LOCATION STUDY

INTERSTATE 69 El Dorado to McGehee, ARKANSAS

FINAL ENVIRONMENTAL IMPACT STATEMENT

I-69 Section of Independent Utility 13
El Dorado to McGehee, Arkansas

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT • AHTD •

DEPARTMENT OF TRANSPORTATION • UNITED STATES OF AMERICA •

FHWA-AR-EIS-04-01-F
State Job. No. 001873
Federal Project: NCPD-NH-0076(24)

I-69 SECTION OF INDEPENDENT UTILITY 13
EL DORADO TO MCGEHEE, ARKANSAS

Final Environmental Impact Statement

Submitted Pursuant to: 42 U.S.C. 4332(2)(c)

by the

U.S. Department of Transportation - Federal Highway Administration
and the
Arkansas Highway and Transportation Department

Cooperating Agencies:
U.S. Army Corps of Engineers – Vicksburg District
U.S. Fish and Wildlife Service
U.S. Coast Guard – Eighth District
U.S. Environmental Protection Agency

8-18-05
Date of Approval

Scott A. Bennett
Arkansas Highway and Transportation Department

Aug 17, 2005
Date of Approval

Sandra L. Otto
Federal Highway Administration

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This project is a proposal to construct a four-lane, divided, fully controlled access highway facility located on new alignment from U.S. 82 near El Dorado, Arkansas to U.S. 65 near McGehee, Arkansas. The proposed highway would be approximately 100 miles in length and would pass through the Arkansas Counties of Ouachita, Union, Calhoun, Bradley, Drew, and Desha. Several alternatives were considered including the No-Action alternative.

Comments on this EIS are due by 10-24-05, and should be sent to:

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SUMMARY

THE I-69 LOCATION STUDY

The proposed I-69 Location Study from El Dorado to McGehee, Arkansas, represents one section (Section of Independent Utility No. 13) of the nationally designated I-69 Corridor that reaches from Port Huron, Michigan to the Texas/Mexico border (Exhibit 1-1). This project, hereafter referred to as the SIU 13 Project, would provide a divided four-lane fully controlled access facility, constructed on new location. The Federal Highway Administration (FHWA) issued a Notice of Intent (NOI) to prepare an Environmental Impact Statement for this project in the December 7, 2001 Federal Register.

The SIU 13 Project Area is approximately 110 miles long and encompasses all or portions of Columbia, Ouachita, Union, Calhoun, Bradley, Ashley, Drew, Chicot, and Desha Counties (Exhibit 1-2). Construction of the SIU 13 Project would:

- Complete a portion of the Congressionally-designated Interstate 69 Highway, expanding Interstate linkage between El Dorado and McGehee, Arkansas and the rest of the Nation.
- Support the North American Free Trade Agreement by expanding the I-69 trade corridor.
- Improve international and interstate movement of freight and people.
- Facilitate economic development and enhance economic growth opportunities in the Lower Mississippi Delta Region.
- Support the Southeast Arkansas Regional Intermodal Facility.
- Improve efficiency of travel.
- Improve traffic safety.
- Improve emergency vehicle response times and access to medical facilities.
- Improve access to education and recreational facilities
- Support the locally based needs identified by community leaders and the public.

The SIU 13 Project will function as a critical link in the Interstate system that will serve travel, economic development, and commercial demands of not only the Project Area, but also the south-central United States. The current study of alternatives and the environmental consequences of the proposed action were initiated in December 2001 by the Arkansas Highway and Transportation Department (AHTD) and the Federal Highway Administration (FHWA). This study is fully documented in the remaining sections of this Environmental Impact Statement (EIS).

ALTERNATIVES CONSIDERED

The development of alternatives for the SIU 13 Project followed a multi-step study approach that evaluated possible highway locations in several stages so that only the most practicable alternatives, i.e., those that met the project purpose and need and that had the potential to minimize

environmental impacts, were advanced to the next phase of study. Initially, an environmental resource map was created for the Project Area by collecting available environmental information from state and federal sources. Using this resource map, key environmental issues were identified for consideration throughout the study process.

The Corridor Study involved the development of four full-length corridors two miles in width within the Project Area. Corridor development used the environmental resources mapping as a guide to avoid and minimize impacts to sensitive resources in addition to consideration of appropriate engineering design criteria and local community leader concerns. These four corridors were analyzed and screened against the sensitive resources, and reviewed by the public, local community leaders, and resource agencies, including the cooperating federal agencies. Once individual corridors or portions of corridors were eliminated from further study, a multi-corridor combination (the Preferred Corridor) was identified that provided the best opportunity to develop highway alignments within it which would avoid or minimize impacts to the social, natural, and cultural environments. Additionally, highway alignments were developed to enhance the transportation services and economic vitality of the Project Area, and accommodate the overall purpose of the National I-69 Corridor. This process provided sufficient information to identify and advance a Preferred Corridor to the more detailed Alignment Study.

The Alignment Study initially developed four preliminary alignment alternatives, approximately 300 feet in width, within the Preferred Corridor. The alignment development process first emphasized avoidance, if practical, and then considered efforts to insure that the alternatives minimized impacts to sensitive resources such as wetlands, threatened and endangered species, and residential areas. This phase of study also included updating and refining the environmental inventory based on specific field investigations within the Preferred Corridor.

A comprehensive public involvement program was conducted during the Corridor and Alignment Studies that involved the public, local community leaders, appropriate state and federal resource agencies, and participating Native American Tribes. Comments from those involved resulted in revisions to the preliminary highway alignments in several areas and the addition of a fifth alignment, which incorporated these changes. Additionally, the development of this fifth alignment combined portions of the four preliminary alignments to further reduce social and environmental impacts.

Project Area

Line 3 and 4

Line 2

Line 1

Preferred Corridor

Preferred (Line 5)

END SECTION 1 BEGIN SECTION 2

END SECTION 2 BEGIN SECTION 3

LEGEND

LINE 1

LINE 2

LINE 3

LINE 4

PREFERRED (LINE 5)

PROPOSED INTERCHANGE

East Camden

Camden

Calhoun

Tinsman

Banks

Hampton

Harrell

Hermitage

Jersey

Ouachita

Louann

Smackover

Norphlet

Calion

Lisbon

El Dorado

Union

Bradley

Moro Bay State Park

H.K Thatcher Lock and Dam

River

Felsenthal National Wildlife Refuge

CO 67

CO 32

7

79

278

167

376

172

160

63

275

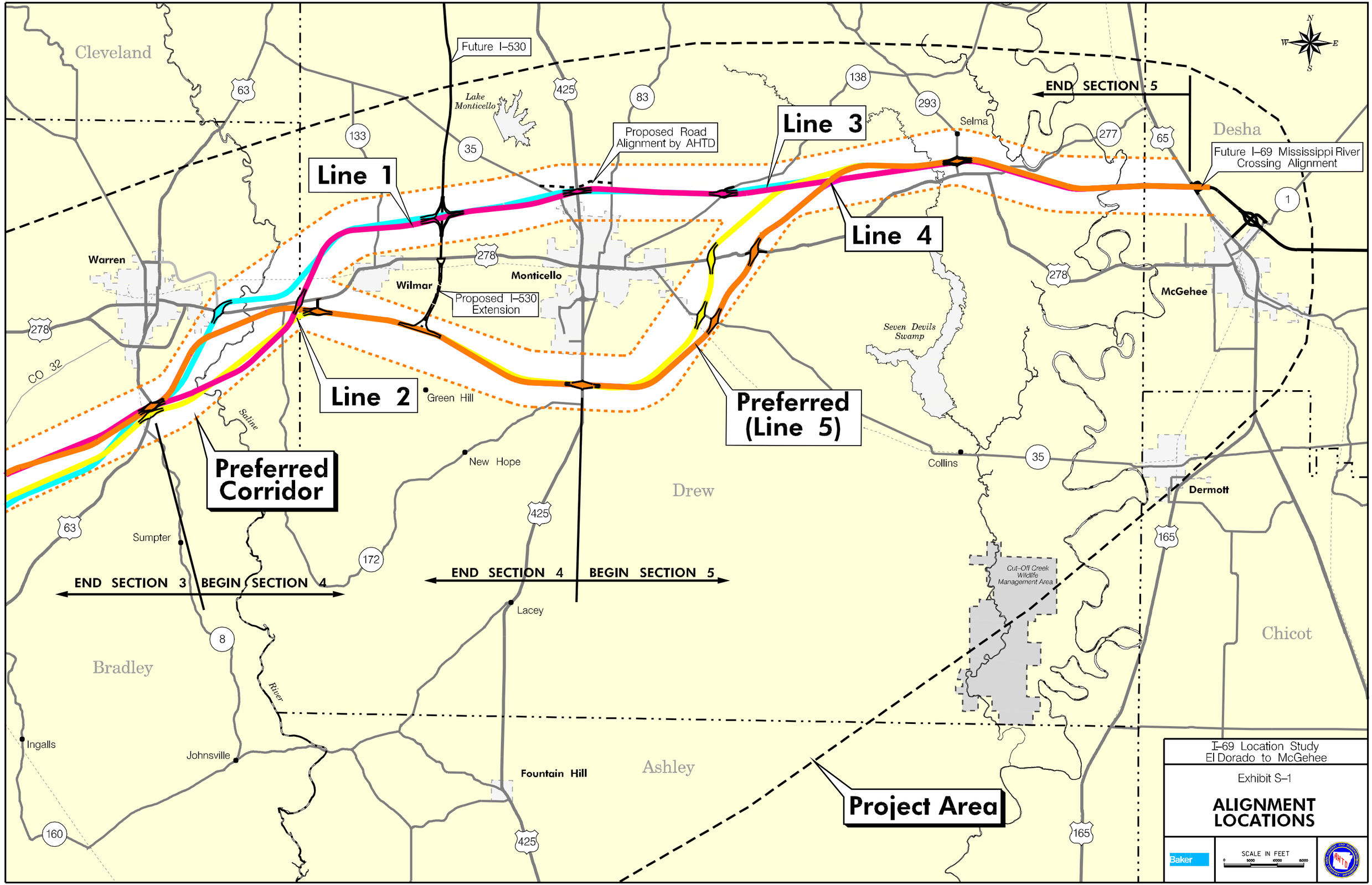
82

N

S

E

W


Cleveland
Future I–530
Lake Monticello
Proposed Road Alignment by AHTD
Line 1
Line 2
Line 3
Line 4
Preferred (Line 5)
Preferred Corridor
Project Area
END SECTION 5
Selma
Desha
Future I–69 Mississippi River Crossing Alignment
Warren
Wilmar
Monticello
Proposed I–530 Extension
Green Hill
Seven Devils Swamp
McGehee
CO 32
Saline River
New Hope
Drew
Collins
Dermott
Sumpter
END SECTION 3
BEGIN SECTION 4
END SECTION 4
BEGIN SECTION 5
Lacey
Cut–Off Creek Wildlife Management Area
Chicot
Bradley
Ingalls
Johnsville
Fountain Hill
Ashley
63
133
35
425
83
138
293
277
65
1
278
172
8
165
160
N
W
E
S
I–69 Location Study
El Dorado to McGehee
Exhibit S–1
ALIGNMENT LOCATIONS
Baker
SCALE IN FEET
0
5000
10000
15000
AHTD

A No-Action alternative was retained throughout the study as a basis for comparing the relative benefits and impacts of the alternatives. Under this alternative, the only projects undertaken would be currently planned safety and capacity improvement projects in the Project Area. Safety projects generally involve shoulder widening and curve realignment where necessary and would be implemented regardless of the decision to construct the proposed highway. Widening projects are currently being constructed for US Highway 278 near Wilmar and Warren. This project would be completed under the No-Action alternative.

Active involvement and participation by community leaders, state and federal agencies, and the public provided sufficient information and comments to identify Line 5 as the Preferred Alignment for the SIU 13 Project. The developed alignments, including the Preferred Alignment, are shown in Exhibit S-1. The basis for identification of the Preferred Alignment is discussed in Section 2. The Preferred Alignment meets the project Purpose and Need and minimizes wetland impacts to the greatest extent practicable in accordance with 404 b(1) guidelines. In addition, the Preferred Alignment would impact the fewest residences (5) over the 103 mile long project. The Preferred Alignment best balances the expected project benefits with the overall project impacts. The final selection of a highway alignment for the SIU 13 Project will not be made until comments received on this Final Environmental Impact.

SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Table S-1 summarizes the project impacts for the developed alignment alternatives discussed in Section 4. Impacts to the social, economic, natural, and cultural environments would result if any of the SIU 13 alignments were constructed. The alignments were developed in a corridor that allowed impact avoidance and minimization for a number of resources, while addressing the project Purpose and Need and providing feasible engineering alternatives. It should be noted that while many resource impacts are similar for the alignment alternatives, they are also relatively minor for a 100 - mile highway project on new location.

All highway alignments would avoid businesses, churches, community facilities, regulatory floodways, cemeteries, and known locations of endangered species, natural areas, and hazardous waste sites. Preliminary project costs range from approximately $779 million to $791 million. Line 1 and Line 2 would impact the greatest number of residences, while the Preferred Alignment (Line 5) would impact the least (5 residences over the 100 mile length of the project). Line 1 and Line 3 would impact the greatest wetland acreage, while the Preferred Alignment (Line 5) would impact the least. Line 1 and Line 2 would impact the greatest floodplain acreage and Lines 2, 3, and 4 would all impact known red-cockaded woodpecker habitat.

OTHER STATE AND FEDERAL ACTIONS REQUIRED

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

- The issuance of a Clean Water Act Section 404 permit for the placement of dredged or fill material in waters of the United States by the US Army Corps of Engineers and a related Section 401 Water Quality Certification issued by the Arkansas Department of Environmental Quality.
- A Bridge Permit issued by the US Coast Guard for crossing the Ouachita River.
- Coordination of the Section 106 process for consideration of archeological and historic resources with the Arkansas State Historic Preservation Officer and the Advisory Council on Historic Preservation.
- A National Pollutant Discharge Elimination System (NPDES) Permit required by Section 402 of the Clean Water Act issued by the Arkansas Department of Environmental Quality.

OTHER PROPOSED MAJOR ACTIONS

Other proposed federal and state actions in the Project Area include:

- The National I-69 Corridor – SIU 14. A Notice of Intent (NOI) was issued by the Federal Highway Administration (FHWA) in March 2003 to prepare an EIS on a proposal to construct SIU 14 of the National I-69 Corridor from I-20 near the town of Haughton in Bossier Parish, Louisiana to US Highway 82 near El Dorado in Union County, Arkansas. SIU 14 lies to the south of SIU 13. Currently, this project is in the highway alignment selection phase of study.
- The National I-69 Corridor – SIU 12. A NOI was issued in December 2000 by FHWA to prepare an Environmental Impact Statement on a proposal to construct SIU 12 of the National I-69 Corridor from US Highway 65 in Desha County, Arkansas to State Highway 1 in Bolivar County, Mississippi, including a crossing of the Mississippi River. A Record of Decision for this project was signed on June 24, 2004.
- Southeast Arkansas I-69 Connector – In October 2001 the Arkansas Highway and Transportation Department received approval from the Federal Highway Administration on the Selected Alignment for the construction of the I-69 Connector from I-530 at Pine Bluff to US Highway 278 between Monticello and Wilmar. Portions of this project are now under construction.
- Southeast Arkansas Feasibility Study – The US Army Corps of Engineers, the Arkansas Soil and Water Commission and the Boeuf-Tensas Regional Irrigation Water Distribution District is evaluating water resource needs throughout the 1.2 million acre Boeuf-Tensas Basin, which includes Bayou Bartholomew in the Project Area counties of Drew, Ashley, Chicot, and Desha Counties. This project is still in progress.
- Southeast Arkansas Regional Intermodal Facility – The Southeast Arkansas Regional Intermodal Facilities Authority was established in 1997 to create a regional intermodal

industrial park within the Project Area. The facility will be located on the southern side of US Highway 278 near the Wilmar, Arkansas area. An environmental assessment was conducted for this project in April 2002 and resulted in the finding of no significant impact (FONSI). Acquisition of right-of-way for this project has been initiated and is on-going.

ENVIRONMENTAL COMMITMENTS

The AHTD and FHWA have consulted and coordinated with appropriate state and federal agencies and Native American Tribes, as well as the public regarding important project issues. Many issues have been resolved throughout the course of the preparation of the Draft and Final EISs by agreeing to the manner in which they will be treated or handled at a later date. The resolution of other issues cannot be completed until the project moves into the next phase of design, when additional information becomes available. The following list summarizes the agreements and commitments that have been reached.

- The AHTD, FHWA, Arkansas Historic Preservation Program, the Advisory Council on Historic Preservation, and the consulting Native American Tribes will develop and sign a memorandum of understanding prior to issuance of the Record of Decision (ROD) for completion of the Section 106 process with respect to the project's effect on cultural resources. A report detailing the results of the Phase I cultural resources survey will be submitted to the Arkansas Historic Preservation Program for review and concurrence.
- The AHTD will avoid wetland impacts to the extent practicable and efforts will be made to minimize unavoidable impacts during the design phase of this project. Mitigation for unavoidable wetland impacts will be provided by AHTD through coordination with the Corps of Engineers (COE) and other appropriate resource agencies. Final mitigation ratios and requirements will be determined after issuance of the Record of Decision.
- Following issuance of the ROD, AHTD will hold Design Public Hearings to receive public comments on the final design of the highway.

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Table S-1

IMPACT SUMMARY

Section	Alignment	Length (miles)	Construction Cost in (000s)	Right of Way/Utility Cost in (000s)	Structures			Cemeteries	Total Noise Impacts	Natural Resources						Cultural Resources			Known Hazardous Waste Sites
					Residences	Businesses	Churches / Community Facilities			Wetlands (acres)	Known Red-cockaded Woodpecker Habitat (acres)	100 Year Floodplains (acres)	Prime Farmlands (acres)	Statewide Farmlands (Acres)	Active Oil and Gas Wells	Recorded Archeology Sites	Recorded Historic Structures	Arch. High Probability Area (acres)	
1	Line 1	15.5	$ 108,671	$ 3,951	4	-	-	-	2	22	-	115	255	-	-	1 UN	-	49	-
	Line 2	15.7	$ 110,416	$ 3,797	1	-	-	-	3	26	-	104	261	-	1	-	-	45	-
	Line 3	15.3	$ 109,129	$ 3,980	4	-	-	-	4	28	-	96	178	-	-	-	-	84	-
	Line 4	15.3	$ 109,129	$ 3,980	4	-	-	-	4	28	-	96	178	-	-	-	-	84	-
	Preferred (Line 5)	15.2	$ 109,419	$ 3,543	1	-	-	-	2	28	-	109	160	-	-	-	-	86	-
2	Line 1	19.2	$ 164,425	$ 4,296	-	-	-	-	1	92	-	184	389	2	-	-	-	205	-
	Line 2	19.2	$ 165,804	$ 4,338	1	-	-	-	-	78	-	164	394	8	-	-	-	202	-
	Line 3	19.0	$ 167,183	$ 4,265	-	-	-	-	-	120	-	174	387	8	-	-	-	201	-
	Line 4	19.0	$ 167,183	$ 4,265	-	-	-	-	-	120	-	174	387	8	-	-	-	201	-
	Preferred (Line 5)	19.3	$ 165,269	$ 4,312	-	-	-	-	1	78	-	170	390	2	-	1 UN	-	199	-
3	Line 1	25.2	$ 163,574	$ 5,636	-	-	-	-	3	65	-	145	494	12	-	-	-	109	-
	Line 2	24.8	$ 163,621	$ 6,021	4	-	-	-	3	69	30	140	586	3	-	-	-	123	-
	Line 3	25.2	$ 166,164	$ 5,813	2	-	-	-	3	75	34	152	595	13	-	-	-	178	-
	Line 4	25.2	$ 166,164	$ 5,813	2	-	-	-	3	75	34	152	595	13	-	-	-	178	-
	Preferred (Line 5)	25.2	$ 163,965	$ 5,642	-	-	-	-	3	65	-	143	439	12	-	-	-	108	-
4	Line 1	18.2	$ 168,619	$ 5,416	8	-	-	-	2	149	-	260	452	57	-	2 NE	-	184	-
	Line 2	17.1	$ 150,863	$ 3,824	-	-	-	-	4	134	-	250	615	113	-	1 NE	-	207	-
	Line 3	18.4	$ 165,925	$ 4,985	4	-	-	-	11	103	-	236	377	50	-	2 NE	-	218	-
	Line 4	17.4	$ 148,457	$ 3,900	-	-	-	-	4	75	-	205	587	92	-	1 NE	-	198	-
	Preferred (Line 5)	17.4	$ 149,516	$ 3,904	-	-	-	-	4	75	-	204	589	91	-	1 NE	-	198	-
5	Line 1	22.3	$ 148,708	$ 5,338	4	-	-	-	7	22	-	152	547	73	-	1 UN	1*	87	-
	Line 2	26.1	$ 175,154	$ 7,045	10	-	-	-	6	23	-	193	662	175	-	1 UN	-	127	-
	Line 3	22.3	$ 148,196	$ 5,662	4	-	-	-	9	23	-	162	567	76	-	1 UN	1*	88	-
	Line 4	25.5	$ 171,500	$ 6,128	4	-	-	-	6	22	-	143	607	160	-	1 UN	-	97	-
	Preferred (Line 5)	25.6	$ 172,136	$ 6,159	4	-	-	-	5	23	-	151	621	154	-	1 UN	-	99	-
Totals	Line 1	100.4	$ 753,997	$ 24,637	16	-	-	-	15	350	-	856	2138	145	-	2 UN, 2 NE	1*	634	-
	Line 2	102.9	$ 765,858	$ 25,025	16	-	-	-	16	330	30	850	2517	299	1	1 UN, 1 NE	-	704	-
	Line 3	100.2	$ 756,597	$ 24,705	14	-	-	-	27	349	34	820	2104	146	-	1 UN, 2 NE	1*	769	-
	Line 4	102.4	$ 762,433	$ 24,086	10	-	-	-	17	320	34	769	2353	273	-	1 UN, 1 NE	-	759	-
	Preferred (Line 5)	102.7	$ 760,305	$ 23,560	5	-	-	-	15	270	-	778	2199	259	-	2 UN, 1 NE	-	690	-

Source: Michael Baker Jr., Inc.

NOTE: The No-Action alternative would result in environmental impacts associated as minor safety improvements and additional widening or passing lane projects are implemented within the Project Area, although the extent of these impacts is not known at this time.

*This structure is no longer standing.
UN = Undetermined status for eligibility for National Register of Historic Places, more work needed
NE - Archeology sites previoulsy surveyed and determined not eligible for nomination to the Nationl Register of Historic Places.

Section 1: PURPOSE AND NEED

1.1 PROJECT DESCRIPTION

The Arkansas State Highway and Transportation Department (AHTD), in cooperation with the Federal Highway Administration (FHWA), proposes to construct Section of Independent Utility (SIU) 13 of the proposed Interstate Highway 69 (I–69) from El Dorado, Arkansas to US Highway 65 near McGehee, Arkansas. This project, hereafter referred to as the SIU 13 Project, represents one section of the nationally designated I-69 Corridor that reaches from Port Huron, Michigan to the Texas/Mexico border (Exhibit 1-1). The proposed project would provide a divided four-lane fully controlled access facility located on new location. The SIU 13 Project Area encompasses all or portions of Columbia, Union, Ouachita, Calhoun, Bradley, Drew, Ashley, Chicot, and Desha Counties and is approximately 110 miles in length (Exhibit 1-2).

1.2 NATIONAL I-69 CORRIDOR

In the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), the United States Congress designated certain highway corridors of national significance to be included in the National Highway System. Twenty-one "high priority corridors" were so designated mainly in regions that are not well served by the existing Interstate Highway System. The I-69 Corridor at that time was identified as Corridor 18 and only included the corridor between Indianapolis and Memphis. Congress has subsequently extended the limits of I-69 to now include a highway corridor from the Canadian border in Michigan to the Mexican border in the Lower Rio Grande Valley of Texas.

Since 1991, several planning studies have been undertaken to address a variety of issues associated with the Congressional designation for I-69. Planning process improvements within the I-69 Corridor have been deemed feasible with overall travel efficiency benefits outweighing the overall cost of constructing and maintaining the roadway. These studies also addressed special issues such as general locations of major river crossings, the development of a nationwide purpose and need, and divided the 1,600-mile I-69 Corridor into 32 Sections of Independent Utility.

1.2.1 I-69 Steering Committee

Following the passage of ISTEA, a Steering Committee was formed with members representing the eight states along the corridor. The member states are Texas, Louisiana, Arkansas, Mississippi, Tennessee, Kentucky, Indiana, and Michigan. Each state department of transportation and the FHWA are represented on the Steering Committee. Initially, the Steering Committee was referred to as the Corridor 18 Steering Committee but was renamed the I-69 Steering Committee following the passage of the Transportation Equity Act for the 21st Century (TEA-21), which officially changed

the corridor designation from Corridor 18 to I-69. AHTD is the administrative agency acting on behalf of the I-69 Steering Committee.

