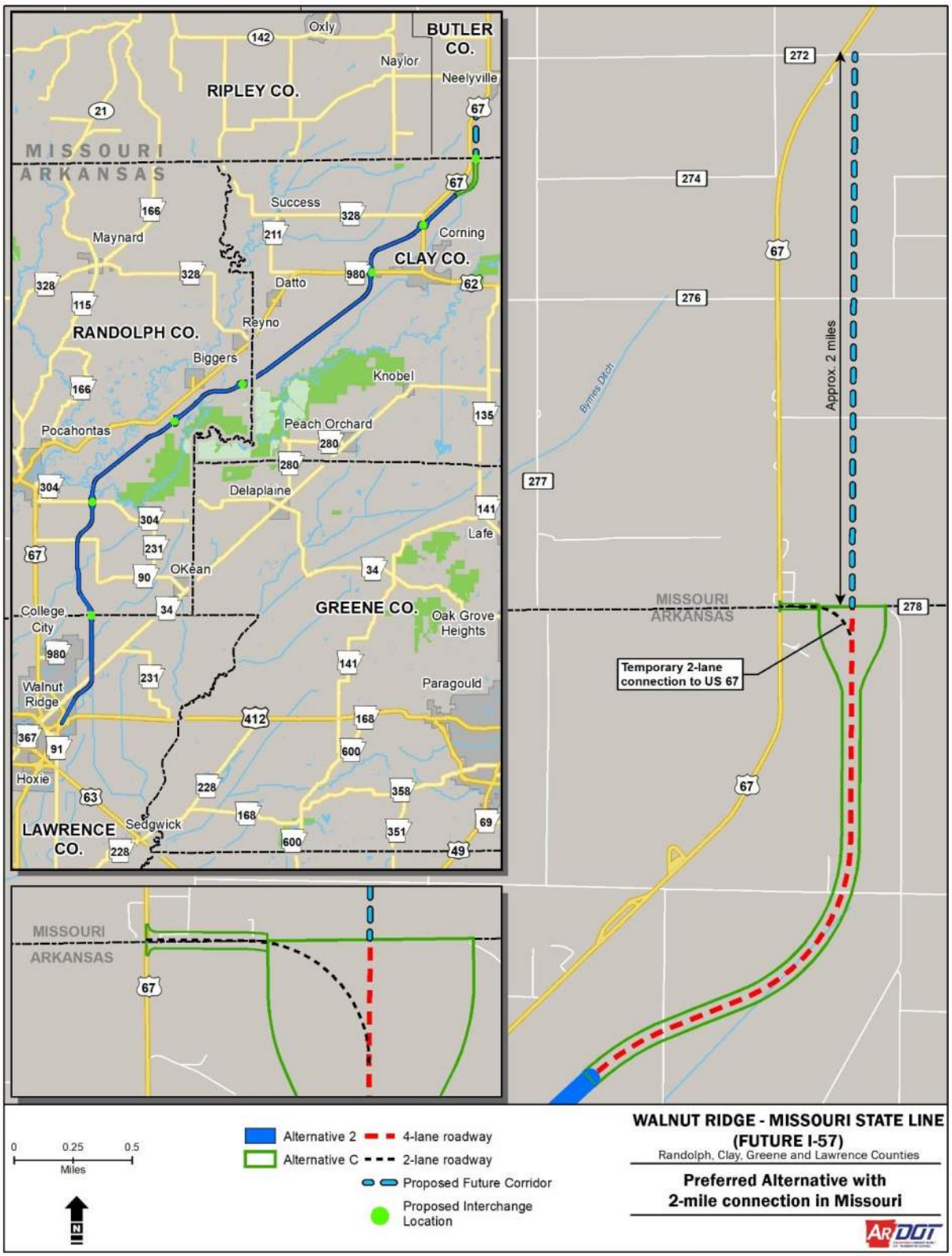
5.2 What is the Preferred Alternative?

The Preferred Alternative is Alternative 2 for the Main Corridor and Alternative C for the Missouri Connector. Land use of the Preferred Alternative is approximately 93% cropland, 5% developed, and 2% undeveloped areas. **Figure 59** shows the possible alignment between County Road 278 and County Road 272 in Missouri.