In recognition of the important role that I-69 can play, the Steering Committee adopted the following statement of overall purpose for the I-69 Corridor:

"To improve international and interstate trade in accordance with national and state goals; to facilitate economic development in accordance with state, regional and local policies and plans; and to improve surface transportation consistent with national, state, regional and local needs and with the Congressional designation of the corridor."

Based on the nationwide purpose established for the I-69 Corridor, the I-69 Steering Committee also identified seven goals that include:

- Improving international and interstate movement of freight and people by ensuring a safe transportation system that is accessible, integrated, and efficient while offering flexibility of transportation choices in mid-America.
- Enhancing the regional and local transportation systems by providing transportation capacity to meet current and future needs.
- Facilitating economic development and enhancing economic growth opportunities domestically and internationally through efficient and flexible transportation with particular emphasis being given to economic growth in the Lower Mississippi Delta region.
- Facilitating connections to intermodal facilities and major ports along the corridor.
- Facilitating the safe and efficient movement of persons and goods by fostering a reduction in incident risk.
- Upgrading existing facilities to be utilized as I-69 within the corridor to design standards suitable for an Interstate highway and commensurate with the projected demand.
- Directly connecting the urban areas named by Congress (the "named cities" of Indianapolis, Evansville, Memphis, Shreveport/Bossier City, and Houston and the Lower Rio Grande Valley) with an Interstate highway connection.


N
W
E
S
PORT HURON
DETROIT
CHICAGO
INDIANAPOLIS
KANSAS CITY
ST. LOUIS
NASHVILLE
OKLAHOMA CITY
LITTLE ROCK
PINE BLUFF
MEMPHIS
I-69 CORRIDOR
DALLAS
JACKSON
SHREVEPORT
LAFAYETTE
HOUSTON
SAN ANTONIO
NEW ORLEANS
I-69 CORRIDOR
BROWNSVILLE
90
94
94
55
69
75
74
57
70
44
65
44
530
40
40
40
530
30
55
49
20
20
20
35
45
49
55
10
10
10
37
35
I–69 Location Study
El Dorado to McGehee
Exhibit 1–1
NATIONAL I–69 CORRIDOR
Baker
0
100
SCALE IN MILES
AHTD

Project Area

Kingsland
Thornton
Bearden
Chidester
Ouachita
Calhoun
Tinsman
Rye
Lake Monticello
Bayou Bartholomew
Desha
Cut-off Creek
Selma
Wilmar
Monticello
Warren
Banks
Bradley
East Camden
Camden
Hampton
Harrell
Saline River
Green Hill
New Hope
Seven Devils Swamp
McGehee
Dermott
Collins
Drew
Sumpter
Hermitage
Jersey
Lacey
Cut-Off Creek Wildlife Management Area
Stephens
Louann
Smackover
Ouachita River
Ingalls
Johnsville
Fountain Hill
Norphlet
Calion
H.K Thatcher Lock and Dam
Moro Bay State Park
Montrose
Portland
Lisbon
El Dorado
Lake Georgia Pacific
Felsenthal National Wildlife Refuge
Hamburg
Newell
Hillsboro
Union
Strong
Crossett
Ashley
Chicot
Parkdale
Lake Jack Lee
Overflow National Wildlife Refuge
Felsenthal Lock and Dam
Huttig
Felsenthal
Junction City
Arkansas
Louisiana

35 11 65 8 63 83 293 277 138 133 35 1 278 79 9 167 7 274 376 160 172 425 165 82 15 275

N S E W

I-69 Location Study
El Dorado to McGehee

Exhibit 1-2

PROJECT AREA

Baker

SCALE IN MILES
0 1 2 3 4 5

1.2.2 Legislative History

The I-69 Corridor has been supported by Congressional mandates since 1991. It was first approved as a high priority corridor from Indianapolis to Memphis in the 1991 ISTEA legislation. In 1993, it was further amended by Congress to extend from Memphis to Houston. The National Highway System Designation Act of 1995 further extended the corridor from Houston to include the Lower Rio Grande Valley of Texas. TEA-21, signed into law on June 9, 1998 redefined Corridor 18 and officially designated it as Interstate 69.

TEA-21 provided several additional stipulations for the I-69 Corridor that:

- Included the existing I-69 section from Indianapolis north to the Port Huron, Michigan border crossing with Canada.
- Included existing I-94 from Port Huron, Michigan through Detroit (including the Ambassador Bridge interchange) to Chicago, Illinois.
- Included the High Priority Corridor from Laredo, Texas, northeast to Texarkana via Houston.
- Required the corridor to follow the "alignment" generally identified in the Special Issues Study in Indiana, Kentucky, Tennessee, Mississippi, Arkansas, Louisiana, and Texas.
- Provided for a connection from Pine Bluff, Arkansas to the corridor identified in the Special Issues Study near Monticello, Arkansas.
- Included connections to four ports of entry on the Mexican border in the Lower Rio Grande Valley.
- Included a connection to Laredo, Texas following US Highway 59 from the Mexican border to Victoria, Texas.
- Included a connection to McAllen, Texas following US Highway 281 from the Mexican border to US Highway 59, then following US Highway 59 to Victoria, Texas.
- US Highway 71 from the Mexican border near Brownsville, Texas to US Highway 59, then following US Highway 59 to Victoria, Texas.
- Included a connection from US Highway 77 along FM 511 to the Port of Brownsville in Texas.

1.2.3 Previous Studies

Several planning studies have been completed in the years since I-69 was officially designated in ISTEA. Two feasibility studies (Corridor 18 and Corridor 20) were completed in 1995 and 1996 respectively. Both feasibility studies confirmed that the corridor was a feasible transportation improvement and a prudent expenditure of public funds. In 1997, a Special Issues Study was

completed that addressed unresolved issues from the previous studies. Those issues included logical locations for major river crossings and ensured the I-69 Corridor was still feasible if extended to the Lower Rio Grande Valley.

In 1999, the Special Environmental Study was initiated to facilitate the Corridor's transition into the FHWA National Environmental Policy Act (NEPA) process. The Special Environmental Study:

- Provided a nationwide Purpose and Need for the project, including updates to the national traffic demand forecasts for both vehicles and freight.
- Divided the 1,600-mile corridor into 32 Sections of Independent Utility (SIU) that could be carried forward through the NEPA process.
- Determined that I-69 should be an Interstate highway project, but should also consider relationships with other modal options.

In addition to these Steering Committee sponsored studies, several states had already undertaken or are currently undertaking studies to address transportation needs in the I-69 Corridor. These studies include the Southwest Indiana Highway Corridor, the Mississippi State Highway 304 Corridor, the Great River Bridge crossing of the Mississippi River, the US 59 Corridor Master Plan from Diboll, Texas, to Garrison, Texas, and the I-69 Route Feasibility Study in the Houston, Texas metropolitan area.

1.2.4 Need for a National I-69 Corridor

Previous feasibility studies completed for the I-69 Corridor have demonstrated that extending I-69 from Indianapolis, Indiana, through Memphis, Tennessee, Bossier City, Louisiana, and Houston, Texas to the Mexican border in the Lower Rio Grande Valley would be a feasible project. The anticipated dollar savings to the traveling public, combined with the potential for economic growth in the region, exceeds the cost to develop the facility by a significant margin.

Through work completed during the previous studies, the Steering Committee recognized that there were three primary needs that completion of I-69 would address. These include:

- More efficient movement of goods, primarily by truck, within the continental United States.
- Improvement of economic development opportunities in the traditionally depressed Mississippi Delta and Lower Rio Grande Valley regions.
- Improvement of transportation linkages in areas of the United States overlooked in the original Interstate system.

Movement of Goods

Both domestic and international freight flow within the United States have increased dramatically over

the last ten years. A recent commodity flow survey (USDOT 1999) estimated that between 1993 and 1997, the total freight tonnage shipped in the United States increased by over 14 percent and the total increase in value of that cargo over the same period increased by almost 19 percent, which equates to between a three and five percent increase in goods movement per year. The commodity flow survey also indicated that truck shipments accounted for nearly 70 percent of the 11 billion freight tons shipped in 1997. The significant increase in both domestic and international freight flow within the United States has been attributed to the implementation of the 1993 North American Free Trade Agreement between Canada, the United States, and Mexico, the increased reliance on businesses for "just-in-time" delivery of goods, and the advent of the "global economy."

A study recently completed by the FHWA suggests that the recent growth in freight traffic will continue through the year 2020. The study estimates that total domestic freight traffic will increase by approximately 87 percent over the next twenty years and that international trade will increase by over 107 percent. The vast majority of the new growth will be in the trucking industry with trucks expected to handle 68 percent of the increased tonnage, 82 percent of the increased value, and 62 percent of the increased ton-miles (USDOT 2000).

Transportation decision-makers are faced with the growing problem of how to address the problems of congestion, safety, and travel efficiency created by the expected influx in goods, while at the same time facilitating the economic prosperity enjoyed over the last decade within the fiscal and environmental constraints of adding capacity to the nation's infrastructure. I-69 has been identified as a potential partial solution to that expected dilemma.

Information provided in the 1999 Commodity Flow Survey (USDOT, 1999) identified the following regarding the I-69 Corridor:

- Over 5 billion tons of freight passed through, originating from or terminating in the I-69 Corridor states, representing approximately one half of the total freight shipped in the United States in 1997.
- The vast majority of the shipments in the I-69 Corridor were local in nature (72 percent), while over 21 percent had either an origin or a destination within the corridor and the remaining 70 percent were comprised of through movements.
- Over 90 percent of the domestic freight shipped to or from the states within the I-69 Corridor was moved by truck - representing approximately 3.5 billion tons.

A number of the most heavily traveled truck corridors that parallel the I-69 Corridor are expecting significant increases in truck traffic over the course of the next twenty years. The existing truck percentages along those routes currently range from 20 to 40 percent and those percentages are expected to continue to rise.

The majority of the expected growth in truck shipments will continue to be in the central, eastern and southern United States, with a dominant movement in the southwest to northeast direction, a movement ideally suited for the I-69 Corridor.

A large portion of the international freight originating in or destined to Canada is expected to move along routes generally parallel to I-69. Similar freight flows exist between the US and Mexico. A large volume of freight to and from Mexico is expected to be diverted to the I-69 Corridor from South Texas to Memphis, TN.

Additional demand for truck traffic will be generated from international, particularly Latin American, trade. A portion of the trade passing through Gulf of Mexico ports would likely utilize the new I-69 Corridor.

The recent increase in freight shipments coupled with the significant growth in automobile traffic is taxing the existing highway system. These trends have resulted in increased traffic congestion in both urban and rural areas of the corridor and decreased safety for the traveling public. If these trends are left unchecked, the effects could negatively impact the freight community and the US economy, as a whole.

The implications of this increased congestion could potentially include:

- Reductions in productivity and increased transportation costs.
- Reduced ability to efficiently transport raw materials for production and finished products to market resulting in higher overhead costs and reduced profits.
- Reduced ability to attract and retain industry in the central part of the United States.

Providing alternative routes such as I-69 would assist in alleviating congestion on the existing highways, as well as provide alternative, more direct routes for transporting freight. The existing travel demand model developed for the original feasibility study, coupled with freight origin/destination data, was used to estimate the likelihood that a new interstate facility would divert freight movements to the I-69 Corridor. The anticipated daily volume of trucks utilizing the I-69 Corridor in the year 2030 are approximately 18,000 south of Houston, Texas, 7,000 between Houston, Texas and Memphis, Tennessee, and 9,000 between Memphis, Tennessee and Indianapolis, Indiana.

Economic Development

A large portion of the I-69 Corridor, especially in the Mississippi Delta and Lower Rio Grande Valley,

has historically had limited access to economic development opportunities. These regions exhibit poverty rates well above and median income levels well below the national average. With improved competitive position resulting from reduced transportation costs, enhanced reliability for the delivery of goods, and improved access to the employment base, I-69 could be instrumental in enabling communities to attract significantly more economic production activity. The original feasibility study estimated that improving only the section of I-69 between Houston, Texas and Indianapolis, Indiana could result in over 27,000 new jobs and $11 billion in additional wages.

Mississippi Delta Initiative

In 1988, a bipartisan commission of federal legislators created the Lower Mississippi Delta Development Commission to investigate opportunities to provide economic and social opportunities for 219 counties/parishes in Louisiana, Mississippi, Arkansas, Tennessee, Missouri, Kentucky, and Illinois (see Exhibit 1-3). Historically, the Mississippi Delta region has experienced economic hardships well above the national average. In the Delta region, poverty rates remain over 175 percent higher than the national average, over half of the counties have had poverty rates greater than 20 percent for the past four decades, and the per capita income in the region is only 53 percent of the national average.

Since 1998, a variety of initiatives have been promoted to make advances in many areas of transportation, housing, environmental protection, economic development, health care, education, and other issues vital to the region.

The Commission's transportation goal envisioned the promotion of economic growth through an improved network of highways, airports, rail, and port facilities. The I-69 Corridor and its associated connections closely parallel the goals developed by the Commission. This new interstate corridor provides improved access to markets on both sides of the Mississippi River, reduces transportation costs for local businesses, provides an incentive for new businesses to locate in the region, and enables travelers and tourists to travel through the region, resulting in additional roadside expenditures.

Lower Rio Grande Valley

The Lower Rio Grande Valley has experienced a similar history of above average poverty rates and below average median income levels. Counties in the Lower Rio Grande Valley have median household incomes that range from 40 to 60 percent of the national average (see Exhibit 1-4) and county poverty rates that range from 160 percent to over five times the national average.

System Linkage

Development of the proposed I-69 Corridor would provide a continuous roadway link designed to

Interstate highway standards from the Mexican border in Texas to the Canadian border in Michigan, a length of more than 1,600 miles. An improved I-69 would provide the following system linkage benefits:

- Currently, no direct Interstate highway type facility exists between the major population centers named in the Congressional legislation, including Indianapolis, Indiana; Memphis, Tennessee; Shreveport, Louisiana; and Houston, Texas. In total, I-69 would connect 10 urban areas with populations in excess of 50,000.
- Several small to medium sized urban areas in the I-69 Corridor do not currently have direct access to the Interstate Highway System. Those communities include Bloomington, Indiana; Millington, Tennessee; Clarksdale, Mississippi; Monticello and El Dorado, Arkansas; as well as Nacogdoches, Lufkin, Victoria, Harlingen, McAllen, Brownsville, and Pharr, Texas.
- An improved I-69 in the urban areas would provide a means of upgrading travel efficiencies on already overburdened freeways, provide an improved connection to important transportation corridors and radial freeways, and provide an improved connection to modal and multi-modal terminals in proximity to I-69.
- I-69 would provide improved crossings of both the Mississippi and Ohio Rivers. Improved major river crossings would provide improved economic development opportunities as well as additional river crossings in times of flooding or national emergencies, such as the potential earthquake along the New Madrid fault.

An improved I-69 would also provide improved connections to alternative border crossing locations in Mexico, especially in the Brownsville and McAllen, Texas areas of the Lower Rio Grande Valley.

I-69 Location Study
El Dorado to McGehee

Exhibit 1-3

MISSISSIPPI DELTA INITIATIVE TARGET COUNTIES

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1.2.5 Sections of Independent Utility

The I-69 Corridor consists of an extension of existing I-69 from Port Huron, Michigan to the Texas/Mexico border. With a total length of over 1,600 miles, the additional sections of I-69 will require many years to complete. This length precludes development of the full corridor as a single construction project and precludes an environmental analysis of the entire corridor. Furthermore, the work to be undertaken varies along the route from widening, reconstruction, and relocation of existing roadways to development of an entirely new highway on new location.

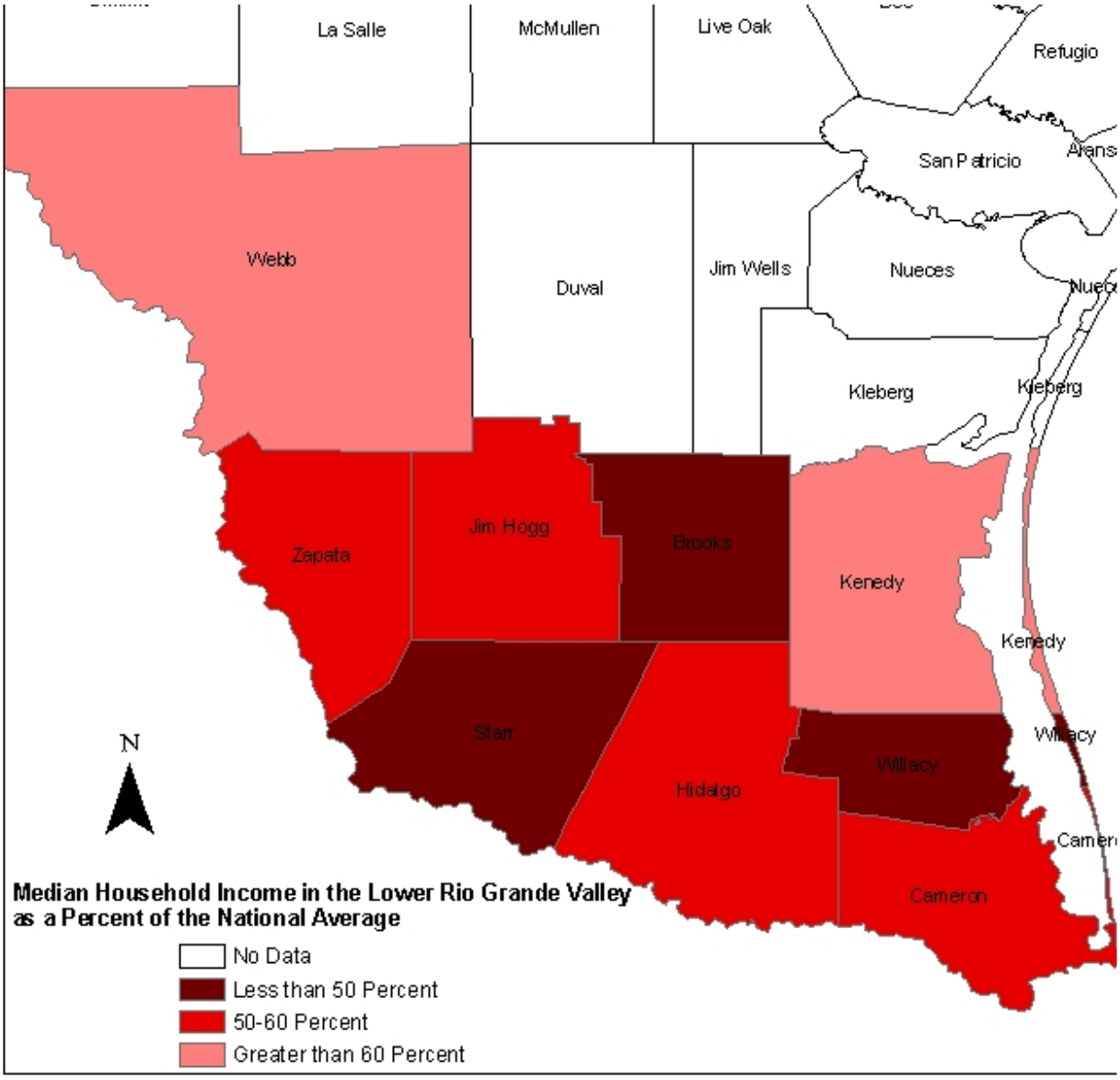
The practical approach was to undertake a series of projects that all fit into and are consistent with the overall purpose and need for I-69. In order to approach this in a realistic manner, the entire corridor was divided into viable sections, each of which could be constructed in a reasonable time frame by the state or states involved if adequate funding were to become available. Each of these sections is referred to as a Section of Independent Utility (SIU).

A given SIU may be in place for several years before an adjacent section is completed and open to traffic, hence the concept of having independent utility. The process of defining these SIUs involves identifying or framing a highway project that meets a number of principles and criteria.

FHWA Guidance

The FHWA memorandum dated November 5, 1993 provides information to guide the establishment of logical termini for a proposed project (or action). It refers to concepts and objectives contained in existing regulations. Three general principles are outlined in the FHWA regulations in 23 CFR 771.111(f) that are to be used to frame or define a highway project. In order to ensure meaningful evaluation of alternatives and to avoid commitments to related transportation improvements before they are fully evaluated, each SIU should:

- Connect logical termini and be of sufficient length to address environmental matters on a broad scope.
- Have independent utility or independent significance, i.e., be usable and be a reasonable expenditure even if no additional transportation improvements in the area are made.
- Not restrict consideration of alternatives for other reasonably foreseeable transportation improvements.



I-69 Location Study
El Dorado to McGehee

Exhibit 1-4

LOWER RIO GRANDE VALLEY MEDIAN HOUSEHOLD INCOME

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Additional Criteria for I-69

For the purposes of the I-69 Corridor, the FHWA guidelines have been expanded upon to establish criteria for evaluating the SIUs. The following is the list of criteria that was used to determine the termini for each SIU within the I-69 Corridor. Congress bases this on the premise that I-69 is to be an Interstate highway in accordance with the mandate. Each SIU should:

- Begin at an Interstate Highway, US or State numbered route (including toll roads) that have regional connectivity, at a NHS intermodal facility, or at an international border.
- Be within the adopted I-69 Representative Corridor.
- Maintain the integrity of the full I-69 Corridor alignment.
- Permit the SIU to make a connection with the crossing Interstate highway, US or State-numbered route, or major local facility at or within a limited distance from the terminus.
- Form one terminus for each adjacent SIU of I-69.
- Not force acceptance of significantly adverse environmental impacts that could be avoided while still remaining within the adopted limits of the I-69 Corridor.
- Be established giving consideration to political boundaries and jurisdictions.
- Have a construction cost estimate that is manageable for the specific state(s) so that the project can be let to contract over a reasonable time frame.
- Be independently useful, serving the I-69 or regional Purpose and Need that would complement I-69, even if other sections of I-69 are never constructed.
- Permit alternatives that provide immediate relief to nearby facilities and serve traffic generators without long-term, negative traffic complications if a decision were made not to extend I-69.
- Not limit nor restrict consideration (in separate studies) of alternatives for other reasonably foreseeable transportation improvements (e.g. committed facilities in the vicinity of the I-69 Corridor as well as other facilities on an officially adopted long-range plan).
- Be set giving consideration to other foreseeable transportation improvements.
- Be at a location that does not force a particular alternative action upon previously adopted improvements along or near the SIU.

1.2.6 I-69 Sections of Independent Utility

The application of these criteria to the I-69 Corridor resulted in 26 SIUs established within the I-69 Corridor. An additional six SIUs, for a total of 32, were added for roadways that connect to the I-69

Corridor, referred to as "I-69 Connectors." The final SIUs resulted from discussions with each state department of transportation. They form a continuous route from the Michigan/Canada border to the Texas/Mexico border. Each SIU (Exhibit 1-5) has a common terminus with adjacent SIUs and are listed in Table 1-1.

I-69 Connectors

As detailed in the current definition of I-69 in the TEA-21 legislation, a number of connecting routes are included as part of the I-69 Corridor. These additional connections are separate SIUs and are listed in Table 1-1.

Although Congress designated the I-69 Corridor as an Interstate highway, the FHWA NEPA process requires consideration of other transportation modes and alternatives to determine if they potentially could meet the identified purpose and need for the corridor. As a part of the I-69 Corridor Special Environmental Study, a modal analysis was performed to assess the potential of each mode to satisfy the overall purpose of the I-69 Corridor. Based upon a review of the characteristics of each modal alternative and the way in which they currently provide services in the corridor, all are essential to meet the diverse and complicated pattern of freight movements and personal travel in the I-69 Corridor. Together, the various transportation modes form an intermodal transportation system that provides important opportunities for travel choices so that the particular needs of specific movements can generally be met. Nevertheless, it was concluded that an Interstate highway in the I-69 Corridor is uniquely suited to address the national needs of domestic and international freight movement, economic development, and system continuity.

This is consistent with the Congressional designation of the I-69 Corridor as an Interstate highway. Unlike the relatively limited spectrum of travel needs that would be served by the other modal alternatives, an Interstate highway facility would be responsive to a wide range of needs on a local, regional, national, and international basis.