While Alternative 3 adequately addresses the purpose and need, Alternative 2 was identified as the Preferred Alternative for the Main Corridor for the following reasons:

- The cities of Corning, Biggers, Reyno and Walnut Ridge along with the Northeast Intermodal Authority provided a resolution that Alternative 2 would be more beneficial to existing developed areas for more growth potential whereas Alternative 3 could slow that development and move future development to areas to the east and away from the growth in Randolph County.
- Public preference identified Alternative 2 as the preferred alternative.
- Alternative 2 would provide better access to Pocahontas and Randolph County as well as other communities and businesses along the existing Hwy. 67 corridor than Alternative 3.
- In case of natural or manmade closures, Alternative 2 provides a closer alternative route to existing Hwy. 67 than Alternative 3.
- Alternative 2 would provide easier access to the College City Airport and to the Pocahontas Municipal Airport than Alternative 3.
- Alternative 2 would impact substantially fewer landowners and require less ROW than Alternative 3.
- Alternative 2 would impact substantially less active cropland, split fewer farms, and affect fewer farm owners.
- Alternative 2 would impact fewer LF of ditches or streams that appear to support agricultural fields.
- Alternative 2 would require fewer impacts to flood protection levees than Alternative 3.
- Compared to Alternative 3, Alternative 2 would require substantially fewer impacts to streams in terms of both the number of crossing and LF impacted.
- Alternative 2 would sever fewer wildlife travel corridors than Alternative 3.
- Alternative 2 would impact fewer structures that provide potentially suitable nesting habitat for migratory birds.
- Alternative 2 would impact fewer acres of forested riparian zone than Alternative 3.
- Alternative 2 would result in fewer noise impacts than Alternative 3.

Figure 59: Preferred Alternative with Two-mile Connection in Missouri



While Alternatives A and B adequately address the purpose and need, Alternative C was identified as the Preferred Alternative for the Missouri Connector for the following reasons:

- Unlike Alternative A, Alternative C would avoid the need for a Hwy. 67 overpass by staying on the east side of existing Hwy. 67. Additionally, unlike Alternative B, Alternative C would avoid substantial ROW acquisition of existing homes and businesses along Hwy. 67.
- Alternative C would require the fewest residential and business relocations, though it does require one relocation within an EJ community.
- Alternative C would impact less farmed wetlands.
- Alternative C would impact the least LF of streams and the least LF of ditches or streams that appear to support agricultural fields.
- Alternative C would require the fewest impacts to floodplains.
- Alternative C would result in wetland impacts comparable to Alternative A and substantially fewer than Alternative B.
- Alternative C would impact fewer state-listed species compared to Alternative B, would impact the same number of state-listed species compared to Alternative A, and would impact the fewest number of federally-listed species compared to Alternatives A and B.
- Unlike Alternatives A and B, Alternative C would not sever any wildlife travel corridors.
- Alternative C would have the lowest construction cost and lowest total cost.

Thus, Alternatives 2 and C form the Preferred Alternative, which best meets the purpose and need of the project while minimizing impacts to the natural, cultural, and social environments to the extent possible. The Preferred Alternative fills in the gap that is currently present in the National Highway System and provides reliable and resilient transportation infrastructure to support economic growth for the region. All sections of future I-57 in Arkansas and Missouri will be completed to interstate standards before FHWA would request the facility be formally designated I-57.

5.3 What are the project commitments?

If the proposed project occurs, the following commitments would be made.

- Coordination with NRCS will be completed for the Preferred Alternative in the FEIS/ROD for impact on important farmland.
- To protect farmland soils, management and design practices would be incorporated into the project to limit adverse effects to designated soils by implementing proper control of sedimentation and erosion during construction.
- If the Selected Alternative involves CRP impacts (i.e., if Alternative 2 is selected), financial compensation would occur to remove the land from a CRP contract.
- BMPs would be implemented, including reseeding, natural re-vegetation, and erosion prevention that would aid in reducing visual impacts along the route while meeting the project objectives.
- Residents and 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.
- In the event housing cannot be found or can be found but not within the displacees' economic means at the time of displacement, Section 206 of Public Law 91-646 (Housing of Last Resort) would be utilized to its fullest and practical extent.
- At the time of displacement another inventory of available housing in the subject area would be obtained and an analysis of the market made to ensure that there are dwellings adequate to meet the needs of all displaces.
- Upon completion of the proposed project, any homes or community facilities where access cannot be effectively restored would be purchased.
- In compliance with federal guidelines, a copy of the Noise Screening Technical Report will be transmitted to the cities and towns located along the alternative corridors for land use planning purposes.
- Construction equipment will be maintained with appropriate mufflers to aid in minimizing construction noise levels.