Table 1-1
SECTIONS OF INDEPENDENT UTILITY FOR THE I-69 CORRIDOR

SIU	Description	Remarks
1	Michigan/Canada Border (at Port Huron, MI) to Indianapolis, IN	SIU covers the existing portion of I-69 from Port Huron, Michigan at the US/Canada border to Indianapolis, Indiana.
2	Indianapolis Urban Area	SIU provides for the extension of I-69 from the northeast side of the city of Indianapolis to the I-465 loop on the southwest side of the area. It is located completely within the Indianapolis metropolitan area.
3	Indianapolis, IN to Evansville, IN	SIU connects from I-465S in the Indianapolis metropolitan area to I-64 north of Evansville and passes through rural southwestern Indiana. The southern terminus is at the I-64/I-164 interchange north of Evansville.
4	Evansville Urban Area and Ohio River Crossing	SIU begins north of Evansville at the I-64/I-164 interchange and proceeds southerly to cross the Ohio River in the Evansville metropolitan area. The southern terminus would be near Henderson, KY at the Pennyrile Parkway interchange with SH 425.
5	Henderson, KY to Eddyville, KY	The termini of this SIU were selected to permit consideration of alternative alignments south of Henderson while connecting with I-24 near the end of the Western Kentucky Parkway or Wendell H. Ford Parkway, as the Kentucky General Assembly renamed it in 1998. Options include 1) use and potential improvement of the Pennyrile Parkway and the Wendell H. Ford/Western Kentucky Parkway to I-24 near the Tennessee River and the Land Between-the-Lakes and 2) a more direct route on new location through western Kentucky.
6	Eddyville, KY to Fulton, KY	SIU covers the remainder of the I-69 corridor under consideration in Kentucky proceeding from the I-24/Wendell H Ford (Western Kentucky) Park-way to the US 51/Purchase Parkway interchange near Fulton, Kentucky at the Kentucky/Tennessee state line. The route follows I-24 in the vicinity of the Land Between-the-Lakes, a sensitive environmental area, and then proceeds southwesterly along the Purchase Parkway.
7	Fulton, KY to Dyersburg, TN	SIU utilizes US 51 from the Purchase Parkway to the I-155 spur that crosses the Mississippi River at Dyersburg, TN. The SIU is made up of three major "segments": 1) the upgrade of the US 51/Purchase Parkway (US 51 Bypass) Interchange in South Fulton, TN, 2) the upgrade of the route (US 51 Corridor) from north of Union City, TN, to south of Troy, TN (this study section may include multiple location alternatives), and 3) the existing freeway section from south of Troy, TN to the US 51/I-155 Interchange at Dyersburg, TN.
8	I-155 to Millington, TN, north of Memphis	SIU involves the upgrade and relocation of US 51 from the vicinity of Dyersburg to the Paul Barret Parkway south of Millington. This terminus in the Millington area permits study of outer loop possibilities within the Memphis urban area for the routing of I-69 as well as the more direct routing along I-40/I-240.
9	Memphis Urban Area	SIU would extend from Millington on US 51 north of Memphis to I-55 south of Memphis at Mississippi SH 304. This permits evaluation of the routing of I-69 through the Memphis area along a variety of different routes.

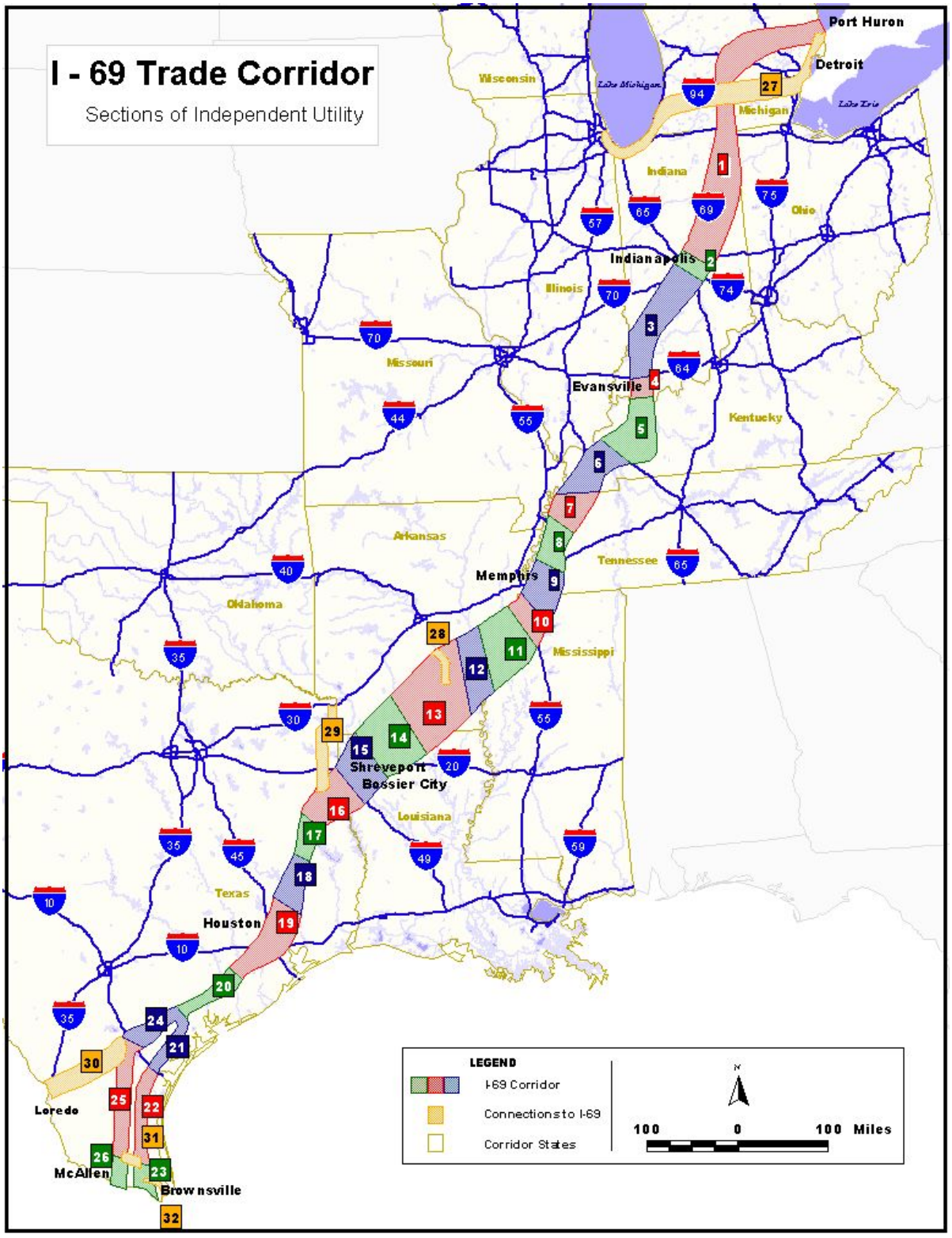
Table 1-1
SECTIONS OF INDEPENDENT UTILITY FOR THE I-69 CORRIDOR

SIU	Description	Remarks
10	MS 304 Corridor	SIU covers a segment of Mississippi State Highway 304 that is currently under development by the Mississippi DOT connecting I-55 to US 61 in northern Mississippi.
11	Mississippi Alignment	SIU connects two SIU that are currently being developed. The MS 304 Corridor and the current study of a new Mississippi River bridge are current projects. This SIU would extend from the US 61/MS 304 Interchange to the Mississippi Route 1 near Rosedale, MS.
12	Mississippi River Crossing	SIU coincides with the corridor locations being studied as a part of the Great River Bridge environmental studies to determine a new crossing of the Mississippi River near Rosedale, MS.
13	US 65 to El Dorado, AR	SIU extends on new alignment from the terminus of the previous Mississippi River Crossing corridor to US 82 in the vicinity of El Dorado, Arkansas. This provides new system connectivity in southern Arkansas.
14	El Dorado, AR to Shreveport, LA	SIU continues I-69 on a new location to a terminus on I-20 east of Bossier City. A previously identified location for this connection at I-20 was the interchange of LA 157 and I-20 at Haughton, LA.
15	Shreveport/Bossier City Urban Area	SIU provides for determination of the routing in this urban area and extends from I-20 on the east side to US 171 in southwestern Shreveport near Stonewall, LA. The general corridor resulting from the Special Issues Study adopted an alignment around the southeastern portion of the urban area based upon the 1992 study, Interstate 69 and Inner Loop Expansion: Compatibility Report.
16	Louisiana/Texas Alignment	SIU provides for the determination of the routing from the Shreveport/Bossier City area to the northeastern terminus for a current study of I-69 in the Nacogdoches, Texas area. The analyses would include determining the location for I-69 at the Texas/Louisiana border and near Carthage and Tenaha, Texas.
17	Lufkin/Nacogdoches, Texas	SIU involves the existing study area in the US 59 Master Plan that includes alignment alternatives for US 59 from north of Nacogdoches to north of Diboll, Texas. This section corresponds to the locations along US 59 being studied by the Texas Department of Transportation in this area.
18	Eastern Texas	SIU takes I-69 from the southern terminus of an existing study at its connection to existing US 59 at Diboll to the north end of the Cleveland Relief Route for US 59. The southern terminus is the beginning of the section of existing US 59 that has full access control. This is near the northern limits of the Houston metropolitan area.
19	Houston Urban Area	SIU provides for the determination of the routing of I-69 across the Houston metropolitan area. The northern terminus of this SIU is the north end of the US 59 Cleveland Relief Route. The southern terminus would be at the connection of US 59 South with TX 60 near Hungerford. The northern limit for this SIU established at Cleveland permits full consideration of upgrades and/or relocation of US59/I-69 entering the Houston area, as well as the connection between US 59/I-69 and the Grand Parkway (North). It incorporates the study limits of current work on Route Feasibility Study for I-69.

Table 1-1
SECTIONS OF INDEPENDENT UTILITY FOR THE I-69 CORRIDOR

SIU	Description	Remarks
20	Houston (Richmond, Texas) to Victoria, Texas	The northern terminus of this SIU is the connection of US 59 South with Texas Highway 60. This SIU provides for the determination of the upgrade of US 59 from the Houston area to the Victoria area. At Victoria, there is a need to determine the urban routing for I-69 with a connection to US 77 for extension towards I-37 near Corpus Christi as well as the routing along existing US 59 to George West. The southern terminus would be at the junction of US 77 with Route 175, a limited access facility extending from US 59 to the southern sector of Victoria, TX to connect with US 77.
21	Victoria, TX to Corpus Christi, TX	SIU permits analysis of the northern portion of the US 77 alignment for I-69 from Victoria to the Lower Rio Grande Valley. The southern terminus at I-37, northwest of Corpus Christi permits separate evaluations of connections and alternatives to Corpus Christi.
22	Corpus Christi, TX to Raymondville, TX	SIU extends I-69 using the US 77 Corridor to a potential connection over to the US 281 Corridor near Raymondville.
23	Raymondville, TX to Texas/Mexico Border	SIU extends along US 77 to the border by way of Harlingen. It permits evaluation of options in the Harlingen/ Brownsville, Texas, and Matamoros urban complex including the border crossing. This also connects with the separate corridor along FM 511 to the Port of Brownsville.
24	Victoria, TX to George West, TX	SIU encompasses possible routings of I-69 from Victoria, Texas southwest along the existing US 59 corridor to the vicinity of George West, Texas at US 281.
25	George West, TX to Edinburg, TX	SIU provides for the evaluation of upgrades to US 281 from the vicinity of US 59 (and connections to I-37) to TX 186 at Edinburg, Texas, with a potential connection to the Raymondville area.
26	Edinburg to Texas/Mexico Border	SIU permits evaluation of all alternatives to connect from the I-69/TX 186 terminus to the Texas/Mexico border near Reynosa
27	I-94 Connector	SIU follows existing I-94 between Port Huron, MI, the Detroit metropolitan area and the Chicago metropolitan area.
28	Southeast Arkansas I-69 Connector	SIU links Pine Bluff, Arkansas to I-69 near Monticello, Arkansas. This section corresponds to the routes along US 65 and US 425 being studied by AHTD in this area.
29	US 59/US 259 Texarkana Connector	SIU is a connection from I-30/US 59 in Texarkana to I-69/US 59 in the vicinity of Nacogdoches, Texas. This SIU corresponds to the northernmost segment of Corridor 20.
30	US 59 Laredo Connector	SIU is a link from I-35/US 59 in Laredo to I-69/US 281 in the vicinity of George West, Texas. This SIU corresponds to the southernmost segment of Corridor 20.
31	US 77/US 281 Lower Rio Grande Valley Connector	SIU is a connection from I-69/US 281 near Edinburg, Texas to I-69/US 77 near Raymondville, Texas
32	FM 511 Connector	SIU is located in the Lower Rio Grande Valley connecting from US 77 near Olmito, Texas to the Port of Brownsville.

Source: FHWA 2002, Michael Baker Jr., Inc.



I-69 Location Study
El Dorado to McGehee

Exhibit 1-5

I-69 TRADE CORRIDOR SECTIONS OF INDEPENDENT UTILITY

Baker

NOT TO SCALE

1.2.7 Project Limits and Logical Termini

The portion of I-69 between El Dorado and McGehee, Arkansas has been identified as SIU 13. The project limits are defined in the Corridor 18 Special Issues Study (1997) and in the I-69 (Corridor 18) Special Environmental Study, Task C Report - Sections of Independent Utility SIU report (1999). The eastern and western limits of the proposed project extend as necessary to connect to the existing highway system in Arkansas. This SIU has independent utility in that it connects the Great River Bridge at US Highway 65 north of McGehee, Arkansas with a regional route (US Highway 82) west of El Dorado, Arkansas as specified in the Task C Report. US Highway 65 north of McGehee and US Highway 82 west of El Dorado serve as the logical termini for the SIU 13 Project.

1.2.8 Legislation

I-69 was first designated as a High Priority Corridor as the result of the 1991 ISTEA legislation and subsequently amended twice to provide a transportation corridor from the Canadian border in Michigan to the Texas/Mexico border in the Lower Rio Grande Valley in Texas. Other legislation indirectly related to the proposed project is the North American Free Trade Agreement (NAFTA) enacted in 1994. Import and export that would result as a part of the agreement are expected to generate additional freight flow between Mexico, the United States, and Canada along several trade corridors. North-south traffic demand is expected to result and some of this increase will be accommodated by I-69.

1.3 PROJECT NEED

The need for the completion of this section of the National I-69 Corridor, SIU 13, was examined through:

- Identification of functional deficiencies in the project area roadway network
- Review of the area interstate system
- Identification of area economic development needs
- Identification of area social needs
- Review of area intermodal facilities
- Review of area recreation opportunities
- Local community involvement.

1.3.1 Traffic Analysis

A traffic analysis was performed to evaluate existing and future traffic conditions within the project area and assess the potential impacts of the proposed I-69 Project on the area transportation network.

Traffic Forecast and Capacity Analysis

Traffic volumes were evaluated for existing conditions (Year 2000), estimated future conditions without the new highway (Year 2030 No-Action), and estimated future conditions with the proposed highway (Year 2030 Build Alternative). In addition,

the traffic analysis evaluated and verified the serviceability of the proposed highway in the design year 2030. Traffic forecasts were based on 2000 AHTD annual average daily traffic (AADT) estimates. Growth rates derived from historical growth trends were used to predict year 2030 traffic volumes. Future roadway conditions were predicted that included the proposed I-69 Project for year 2030. Diverted traffic and induced travel within the project area and to the proposed highway were estimated using methods outlined in Moskowitz (1956) and Noland (1999).

A capacity analysis was conducted to determine the Level of Service (LOS) for US and state highways within the project area (Transportation Research Board 2000). The LOS qualitatively measures traffic operating conditions through a consideration of speed, safety, convenience, travel time, driving comfort, maneuverability, traffic interruptions, and travel costs. Level of service is defined in categories from A to F. Level of service A represents the highest quality of service with free flowing traffic conditions, while LOS F represents heavy congestion or traffic breakdown conditions. AHTD designs highways to operate at LOS B in rural areas and LOS C in urban areas, where possible. Complete definitions of the LOS ratings are provided in the Appendix.

Within the Project Area, the roadway network was divided into 150 roadway links to facilitate the traffic analysis. A review of the Year 2000 traffic conditions found that system wide, all roadway links operated at LOS D or above, with a majority of links operating at LOS A (33 percent) and LOS C (35 percent) (Table 1-2). Ten roadway links were found to operate at LOS D during peak periods; five in El Dorado associated with US 82B, US 167, and S.H. 7B; one in Warren associated with US Highway 63B, two in Monticello associated with US Highway 278; and two south of Monticello on US Highway 425.

Table 1-2
PROJECT AREA LEVEL OF SERVICE (LOS)

LOS Results	2000 Existing Peak % of Roadway Links	2030 No-Build Peak % of Roadway Links
A	33	22
B	25	20
C	35	24
D	**7**	**31**
E	**0**	**3**

Source; Michael Baker Jr., Inc.

By the year 2030 without the proposed I-69 Project, the increased traffic volumes projected to occur would result in an overall LOS degradation for the project area roadway network. Roadway links operating at LOS A, B, and C would decrease. Links operating at LOS D would increase by nearly 25 percent. Four roadway links are projected to operate at LOS E, two in Monticello and two near McGehee. The majority of LOS D links are within or near the communities of El Dorado, Warren, and Monticello.

The SIU 13 Project (2030 Build Alternative) would provide additional roadway capacity in the Project

Area and would result in a general increase in system wide performance when compared to the No-Build Alternative. Interstate 69 would assist in diverting traffic volumes off the surrounding roadways resulting in the majority of links operating at LOS C or better. Areas of poor performance would still exist in El Dorado and Monticello, as I-69 would not improve community specific traffic issues. Section 2 provides a more detailed discussion of the 2030 Build Alternatives effect on Project Area LOS.

1.3.2 Interstate System Linkage

In 1956, the Interstate Highway System was authorized with the goal of linking together the nation's major urban areas. Within the south-central United States, the Interstate system provides both east-west and north-south travel (Exhibit 1-1). Interstate travel in Arkansas is restricted to five routes: north-south travel on I-55 in the northeastern corner of the state, north-south travel on I-530 from Little Rock to Pine Bluff, and north-south travel on I-540 from Fort Smith to Bella Vista in the northwestern corner of the state, east-west travel on Interstate 30 from Texarkana to Little Rock, and I-40 that is the only Interstate that completely traverses the entire state from Fort Smith, Arkansas to Memphis, Tennessee.

Citizens that reside in south-central and southeastern Arkansas are not directly linked to the Interstate highway system. The population within the Project Area exceeds 190,000, which includes El Dorado with a population of over 20,000. Citizens in the El Dorado area currently travel over 80 miles to Texarkana or Arkadelphia to access I-30 for northeast travel in Arkansas, eastward travel to Tennessee, and westward travel into Texas. Those wishing to access the Interstate system to the south would have to travel over 50 miles to reach I-20 in Louisiana. Residents in the Warren, Monticello, and McGehee areas have to travel about 50 miles to access I-530 in Pine Bluff for northward travel to Little Rock, approximately 90 miles to the south to reach I-20 in Louisiana, and over 100 miles east to reach I-55 in Mississippi.

At the regional level, completion of I-69 would provide an Interstate quality facility that would provide a direct connection for the residents of south-central and southeastern Arkansas to major metropolitan areas in Louisiana, Texas, and Tennessee.

1.3.3 Economic Development

Historically, the economic base of the Project Area in southeast and south-central Arkansas has been in oil and gas production, forestry, and farming. Larger cities such as El Dorado, Monticello, and Warren have expanded and diversified their economic base through the addition and development of manufacturing, retail, and financial employment opportunities. Some of the major employers by county include: Great Lakes Chemical Corporation, Union Powers Partnership, Georgia Pacific, Murphy Oil and The Medical

Center of South Arkansas in Union County; Lockhead-Martin, and the Ouachita Valley Medical Center in Ouachita County; Potlach Corporation, Bradley County Memorial Hospital, and Robbins, Inc. in Bradley County; Burlington Industries, International Paper, University of Arkansas at Monticello, and the Drew County Memorial Hospital in Drew County; McGehee Industries and the McGehee School District in Desha County; and the Ashley County Medical Center and Georgia Pacific in Ashley County. Even though the Project Area has a diversity of employment opportunities, the 2000 unemployment rate for all Project Area counties remained higher than the statewide rate of four percent and ranged from five percent in Union County to 11 percent in Desha County (See Section 3-2). Discussions with local community leaders identified the need to attract and expand industry in their communities and in the region to reduce unemployment and to reduce the migration of their labor force and households. Local community leaders identified the SIU 13 Project as a catalyst that could spur development of local and regional businesses. Providing improved access to the Project Area for both employees and employers would result in new job opportunities and a reduction in unemployment. Furthermore, local leaders felt that the location of an Interstate facility near their communities would enhance their ability to recruit industry to south Arkansas by allowing them to compete with other communities and other states that have ready access to Interstate highways.

I-69 would increase transportation efficiency for many industries dependent on trucking as travel time and vehicle operating costs are reduced. The proposed highway would provide an alternative east-west Interstate quality highway that would avoid local traffic conflicts and communities. Increased transportation efficiencies would be expected to reduce shipping and overall operating costs for companies located in this area. In addition, the proposed highway would continue transportation improvement initiatives in south Arkansas that enhance economic development opportunities by providing a link from this region to the national Interstate highway system and connections with commerce centers in other parts of the state and country.

1.3.4 Roadway Network and Social Services

A primary role of a transportation system is to provide safe and efficient access to hospitals, schools, government offices, and retail stores, as well as movement between communities. Discussions with local community leaders and the public identified access to these services and between communities as important quality of life factors in this primarily rural Project Area. Currently, the Project Area is linked together by a transportation system of two-lane state and county roadways and several US highways that have some four-lane sections.

The I-69 Project would reduce travel time for many citizens traveling from rural portions of the Project Area to obtain personal items, household supplies, and medical care. To travel to Monticello, citizens living in the communities of Kirkland, Liberty, and Louann currently drive nearly 80 miles in approximately 1-¾ to two hours. Travel on I-69 could reduce travel time by nearly 50 percent to cover the more direct route of just over 60 miles in less than an hour. Travelers heading from El Dorado to McGehee travel roughly 100 mile in two to 2-½ hours. Travel on I-69 between these two communities would cover approximately the same distance in just over 1-½ hours, a timesaving of over 30 percent.

When traveling to medical facilities, fewer miles traveled means less travel time. Medical facilities within the Project Area include the Medical Center of South Arkansas in El Dorado, Bradley County Medical Center in Warren, Drew Memorial Hospital in Monticello, and McGehee-Desha County Hospital in McGehee. Construction of I-69 would benefit Project Area residents with safer and more efficient travel to medical facilities.

Protection of personal property is a concern of citizens in all communities. Municipal police departments are located in El Dorado, Smackover, Hampton, Warren, Monticello, and Dermott. Most cities and towns throughout the Project Area have fire departments. Smaller populated communities are provided with fire protection from one of the surrounding towns. Law enforcement and fire personnel rely on existing local roads to protect communities. Construction of I-69 could benefit the Project Area by reducing emergency response times between communities and by removing through traffic from the local roadway network.

Post secondary education opportunities are offered at the South Arkansas Community College (SACC) in El Dorado and the University of Arkansas-Monticello campus. SACC provides a diverse two-year curriculum while the Monticello campus offers degrees at the bachelors and masters level. The construction of I-69 would provide a more efficient, safer, and accessible travel facility for the rural residents of Arkansas.

1.3.5 Intermodal Demand

With the enactment of ISTEA and TEA-21 by Congress, providing improved intermodal connectivity has become a national priority. It is important to consider other transportation modes within a region when planning and designing highway facilities. Accommodations for intermodal facilities and activities must be provided to achieve a sound transportation system with minimal or no delay for passenger and freight movement transferring between modes.

Improved intermodal access and connectivity can be enhanced with the development of a new highway facility. Improved design features such as adequate turning radii, grades, railroad grade

separations, and vertical and horizontal clearances of a new highway facility would allow ease of movement of tractor-trailer trucks and trains through the region. Control of access along a new facility would allow for the unrestricted movement of through traffic by removing the delay caused by local traffic. The reduced delay and placement of interchanges would result in improved travel times for both cars and trucks. The existence of a better transportation network would provide a more efficient medium for the shipping and receiving of freight and commodities and enhance economic growth of the region.

1.3.6 Airports

The closest commercial airports include the Texarkana Regional Airport, Adams Field in Little Rock, and the Mid Delta Regional Airport in Greenville, MS. Local airports include the South Arkansas Regional Airport at Goodwin Field and the Downtown Airport in El Dorado, and the Warren, Monticello, Dermott, and McGehee Municipal Airports.

1.3.7 Bus Lines

Passenger bus service is available for nationwide travel by Greyhound Bus Lines in El Dorado and Monticello. Additionally, the Southern Arkansas Transit service in El Dorado provides travel to Malvern via Camden and Fordyce for subsequent nationwide travel on Greyhound Bus Lines.

1.3.8 Navigable Waterways and Ports

Three ports are located within close proximity to the Project Area. The Ports of Camden and Crossett lie along the Ouachita River, the only navigable waterway in the Project Area. The Port of Camden is located about eight miles northwest of El Dorado in Ouachita County. The facility primarily consists of a 30,000 square foot warehouse leased from the city of Camden by a private firm to store tires. Currently, the Port is non-operational.

The Port of Crossett lies about five miles south of the confluence of the Ouachita and Saline Rivers along the eastern boundary of Union County. The facility is owned by the City of Crossett and consists of a docking peer, a turning basin, a four barge towing system and a 15,000 square foot warehouse. At times, crude oil is received by barge to local oil companies and pumped into on site tankers.