- An asbestos survey will be conducted by a certified asbestos inspector on each building slated for acquisition and demolition. All detected asbestos-containing materials will be removed prior to demolition in accordance with the Arkansas DEQ, EPA, and OSHA regulations.
- If hazardous materials, unknown illegal dumps, or USTs 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 Arkansas DEQ, appropriate remediation and disposal methods will be determined.
- Natural gas pipeline impacts will be avoided by bridging or will be appropriately mitigated.
- An intensive cultural resources survey will be conducted for the Preferred Alternative. If sites are affected, a report documenting the survey results and stating ARDOT's recommendations will be prepared and submitted for SHPO review. If prehistoric sites are impacted, FHWA-led consultation with the appropriate Native American Tribe will be conducted and the site(s) evaluated to determine if Phase II testing is necessary. Should any of the sites be determined as eligible or potentially eligible for NRHP nomination and avoidance is not possible, site-specific treatment plans will be prepared and data recovery conducted at the earliest practicable time. All borrow pits, waste areas, and work roads will be surveyed for cultural resources when locations become available. The Section 106 Programmatic Agreement will be completed and signed prior to the issuance of the FEIS / ROD.
- The appropriate Section 4(f) evaluation would be conducted and included with the combined FEIS/ROD for any archeological site identified by the cultural resources survey that is eligible for nomination to the NRHP and avoidance is not possible.
- Section 7 consultation with the USFWS will continue upon the selection of the Preferred Alternative. USFWS concurrence/clearance will be obtained for the Preferred Alternative prior to final NEPA approval.
- The ARDOT Nesting Sites of Migratory Birds SP will be incorporated into the construction contract. Additionally, no activities should occur within 1,000 feet of an active migratory bird nesting colony.
- 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 will be contacted for the proper procedures to be followed and to examine the cave to determine usage by any listed species.
- Any regulated articles (such as equipment or hay/straw) entering the project area that originated from within the USDA Imported Fire Ant Quarantine would follow recommended guidelines or compliance agreements to avoid introducing fire ants into areas that do not yet have them.
- A wildflower seed mix will be included in the permanent seeding for the project.
- During the design phase(s) of the project, the most current hydraulic and environmental data will be used to inform the culvert structure types and sizes to handle a minimum of a 100-year storm event and additionally include consideration to maintaining aquatic connections. Additionally, further review of wildlife crossing opportunities of the proposed roadway and/or assurance of wildlife passage at bridges and culverts will be conducted at the time of design.
- Water Pollution Control, Wellhead Protection, Storm Water Pollution Prevention Plan, and Vegetated Buffer Zone SPs will be incorporated into the construction contract to minimize potential impacts to water quality.
- ARDOT would take special measures during construction activities within source water protection areas. Appropriate coordination with the ADH will occur if wellhead protection areas are impacted by the Preferred Alternative.
- Proper well abandonment would occur for any wells impacted by the Preferred Alternative. Well abandonment would comply with procedures pursuant to the Arkansas Department of Agriculture's Water Well Construction Commission regulations.
- 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 NPDES, and Section 404 Permit for Dredged or Fill Material.
- Unavoidable stream and wetland impacts will be compensated at an approved mitigation site(s) utilizing 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.
- Sensitive noise areas would be identified, and work would be restricted in these areas to daylight hours. Provisions would be included in the plans and project contract that require the contractor to make every reasonable effort to minimize construction noise. In residential areas, major activity would be limited to normal work hours whenever practicable.
- Fugitive dust control measures contained in standard specifications will be implemented as appropriate.
- If construction were to occur in close proximity to businesses and residents, construction would be limited to short durations during the night-time hours. Construction during the night-time hours would follow any local policies and ordinances established for construction activities.
- Construction that would require cross street closures would be scheduled so only one crossing in an area is affected at one time. Where detours are required, clear and visible signage for an alternative route would be displayed. The proposed project would not restrict access to any residences, existing public or community services, or businesses. In the event that road closures or detours are required, county and local public safety officials would be notified of the proposed road closures or detours. Detour timing and necessary rerouting of emergency vehicles would be coordinated with the proper local agencies.
- Residents and businesses in the immediate construction area would be notified in advance of proposed construction activity.