The Port of Yellow Bend is located along the Mississippi River approximately 11 miles southeast of McGehee at the boundary between Chicot and Desha Counties. The Chicot – Desha Metropolitan Port Authority has jurisdiction over the port. The facility includes a man-made slackwater harbor that is connected to the Mississippi River by a 2,000-foot long channel. Commodities moved through the Port Authority's public terminal include stone, lime, dry bulk fertilizer, rice, wood chips, logs, and Russian railroad iron (AHTD 1997).

1.3.9 Railways

Railroads are designated as either Class I, Class II, or Class III Railroads. Rail class is predominantly based on the area of service. A Class I Railroad refers to one that provides national rail service, Class II provides regional rail service, and Class III provides local rail service. There are no Class II railroads in the state of Arkansas.

Union Pacific provides Class I rail service at each end of the Project Area. Union Pacific directly connects El Dorado and McGehee to all major cities of the south and the west with long haul service to national market areas. Delta Southern Railroad directly connects Warren to McGehee providing Class I rail connection across the eastern half of the Project Area. Nationally, these railroads carry a wide variety of commodities including chemicals, coal, food and food products, forest products, grain and grain products, metals and minerals, and automobiles and parts. Union Pacific is the largest hauler of chemicals, much of which originates along the Gulf Coast near Houston, Texas. Additionally, it is one of the largest carriers of truck trailers and containers. Locally, cargo transported outbound from El Dorado includes chemicals, fiberboard, and dimension yellow pine lumber.

Most of the Class III railroads that operate in the Project Area link to the Union Pacific rail yards in El Dorado, Warren, and McGehee. These four Class III Railroads, also know as short line carriers, include the Ouachita, El Dorado - Wesson; Fordyce and Princeton; and the Warren Saline River Railroads. The primary services offered by Class III Railroads are switching, spotting cars, and feeder rail car service to Union Pacific (AHTD 1997).

The Ouachita Railroad, formerly part of the Rock Island Line, operates freight service from a connection with Union Pacific at El Dorado and extends to Lillie, LA. Primary cargo includes bulk chemicals, lumber, and particleboard. The El Dorado - Wesson Railroad operates freight service from a connection with the Union Pacific at El Dorado and extends to Newell, AR. Materials handled include petroleum products, chemicals, and medium density fiberboard.

The Fordyce and Princeton Railroad is owned by Georgia Pacific and operates from Fordyce to the lumber mill in Crossett. At Crossett, it changes to the Arkansas, Louisiana, and Mississippi Railroad and proceeds southward to Monroe, LA. Freight carried includes lumber and paper products.

The Warren and Saline River Railroad (WSR) is owned by Potlach Forest, Inc. and extends from the Union Pacific connection in Warren and serves lumber mills in the local area. These rail facilities transfer locally manufactured hardwood flooring and siding to the Delta Southern railway at McGehee. A portion of railroad originally connected to the Fordyce Princeton Railroad but

was abandoned in 1994 (AHTD 2002). The WSR now serves the Bradley County Industrial Park.

The Southeast Arkansas Regional Intermodal Facilities Authority is planning to create a regional intermodal industrial park within the Project Area approximately 1.5 to 2 miles east of Wilmar, Arkansas south of US Highway 278. The dimensions of the facility would be approximately 3,000 feet by 6,000 feet (413 acres) of sufficient size to accommodate an Intermodal Container Transfer Facility (ICTF) and an adjacent industrial park. The facility would serve as a complex where cargo could be transferred from one mode of transportation to another (i.e. railroad car to truck or truck to railroad car). The adjacent industrial park would serve as support for warehousing, manufacturing, dry bulk handling, value added cargo, and consumer retail for the ICTF.

The I-69 Project Area has a wide variety of transportation modes on which to move people and commodities including cars, trucks, airports, bus lines, waterways, pipelines, and rail. An Interstate facility between US Highway 82 west of El Dorado and US Highway 65 at McGehee would provide the region with: better access to air and bus terminals for local citizens, a more efficient local trucking industry with improved access to railway transport of commodities to national markets, and a safer mode of travel to navigable waterways and ports beyond the Project Area.

1.3.10 Recreation Demand

Outdoor and indoor recreational activities are abundantly available within and adjacent to the Project Area. The Ouachita River, Calion Lake, Lake Georgia Pacific, Saline River, Lake Monticello, Seven Devils Lake, Raymond Lake, and Bayou Bartholomew offer boating, fishing, and camping opportunities. State, county, and local parks such as Moro Bay State Park, White Oak Lake State Park, Bradley County Park in Warren, and Wiley A. McGehee Memorial Park collectively offer a wide diversity of outdoor activities that include fishing, hunting, camping, hiking trails, water sports, and swimming. Similar types of outdoor recreation can be enjoyed in the Casey Jones, Cutoff Creek, and Seven Devils Swamp Wildlife Management Areas, the Warren Prairie Natural Area, and the Felsenthal National Wildlife Refuge. Numerous hunting clubs throughout the Project Area provide seasonal hunting opportunities.

The South Arkansas Arboretum in El Dorado, dedicated to preserving the native, rare, and economically important flora of the West Gulf Coastal Plain, provides another scenic attraction in the Project Area. The Kisatchie National Forest is located south of El Dorado in northern Louisiana. Golfing can be enjoyed at several locations including the Magnolia, Camden, El Dorado, and Warren Country Clubs, the Pine Hills Country Club in Smackover, and the Prairie Country Club in Crossett.

Indoor recreation attractions in the Project Area include the South Arkansas Arts Center and the South Arkansas Symphony in El Dorado and the Arkansas Museum of Natural History in Smackover. This museum tells the story of the 1920s oil boom in south Arkansas and the oil and brine industry. Additional attractions include the Bradley County Historical Museum in Warren and the Drew County Museum in Monticello.

There is no Interstate access to any recreational areas in the Project Area. The closest Interstate access is I-530 in Pine Bluff, about an hour traveling distance from Warren and Monticello. An Interstate facility through southern Arkansas would provide improved access to recreational areas for in and out of state tourists.

1.3.11 Community Leader and Public Involvement

Coordination with local community leaders and discussions with the public in and around the Project Area identified several locally based project needs that include:

- Interstate access for the existing and planned industrial development southeast of Monticello to promote further economic development
- Interstate access to provide the best economic development opportunities for the communities of El Dorado, Camden, and Magnolia
- Improved safety by removing truck traffic from local roads
- Greater access to medical centers in Memphis, Tennessee and Shreveport, Louisiana
- Greater access to education and recreational facilities
- Improved delivery time for goods and services
- Greater access to southeast Arkansas and better connectivity to the Interstate system.

Citizens of the Project Area could use the new highway as a more efficient and faster link for interstate travel into Mississippi to access I-55 for subsequent travel to Memphis, Tennessee or Jackson, Mississippi. Additionally, completion of SIU 14 could provide Project Area citizens a safer and more efficient facility for travel to Shreveport, Louisiana with subsequent travel via I-49 to southern Louisiana and Texas via I-20. Future construction of the Southeast Arkansas I-69 Connector from the Project Area to Pine Bluff would promote better access for travel to Little Rock to access I-30 and I-40. This increased interstate connectivity would result in improved travel times and safer access to medical facilities, shopping areas, employment opportunities, and recreational areas.

1.4 PURPOSE AND NEED SUMMARY

The SIU 13 Project is a component of the I-69 Corridor identified in TEA-21 and is a Section of Independent Utility in the I-69 (Corridor 18) Special Environmental Study Task C Report, Sections of

Independent Utility (AHTD 1999). As such, this project will serve to function as a critical link in the Interstate system that will serve travel, economic development, and commercial demands of the south-central United States as well as serve the local and regional needs of south Arkansas.

Construction of the proposed project would:

- Complete a portion of the Congressionally-designated Interstate Highway 69, expanding Interstate linkage between El Dorado and McGehee, Arkansas and the rest of the Nation
- Support the North American Free Trade Agreement by expanding the I-69 trade corridor
- Improve international and interstate movement of freight and people
- Facilitate economic development and enhance economic growth opportunities in the Lower Mississippi Delta Region
- Improve traffic safety
- Improve efficiency of travel
- Improve access to educational facilities
- Improve access to recreational areas and facilities
- Improve emergency response times and access to medical facilities
- Support the locally based needs identified by community leaders.

Section 2: ALTERNATIVES

This section presents the SIU 13 Project alternatives development process. This process effectively generated the information necessary to evaluate the effects of the project on the social, natural, and cultural environments (see Section 4), and provided a framework for resource agency, Native American Tribes, and public involvement. A summary of project scoping, alternatives development and screening, and project outreach is provided. This includes a discussion of all reasonable alternatives considered and included the examination of five broad transportation concepts or alternatives: the No-Action Alternative, a Transportation Systems Management (TSM) Alternative, a Mass Transit Alternative, an Upgrading the Existing Road Network Alternative, and the Build Alternative. Alternatives determined not to meet the project purpose and need (as documented in Section 1) were eliminated from further consideration, while reasonable alternatives identified were carried forward for further detailed study.

2.1 THE PROJECT STUDY PROCESS

The study process adopted for the completion of the environmental and location study for the SIU 13 Project is shown in Exhibit 2-1. Four primary phases of work are involved and include:

- The Scoping Process and Purpose and Need assessment that included the identification of important project and environmental issues, and a consideration of the National as well as project specific purpose and need.
- The Corridor Study which developed several corridor alternatives, approximately two miles in width, within the Project Area and identification of a Preferred Corridor.
- The Alignment Study that developed specific highway alignment alternatives, approximately 300 feet in width, within the Preferred Corridor.
- Environmental Documentation that consists of the preparation of the Draft and Final Environmental Impact Statements and other supporting documents and the selection of a single Preferred Alignment identified in the Final Environmental Impact Statement and the Record of Decision.

This multi-step study process allows for the examination of a full range of alternatives at both the corridor and alignment levels, with increasing detail as the study progresses. This enables alternatives to be evaluated in several stages so that only the most practicable alternatives which meet the project purpose and need as well as have the potential to minimize environmental impacts, are advanced to the next phase of study.

The study process also satisfies various regulatory and coordination requirements for projects integrating the National Environmental Policy Act (NEPA) and the Section 404 Permit processes. The

multi-step project approach allows a thorough consideration of all alternatives developed with respect to potential impacts to "waters of the United States", including wetlands, as required under Section 404 of the Clean Water Act. The required Section 404(b)(1) alternatives analysis will be conducted during both the corridor and alignment studies as the project progresses. This approach first emphasizes avoidance, and then minimization efforts to insure that the identified Preferred Corridor, and ultimately the Selected Alignment, minimize wetland impacts to the greatest extent practicable.

2.2 THE SCOPING PROCESS

Federal and state resource agencies, Native American Tribes, and local elected officials were invited to participate in a series of scoping meetings in December 2001. These meetings provided the opportunity for participants to gain an understanding of the study process, discuss project benefits and concerns, and identify key issues to be considered during corridor and alignment development. For more information, meeting minutes and attendance records are on file at AHTD.

2.2.1 Resource Agency Involvement

A scoping meeting was held with state and federal resource and regulatory agencies on December 5, 2001 in Little Rock, Arkansas to initiate early agency involvement and cooperation for the study. The objective of the meeting was to discuss the SIU 13 Project and to identify key environmental issues to be considered during both the corridor and alignment phases of study. Specific issues identified and discussed included avoiding and/or minimizing involvement with federally listed threatened and endangered species, specifically the red-cockaded woodpecker and *Geocarpon minimum* (a small plant species), Bayou Bartholomew, Seven Devil's Swamp, Cut-off Creek Wildlife Management Area, Casey Jones Wildlife Management Area, Felsenthal National Wildlife Refuge, H.K. Thatcher Lock and Dam on the Ouachita River, Moro Bay State Park, and wetland resources in the Project Area.

2.2.2 Native American Tribe Involvement

Representatives from the Caddo Tribe of Oklahoma, the Tunica-Biloxi Indians of Louisiana, and the Quapaw Tribe of Oklahoma were invited to participate in the December 2001 agency scoping meeting to discuss the SIU 13 Project study process and to identify any issues or areas of traditional religious and cultural importance that should be considered during both the corridor and alignment phases of study. No correspondence has been received from any tribe identifying specific concerns. FHWA is continuing to work with these tribes on a Programmatic Agreement for all I-69 projects in Arkansas.

LOCATION STUDY

INTERSTATE 69 El Dorado to McGehee, ARKANSAS

El Dorado to McGehee, Arkansas

Phase I - Scoping and Purpose and Need

Project Initiation
- Kick Off Meeting
- Define Study Area
- Prepare Notice of Intent
- Finalize Study Process

Scoping
- Agency, Tribal, Local Officials Meetings
- Input on Purpose and Need

Traffic Analysis
- Evaluate Level of Service on Area Roads
- Traffic Forecasting

Purpose and Need

Phase II - Corridor Study

GIS Environmental Inventory
- AHTD Aerial Photography
- Environmental Data
- Develop Aerial Mosaic

Develop Alternative Corridors
- Develop Corridors 2 Mile Wide
- Minimize Impact Potential
- GIS Analysis and Screening

Outreach Period
- Public, Local Officials Meetings
- Obtain Input on Corridor Alternatives
- Present Corridor Environmental Inventory

Corridor Revisions
- Revisions based on FHWA, AHTD, Public, Agency, Tribal, Local Official Input
- Identification of Preferred Corridor

Corridor(s) Carried Forward

Phase III - Alignment Study

Enhance GIS Environmental Inventory
- Additional Environmental Data

Engineering Alignment Studies
- Develop Alternative Alignments
- INROADS Generated

Environmental Field Studies
- Wetland Delineations
- Noise Receptors
- Confirm Hazmat Sites
- Oil/Gas Wells
- Verify Relocations

Outreach Period
- Agency, Tribal, Local Officials, Public Meetings, Agency Field Trips
- Obtain Input on Alignment Alternatives
- Present Preliminary Impacts

Alignment Revisions
- Revisions based on FHWA, AHTD, Public, Agency, Tribal, Local Official Input

Alignments Carried Forward

Phase IV - Environmental Documentation

Prepare Draft EIS
- Joint Review of Preliminary Document

Public Hearing

Selected Alignment
- Alignment Revisions

Phase I Archeology

Final EIS
- Address DEIS Comments
- Section 106 Programmetric Agreement
- Finalize Environmental Commitments

Record of Decision
- Obtain Project Approval

Work in Progress

Outreach Period

Decision

Step Involves Consensus Building

I-69 Location Study
El Dorado to McGehee

Exhibit 2-1

STUDY PROCESS

Baker

2.2.3 Community Leader Involvement

Two scoping meetings were held with local community leaders on December 6, 2001 in Monticello and El Dorado, Arkansas. These meetings presented an overview of the project study process and the proposed Project Area. Table 2-1 summarizes the project concerns and benefits discussed at the meetings.

Table 2-1
LOCAL COMMUNITY LEADER SCOPING MEETING
SUMMARY OF COMMENTS

Benefits of the Proposed Project
Increase jobs and industry
General economic development
Local impact on economy during construction
Access to metropolitan areas
Cheaper freight rates
Access to markets in Canada and Mexico
Help retain population
Improved delivery time for goods and services
Greater access to educational facilities
Increase tourism through increased accessibility to area
Improved safety by removing truck traffic from local roads
Better marketability for Southeast Arkansas
Greater access into Southeast Arkansas and better connectivity to Interstate system
Greater access to medical centers in Memphis and Shreveport
Increase access to recreation areas/facilities (Felsenthal National Wildlife Refuge)
Hazardous waste movement taken off local roads and put on to I-69
Concerns With the Proposed Project
Impacts to Bayou Bartholomew, Saline River, Ouachita River
Impacts to private property
Noise Impacts
Time frame for completion
Local community needs due to projected growth
Need for additional law enforcement, fire protection, utilities
Funding for project

Source: Michael Baker Jr., Inc.. December 6, 2001 Local Officials Meetings

2.3 ALTERNATIVES CONSIDERED AND ELIMINATED

Three of the broad transportation alternatives were considered but eliminated from further study because they did not meet the nationally established purpose and need for the project. Alternatives eliminated include the Transportation Systems Management (TSM) Alternative, the Mass Transit Alternative, and an alternative that would upgrade the existing road network.

2.3.1 Transportation Systems Management

A TSM Alternative would include limited construction activities designed to maximize the efficiency of the existing highway network. The TSM approach typically includes low cost improvements such as optimizing traffic signal timing, installing traffic signals, adding high

occupancy vehicle lanes, minor realignments of horizontal curves, and widening roadway shoulders. TSM measures are generally considered appropriate in urban areas with a population of over 200,000 persons (USDOT 1987). The Project Area lies within a nine county region with a Census 2000 estimated population of approximately 190,000. In addition, Project Area communities range from approximately 22,000 to less than 500 people situated in a primarily rural setting.

While these measures would likely result in some localized traffic safety and level of service improvements, the TSM Alternative would not provide the Interstate linkage for the proposed I-69 Corridor (Corridor 18) consistent with the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and the Transportation Equity Act for the 21st Century (TEA-21) legislation. In addition, the TSM Alternative would not provide many of the anticipated project benefits identified by local officials during the Scoping Process (See Table 2-1). The TSM Alternative was eliminated from further consideration.

2.3.2 Mass Transit Alternative

A Mass Transit Alternative, such as bus or rail service, is generally only relevant in urban areas with a population of over 200,000 (USDOT 1987), and where concentrated trip origins and/or destinations make mass transit viable. The effectiveness of a Mass Transit Alternative within the SIU 13 Project Area would be minimal due to the widely dispersed county populations and the lack of a single community approaching 200,000 inhabitants. Furthermore, mass transit would not be a reasonable transportation alternative to satisfy the project's National purpose and need to improve international and interstate movement of freight and people, or facilitate connections to intermodal facilities and major ports. The Mass Transit Alternative was eliminated from further consideration.

2.3.3 Upgrading the Existing Road Network

Existing primary highways in the Project Area that connect El Dorado to McGehee were evaluated to determine if they could function as feasible alternatives for this study. This included an evaluation of US Highways 82, 167, 278, and 63. In addition to statewide travel, these highways are heavily used by local traffic and many residences and businesses are located adjacent or close to the existing highways. Numerous driveways and secondary road intersections are associated with each route as well as adjacent environmental resources such as wildlife management areas, wetlands, and floodplains.

Reconstruction of these highways to divided, four-lane, fully controlled access facilities would require that all driveway and secondary road connections be severed. To maintain local access, frontage roads would need to be constructed. Reconstruction of these facilities on their existing locations would also reduce the opportunity to avoid and/or minimize potential environmental impacts to resources such as wildlife management areas and refuges, wetlands, floodplains, cemeteries, and archeological sites adjacent to the existing highways. Furthermore, US Highway 278

functions as a major thoroughfare in Monticello and is integrated into the city road network in this municipality. Reconstruction of this highway for the proposed project would require bypassing Monticello to avoid substantial community impacts and would involve developing new location alternatives in these areas, as well as in many other smaller communities such as Wilmar. Based on the potential community, residential and business impacts; community disruption during construction; and inability to avoid and minimize adjacent environmental resources, the reconstruction of existing highways was not considered a feasible alternative for the proposed project and was eliminated from further consideration.

2.4 ALTERNATIVES CONSIDERED FOR FURTHER STUDY

Of the five transportation alternatives considered for this project, the No-Action and Build Alternatives have been retained and carried forward for further study.

2.4.1 The No-Action Alternative

The No-Action alternative would not involve the construction of the SIU 13 Project. While this alternative would not meet the project purpose and need, it was retained to allow comparisons with the developed Build Alternatives. Under the No-Action Alternative, the Project Area roadway network would evolve as currently planned or programmed and would involve normal roadway maintenance activities, minor safety improvements, and several widening and passing lane projects. Passing lanes are currently under construction on US Highway 278 near Wilmar and Warren.

The No-Action Alternative will be maintained as an alternative to new highway construction and will be documented through the completion of the EIS process.

2.4.2 Build Alternatives

Development of the Build Alternatives involved the evaluation of a full range of alternatives at both the corridor and alignment phases of study. Section 2.5 documents the corridor development and evaluation processes and discusses the reasonable alternatives developed.

2.5 CORRIDOR STUDY

The Corridor Study considered the feasibility of several two – mile wide corridor alternatives with respect to affected social, economic, environmental, and engineering issues. The two - mile wide corridor allowed for the development and screening of a limited number of reasonable alternatives that covered a large portion of the Project Area. The Corridor Study consisted of the following work efforts:

- Collection of environmental information from resource agencies and fieldwork to create an Environmental Inventory for the Project Area.
- Creation of a project Geographic Information System (GIS) using existing environmental data.

- Development of corridor alternatives and GIS environmental analysis.
- Presentation of corridor alternatives and Environmental Inventory to local officials and the public for review and comment.
- Federal and State Agency review.
- Modification of corridor alternatives, if necessary, based on public and agency involvement.
- Identification of a Preferred Corridor in which to develop specific, more detailed highway Alignment Alternatives.

2.5.1 Environmental Inventory

Environmental data within the Project Area were collected from a variety of state and federal sources and entered into the project GIS for subsequent analysis. It should be noted that the Project Area extends approximately 15 miles southwest of the El Dorado area and the possible southern terminus locations for the SIU 13 Project. Environmental data were obtained within this extended area to identify potential concerns that could preclude or impede future extension of SIU 13 from El Dorado to Interstate 20 in Louisiana (SIU 14). Data obtained from various agencies or sources included:

- Community Facilities – -Schools, churches, hospitals, parks, and public facilities obtained from USGS topographic maps.
- Cultural Resources - Information on known archeological sites and historic structures obtained from the Arkansas Archeological Survey (AAS) and the Arkansas Historic Preservation Program (AHPP). Area cemeteries were identified from USGS maps and through public involvement. High Probability Areas were identified for areas that may contain prehistoric archeological resources.
- Environmental Justice –Census data and discussions with community leaders and the public were used to identify concentrations of minority and low-income populations.
- Floodplains and Floodways - Federal Emergency Management Agency (FEMA) floodplain maps were used to determine the extent of the 100 year floodplain.
- Hazardous Materials - Information on landfills, open dumps, Resource Conservation and Recovery Act (RCRA), Comprehensive Environmental Response and Compensation Liability Act (CERCLA), Underground Storage Tank (UST), and Leaking Underground Storage Tank (LUST) sites obtained from Arkansas Department of Environmental Quality and County Sanitarians.
- Native American Interests – Coordination with Native Americans is on-going.
- Oil and Gas Resources/ Bromine Resources – Obtained information from the Arkansas

Geological Commission and Arkansas Oil and Gas Commission.

- Potential Section 4(f) and Section 6(f) Properties – Obtained information from USGS topographic maps from the Arkansas Natural Heritage Commission, Arkansas Parks and Tourism, and the Arkansas Archeological Survey.
- Protected Species - Obtained information from the Arkansas Natural Heritage Commission to determine the location of federal and state listed species. In addition, obtained red-cockaded woodpecker information from area timber company biologists.
- Potential Residential and Business Relocations - Obtained information from USGS topographic maps, aerial photographs and field investigations.
- Water Resources – Obtained location of wellhead protection areas from the Arkansas Department of Health.
- Wetland Reserve Program Lands – Obtained from the Natural Resources Conservation Service.
- Wetlands – Determined wetland areas based on photo interpretation of National Aerial Photography Program (NAPP) Color Infrared (CIR) aerial photography with limited ground-truthing.
- Wildlife Management Areas – Obtained from Arkansas Game and Fish Commission and Natural Heritage Commission.

2.5.2 Project Geographic Information System

A key component of the project study process is the use of Geographic Information System (GIS) technology and the development of a project specific GIS. This GIS-based approach has been used successfully over the last decade on numerous transportation environmental and location NEPA study efforts in a number of states, including Arkansas and Louisiana. The GIS is an effective tool for managing environmental data for extensive geographic areas in a cost and time efficient manner; in this case over 3,000 square miles. The benefits of the GIS approach include:

- Consolidation of all environmental and engineering data, regardless of source or scale, onto one map base.
- Consideration of key environmental issues *before* alternatives are developed.
- Instills confidence in the public and the resource agencies through a "seeing is believing" approach that allows visual confirmation of particular issues of concern (location of family cemeteries, sensitive wetland areas, etc.).
- Efficiently analyzes information when changes in alternatives occur. "What if" scenarios can quickly and accurately be examined to investigate possible alternative shifts with a minimum amount of time and effort.

Using the GIS approach, broad corridors developed within the Project Area were analyzed and screened early in the study process. This reduced the area where more detailed work efforts could be conducted. For this project, the corridor screening process

effectively reduced the original study area from over 3,000 square miles to 200 square miles (a reduction of over 90 percent) in approximately six months through a thorough consideration of social, environmental, and engineering issues. It should be emphasized that development of corridor alternatives occurs after key environmental and social issues have been identified throughout the Project Area. This serves to limit the number and location of broad corridor alternatives to areas that avoid and minimize involvement with identified key environmental issues and address issues such as community access.