5.4 What are the next steps?

After this Draft EIS is approved by FHWA for public dissemination, a Location Public Hearing will be held to present the findings of and solicit comments on the DEIS from the public and other stakeholders.

FHWA and ARDOT invite interested individuals and entities to provide comments on the DEIS. The DEIS and appendices can be viewed and downloaded from the project website at: https://future57.transportationplanroom.com/ or at http://www.arkansashighways.com/.

The public comment period will extend 45 days after the DEIS is distributed for public review. FHWA will review all comments and consider and respond to all substantive comments received within the 45-day period. An in-person public hearing will occur at least 30 days after the Notice of Availability. Personally identifiable information provided by individuals submitting public comments may be published. Refer to https://future57.transportationplanroom.com/ for the latest information on the public hearing date and location.

Copies of the DEIS have been placed at the Randolph County, Lawrence County, Greene County, and Corning Public Libraries. The following contact information can also be used to request copies of the DEIS:

Mail: Garver
Attn: Jon Hetzel
4701 Northshore Drive
North Little Rock, AR 72118
Telephone: (501) 823-0730
E-mail: PublicInvolvement@GarverUSA.com

After a review of comments received from citizens, public officials, and public agencies, a FEIS and ROD document will be prepared and submitted to FHWA, documenting the final environmental clearances and impacts associated with the Preferred Alternative. The FHWA will issue a single document that consists of the FEIS and ROD pursuant to 49 U.S.C. 304a(b) [and 23 U.S.C. 139(n)(2)] unless the FHWA determines that statutory criteria or practicability considerations preclude issuance of such a combined document. If FHWA issues the ROD, it would identify the Selected Alternative and conclude the NEPA process.

Chapter 6 – List of Preparers

Bill McAbee, Garver – Environmental Project Manager and Co-author of Chapters 1-2; and Sections 3.8-3.9 and 3.16.
B.S., Wildlife Ecology/Management
M.S., Biology
24 years of experience

Cassie Schmidt, Garver – Co-author of Sections 3.1-3.7, 3.14, 3.18, 3.21, and 3.23-3.24; Chapters 4-7; and the VIA Memo, Conceptual Stage Relocation Statement, Biological Resources Technical Report, and Waters Technical Report.
B.S., Zoology
M.S., Biology
10 years of experience

Michele Lopez, Garver – Co-author of Sections 3.11-3.13, 3.15, and 3.28-3.30; and the Induced Growth and Reasonably Foreseeable Impacts Technical Report.
B.S., Biology
22 years of experience

Ryan Mountain (Professional Wetland Scientist), Garver – Co-author of Sections 3.10, 3.19-3.20, 3.22, and 3.26; and the Screening Level Noise Analysis Technical Report, Biological Resources Technical Report, and Waters Technical Report.
B.S., Fisheries and Wildlife Management
21 years of experience

David Bednar, Garver – Co-author of Section 3.25 and the Waters Technical Report.
B.S., Geology
M.S., Geology
32 years of experience

Christopher Herron (P.E.), Garver – Co-author of Section 3.27 and the Waters Technical Report.
B.S., Civil Engineering
M.S., Coastal and Hydraulic Civil Engineering
8 years of experience

Nicci Tiner, Garver – Co-author of Section 3.9 and the Traffic and Safety Analysis Technical Report.
B.S., Civil Engineering
33 years of experience

Annette Smalley, Garver – Co-author of the Traffic and Safety Analysis Technical Report.
B.S., Civil Engineering
M.S., Civil Engineering
10 years of experience

Sean Wray, Garver – GIS analyst and created exhibits throughout, including technical reports.
23 years of experience

Jon Hetzel, Garver – Co-author of public involvement synopsis reports.
B.S., Journalism
17 years of experience

Lindi Miller, Garver – Co-author of public involvement synopsis reports.
B.S., Biology
M.S., Public Administration
1 year of experience