2.5.3 Identification of Key Project Area Issues/Constraints

Prior to initial corridor development, key environmental, engineering, and social issues were identified within the Project Area based on information gathered during the Scoping Process from public, local official, and state and federal resource agencies. In the El Dorado portion of the Project Area, a number of issues or constraints influenced preliminary corridor development and included:

- Acceptable crossing locations of the Ouachita River.
- Existing and planned residential and business development.
- The location of minority and low income populations.
- The location of Moro Bay State Park and H.K. Thatcher lock and dam along the Ouachita River.
- Floodplains/wetlands associated with the Ouachita River system.
- Oil and gas fields, particularly near Smackover.
- Potential interchange locations at US Highway 82, S.H. 7, US Highway 167, and US Highway 63.
- The location of the airport west of El Dorado.
- Accessibility of I-69 to major area communities.
- The ability to minimize longitudinal stream crossings and maximize perpendicular crossings.

Moving toward the Warren/Monticello portion of the Project Area, preliminary corridor development was influenced by:

- Acceptable crossing locations of the Saline River.
- Existing and planned residential and business development.
- The location of minority and low income populations.
- The location of the Warren Prairie Natural Areas and the federally threatened plant species *Geocarpon minimum*.
- The known locations of the federally endangered red-cockaded woodpecker.
- Casey Jones Wildlife Management area property.
- Proximity to Hampton, Warren, Wilmar, Monticello.
- Compatibility with Southeast Arkansas Intermodal Facility.
- Compatibility with area airports.
- Proximity to existing and planned industrial parks.
- Proximity to University of Arkansas at Monticello.

- Compatibility with Southeast Arkansas I-69 Connector - from US Highway 278 to I-530.

In the McGehee area and eastern terminus of the project, preliminary corridor development considered:

- Existing and planned residential and business development.
- The location of minority and low-income populations.
- Bayou Bartholomew and associated wetlands and floodplains. Bayou Bartholomew was identified as a sensitive resource by the COE, the USFWS, the Arkansas Game and Fish Commission, the Arkansas Natural Heritage Commission, and the Bayou Bartholomew Alliance (a local non-profit environmental organization of citizens, landowners, and academics).
- Seven Devil's Swamp.
- Casey Jones Wildlife Management Area property.
- Cut-Off Creek Wildlife Management Area.
- Compatibility with the alternatives developed for the I-69 Mississippi River Crossing EIS study (SIU 12).

2.5.4 Preliminary Corridor Development

Using the key project issues/constraints as a guide, four corridors (A, B, C, and D) were initially developed within the Project Area (Exhibit 2-2). Within some reaches of the project, two or more corridors may be in the same location due to environmental or engineering constraints. The GIS based Environmental Inventory mapping was used to avoid and minimize impacts to sensitive environmental resources, while considering engineering issues such as river crossings and potential interchange locations. In addition, initial corridor development responded to public and local official concerns regarding community accessibility to the facility and potential residential and business displacements. Each corridor is two miles wide and extends from the El Dorado area northwestward to US Highway 65 near McGehee.

Corridor A

Corridor A begins at US Highway 82 approximately seven miles west of El Dorado near the El Dorado airport. The corridor heads in a northward direction for approximately 10 miles before crossing the Union/Calhoun County line and turning northeast crossing S.H. 7 near Louann. The corridor continues in an easterly direction, crosses the Ouachita River and then crosses US Highway 167 approximately four miles south of Hampton. Corridor A continues to the east passing south of the communities of Harrell and Banks and then turns northeasterly near Farmville, where it crosses US Highway 63 approximately two miles south of Warren. East of Warren, the corridor crosses the Saline River and then turns northward near Green Hill, crossing US Highway 278 east of Wilmar before turning back to the east and heading toward Monticello. Corridor A crosses S.H 35, US Highway 425, and S.H. 83 just north of Monticello, then crosses S.H. 138 approximately three miles east of Monticello.

The corridor continues to the east, crossing S.H. 277 near Selma, then crosses Bayou Bartholomew and

terminates at US Highway 65 approximately one mile north of McGehee.

Concerns with respect to Corridor A include involvement with floodplains and wetlands associated with the Ouachita and Saline Rivers and Moro and L'Aigle Creeks, oil and gas wells near Louann, involvement with the Warren Prairie Natural Area and associated federally listed threatened and endangered species, potential residential displacements near Monticello, and the crossing of Bayou Bartholomew.

Corridor B

Corridor B begins at US Highway 82 approximately four miles west of El Dorado and just east of the El Dorado airport. The corridor heads north for approximately three miles before turning northeast and crossing S.H. 7 between El Dorado and Norphlet. The corridor continues to the northeast where it crosses the Ouachita River near Calion, then turns to the north and converges with Corridor A at US Highway 167 south of Hampton. Corridor B follows the same path as Corridor A to Warren where it turns northward after crossing the Saline River and crosses US Highway 278 passing north and west of Wilmar, avoiding the Green Hill community and Warren Prairie Natural Areas. Just east of Wilmar, Corridor B converges again with Corridor A where it continues north of Monticello, to US Highway 65 near McGehee.

Concerns with Corridor B include involvement with floodplains and wetlands associated with the Ouachita and Saline Rivers and Moro and L'Aigle Creeks, oil and gas wells near Norphlet, involvement with red-cockaded woodpecker locations near the Ouachita River, potential residential displacements near Norphlet, and the crossing of Bayou Bartholomew.

Corridor C

Corridor C begins at US Highway 167 approximately two miles south of El Dorado. The corridor heads northeast, crossing US Highway 82 and then crosses US Highway 63 approximately five miles east of El Dorado before crossing the Ouachita River between H.K Thatcher lock and dam and Moro Bay State Park. North of the river crossing, the corridor turns to the east and crosses US Highway 63 a second time approximately four miles south of Hermitage. Corridor C then turns northeast and heads towards Monticello, crossing S.H. 8 and S.H. 172 before crossing US Highway 425 just south of Monticello. The corridor then crosses S.H. 35 and US Highway 278 where it converges with Corridor D and crosses the northern portion of Seven Devil's Swamp. Corridor C then diverges from the Corridor D footprint and terminates at US Highway 65 north of McGehee with Corridors A and B.

Project Area

Kingsland
Thornton
Bearden
Chidester
Ouachita
Calhoun
Tinsman
Rye
Lake Monticello
Wilmar
Monticello
Warren
Banks
Bradley
East Camden
Camden
Hampton
Harrell
Sumpter
Hermitage
Jersey
Selma
Seven Devils Swamp
McGehee
New Hope
Green Hill
Dermott
Collins
Drew
Desha
Bayou Bartholomew
Cut-off Creek
Saline River
Lacey
Fountain Hill
Cut-Off Creek Wildlife Management Area
Stephens
Louann
Smackover
Norphlet
Ouachita River
Calion
H.K. Thatcher Lock and Dam
Moro Bay State Park
Ingalls
Johnsville
Lisbon
El Dorado
Newell
Hillsboro
Union
Strong
Junction City
Huttig
Felsenthal
Felsenthal National Wildlife Refuge
Lake Georgia Pacific
Lake Jack Lee
Felsenthal Lock and Dam
Crossett
Hamburg
Ashley
Montrose
Portland
Parkdale
Chicot
Overflow National Wildlife Refuge
Arkansas
Louisiana

LEGEND

- A — CORRIDOR A
- B — CORRIDOR B
- C — CORRIDOR C
- D — CORRIDOR A

I-69 Location Study
El Dorado to McGehee

Exhibit 2–2

PROJECT AREA AND CORRIDOR LOCATIONS

Baker

SCALE IN MILES 0 1 2 3 4 5

Concerns with Corridor C include involvement with floodplains and wetlands associated with the Ouachita and Saline Rivers and Moro and L'Aigle Creeks, oil and gas wells south of El Dorado, involvement with red-cockaded woodpecker locations near the Ouachita River, proximity from major communities, proximity to Moro Bay State Park and Felsenthal National Wildlife Refuge, involvement with Seven Devil's Swamp and Casey Jones Wildlife Management Area, and the crossing of Bayou Bartholomew.

Corridor D

Corridor D begins at US Highway 167 approximately seven miles south of El Dorado. The corridor heads northeast crossing US Highway 82 near Hillsboro, then crosses Ouachita River south of Moro Bay State Park. The corridor continues to the northeast passing approximately five miles south of Hermitage then crosses S.H. 8 about 10 miles south of Warren. Corridor D crosses the Saline River and then crosses US Highway 425 approximately three miles south of Monticello. The corridor then crosses S.H. 35 and US Highway 278 where it aligns with Corridor C, crosses the northern portion of Seven Devil's Swamp, and then turns southeast and terminates at US Highway 65 south of McGehee.

Concerns with Corridor D include involvement with floodplains and wetlands associated with the Ouachita and Saline Rivers and Moro and L'Aigle Creeks, oil and gas wells south of El Dorado, involvement with red-cockaded woodpecker locations near the Ouachita and Saline Rivers, distance from major communities, proximity to Moro Bay State Park and Felsenthal National Wildlife Refuge, involvement with Seven Devil's Swamp and Casey Jones Wildlife Management Area, the crossing of Bayou Bartholomew, and the termination at US Highway 65 south of McGehee.

2.5.5 Corridor Screening

The issues/factors identified in Section 2.5.3 were used to develop and refine the screening criteria used to evaluate the preliminary corridor alternatives. In addition, several other criteria were developed that included an evaluation of the following:

- Compatibility with area economic goals – based on December 2001 meetings with local elected officials and community leaders.
- Compatibility with Southeast Arkansas I-69 Connector - from US Highway 278 near Wilmar to I-530 in Pine Bluff – would provide a connection from I-69 to Interstates 30 and 40 in Little Rock via I-530.
- Compatibility with Southeast Arkansas Regional Intermodal Facility – a planned facility near Wilmar that would include a bulk freight terminal, with freight transfer and tracking capabilities, logistic services, export/customs services, container pool service, and serve as a warehousing and distribution center.
- Construction by Useable Sections - corridors were evaluated to determine if they would allow construction of the SIU 13 Project in shorter

useable sections between El Dorado and McGehee.

- Cultural Resources – obtained known archeological and historic structure data for the Project Area so these resources could be fully considered during corridor development.
- Wellhead Protection Areas, Recorded Hazardous Waste Sites – identified and considered to address concerns expressed by the EPA and the Arkansas Department of Environmental Quality.

Table 2-2 presents a Preliminary Corridor Screening Comparison of the four corridor alternatives developed to evaluate the corridors across a number of social, engineering, and environmental issues. Rankings were assigned to each corridor based on that corridor's ability to address a particular issue or avoid a particular resource. This information was presented to the resource agencies, local elected officials and the public during Corridor Study review meetings held in March 2002. These rankings were presented as preliminary and subject to change based on information and input received at the March 2002 meetings.

2.5.6 Corridor Studies Outreach

After development of the environmental inventory, corridor alternatives, and subsequent corridor comparison analysis, public meetings were held to present the results of the Corridor Study and to obtain input on the corridor alternatives developed.

Resource Agency Involvement

Federal and state agencies were invited to participate in a corridor study review meeting held on March 12, 2002 to review the environmental inventory and the preliminary corridors developed. Specific issues identified and discussed included avoiding and/or minimizing involvement with oil and gas fields near Louann, wetlands associated with the Ouachita River, Moro Creek, L'Aigle Creek, and the Saline River, Seven Devil's Swamp and Cut-off Creek Wildlife Management area, Casey Jones Wildlife Management area, the Warren Prairie Natural Areas and associated federally listed threatened and endangered species south of Wilmar, and red-cockaded woodpecker locations throughout the Project Area. The group discussed the possibility of combining Corridors A and B to better minimize potential environmental impacts.

Community Leader Involvement

Community leaders were invited to participate in corridor study review meetings held on March 12 and 13, 2002 to review the environmental inventory and the preliminary corridors developed. Representatives attending the El Dorado meeting, including the Mayors of El Dorado and Camden, supported Corridor A as providing the best economic development opportunities for the communities of El Dorado, Camden, Magnolia, and the surrounding area.

Table 2-2
PRELIMINARY CORRIDOR SCREENING COMPARISON

Issue/Resource	CORRIDORS				Comments
	A	B	C	D	
Access to Major Communities	1	1	3	3	Based on evaluation of proximity to communities and ability to locate interchanges along major roadways.
Compatibility with Area Economic Goals	1	2	4	4	Based on December 2001 meetings with local elected officials and community leaders.
Compatibility with the Southeast Arkansas I-69 Connector - from US 278 to I-530	1	2	3	4	Provides opportunity to integrate I-69 with the Southeast Arkansas I-69 Connector.
Potential Residential Displacements	2	2	2	1	Corridor D located furthest from populated areas.
Compatibility with Area Intermodal Facility	1	1	1	1	Provides opportunity to integrate I-69 with SE Arkansas Intermodal Facility.
Compatibility with Area Airports	1	1	3	3	Provides access to Warren and El Dorado Airports.
Wildlife Management Areas	2	1	3	4	Corridors A and B have least involvement with Casey Jones Wildlife Management Area properties.
Ouachita River Crossing	1	2	4	3	Provide opportunity to construct perpendicular river crossing.
Construction by Useable Sections	1	2	3	4	Due to the length of the project, would allow I-69 to be constructed in shorter useable sections.
Natural Resources					
Wetlands	1	2	2	3	All corridors cross wetlands associated with the Ouachita River, Moro Creek, L'Aigle Creek, the Saline River, Cut-off Creek, and Bayou Bartholomew.
Seven Devil's Swamp	1	1	2	3	Alignments developed in Corridors A and B would avoid this resource.
Known Threatened or Endangered Species Locations	3	3	3	3	Based on known sites and known population clusters.
100 Year Floodplains	3	2	1	3	All corridors cross floodplains associated with the Ouachita River, Moro Creek, L'Aigle Creek, the Saline River, Cut-off Creek, and Bayou Bartholomew.
Cultural Resources					
Recorded Archeological Sites	3	4	2	1	Alignments developed in any corridor would avoid recorded archeological sites to the extent practicable.
Recorded Historic Structures	1	1	1	1	Five or fewer recorded historic structures within each Corridor. Alignments developed within any corridor could avoid impacts to recorded historic structures.
Archeological High Probability Areas	3	3	2	3	Indication of potential presence of archeological sites based on known sites and area topography.
Oil and Gas Fields	2	3	1	4	All corridors avoid high density Smackover field. Alignment development in any corridor would avoid impacts to individual wells to the extent practicable.
Wellhead Protection Areas	2	2	2	1	Public water supply areas.
Recorded Hazardous Materials Sites	1	1	1	1	No sites identified within corridors.
TOTALS	**31**	**36**	**43**	**50**	

Source: Michael Baker Jr., Inc.

Ranking system: 1 = most effective at addressing issue or greatest ability to avoid resource; 2 = moderately effective at addressing issue or moderate ability to avoid resource; 3 = slightly effective at addressing issue or some ability to avoid resource; 4 = least effective at addressing issue or least ability to avoid resource

Warren representatives believed that Corridor A and Corridor B would serve the community well and are located near the industrial portion of town. Concerns in the Monticello area focused on providing access to I-69 for the existing and planned industrial development southeast of town to promote further economic development and the possibility of removing truck traffic from local thoroughfares through the town.

Public Involvement

Over 100 people attended the public meetings held on March 11, 12, and 13, 2002 in McGehee, Monticello, and El Dorado. Public input centered on potential economic development opportunities, community access, and potential residential and property impacts.

Tribal Involvement

Tribal participation was encouraged throughout the study process. In June 2002, the FHWA met with the Caddo Nation of Oklahoma and the Quapaw Tribe of Oklahoma to discuss the Corridor Study process and the identification of any issues or areas of traditional religious and cultural importance that should be considered during the subsequent development of the preliminary alignment alternatives. The Tunica-Biloxi Indians of Louisiana received meeting correspondence, but did not attend this meeting. All tribal correspondence is included in the Appendix.

2.5.7 Corridors Not Carried Forward

Based on a review of the environmental, engineering, and social issues, and with input from the public, local officials, and various resource agencies, several corridors were not carried forward for more detailed study and were eliminated from further consideration.

Corridor D

Corridor D was not carried forward for further study due to potential impacts to Seven Devil's Swamp and Cut-off Creek Wildlife Management area, Casey Jones Wildlife Management area, Felsenthal National Wildlife Refuge, and oil and gas fields south of El Dorado. Corridor D provided limited access to many major Project Area communities, would not connect to the preferred alternative for the I-69 Mississippi River Crossing EIS study. In addition, it would be difficult to construct in shorter useable sections, and was not favored by any local officials or community leaders in the El Dorado area.

Corridor C

Corridor C was not carried forward in its entirety for further study due to potential impacts to Seven Devil's Swamp and Cut-off Creek Wildlife Management area, Casey Jones Wildlife Management area, red-cockaded woodpecker locations throughout the Project Area, oil and gas wells south of El Dorado, proximity to the Felsenthal National Wildlife Refuge and Moro Bay State Park. Furthermore, Corridor C would have

the least desirable crossing of the Ouachita River and associated floodplains and wetlands, provides limited access to many major Project Area communities, would be difficult to construct in shorter useable sections. The corridor was not favored by any local officials or community leaders in the El Dorado area.

Portion of Corridor A Near Wilmar

The portion of Corridor A located from near US Highway 278 east of Wilmar to US Highway 63 south of Warren was not carried forward for further study based on residential and community impacts in the Green Hill area, and impacts to the Warren Prairie Natural Areas and associated federally listed threatened and endangered species in this area. Future plans to expand the Warren Prairie Natural Area would also be impacted by this corridor.

Portion of Corridor B West of US Highway 167

The portion of Corridor B from US Highway 167 to US Highway 82 was eliminated from further study due to involvement with red-cockaded woodpecker locations, wetlands and floodplains near the Ouachita River, oil and gas wells near Norphlet, and potential residential and business displacements near Norphlet.

2.5.8 The Preferred Corridor for the SIU 13 Project

The objective of the Corridor Study phase of this project is to identify a corridor as part of a planning process which represents the best opportunity to develop highway alignments that avoid or minimize impacts to the social, natural, and cultural environments and will serve to enhance the transportation services and economic vitality of the Project Area, while accommodating the overall purpose of the national I-69 Corridor. It is unlikely that one corridor represents the *least* potential impact to all resource categories or *best* addresses various issues. The information collected and evaluated during the Corridor Study, combined with the involvement of the public, local community leaders and resource agencies, is sufficient to identify a preferred corridor to advance to the Alignment Study. Once corridors or portions of corridors were eliminated from further study, the remaining corridors served as a starting point for the preferred corridor identification.

Further analysis showed that a multi-corridor combination represented the best opportunity to develop highway alignments that avoid or minimize impacts to the social, natural, and cultural environments and that best meet the purpose and need of the project. This includes Corridor A from US Highway 82 near El Dorado to US Highway 167 near Hampton, Corridor B from US Highway 167 to US Highway 65 in McGehee, and in the Monticello area, a corridor link that extends from Corridor B west of Monticello, passes south of town, and reconnects to Corridor B east of Monticello. Public input led to the development of this corridor link south of Monticello that would pass north of the Warren Prairie and community of Green Hill, while providing the

opportunity for development of alignment alternatives in this area.

This corridor combination would provide the best access to the Project Area communities of El Dorado, Louann, Smackover, Hampton, Harrell, Banks, and Selma, as well as the nearby communities of Camden and Magnolia. This corridor combination would also provide the greatest opportunity to minimize impacts to the Warren Prairie Natural Areas and associated federally listed threatened and endangered species in the Wilmar/Warren area, while best serving the communities of Warren, Wilmar, and Monticello. Based on the evaluation with respect to social, engineering, economic, and environmental issues, no additional corridors or corridor combinations presented a better opportunity to minimize adverse impacts.

Table 2-3 presents a Revised Corridor Screening Comparison of the four original corridors and the preferred corridor combination. Based on comments from the resource agencies and the public at the March 11-13, 2002 meetings, minor changes were made to three issue/resource category rankings (Access to Major Communities - Corridor B changed from a 1 to a 2, Compatibility with Area Economic Goals – Corridor A changed from a 1 to a 2, and Known Threatened or Endangered Species Locations – Corridor A changed from a 3 to a 4). These changes did not result in any substantial differences to the total rankings of the corridors. All corridors would have environmental impacts. Of the resources studied, the SIU 13 Project would ultimately have the greatest impact on residences/personal property, floodplains, wetlands, and other undeveloped lands. Impacts to businesses, churches, cemeteries, oil and gas wells, and cultural resources would occur to a lesser extent and in some areas, could be avoided entirely.

After a thorough review of all resources and input from the public, community leaders, and agency representatives, a Preferred Corridor was identified and carried forward into the Alignment Study (Exhibit 2-3).

The Preferred Corridor best addresses the public's and local community leader's concern with community access and potential for economic development opportunities, access to the Southeast Arkansas Regional Intermodal Facility, and area airports. The inclusion of corridor alternatives both north and south of Monticello provides the opportunity to develop more specific highway alignments in this area and to better determine the potential impacts, both positive and negative, associated with each. The Preferred Corridor provides the best location for the Ouachita River crossing and provides the greatest opportunity to ultimately construct I-69 in shorter useable sections.

Table 2-3
REVISED CORRIDOR SCREENING COMPARISON

Issue/Resource	CORRIDORS					Comments
	A	B	C	D	Preferred A/B/C	
Access to Major Communities	1	2	3	3	1	Based on eval. of proximity to communities and ability to locate interchanges along major roadways and March 2002 meetings with local elected officials and community leaders.
Compatibility with Area Economic Goals	2	2	4	4	2	Based on December 2001 and March 2002 meetings with local elected officials and community leaders.
Compatibility with Southeast Arkansas I-69 Connector - from US 278 to I-530	1	2	3	4	1	Provides opportunity to integrate I-69 with Southeast Arkansas I-69 Connector.
Potential Residential Displacements	2	2	2	1	2	Corridor D located furthest from populated areas.
Compatibility with Area Intermodal Facility	1	1	1	1	1	Provides opportunity to integrate I-69 with SE Arkansas Intermodal Facility.
Compatibility with Area Airports	1	1	3	3	1	Provides access to Warren and El Dorado Airports.
Wildlife Management Areas	2	1	3	4	1	Corridors A and B have least involvement with Casey Jones Wildlife Management Area properties.
Ouachita River Crossing	1	2	4	3	1	Provide opportunity to construct perpendicular river crossing.
Construction by Useable Sections	1	2	3	4	1	Due to the length of the project, would allow I-69 to be constructed in shorter useable sections.
Natural Resources						
Wetlands	1	2	2	3	1	All corridors cross wetlands associated with Project Area streams.
Seven Devil's Swamp	1	1	2	3	1	Alignments developed in Corridors A and B would avoid this resource.
Known Threatened or Endangered Species Locations	4	3	3	2	1	Based on known sites and known population clusters.
100 Year Floodplains	3	2	1	3	2	All corridors cross floodplains associated with Project Area streams.
Cultural Resources						
Recorded Archeological Sites	3	4	2	1	3	Alignments developed in any corridor would avoid recorded archeological sites to the extent practicable.
Recorded Historic Structures	1	1	1	1	1	Five or fewer recorded historic structures within each Corridor. Alignments developed within any corridor could avoid impacts to recorded historic structures.
Archeological High Probability Areas	3	3	2	3	3	Indication of potential presence of prehistoric archeological sites.
Oil and Gas Fields	2	3	1	4	2	All corridors avoid high density Smackover field. Alignment development in any corridor would avoid impacts to individual wells to the extent practicable.
Wellhead Protection Areas	2	2	2	1	2	Public water supply areas.
Recorded Hazardous Materials Sites	1	1	1	1	1	No sites identified within corridors.
TOTALS	**33**	**37**	**43**	**49**	**28**	

Source: Michael Baker Jr., Inc.

Ranking system: 1 = most effective at addressing issue or greatest ability to avoid resource
2 = moderately effective at addressing issue or moderate ability to avoid resource
3 = slightly effective at addressing issue or some ability to avoid resource
4 = least effective at addressing issue or least ability to avoid resource

In addition, the Preferred Corridor provides the greatest opportunity to avoid impacts to the Warren Prairie Natural Areas and associated federally listed threatened and endangered species in the Wilmar/Warren area, the greatest opportunity to avoid Seven Devil's Swamp and other wildlife management areas.

While all corridors would cross wetlands associated with the Ouachita River, Moro Creek, L'Aigle Creek, the Saline River, Cut-off Creek, and Bayou Bartholomew, the Preferred Corridor crosses the majority of these systems in areas well north of higher quality wetlands (Felsenthal National Wildlife Refuge), and avoids Seven Devil's Swamp. Review of aerial photos found greater opportunities to cross in degraded or disturbed areas (Ouachita River), or near existing highway bridges (Saline River).

It should be noted that the identification of the Preferred Corridor does not preclude consideration of highway alignment development slightly outside of this corridor area, if warranted, to avoid or further minimize environmental and social impacts during the Alignment Study.

2.6 ALIGNMENT STUDY

The Alignment Study consisted of a focused effort within the Preferred Corridor and included:

- Obtaining Level 3 DEM USGS data for the Preferred Corridor (used to develop digital terrain model and run engineering software for alignment alternatives)
- Updating or adding the following project GIS environmental information that included:
  - Potential historic standing structures survey.
  - Farmed wetland information.
  - Field collected wetland information.
  - Streams information.
  - Standing structures survey as necessary to reflect recent and on-going construction.
  - Site boundaries of known archeological sites and cemeteries.
  - Collected property boundary information from the appropriate counties.
  - Developing preliminary alignment alternatives and conducting environmental field studies.
  - Presenting alignment comparisons to the public and local officials for review and comment.
  - Conducting field reviews of the preliminary alignments with resource agencies to obtain comments.

Revising the alignments based on public, local officials, and agency comments.

Project Area

Monticello Alternatives Under Study
Only One Corridor will Ultimately be Selected in this Area

Preferred Corridor

Kingsland
Rye
Thornton
Bearden
Chidester
Ouachita
Calhoun
Tinsman
Warren
Wilmar
Monticello
Lake Monticello
Bayou Bartholomew
Desha
Selma
Creek
Cut-off
Seven Devils Swamp
McGehee
Dermott
Collins
Drew
Green Hill
New Hope
Banks
Bradley
Hampton
Harrell
East Camden
Camden
Stephens
Louann
Smackover
Norphlet
Calion
H.K Thatcher Lock and Dam
Moro Bay State Park
Ouachita River
Saline River
Sumpter
Jersey
Hermitage
Ingalls
Johnsville
Lacey
Fountain Hill
Cut-Off Creek Wildlife Management Area
Lisbon
El Dorado
Newell
Hillsboro
Union
Strong
Junction City
Huttig
Felsenthal
Felsenthal National Wildlife Refuge
Lake Georgia Pacific
Lake Jack Lee
Felsenthal Lock and Dam
Crossett
Hamburg
Ashley
Chicot
Montrose
Portland
Parkdale
Overflow National Wildlife Refuge
Arkansas
Louisiana

I-69 Location Study
El Dorado to McGehee

Exhibit 2–3
PROJECT AREA AND PREFERRED CORRIDOR

Baker

SCALE IN MILES
0 1 2 3 4 5

2.6.1 Design Features

The proposed highway would be designed as a four lane, divided, fully controlled access facility on new location. Access to the proposed highway would be limited to specific interchange locations with grade separations at other crossroads. The roadway design criteria used during the alignment study are presented in Table 2-4.

Table 2-4
DESIGN CRITERIA

ITEM	VALUE	
Design Speed	70 mph	
Median Width	80 ft	
	Maximum	**Preferred**
Profile Grade	5%	4%
Degree of Curve	3°	2°

The basic geometric features or typical section for the proposed highway are presented in Exhibit 2-4. The highway typical section included two 12 - foot wide through lanes in both travel directions with an 80 - foot wide median and inside and outside shoulders.

Access to the highway would be limited to interchange locations along all of the alignment alternatives developed. Grade separations are proposed at major roadway crossings. Proposed interchanges and grade separations are provided in Table 2-5.

2.6.2 Preliminary Alignment Development

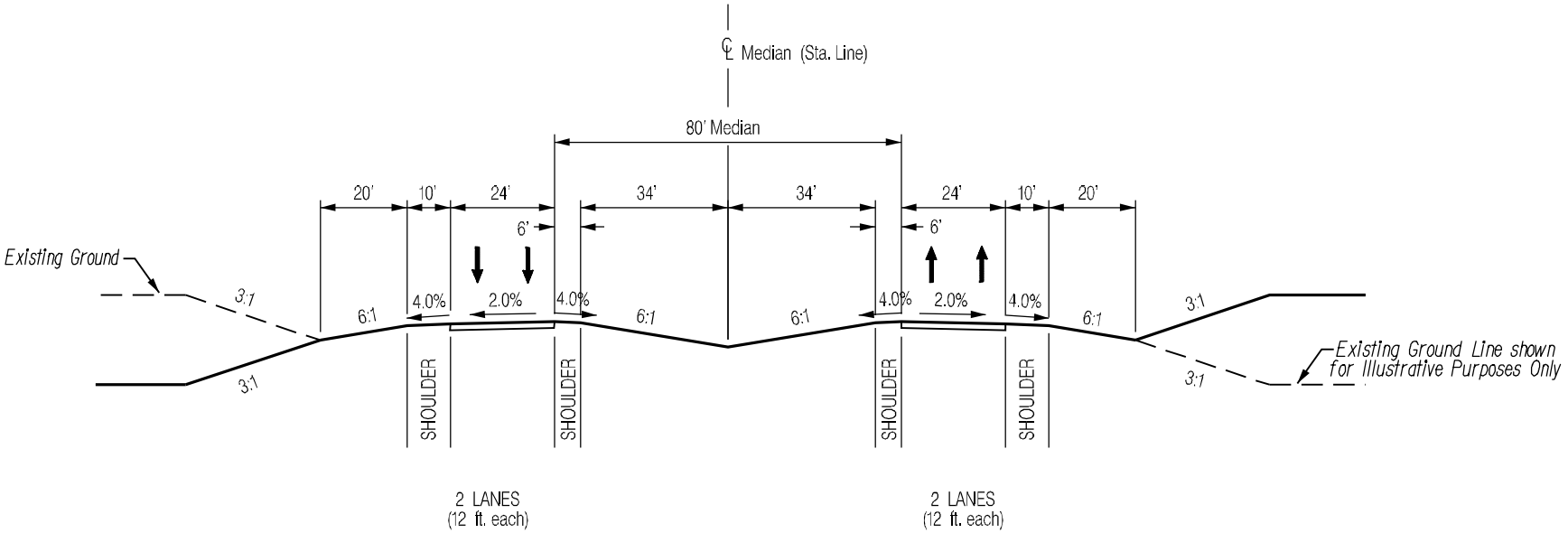
The Preferred Corridor was divided into five discrete sections to allow for more detailed analysis of potential impacts (See Exhibit 2-5). Section 1 begins at US Highway 82 approximately nine miles west of El Dorado and proceeds northward for 16 miles to S.H. 7 north of El Dorado. Section 2 extends from S.H. 7 to US Highway 167 south of Hampton, a distance of approximately 20 miles. Section 3 starts at US Highway 167 and extends to US Highway 63 south of Warren, a distance of approximately 25 miles. Section 4 begins at US Highway 63 and then splits near the Bradley/Drew County Line to form two corridor alternatives that pass to the north and south of Monticello to terminate at US Highway 425, a distance of about 18 miles. Section 5 begins at US Highway 425 and proceeds east of Monticello where the two corridors converge and terminate at US Highway 65 north of McGehee, a distance of approximately 24 miles.

Four initial alignments were developed within the Preferred Corridor and are shown on Exhibit 2-5. These alignments are identified as Line 1, Line 2, Line 3, and Line 4. In some sections, alignments are in the same location or cross over each other due to associated engineering or environmental constraints in that area of the Preferred Corridor. A brief description of each alignment and environmental and engineering issues is provided below.

Table 2-5
PROPOSED INTERCHANGES AND GRADE SEPARATIONS

Intersecting Roadway	Alignment Alternatives				
	Line 1	Line 2	Line 3	Line 4	Preferred (Line 5)
US 82	I, O	I, O	I, O	I, O	I, O
S.H. 172	O	O	O	O	O
Bethel Road	O	O	O	O	O
Sandy Creek Road	-	-	O, R	O, R	O, R
S.H. 160	I, O	I, O	I, U	I, U	I, U
Silver Hill Loop	O	O	-	-	-
Local Road	-	O	-	-	-
County Road 61	O	O	O	O	O
County Road 2	O	O	O	O	O
S.H. 376	U	U	U	U	U
S.H. 7	I, U	I, U	I, U	I, U	I, U
County Road 63	R, O	R, O	R, O	R, O	R, O
County Road 67	I, O	I, O	I, O	I, O	I, O
Near County Line	R, U	O	R, O	R, O	R, O
Potlach Road	O	O	O	O	O
Little Bay Road	O	O	O	O	O
Local Road	O	R, O	O	O	O
US 167	I, U	I, U	I, U	I, U	I, U
S.H. 160	I, O	I, O, R	I, O	I, O	I, O
Banks Jersey Road	O	O	O	O	O
County Road 88	O	O	O	O	O
County Road 5	O,R	O, R	O, R	O	O, R
County Road 32	O, R	O	O	O	O
Prospect Road	O, R	O, R	O	O	O, R
Carmel Cutoff Road	O	O	O	O	O
US 63	I, O, R	I, U	I, O, R	I, O	I, O, R
S.H. 172	U	U	-	U	U
US 278	I, O	-	I, O	-	-
Local Road	-	I, O	-	I, O	I, O
County Road 361	-	O, R	-	O, R	O. R
Sanderlin Road	U	-	U	-	-
County Road 133	O	-	O	-	-
Dickson Road	O, R	-	O	-	
Future I-530	I, U	I, O	I, U	I, O	I, O
Barkada Road	O, R	-	O	-	-
S.H. 35	O, R	I, O	U	I, O	I, O
US 425	I, U	I, U	I, U	I, U	I, U
County Road 14	-	O, R	-	O, R	O, R
County Road 15	-	O	-	O	O
S.H. 83	U		U		
Florence Road	U	-	U	-	-
County Road 36	-	O	-	O	-
County Road 46	-	O	-	O	O
County Road 50	-	O	-	O	O
US 278	-	U	-	I, U, R	I, U, R
S.H. 138	I, U	-	I, U, R	-	-
North Sixteen Section Road	O, R	O, R	O, R	O, R	O, R
S.H. 293	I, O	I, O	I, O	I, O	I, O
Local Road	O, R	O, R	O, R	O, R	O, R
S.H. 277	O	O	O	O	O
Local Road	U, R	U, R	U, R	U, R	U, R
US 65	I, U	I, U	I, U	I, U	I, U

I = Interchange
O = Overpass – Proposed highway would cross over local road
R = Proposed local road relocation
U = Underpass – Local road would cross over proposed highway



TYPICAL SECTION

I-69 Location Study
El Dorado To McGehee

Exhibit 2-4

TYPICAL SECTION

Baker

NOT TO SCALE

N
W
E
S

Project Area

Line 3 and 4

Line 2

Line 1

Preferred Corridor

END SECTION 1 BEGIN SECTION 2

END SECTION 2 BEGIN SECTION 3

BEGIN SECTION 1

Calhoun

Ouachita

Union

Bradley

East Camden

Camden

Tinsman

Banks

Hampton

Harrell

Hermitage

Jersey

Louann

Smackover

Norphlet

Calion

Lisbon

El Dorado

H.K Thatcher Lock and Dam

Moro Bay State Park

Felsenthal National Wildlife Refuge

Ouachita River

CO 67

CO 32

79

7

278

167

376

172

160

63

275

82

LEGEND

LINE 1

LINE 2

LINE 3

LINE 4

PROPOSED INTERCHANGE

Cleveland

Future I–530

Lake Monticello

Proposed Road Alignment by AHTD

Line 3

END SECTION 5

Selma

Desha

Future I–69 Mississippi River Crossing Alignment

Line 4

Warren

Monticello

Wilmar

Proposed I–530 Extension

McGehee

Seven Devils Swamp

Line 1

Line 2

Green Hill

Saline

Preferred Corridor

New Hope

Collins

Drew

Bayou Bartholomew

Dermott

Sumpter

END SECTION 3 BEGIN SECTION 4

END SECTION 4 BEGIN SECTION 5

Lacey

Cut–Off Creek Wildlife Management Area

Chicot

Bradley

Ingalls

Johnsville

Fountain Hill

Ashley

Project Area

I–69 Location Study
El Dorado to McGehee

Exhibit 2–5

PRELIMINARY ALIGNMENT LOCATIONS

Baker

SCALE IN FEET
0 5000 10000 15000

Section 1 Alignments

All alignments begin at a common point with an interchange at US Highway 82 approximately, two miles west of the regional El Dorado airport and heads northward toward the Union/Ouachita County line. North of Camp Creek, Line 1 and Line 2 veer to the west and intersect with S.H. 160 just west of Silver Hill Loop Road. Lines 3 and 4 proceed to the northeast and intersect with S.H. 160 slightly west of Sweet Canaan Church. An interchange is proposed for all alignments at S.H. 160. All alignments continue north to the county line, crossing Smackover Creek and converging together just west of the community of Liberty and then proceed to S.H. 7. An interchange is proposed for all alignments at this location.

Alignment development in Section 1 was influenced by the number and location of residences on US Highway 82, oil and gas wells in the vicinity of the S.H. 172 crossing, drainage and local road alignments in the vicinity of the S.H. 160 crossing, the Pace City Oil and Gas Field located between S.H. 160 and Smackover Creek, the Smackover Oil and Gas Field, and residential areas near the communities of Liberty and Kirkland near S.H. 7.

Section 2 Alignments

From S.H. 7, all alignments head east to County Road 67. An interchange is proposed for all alignments at this location to serve the rural residents in this area. The alignments continue east, crossing the Ouachita River and heading to US Highway 167. An interchange is proposed for all alignments at this location approximately one mile north of S.H. 172.

Alignment development in Section 2 was primarily influenced by the oil and gas well locations in the Smackover Field near the community of Louann, residential areas along County Roads 63 and 67, the crossing of the Ouachita River, several lakes and river oxbows in the Ouachita River floodplain. Other factors influencing alignment development included areas of land with known endangered species, the Hampton Oil Field, and determining an acceptable interchange location at US Highway 167.

Section 3 Alignments

All alignments continue eastward from US Highway 167 to a proposed interchange at S.H. 160. The alignments continue east crossing Moro and L'Aigle Creeks to County Road 32 in the Farmville area. All alignments have a proposed interchange at this location. The alignments proceed eastward to a proposed interchange location south of Warren at US Highway 63.

Alignment development in Section 3 was influenced by the location of S.H. 172 and S.H. 160, residential areas along S.H. 160 and County Roads 1, 5, and 32, and areas of land with known populations of federally listed endangered species. Additional factors influencing alignment development included the

location of churches, cemeteries, and the Warren Airport.

Section 4 Alignments

Section 4 alignments were developed both north and south of Monticello. All alignments continue from US Highway 63, with Lines 1 and 3 passing just north of town and terminating at US Highway 425, while Lines 2 and 4 pass south of town and end at US Highway 425. Lines 1 and 3 would have a proposed interchange at US Highway 278, a proposed fully directional interchange with I-530 north of Wilmar, and a proposed interchange at US Highway 425. Lines 2 and 4 would have a fully directional interchange with the proposed extension of I-530 south of Wilmar and would have a proposed interchange at US Highway 425 south of Monticello.

Alignment development in Section 4 was influenced by the Saline River crossings and the associated river floodplain and wetlands, the Warren Prairie Natural Area, the number and location of residences in the vicinity of Wilmar, Green Hill and Monticello, the location of the Warren sewage lagoon, and the ability to minimize impacts to the floodplains of Tenmile, Flat and Langford Creeks.

Section 5 Alignments

Lines 1 and 3 proceed eastward from US Highway 425, crossing S.H. 83 to S.H. 138. An interchange is proposed at this location. Lines 2 and 4 proceed from US Highway 425 and turn northeastward, crossing S.H. 35 and US Highway 278 before converging with Lines 1 and 3 east of S.H. 138. Interchanges are proposed for Lines 2 and 4 at S.H. 35 and US Highway 278. East of S.H. 138 all alignments converge at S.H. 293 with a proposed interchange south of Selma and then continue across Bayou Bartholomew and end with a proposed interchange at US Highway 65.

Alignments developed in Section 5 were influenced by proposed interchange locations at S.H. 138, S.H. 35, and US Highway 278, Monticello's sewage lagoons, wetlands in the Godfrey Creek area, and residential areas and farm related buildings near S.H. 138. Additional factors influencing alignment development included industrial areas to the south of Monticello, large tracts of farmland east of S.H. 138, a tract of property enrolled in the Wetland Reserve Program just west of Selma, wetlands in the vicinity of Bayou Bartholomew, and the SIU 12 alignment at US Highway 65 north of McGehee.

2.6.3 Public, Native American, Local Community Leader, and Agency Involvement

Comprehensive involvement of the public, Native American Tribes, local community leaders, and state and federal resources agencies was encouraged throughout the Alignment Study process. Public meetings were held in El Dorado, Warren, Monticello, and McGehee in March 2003 to obtain input on the preliminary alignments developed. Additional meetings were held with

local community leaders, and state and federal resources agencies. Public meeting display material was provided to the communities of El Dorado, Camden, Smackover, Warren, Crossett, Monticello, McGehee, and Dumas. Additionally, material was available for review at the project office in White Hall, Arkansas.

In May 2003, FHWA met with the Caddo Tribe of Oklahoma and the Quapaw Tribe of Oklahoma to review the preliminary alignments and discuss the on-going development of a Programmatic Agreement with FHWA. The Tunica-Biloxi Indians of Louisiana received meeting correspondence, but did not attend this meeting. All tribal correspondence is included in the Appendix.

Meetings with local community leaders were held in El Dorado and Monticello prior to public meetings to discuss the alignments in detail. Comments on the effect of the various lines on the local economy, traffic relief, and planned development or consistency with development objectives were specifically sought. Community leaders in attendance at the El Dorado meeting provided no preference for any alignment.

At this meeting the City of Monticello presented a letter that stated a preference for the southern alternative around Monticello, which was also supported by the Monticello Economic Development Commission.

All appropriate state and federal resource agencies were invited to attend a field review of the preliminary alignments. Detailed maps similar to those presented at the public meetings were reviewed in the field with the agencies. Public, tribal, local community leader, and agency involvement is discussed in greater detail in Section 7.

2.6.4 Alignment Revisions/Additions

Based on comments received following the March 2003 meetings, revisions were made to the preliminary alignments in several areas of the project. In addition, a fifth alignment (Line 5) was developed that incorporated these changes as well as combined portions of the four preliminary alignments to further reduce social and environmental impacts (see Exhibit 2-6).

Due to public concern of residential impacts at the proposed US Highway 82 interchange location, two additional interchange locations were developed approximately 1,200 feet to the west and east of Line 1 to form three distinctive interchange locations.

The second revision to the initial alignment locations is the result of landowner concern for an unrecorded historic cemetery north of S.H. 172. In response, Lines 1, 2, and 5 were relocated approximately 160 feet to the east to avoid this area.

Other minor revisions were made to the preliminary alignments to improve highway geometry and

further reduce or avoid impacts to sensitive environmental areas. These included improving local road crossings and further reducing and avoiding impacts to cemeteries, wetlands, and other water resources.

2.6.5 Traffic Analysis

To verify the proposed highway's future serviceability, a traffic analysis evaluated 2030 design year projected traffic conditions encompassing the area from El Dorado to McGehee, Arkansas. Due to the proximity of all developed alignments, a representative Build Alternative on new location was evaluated for the 2030 design year and considered the following four I-69 section scenarios:

1. El Dorado to McGehee, Arkansas
2. El Dorado, Arkansas to Memphis, Tennessee
3. Shreveport, Louisiana to Memphis, Tennessee
4. Build out of the National I-69 Corridor, Canadian Border to Mexican Border

Using the methodology outlined in the 2000 Highway Capacity Manual (HCM), the capacity analysis calculated the roadways' Level of Service (LOS) as discussed in Section 1.

All portions of SIU 13 from El Dorado to McGehee are projected to operate at LOS A for scenarios 1 and 2 and will operate at LOS A or B for scenarios 3 and 4. The average daily traffic volumes varied from a maximum of 3,800 vehicles under scenario 1 (El Dorado to McGehee, only) to a maximum of 14,000 under the completed National I-69 Corridor scenario.

The SIU 13 Project (2030 Build Alternative) would provide additional roadway capacity to the Project Area and would result in a general increase in system wide performance when compared to the No-Action Alternative. Interstate 69 would assist in diverting traffic volumes off the surrounding roadways resulting in the majority of links operating at LOS C or better. Areas of poor performance would still exist in El Dorado and Monticello, as I-69 would not improve community specific traffic issues. Table 2-6 and Table 2-7 provide a summary of 2030 Build Alternatives affect on Project Area LOS and includes alternatives both north and south of Monticello. Both alternatives show a general increase in system wide performance, reducing the percentage of roadway links operating at LOS D, and increasing the percentage of roadway links operating at LOS B. No substantial difference exists between these two alternatives with respect to LOS improvements.

2.6.6 Preliminary Cost Estimate

The preliminary cost estimates prepared for the alignment alternatives include construction, right-of-way (ROW) acquisition, and utility relocation costs (Table 2-8).

Kingsland
Thornton
Bearden
Chidester
Ouachita
Calhoun
Tinsman
Rye
Lake Monticello
Bayou
Desha
Barthelemew
Cut-off Creek
Selma
Wilmar
Monticello
Warren
Banks
Seven Devils Swamp
McGehee
East Camden
Camden
Green Hill
Bradley
Hampton
Harrell
Sumpter
New Hope
Drew
Collins
Dermott
Jersey
Hermitage
Saline River
Lacey
Cut-Off Creek Wildlife Management Area
Louann
Smackover
Ouachita River
Ingalls
Johnsville
Fountain Hill
Norphlet
Calion
H.K Thatcher Lock and Dam
Moro Bay State Park
Montrose
Portland
Lisbon
El Dorado
Lake Georgia Pacific
Felsenthal National Wildlife Refuge
Hamburg
Chicot
Newell
Hillsboro
Strong
Crossett
Ashley
Parkdale
Union
Lake Jack Lee
Overflow National Wildlife Refuge
Felsenthal Lock and Dam
Huttig
Felsenthal
Junction City
Arkansas
Louisiana

1 2 3 4 5 6 7

I-69 Location Study
El Dorado to McGehee

Exhibit 2–6

ALIGNMENT LOCATIONS INDEX

Baker

SCALE IN MILES
0 1 2 3

BEGIN SECTION 1

Line 1

Line 2

Line 3

Line 4

Preferred (Line 5)

Preferred Corridor

Cairo

Lisbon

Liberty

El Dorado Field

Union County

Ouachita County

Match Line See Sheet 2 of 7

82

160

172

Sandy Creek

Bear Creek

Silver Creek

Carey Creek

Beech Creek

Smackover Creek

Richland Creek

LEGEND

- LINE 1
- LINE 2
- LINE 3
- LINE 4
- PREFERRED (LINE 5)
- PROPOSED INTERCHANGE
- WETLAND
- NATURAL AREA
- FLOODPLAIN
- FLOODWAY
- WILDLIFE MANAGEMENT AREA
- WETLAND RESERVE PROGRAM
- OIL AND GAS FIELD
- HIGH PROBABILITY AREA FOR ARCHEOLOGICAL RESOURCES
- OIL AND GAS WELL LOCATION
- WELLHEAD PROTECTION AREA

I-69 Location Study
El Dorado to McGehee

Exhibit 2-6

ALIGNMENT LOCATIONS

Sheet 1 of 7

Baker

SCALE IN FEET
0 1000 2000 3000 4000 5000

END SECTION 1 | BEGIN SECTION 2

Preferred Corridor

Preferred (Line 5)

Line 1

Line 2

Line 3

Line 4

Louann

Cross Roads

Smackover

Kenova

Snow Hill

Joyce City

Ouachita County

Union County

Calhoun County

Match Line See Sheet 1 of 7

Match Line See Sheet 3 of 7

376

7

160

CO 67

North Fork Creek

Wolf Creek

Bayou Ouachita

Little Bay Lake

Ben Davis Lake

Cages Lake

LEGEND

- LINE 1
- LINE 2
- LINE 3
- LINE 4
- PREFERRED (LINE 5)
- PROPOSED INTERCHANGE
- WETLAND
- NATURAL AREA
- FLOODPLAIN
- FLOODWAY
- WILDLIFE MANAGEMENT AREA
- WETLAND RESERVE PROGRAM
- OIL AND GAS FIELD
- HIGH PROBABILITY AREA FOR ARCHEOLOGICAL RESOURCES
- OIL AND GAS WELL LOCATION
- WELLHEAD PROTECTION AREA

I-69 Location Study
El Dorado to McGehee

Exhibit 2-6

ALIGNMENT LOCATIONS

Sheet 2 of 7

Baker

SCALE IN FEET
0 1000 2000 3000 4000 5000

ARHTD

END SECTION 2 BEGIN SECTION 3

Preferred (Line 5)

Line 2

Line 1

Line 3

Line 4

Preferred Corridor

Hampton

Harrell

Artesian

278

203

274

167

160

172

Champagnolle Creek

Little Champagnolle Creek

Bayou Blann

Dunn Creek

Jim Brake

Tom Cook Brake

Rocky Branch

Hurricane Creek

Gilbert Branch

Match Line See Sheet 2 of 7

Match Line See Sheet 4 of 7

N

W E

S

LEGEND

- LINE 1
- LINE 2
- LINE 3
- LINE 4
- PREFERRED (LINE 5)
- PROPOSED INTERCHANGE
- WETLAND
- NATURAL AREA
- FLOODPLAIN
- FLOODWAY
- WILDLIFE MANAGEMENT AREA
- WETLAND RESERVE PROGRAM
- OIL AND GAS FIELD
- HIGH PROBABILITY AREA FOR ARCHEOLOGICAL RESOURCES
- OIL AND GAS WELL LOCATION
- WELLHEAD PROTECTION AREA