Andrew Warren (P.E., PTOE), ARDOT – Co-author of the 2015 Highway 67 Improvement Study.
M.S., Civil Engineering
14 years of experience

Jim Harvey, Alliance Transportation Group, Inc. – Co-author of the Economics Impact Analysis
B.A., History
Master of Urban and Regional Planning
Juris Doctorate
41 years of experience

Andrew Buchner, Panamerican Consultants, Inc. – Co-author of Section 3.16 and the ARS.
B.A., Anthropology/Sociology
M.A., Anthropology
32 years of experience

Chapter 7 – References

7.1 Acronyms

AA	Action Area
ADT	Average Daily Traffic
AADT	Average Annual Daily Traffic
AASHTO	American Association of State Highway and Transportation Officials
ACS	American Community Survey
ADH	Arkansas Department of Health
AGFC	Arkansas Game and Fish Commission
AHC	Arkansas State Highway Commission
AHPP	Arkansas Historic Preservation Program
AMASDA	Automated Management of Archeological Site Data in Arkansas
ANRC	Arkansas Natural Resources Commission
AOI	Area of Influence
APC&EC	Arkansas Pollution Control and Ecology Commission
ARDOT	Arkansas Department of Transportation
AST	Aboveground Storage Tank
AVE	Area of Visual Effect
BA	Biological Assessment
BFE	Base Flood Elevation
BMPs	Best Management Practices
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CMF	Crash Modification Factor
CR	County Road
CRP	Conservation Reserve Program
CSRS	Conceptual Stage Relocation Statement
CWA	Clean Water Act
DBH	Diameter at Breast Height
DEIS	Draft Environmental Impact Statement
DEQ	Division of Environmental Quality within the Arkansas Department of Energy and Environment
EAPDD	East Arkansas Planning and Development District
EIS	Environmental Impact Statement
EJ	Environmental Justice
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ERW	Extraordinary Resource Water
ESA	Endangered Species Act
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Maps
FIS	Flood Insurance Study
FPPA	Farmland Protection Policy Act
FS	Field Site
FW	Farmed Wetlands
GHG	Greenhouse Gas
GIS	Geographic Information System

HHS	Health and Human Services
HUC	Hydrologic Unit Code
ITS	Intelligent Transportation Systems
IMPLAN	Impact Analysis for Planning
LEP	Limited English Proficiency
LF	Linear Feet
LiDAR	Light Detection and Ranging
LRTP	Long-Range Transportation Plan
LUST	Leaking Underground Storage Tank
LWCF	Land and Water Conservation Fund
MA	Maintenance Area
MAP-21	Moving Ahead for Progress in the 21st Century
MBTA	Migratory Bird Treaty Act
MGD	Million Gallons Per Day
MOA	Memorandum of Agreement
MoDOT	Missouri Department of Transportation
MOU	Memorandum of Understanding
MSAT	Mobile Source Air Toxics
NA	Nonattainment Area
NAAQS	National Ambient Air Quality Standards
NAC	Noise Abatement Criteria
NBZ	Noise Buffer Zones
NEA	Northeast Arkansas Regional Intermodal Authority
NFIP	National Flood Insurance Program
NGPL	Natural Gas Pipeline Company of America LLC
NLCD	National Land Cover Dataset
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSA	Noise Study Areas
NWI	National Wetlands Inventory
OHWM	Ordinary High Water Mark
OSHA	Occupational Safety and Health Administration
OWs	Other Waters
PC	Prior Converted Croplands
PFW	Possible Farmed Wetlands
RCB	Reinforced Concrete Box
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
ROW	Right of Way
SARA	Superfund Amendments and Reauthorization Act
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SP	Special Provision
STIP	Statewide Transportation Improvement Plan
SWPPP	Stormwater Pollution Prevention Plan
T&E	Threatened and Endangered
TDM	Travel Demand Model
TMDL	Total Maximum Daily Load
TNM	Traffic Noise Model (Version 2.5)

TSM	Transportation System Management
UPRR	Union Pacific Railroad
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture
USDOT	United States Department of Transportation
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	Underground Storage Tanks
VHT	Vehicle Hours Traveled
VMT	Vehicle Miles Traveled
WMA	Wildlife Management Area
WRP	Wetland Reserve Program
WWTP	Wastewater Treatment Plant

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