I-69 Location Study
El Dorado to McGehee

Exhibit 2-6

ALIGNMENT LOCATIONS

Sheet 3 of 7

Baker

SCALE IN FEET
0 1000 2000 3000 4000 5000

Summerville
Farmville
Jersey
Hermitage
278
160
63
CO 32
Bradley County
Calhoun County
Jacks Creek
Jolly Creek
Main Creek
Wahl Branch
Mayo Creek
Villum Branch
Springhill Creek
California Creek
Brushy Creek
L'Aigle Creek
Preferred Corridor
Preferred (Line 5)
Line 1
Line 2
Line 3
Line 4
Match Line See Sheet 3 of 7
Match Line See Sheet 5 of 7
N
W
E
S
LEGEND
LINE 1
LINE 2
LINE 3
LINE 4
PREFERRED (LINE 5)
PROPOSED INTERCHANGE
WETLAND
NATURAL AREA
FLOODPLAIN
FLOODWAY
WILDLIFE MANAGEMENT AREA
WETLAND RESERVE PROGRAM
OIL AND GAS FIELD
HIGH PROBABILITY AREA FOR ARCHEOLOGICAL RESOURCES
OIL AND GAS WELL LOCATION
WELLHEAD PROTECTION AREA
I-69 Location Study
El Dorado to McGehee
Exhibit 2-6
ALIGNMENT LOCATIONS
Sheet 4 of 7
Baker
SCALE IN FEET
0 1000 2000 3000 4000 5000
AHTD

END SECTION 3

BEGIN SECTION 4

Warren

Wilmar

Carmel

Line 1

Line 2

Line 3

Line 4

Preferred (Line 5)

Preferred Corridor

Warren Prairie Natural Area

Casey Jones Wildlife Management Area (Leased)

Bradley County

Drew County

Match Line See Sheet 4 of 7

Match Line See Sheet 6 of 7

63

8

278

133

172

Carmichael Creek

L'Aigle Creek

Brushy Creek

Saline River

Moro Creek

Fish Branch

Tributary

N

W

E

S

LEGEND

- LINE 1
- LINE 2
- LINE 3
- LINE 4
- PREFERRED (LINE 5)
- PROPOSED INTERCHANGE
- WETLAND
- NATURAL AREA
- FLOODPLAIN
- FLOODWAY
- WILDLIFE MANAGEMENT AREA
- WETLAND RESERVE PROGRAM
- OIL AND GAS FIELD
- HIGH PROBABILITY AREA FOR ARCHEOLOGICAL RESOURCES
- OIL AND GAS WELL LOCATION
- WELLHEAD PROTECTION AREA

I-69 Location Study
El Dorado to McGehee

Exhibit 2-6

ALIGNMENT LOCATIONS

Sheet 5 of 7

Baker

SCALE IN FEET
0 1000 2000 3000 4000 5000

Future I-530

Line 3

Proposed Road Alignment by AHTD

Line 1

Preferred Corridor

Line 2

Monticello

Monticello Airport

Proposed I-530 Extension

END SECTION 4 BEGIN SECTION 5

College Heights

Enon

Preferred (Line 5)

Preferred Corridor

Line 4

Langford Creek

Lower Cutoff Creek

Godfry Creek

Hurricane Creek

Piney Creek

Tennile Creek

Clear Creek

Jordan Creek

Adcock Creek

Sandy Creek

Match Line See Sheet 5 of 7

Match Line See Sheet 7 of 7

LEGEND

- LINE 1
- LINE 2
- LINE 3
- LINE 4
- PREFERRED (LINE 5)
- PROPOSED INTERCHANGE
- WETLAND
- NATURAL AREA
- FLOODPLAIN
- FLOODWAY
- WILDLIFE MANAGEMENT AREA
- WETLAND RESERVE PROGRAM
- OIL AND GAS FIELD
- HIGH PROBABILITY AREA FOR ARCHEOLOGICAL RESOURCES
- OIL AND GAS WELL LOCATION
- WELLHEAD PROTECTION AREA

I-69 Location Study
El Dorado to McGehee

Exhibit 2-6

ALIGNMENT LOCATIONS

Sheet 6 of 7

Baker

SCALE IN FEET 0 1000 2000 3000 4000 5000

Match Line See Sheet 6 of 7

Wetland Reserve Program

Line 2

Line 3

Line 4

Line 1

Preferred (Line 5)

Preferred Corridor

END SECTION 5

Selma

Tiller

Reed

McGehee

Future I-69 Mississippi River Crossing Alignment

Casey Jones Wildlife Management Area (Leased)

Seven Devils Swamp WMA (CO)

Cutoff Creek

Ables Creek

Bartholomew Bayou

Open Lake

Paw Paw Brake

Austin Brake

Piney Creek

Seven Devils Lake

Drew County

Desha County

138 293 65 277 278

N W E S

LEGEND

- LINE 1
- LINE 2
- LINE 3
- LINE 4
- LINE 5 (PREFERRED)
- PROPOSED INTERCHANGE
- WETLAND
- NATURAL AREA
- FLOODPLAIN
- FLOODWAY
- WILDLIFE MANAGEMENT AREA
- WETLAND RESERVE PROGRAM
- OIL AND GAS FIELD
- HIGH PROBABILITY AREA FOR ARCHEOLOGICAL RESOURCES
- OIL AND GAS WELL LOCATION
- WELLHEAD PROTECTION AREA

I-69 Location Study
El Dorado to McGehee

Exhibit 2-6

ALIGNMENT LOCATIONS

Sheet 7 of 7

Baker

SCALE IN FEET
0 1000 2000 3000 4000 5000

Table 2-6
NORTH OF MONTICELLO BUILD ALTERNATIVE LOS

LOS RESULTS	2030 NO BUILD % of Roadway Links	2030 SCENARIO 1 % of Roadway Links	2030 SCENARIO 2 % of Roadway Links	2030 SCENARIO 3-4 % of Roadway Links
A	22	29	28	21
B	20	20	21	30
C	24	24	24	28
D	**31**	**25**	**26**	**20**
E	**3**	**2**	**1**	**1**

Source: Michael Baker Jr. Inc.

Table 2-7
SOUTH OF MONTICELLO BUILD ALTERNATIVE LOS

LOS RESULTS	2030 NO BUILD % of Roadway Links	2030 SCENARIO 1 % of Roadway Links	2030 SCENARIO 2 % of Roadway Links	2030 SCENARIO 3-4 % of Roadway Links
A	22	30	30	24
B	20	19	19	25
C	24	23	23	23
D	**31**	**24**	**24**	**24**
E	**3**	**3**	**3**	**3**

Source: Michael Baker Jr. Inc.

Table 2-8
COST ESTIMATE FOR ALIGNMENT ALTERNATIVES (IN YEAR 2003 $) (in 000s)

Cost	Line 1	Line 2	Line 3	Line 4	Preferred (Line 5)
Construction	$753,997	$765,858	$756,597	$762,433	$760,305
ROW	$24,637	$25,025	$24,705	$24,086	$23,560
Total	$778,634	$790,883	$781,302	$786,519	$783,865
Total Cost/Mile	7.755	7.686	7.797	7.681	7.634

Source: Michael Baker Jr., Inc., AHTD Estimated Costs per Mile, July 2002

Construction costs include earthwork, grading, drainage, base and pavement, bridges, and a 15 percent engineering design and construction inspection expense (AHTD Estimated Costs per Mile, July 2002). ROW costs include land acquisition, relocation expenses for residences, utility relocations, and administrative expenses. The average total cost of the alternatives is $7.7 million/mile.

2.6.7 Environmental Documentation and Public Hearings

Public hearings were held on June 22-24, 2004 in El Dorado, Monticello, and McGehee. Over 100 DEISs were distributed to state and federal agencies, Native American Tribes, U.S. and State senators and representatives, county judges, local community leaders, chamber of commerce, and other organizations and are listed in Section 6. Comments received on the DEIS are discussed in Section 7 as part of the administrative record for this project.

2.6.8 The Preferred Alignment

Active involvement and participation by community leaders, state and federal agencies, and the public provided sufficient information and comments to identify Line 5 as the Preferred Alignment for the SIU 13 Project. The Preferred Alignment is identified in Exhibit 2-6 and is compared to the alignments considered in the Draft EIS in Table S-1. As discussed in Section 2.6.4, Line 5 (the Preferred Alignment) was developed to combine portions of the four preliminary alignments to further reduce social and environmental impacts. Furthermore, based on comments received on the DEIS and on the Preferred Alignment announcement in October 2004, minor revisions were made to Line 5 to further reduce property owner impacts.

The Preferred Alignment is discussed in more detail for each of the following project sections.

Section 1 – US Highway 82 to S.H. 7

The Preferred Alignment in Section 1 would:

- Best minimize residential impacts at the US Highway 82 interchange.
- Best avoid brine wells and transmission lines south of US Highway 82.
- Provide acceptable connections to SIU 14 alignments under development.
- Avoid an unrecorded historic cemetery north of S.H. 172.
- Best avoid residential and agricultural development in the Silver Hill Loop area.
- Eliminate the need for extended frontage roads in the Silver Hill Loop area.
- Avoid known oil well locations.
- Best avoid residential impacts near the communities of Liberty and Kirkland.
- Provide the best interchange location at US Highway 82 and S.H. 160.

Section 2 - S.H. 7 to US Highway 167

The Preferred Alignment in Section 2 would:

- Best avoid residential impacts at County Road 67 interchange.
- Best minimize impacts to forested wetlands in the Ouachita River floodplain.
- Avoid the need to relocate a timber access road east of the Ouachita River crossing.
- Provide the best crossing of the Ouachita River.

Section 3 – US Highway 167 to US Highway 63

The Preferred Alignment in Section 3 would:

- Best avoid residential impacts at S.H. 160 interchange.
- Avoid residential impacts at all local and county road crossings.
- Be located furthest from known red-cockaded woodpecker areas.
- Minimize wetland impacts.
- Avoid all known churches and cemeteries.

Section 4 - US Highway 63 to US Highway 425

The Preferred Alignment in Section 4 would:

- Provide the best crossing of the Saline River closest to US Highway 278 (a state and federal resource agency comment).
- Avoid the Warren Prairie Natural Area.
- Provide the closest interchange access to Wilmar, a predominantly minority community.
- Avoid residential impacts.
- Provide the best interchange location at US Highway 425.

Section 5 - US Highway 425 to USHighway 65

The Preferred Alignment in Section 5 would:

- Avoid a known wetland reserve program property.
- Best address potential environmental justice concerns east of Monticello.
- Best minimize impacts to farmland and farm operations east of Monticello.

Monticello Area

In addition to the five project sections, alignments north and south of Monticello were evaluated (Table 2-9) and presented to the public at the DEIS hearings. The majority of DEIS comments received on this issue favored a southern route, including support from state and community leaders (see Section 7 Coordination and Public involvement). Furthermore, the Preferred Alignment would:

- Avoid existing and planned residential development north of Monticello.
- Provide better access to the University, public schools, hospital, and other medical facilities.

- Provide better access to existing and planned industrial development.
- Best minimize impacts to farmland and farm operations east of Monticello.
- Provide better access to Crossett, Hamburg and other Ashley County communities, and Ashley County industries.

In Summary, the Preferred Alignment:

- Impacts the fewest residences (4) over the 103 mile project.
- Impacts the least amount of wetlands.
- Avoids known active oil wells.
- Avoids known red-cockaded woodpecker areas.
- Avoids direct impacts to developed communities.
- Avoids known properties on the National Register of Historic Places.
- Avoids known hazardous waste sites.
- Best avoids direct impacts to and separation of rural residential housing clusters.
- Best avoids potential environmental justice areas.
- Best avoids the Warren Prairie Natural Area.
- Best addresses social and environmental issues in the Monticello area.
- Remains closest to US Highway 278 at the Saline River crossing (a state and federal agency concern).

The Preferred Alignment will be subject to public, local community leader, state and federal agency, and Native American Tribal review during the comment period on the Final EIS. Any comments received will be evaluated and addressed in the Record of Decision.

The identification of the Preferred Alignment satisfies, to the fullest extent possible, the objectives of the NEPA/404 process that has been adopted for this study. The multi-step project approach allowed a thorough consideration of all alternatives developed at both the corridor and alignment level with respect to the potential impacts to waters of the United States including wetlands, and functioned as the Alternatives Analysis. Impacts were minimized to the greatest extent practicable in accordance with Section 404 b(1) Guidelines.

Table 2-9
PRELIMINARY ALIGNMENT COMPARISON
US 63 (WARREN) TO US 65 (MCGEHEE)

Issue/Resource	RATING (UNITS)	ALIGNMENTS					Comments
		LINE 1	LINE 2	LINE 3	LINE 4	LINE 5	
Social/Economic/Engineering							
Economic Development Opportunities	Rating	◒	○	◒	○	○	Based on March 2003 meetings with local elected officials and community leaders. Lines 2,4,and 5 would provide the best access to existing and planned industrial development areas.
Compatibility with existing Land Use	Rating	◒	○	◒	○	○	Best avoids areas of dense residential development or planned residential development
Compatibility with existing and planned industrial development	Rating	◒	○	◒	○	○	Lines 2, 4, and 5 would provide the best access to existing and planned industrial development in Monticello. All alignments would provide good access to facilities in Warren.
Number of Residential Displacements	Rating (Number)	● (15)	◒ (10)	● (15)	◒ (3)	◒ (3)	Lines 1 and 3 would impact a residential area in Monticello.
Potential Noise Impacts	Rating	◒	○	◒	○	○	Lines 1 and 3 would have greater noise impacts as there are more sensitive receptors (residences) in the northern Monticello area
Facility accessibility to communities and industries south of project (Ashley County, Crossett, Georgia Pacific (GP) facility)	Rating	●	○	●	○	○	Support for alignments south of Monticello by Ashley County Judge, Crossett Economic Development Commission, GP
Facility accessibility to University of Arkansas at Monticello (UAM)	Rating	●	○	●	○	○	Support for alignments south of Monticello by Chancellor of UAM (Lines 2,4, and 5).
Large Scale Agricultural Operations	Rating	●	◒	●	○	○	Lines 4 and 5 would have the least impact on large agricultural properties – would cross near back portion of properties, maximizing farmable areas.
Potential Adverse Impacts to Low Income and Minority Populations (Environmental Justice Issues)	Rating	●	◒	●	◒	○	Line 5 provides the greatest opportunity to avoid adverse impacts to low income and minority residents.
Direct impacts and separation of rural residential housing clusters	Rating	◒	◒	◒	◒	○	Line 5 provides the greatest opportunity to avoid impacts to clusters of rural residential dwellings.
Preliminary Construction Cost Estimate from US 63 to US 65	Rating	○	◒	○	◒	◒	
Length of Alignment	Rating (Miles)	○ (40.5)	◒ (43.2)	○ (40.5)	◒ (42.9)	◒ (43.0)	
Extension of I-530	Rating (Miles)	○ (0)	● (2.7)	○ (0)	● (2.7)	● (2.7)	Lines 2, 4, and 5 would require the future extension of I-530 to tie directly to I-69 south of Wilmar.
Environmental							
Impacts to Forested Wetlands	Rating (Acres)	● (171)	◒ (157)	◒ (126)	○ (98)	○ (98)	Wetland impacts primarily associated with Saline River drainage.
Impacts to 100 Year Floodplain	Rating (Acres)	◒ (412)	● (443)	◒ (398)	○ (347)	○ (356)	Crossing of 100 Year Floodplain.
Impacts at Saline River Wetlands/Floodplains	Rating	●	●	◒	○	○	Based on resource agency concerns and ability to be near US 278 existing crossing of the Saline River.
Potential Impacts to Warren Prairie Natural Area	Rating	●	●	○	◒	◒	All alignments avoid the existing Warren Prairie property and the proposed expansion area. Rating based on distance from the property.
Recorded Archeological Sites	Rating (Number)	◒ (3)	○ (2)	◒ (3)	○ (2)	○ (2)	Known archeology sites of undetermined eligibility and previously determined not eligible sites.
Potential Historic Structure Impacts	Rating	●	○	●	○	○	Lines 1 and 3 would impact several potential historic structures at SH 35. Lines 2, 4, and 5 would avoid this area.
Archeological High Probability Areas	Rating (Acres)	○ (271)	● (334)	◒ (306)	◒ (295)	◒ (297)	Indication of potential presence of archeological sites. All alignments would cross Bayou Bartholomew and the Saline River drainage where archeological sites are likely to occur.
Recorded Hazardous Materials Sites	(Number)	○ (0)	○ (0)	○ (0)	○ (0)	○ (0)	Alignments would not impact any known hazardous materials sites.

Source: Michael Baker Jr., Inc.

Rating scale: ○ ◔ ◑ ◕ ● Best → Worst

Section 3 AFFECTED ENVIRONMENT

This Section provides a general description of the social, natural, and physical environments in the roughly 3,000 square mile SIU 13 Project Area in nine southern Arkansas Counties. Specific impact assessments and potential mitigation measures are presented in Section 4: Environmental Consequences.

3.1 SOCIAL ENVIRONMENT

The Project Area is located in the Gulf Coastal Plain Region of southern Arkansas and encompasses portions of Columbia, Union, Ouachita, Calhoun, Bradley, Drew, Desha, Chicot, and Ashley Counties. This portion of Arkansas is dominated by large-scale agricultural activities including expansive tracts of timber producing forests and scattered parcels in pasture and row crop production. Primary areas of residential and commercial development are confined to the cities of El Dorado, Warren, Monticello, McGehee, and Dermott, while smaller communities ranging in population from 100-1,000 are scattered throughout the nine-county area.

3.1.1 Demographics

Population data and growth rates are presented in Table 3-1. Drew and Bradley Counties experienced the only positive population increase between 1990 and 2000 in the Project Area, but were still roughly 50 percent below the statewide average of 14 percent. Monticello in Drew County had the greatest population increase (+13 percent), while Dermott in Chicot County experienced the largest population decrease (-30 percent). Overall, the nine Project Area counties experienced a decline of approximately two percent between 1990 and 2000.

The overall decline in the population within the Project Area is similar to other parts of rural southern Arkansas. These areas have experienced difficulty in transitioning from the historical economic backbone of timber and agriculture to other job market sectors such as manufacturing, medical or retail. Consequently over time, many counties have lost individuals and families who have had to move to other areas offering a more diverse and available source of employment opportunities.

Drew County, Bradley County, and the city of Monticello had the largest population within the 19-44 age class. Bradley County and the city of Warren had the highest percent of persons older than 65. In general, age distributions for the Project Area counties and larger towns and cities are very similar to state wide statistics.

Minority populations comprise a large portion of the Project Area populous and are without exception greater than those observed for the statewide average (Table 3-2). The percentage of minorities observed in Project Area county populations ranges from 25 percent in Calhoun County to 57 percent in Chicot County.

Table 3-1
PROJECT AREA POPULATION DATA

State/County/Community	1990	2000	1990-2000 Change (%)
Arkansas	*2,350,725*	*2,673,400*	*+14*
Ashley County	24,319	24,209	0
Bradley County	11,793	12,600	+7
Warren	6,455	6,442	0
Calhoun County	5,826	5,744	-1
Hampton	1,562	1,579	+1
Chicot County	15,713	14,117	-4
Dermott	4,715	3,292	-30
Columbia County	25,691	25,603	-1
Desha County	16,798	15,341	-9
McGehee	4,997	4,570	-9
Drew County	17,369	18,723	+7
Monticello	8,116	9,146	+13
Union County	46,719	45,629	-2
El Dorado	23,146	21,530	-7
Smackover	2,232	2,005	-10
Ouachita County	30,574	28,790	-6
All Project Area Counties	194,802	190,756	-2

Source: U.S. Department of Commerce - Bureau of the Census - 2000, Summary of General Characteristics - Population of Places
Source: U.S. Department of Commerce - Bureau of the Census - 1990, Summary of General Characteristics - Population of Places

The average minority percentage for all Project Area counties and larger cities is 39 percent. The higher percentage of African Americans found in the Project Area is similar to other historically agriculturally dominated areas throughout the southern United States. Prior to farming mechanization and the conversion from family and smaller sized farms to large conglomerate farm operations, African Americans served as the dominant farm labor force in this area and have remained a large proportion of the county populations.

Most of the minority population in the Project Area is African American with only two to three percent of the minority population typically composed of other ethnic groups. However, in Bradley County the Hispanic/Latino population has grown from less than two percent in 1990 to around eight percent in 2000. According to the Bradley County Economic Council, Hispanics/Latinos are coming to Bradley County to work in the poultry and tomato farming sectors.

Table 3-2
PROJECT AREA RACIAL CHARACTERISTICS

State, County or Community	Total Pop.	White		African American		Other	
		Pop.	%	Pop.	%	Pop.	%
Arkansas	*2,673,400*	*2,138,598*	*80*	*418,950*	*16*	*115,852*	*4*
Ashley County	24,209	16,892	70	6,561	27	756	3
Bradley County	12,600	7,983	63	3,607	29	1,010	8
Warren	6,442	3,508	54	2,628	41	306	5
Calhoun County	5,744	4,280	74	1,343	23	121	2
Hampton	1,579	1,045	66	506	32	28	2
Chicot County	14,117	6,104	43	7,617	54	396	3
Dermott	3,292	831	25	2,412	73	49	2
Columbia County	25,603	16,035	63	9,317	36	467	2
Desha County	15,341	7,747	50	7,107	46	481	3
McGehee	4,570	2,592	57	1,897	42	81	2
Drew County	18,723	13,162	70	5,085	27	476	3
Monticello	9,146	5,941	65	2,983	33	222	2
Ouachita County	28,790	17,200	60	11,125	38	465	2
Union County	45,629	30,182	66	14,587	32	860	2
El Dorado	21,530	11,552	54	9,512	44	466	2
Smackover	2,005	1,455	73	527	26	23	1
Project Area Counties	190,756	119,585	61	66,349	34	8,996	3

Source: U.S. Department of Commerce - Bureau of the Census - 2000, Summary of General Characteristics - Population of Places

3.1.2 Community Characteristics

The larger communities of El Dorado, Smackover, Warren, Monticello, McGehee, and Dermott, are well-defined with businesses, schools, churches, and residential development located along a network of municipal streets. These larger communities function as centers for a wide variety of social activities for city residents as well as for residents of the surrounding rural areas. Each community has grocery and retail shopping, health services, public school systems, and other services. Beyond the city limits, residential development patterns become dispersed as the environment changes to a more rural setting.

There are many smaller cities in the Project Area such as Hampton, Harrell, Hermitage, and Selma. These communities can generally be described as clusters of residences located along county or state highways with an associated church and cemetery and little or no commercial development. Residents of these small rural communities must travel to nearby larger communities such as El

Dorado, Warren, and Monticello for many goods and services.

Primary health care needs for area residents are provided at major medical facilities located in El Dorado, Warren, Monticello, and McGehee. These facilities provide emergency as well as routine and specialized care. Smaller physician and dental offices are located in area communities and provide routine care.

Primary and secondary schools, as well as public libraries, are limited to the communities of El Dorado, Smackover, Warren, Monticello, Dermott, and McGehee within the Project Area. In addition, post-secondary education opportunities are offered at the University of Arkansas – Monticello Campus and the South Arkansas Community College in El Dorado. Project Area counties had a high school graduation rate (37 percent) slightly above the statewide average (34 percent), but were lower for post-secondary education categories (Table 3-3). Calhoun County had one of the highest high school graduation rates (44 percent) yet had the lowest percent attaining a bachelor's degree or higher (seven percent). The communities of El Dorado and Monticello had the highest percent attaining a bachelor's degree or higher (19 percent and 22 percent, respectively). Many of the towns and counties that have lower percentages of post high school degrees would likely benefit from improved access to regional colleges located in El Dorado and Monticello.

Churches and cemeteries are scattered throughout the Project Area and have been identified by the public as sensitive community and family resources that should be avoided during the highway development process. Every effort was made throughout the Corridor and Alignment Studies to avoid and minimize potential impacts to these resources.

Law enforcement is provided by local, county and state police departments. Municipal police departments are located in El Dorado, Warren, Monticello, Dermott, and McGehee. Police protection is also provided by two state police offices located in Warren and Pine Bluff, and nine county Sheriff's departments.

Table 3-3
2000 PROJECT AREA EDUCATIONAL ATTAINMENT PERSONS 25 YEARS AND OLDER

State, County or Community	*Non-High School Graduate		High School Graduate		*Some College/ Associates Degree		Bachelors Degree or Higher	
	Number	% Total Pop.	Number	% Total Pop.	Number	% Total Pop.	Number.	% Total Pop.
Arkansas	*427,449*	*25*	*590,416*	*34*	*424,907*	*24*	*288,428*	*17*
Ashley County	4,325	28	6,798	43	3,017	19	1,582	10
Bradley County	2,794	33	3,082	37	1,494	18	998	12
Warren	1,494	34	1,619	37	774	18	521	12
Calhoun County	1,221	31	1,701	44	699	18	285	7
Hampton	263	27	434	44	189	19	98	10
Chicot County	3,242	36	3,196	35	1,566	17	1,058	12
Dermott	791	39	729	36	316	16	208	10
Columbia County	4,164	26	5,742	36	3,442	21	2,694	17
Desha County	3,351	35	3,443	36	1,720	18	1,060	11
McGehee	853	29	1,109	38	581	20	402	14
Drew County	3,113	27	3,966	34	2,480	21	1,994	17
Monticello	1,156	22	1,819	34	1,139	22	1,172	22
Ouachita County	5,032	26	6,622	35	4,906	26	2,415	13
Union County	7,643	26	10,648	36	7,228	24	4,467	15
El Dorado	3,707	26	4,349	31	3,320	24	2,597	19
Smackover	382	28	479	35	316	23	202	15
Project Area Counties	34,885	28	45,198	37	26,552	22	16,553	13

Source: U.S. Department of Commerce - Bureau of the Census - 2000, Census of Population and Housing.
* Categories are independent, meaning that those included in one category are not included in another category. For instance, those with a "Bachelors degree or Higher" are not also counted under the "High School Graduate" category.

Fire protection is provided by municipal fire stations located in El Dorado, Warren, Monticello, Dermott, and McGehee. Rural areas are protected through the efforts of volunteer fire departments located throughout the Project Area.

General housing characteristics for the Project Area are presented in Table 3-4. Ashley County had the highest percentage of owner-occupied housing units (67 percent). Calhoun County had the highest percentage of vacant housing units (23 percent). Monticello had the lowest percentage of owner-occupied housing units (50 percent) and the highest percentage of renter-occupied units (40 percent). Community median value for owner-occupied housing units ranged from $32,700 in Dermott to $66,000 in Monticello, while county median values ranged from $41,700 in Calhoun to $60,100 in Drew. All Project Area median home values were considerably below the statewide value of $72,800.

Table 3-4
2000 PROJECT AREA HOUSING CHARACTERISTICS

State, County or Community	Total Housing	Owner Occupied		Renter Occupied		Vacant		Median Value Owner Occupied Unit
	Units	Units	%	Units	%	Units	%	
Arkansas	*1,173,043*	*723,535*	*62*	*319,161*	*27*	*130,347*	*11*	*72,800*
Ashley County	10,615	7,136	67	2,248	21	1,231	12	55,700
Bradley County	5930	3,512	60	1,322	22	1,096	18	45,000
Warren	2,880	1,636	57	933	32	311	11	45,900
Calhoun County	3,012	1,907	63	410	14	695	23	41,700
Hampton	699	429	61	190	27	80	12	45,700
Chicot County	5,974	3,632	61	1,573	26	769	13	47,300
Dermott	1,404	815	58	401	29	188	13	32,700
Columbia County	11,566	7,127	62	2,854	25	1,585	14	39,200
Desha County	6,663	3,762	56	2,160	33	741	11	46,700
McGehee	2,044	1,130	55	706	35	208	10	47,200
Drew County	8,287	5,060	61	2,277	27	950	12	60,100
Monticello	3,972	1,974	50	1,618	40	380	10	66,000
Ouachita County	13,450	8,293	62	3,320	25	1,837	13	50,200
Union County	20,676	13,110	63	4,879	24	2,687	13	55,400
El Dorado	9,891	5,273	53	3,413	35	1,205	12	55,400
Smackover	915	590	64	204	23	121	13	53,300
Project Area Counties	86,173	53539	62	21,043	24	11,591	14	50,263

Source: U.S. Department of Commerce - Bureau of the Census - 2000, Summary of General Characteristics - Population of Place

Recreational Resources

The Project Area provides access to several major outdoor recreation areas. Used by hunters, fisherman, and a variety of other outdoor enthusiasts for bird watching, camping, and boating, these recreation areas are primarily operated as state and federal wildlife management areas such as Felsenthal National Wildlife Refuge (NWR) and Seven Devils Swamp Wildlife Management Area (WMA). In addition to these public lands, the Project Area has thousands of acres of private lands that offer similar outdoor opportunities. The major recreational areas are described below.

Lake Monticello is located in Drew County just north of the City of Monticello. This 1,520 acre impoundment provides opportunities for fishing, boating, and other water related activities. An archery range and a model airplane airport are also located at the lake.

Lake Georgia Pacific, located in Ashley County near Felsenthal NWR, is the largest impoundment in the Project Area. The lake is approximately 1,700 acres and used for fishing and as a public water supply for the community of Crossett.

Located in south central Arkansas, Felsenthal NWR is a 65,000-acre refuge established for

migrating waterfowl in 1975. Felsenthal NWR greatly enhances the regions biodiversity and is home for thousands of migrant and resident waterfowl, marsh and water birds, neotropical migrants, resident wildlife, and has the highest density of the federally endangered red-cockaded woodpecker in the state. In addition, there are over 200 known Native American archeological sites on the refuge. Felsenthal NWR averages over 300,000 visitors annually. Visitor records indicate that most live within 150 miles of the refuge.

Cut-off Creek WMA is located approximately 25 miles southeast of Monticello in Drew County. Established in 1958, this WMA consists of 9,080 acres of primarily bottomland hardwoods. Two thousand acres of hardwoods are flooded annually for waterfowl hunting. According to records of hunter activity, this WMA primarily serves as a hunting site for local residents.

Seven Devils Swamp Natural Area is located along Cut-off Creek at the point where the creek flows from the pine-covered hills of the West Gulf Coastal Plain to the flat lowlands of the Mississippi Alluvial Plain. The area is comprised of a relatively narrow bottomland occupied by bald cypress and water tupelo on the wetter sites and bottomland hardwood tree species on drier, but still flood-prone, sites. Further downstream, the area is almost permanently flooded, supporting a diverse swamp community. High quality forested canebrakes also occur within this natural area. The natural area falls within the Seven Devils Swamp Wildlife Management Area and is co-managed by the Arkansas Natural Heritage Commission (ANHC) and the Arkansas Game and Fish Commission (AGFC).

Established in 1954, Seven Devils Swamp WMA is part of a 6,000 acre wetland area located 12 miles east of Monticello in Drew County. The Arkansas Game and Fish Commission owns 512 acres, while the remainder is owned mostly by Georgia-Pacific Corp. and other private individuals. The portion owned by Georgia-Pacific is in the land lease system known as the Casey Jones WMA. This area was originally purchased for a fishing lake, but is now primarily managed for waterfowl. The area is composed of cypress, tupelo, locust and willow trees, and buttonbush. Cut-off Creek is the single source of water for the area. Thousands of waterfowl and other water birds migrate through the swamp annually. The swamp has a breeding population of anghingas, great blue herons, and little green herons. There are occasional sightings of bald eagles in the fall and winter and some alligators are present in this WMA.

Warren Prairie Natural Area is located southeast of Wilmar in Bradley and Drew Counties. This approximately 890-acre area was acquired by the Nature Conservancy in 1983 and is currently managed by the ANHC. The area consists of a mosaic of salt slick barrens, saline prairie, Delta post oak flatwoods, prairie mound woodlands, pine

woodlands, and bottomland hardwood forest communities. Soils containing high amounts of sodium at the site appear to account for the sparse and irregular distribution of trees and the resultant dominance of grasses and other herbaceous vegetation. Stands of dwarf palmetto are distributed irregularly on the prairie and lend a tropical aspect to the area. This natural area provides critical habitat for the state's largest population of the federally threatened plant, geocarpon (*Geocarpon minimum*). According to the ANHC, the potential for Warren Prairie to serve as habitat for the federally endangered red-cockaded woodpecker (*Picoides borealis*) is being examined.

The Ouachita River has been a favorite fishing spot among sportsmen for decades with catches including small-mouth, spotted, and largemouth bass and green and longear sunfish. The river is also used by boaters for water sports and provides waterfowl hunting opportunities in the winter.

The Saline River is the last major undammed stream in the Ouachita Mountain drainage area. Its watershed contains some of the finest deer, turkey, and squirrel hunting in Arkansas. The Saline is one of the few rivers in this area with a gravel bottom throughout its entire length and provides excellent fishing and canoeing opportunities.

One of the most popular fishing and water sport areas in south central Arkansas has formed where Moro Bay and Raymond Lake join the Ouachita River. Moro Bay State Park, located at the confluence of these waters, offers camping, picnicking, hiking, fishing and other related water recreation opportunities.

The Arkansas Museum of Natural Resources is located one mile south of Smackover in the heart of the Arkansas oil fields. The Museum collects, conserves, interprets, and exhibits examples of Arkansas' oil and brine industrial history and the social history that accompanied the oil boom of the 1920s.

3.2 ECONOMIC ENVIRONMENT

Historically, farming and forestry activities have formed the economic base of southern Arkansas. However in the El Dorado area, oil was discovered in 1921 and the timber/cotton based economy quickly changed with the discovery of the Smackover Oil Field. The town of Smackover, just north of El Dorado, grew from approximately 100 people to over 25,000 in less than a year. The population of Smackover is currently around 2,000 people. Although the oil boom is over, there are still many producing wells and an ongoing oil industry in the area. Additionally, the discovery of one of the world's largest brine reserves in Union and Columbia Counties has had an impact on the local economy and could play a larger role in the area's economic future.

Between 1990 and 2000, the civilian labor force decreased two percent in the Project Area counties while the statewide labor force increased 12 percent (Table 3-5). Ouachita County experienced the greatest reduction in labor force (21 percent), while Drew County's labor force increased 16 percent. The average unemployment rate for all Project Area counties in 2000 (eight percent) was higher than the statewide average (4.4 percent) and ranged from 5.1 percent in Union County to 11.2 percent in Desha County.

Many jobs continue to migrate to more urban settings. Communities such as El Dorado, Warren, and Monticello have expanded their economic base through the addition and development of diversified employment opportunities to stimulate economic growth. While major employers vary from county to county, the dominant employment industries throughout the Project Area counties include health services, agriculture (forestry, farming, and aquaculture), education, manufacturing, and retail trade.

Employment in health services and agriculture were the only industry types within the Project Area counties to exhibit an overall positive increase (Table 3-6). All project counties showed a positive increase in employment in health service with the greatest in Bradley, Chicot, and Ouachita Counties (6 percent). Agricultural activities are a modest employment contributor within most of the Project Area counties. Agricultural employment reductions were observed in Columbia, Chicot, and Desha Counties. Notable exceptions occurred in Bradley and Calhoun Counties. Bradley County has experienced strong growth in tomato farming and Calhoun County experienced a slight increase in timber related employment recent years.

Overall, employment in education remained relatively constant throughout the Project Area counties. Several counties showed a slight increase, while others had a slight decrease as school systems adjusted to the fluctuating number of school age children in each county.

Project Area employment in manufacturing and retail trade suffered the greatest decline of the industry types between 1990 and 2000 with each county experiencing a reduction in employment. Bradley County showed the greatest manufacturing employment decline (13 percent), while Union County showed the greatest retail employment decline (six percent).

Table 3-5
PROJECT AREA LABOR FORCE ESTIMATES

State/County	Civilian Labor Force			Unemployment Rate (%)		
	1990	2000	% Change	1990	2000	Difference
Arkansas	1,126,100	1,262,300	12.0	7.0	4.4	-2.6
Ashley County	10,900	10,750	-1.0	6.0	7.2	1.2
Bradley County	5,175	4,550	-12.0	9.7	8.6	-1.1
Calhoun County	2,625	2,225	-15.0	11.4	7.6	-3.8
Chicot County	5,950	6,400	8.0	10.5	9.0	-1.5
Columbia County	11,775	11,525	-2.0	7.4	5.7	-1.7
Desha County	6,850	7,100	4.0	10.6	11.2	0.6
Drew County	8,625	10,000	16.0	9.0	6.7	-2.3
Ouachita County	14,600	11,550	-21.0	13.8	7.8	-6.0
Union County	20,775	21,325	3.0	7.0	5.1	-1.9
Project Area Counties	87,275	85,425	-2.0	10.0	8.0	-2.0

Source: Arkansas Employment Security Department 2004

Table 3-6
EMPLOYMENT BY INDUSTRY TYPE*

	*Agriculture**			Manufacturing			Retail trade			Health services			Education		
County	1990	2000	% Change	1990	2000	% Change	1990	2000	% Change	1990	2000	% Change	1990	2000	% Change
Ashley	7	7	0	39	28	-10	13	12	-1	6	7	+1	9	8	-1
Bradley	3	10	+7	34	21	-13	13	12	-1	8	14	+6	8	9	+1
Calhoun	1	9	+8	34	25	-11	14	10	-4	6	10	+4	10	7	-3
Chicot	17	12	-5	17	13	-4	14	11	-3	9	15	+6	9	10	+1
Columbia	4	3	-1	27	25	-2	17	12	-5	7	10	+3	11	13	+2
Desha	16	12	-4	22	21	-1	14	10	-4	6	8	+2	9	9	0
Drew	5	6	+1	31	24	-7	15	13	-2	7	10	+3	14	11	-3
Ouachita	2	2	0	35	31	-4	15	13	-2	6	12	+6	8	9	+1
Union	2	3	+1	26	25	-1	17	11	-6	9	12	+3	7	9	+2
Project Area Counties	6	7	+1	29	24	-5	15	12	-3	7	11	+4	9	9	0

Source: U.S. Department of Commerce - Bureau of the Census – 1990 and 2000, Census of Population and Housing – General Housing Characteristics
*Values are presented as % of employed persons 16 years of age and older.
** Agriculture includes forestry, farming, and aquaculture.

Some of the largest employers in each county are listed below:

- Columbia County – Albemarle, Alcoa, Southern Arkansas University, Magnolia Hospital, Amfuel, Magnolia Public Schools.
- Union County – Union Powers Partnership, Anthony Forest Products, ConAgra, Cooper Engineered Products, Georgia Pacific, Great Lakes Chemical Corp., Lion Oil, Prescolite, Murphy Oil, Teris, The Medical Center of South Arkansas, El Dorado School District.
- Ouachita County – International Paper, Lockheed-Martin,Camden/Fairview School District, Ouachita County Medical Systems, ARC, Arquest.
- Calhoun County – Atlantic Research Corporation, Lockheed Martin, Raytheon Missile Systems, General Dynamics, Scottco Paper Products.
- Bradley County - Robbins, Inc., Potlatch Corporation, Bradley County Memorial Hospital, Warren Public School District, Southeast Arkansas Human Development Center, Wagnon Place Nursing Home, and Beverly Enterprises.
- Drew County - Burlington Industries, International Paper, University of Arkansas-Monticello, Monticello School District, Drew Memorial Hospital, Wal-Mart, and SEAARK Marine and Boat, Inc.
- Desha County – Potlatch Corporation, McGehee Industries, McGehee School District.
- Chicot County – Delta Regional Prison, Chicot Memorial Hospital, Dermott Public Schools.
- Ashley County – Georgia Pacific, P.E. Barnes Lumber, Hamburg School District, Crossett Public Schools, Bemis, Ashley County Medical Center, Ideal Construction.

Median household incomes vary from $22,024/year in Chicot County to $31,758/year in Ashley County (Table 3-7). The average median household income across the Project Area is $27,400, which is approximately 15 percent lower than the statewide average of $32,182.

Table 3-7
MEDIAN HOUSEHOLD INCOME

State/County	1990	2000	% Change
Arkansas	*21,147*	*32,182*	*52*
Ashley County	20,609	31,758	54
Bradley County	17,259	24,821	44
Calhoun County	21,198	28,438	34
Chicot County	12,680	22,024	74
Columbia County	18,400	27,640	67
Desha County	15,719	24,121	53
Drew County	18,906	28,627	51
Ouachita County	21,056	29,341	39
Union County	21,041	29,809	42
Project Area Counties	18,541	27,400	51

Source: U.S. Department of Commerce - Bureau of the Census – 1990 and 2000, Census of Population and Housing – General Housing Characteristics

In summary, the Project Area counties have experienced a declining civilian labor force, unemployment around twice the state average, changing employment industries, and incomes sometimes substantially less than the statewide average.

3.3 ENVIRONMENTAL JUSTICE

Executive Order (EO) 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations" (February 1994) was issued: 1) to promote nondiscrimination in federal programs substantially affecting human health and the environment; 2) to ensure that there will be no disproportionately high and adverse impacts to low-income and minority populations; and 3) to provide low-income and minority communities access to public information on, and the opportunity for, public participation in proposed federal actions. The United States Department of Transportation's (USDOT) final Order on Environmental Justice (April 1997) was used to comply with EO 12898. In addition, the 1997 Environmental Protection Agency's, "Interim Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses" and the Council on Environmental Quality's, "Environmental Justice Guidance Under the National Environmental Policy Act" (1997) provided additional direction in addressing these issues.

3.3.1 Identification of Minority, Low-income, and Elderly Populations

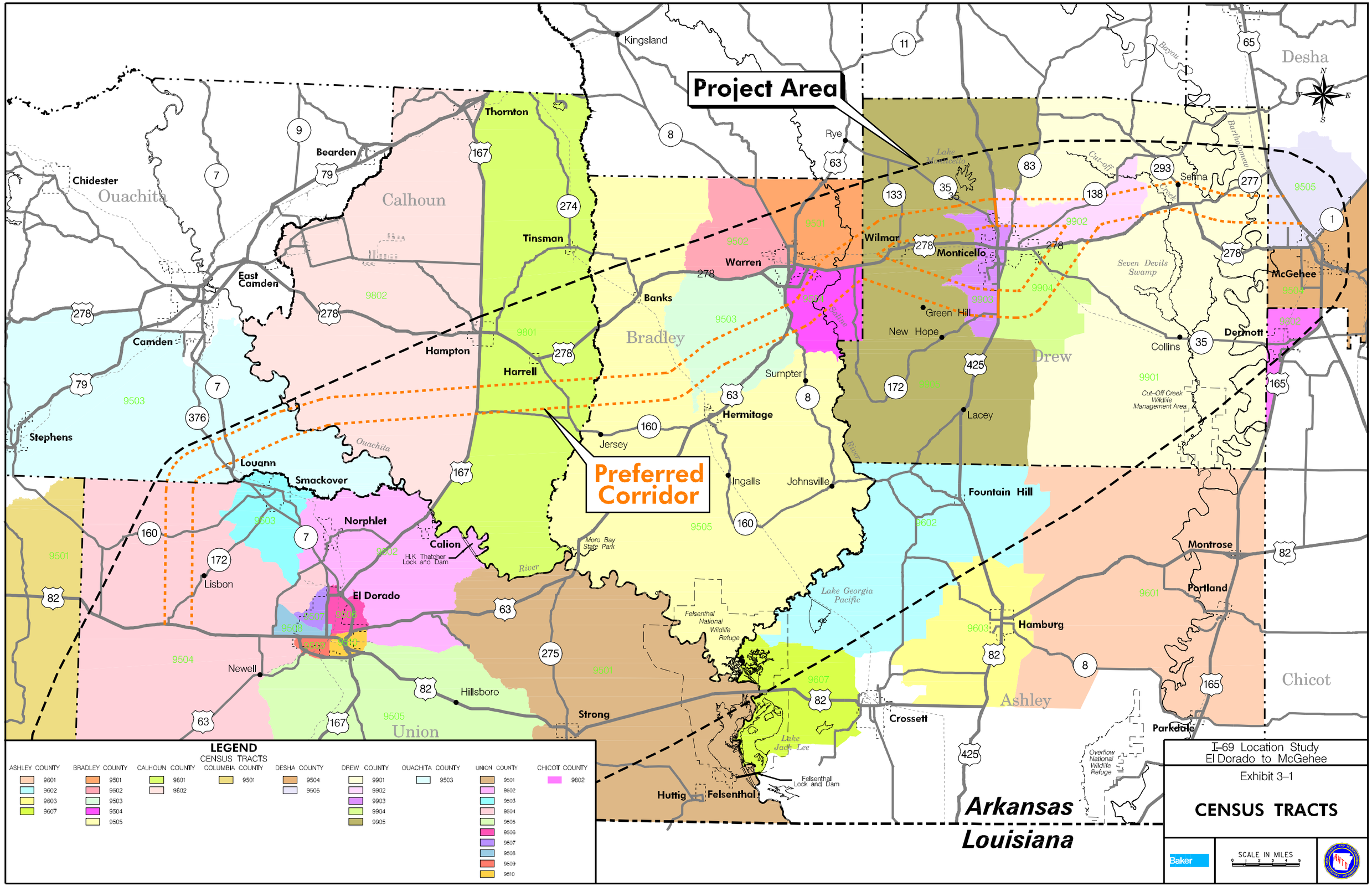
Information obtained from the U.S. Census Bureau was examined to determine the presence of minority and low-income, populations within the Project Area. Although not specifically required by Executive Order 12898, elderly populations (>65 years old) were also identified. Thirty-one Census Tracts were examined to better characterize these populations that may be affected by the proposed project (Exhibit 3-1).

The highest concentrations of minority populations were found in Chicot County Tract 9802, and Union County Tracts 9509 and 9510 (Table 3-8). Drew County Tract 9902 also had a high percentage of minorities. Tract 9802 is located primarily within the town of Dermott and Tracts 9509 and 9510 are located primarily within the city limits of El Dorado. Tract 9902 is primarily rural farmland and undeveloped timberland just outside of the City of Monticello.

Of the four Tracts described above, three also had some of the highest percentages of persons in poverty. In El Dorado, Tract 9510 had the highest percentage of persons in poverty (34 percent) in the Project Area. The average percent of persons in poverty for all tracts in the Project Area was 20 percent while the statewide average was 16 percent.

The percentage of persons over 65 years of age in the Project Area is similar to the statewide percentage. Percentages ranged from 10 percent in Tract 9509 in Union County to 20 percent in Tracts 9501 in Bradley County and Tracts 9507 and 9508 in Union County.

Further discussion and analysis of Environmental Justice issues is found in Section 4.2.



LEGEND

CENSUS TRACTS

ASHLEY COUNTY	BRADLEY COUNTY	CALHOUN COUNTY	COLUMBIA COUNTY	DESHA COUNTY	DREW COUNTY	OUACHITA COUNTY	UNION COUNTY	CHICOT COUNTY
9601	9501	9801	9501	9504	9901	9503	9501	9802
9602	9502	9802		9505	9902		9502	
9603	9503				9903		9503	
9607	9504				9904		9504	
	9505				9905		9505	
							9506	
							9507	
							9508	
							9509	
							9510	

I-69 Location Study
El Dorado to McGehee

Exhibit 3-1

CENSUS TRACTS

Baker

SCALE IN MILES 0 1 2 3 4 5

Table 3-8
2000 PROJECT AREA MINORITY, LOW-INCOME,
AND ELDERLY POPULATIONS BY CENSUS TRACT

County/State	Census Tract*	Population	% Minority	% 65 and Older	Median Household Income	% in Poverty (Persons)
Arkansas	--	*2,673,400*	*20*	*14*	*32,182*	*16*
Ashley County	9602	2,698	12	11	32,125	12
Chicot County	9802	3,422	73	16	19,077	30
Columbia County	9501	3,539	28	14	32,813	16
Drew County	9901	2,756	25	12	31,458	16
	9902	2,621	60	10	26,628	18
	9903	5,752	20	13	31,026	17
	9904	3,352	30	15	25,670	22
	9905	4,242	28	13	30,131	16
**Drew County Totals		18,723	30	13	28,982	18
Bradley County	9501	2,825	28	20	23,682	26
	9502	2,000	34	16	26,563	21
	9503	2,397	47	12	23,490	29
	9504	1,913	34	17	28,125	15
	9505	3,465	40	14	23,026	31
Bradley County Totals		12,600	37	16	24,977	24
Calhoun County	9801	2,896	29	18	26,579	18
	9802	2,848	18	14	30,466	14
Calhoun County Totals		5,744	24	16	28,522	16
Desha County	9504	3,630	54	15	19,893	33
	9505	2,256	30	16	26,648	21
Desha County Totals		10,938	41	14	25,277	26
Ouachita County	9503	6,193	28	16	34,669	17
Union County	9501	4,124	46	15	25,652	20
	9502	4,531	18	15	32,367	15
	9503	2,653	27	19	28,388	15
	9504	6,180	22	13	34,167	11
	9505	6,264	10	12	36,173	10
	9506	4,038	39	16	37,121	18
	9507	5,163	25	20	34,732	14
	9508	3,713	26	20	30,532	18
	9509	3,219	71	10	21,250	31
	9510	5,744	69	21	15,747	34
Union County Totals		45,629	34	16	29,613	19
Project Area Totals		194,802	34	15	27,400	20

Source: U.S. Department of Commerce - Bureau of the Census - 2000 - Census of Housing and Population
*Includes only Census Tracts within Project Area boundary.
**County totals only include the Census Tracts identified within the Project Area.

3.4 BICYCLE AND PEDESTRIAN FACILITIES

The Project Area was reviewed for pedestrian walkway facilities, designated bikeways, scenic trails, and proposed trails to identify any areas where these facilities may be impacted by the proposed project. No exclusive bikeways or hiking trails exist or are planned for the Project Area. Due to the rural nature of the majority of the Project Area, most of the bicycle and pedestrian activity is limited to the larger communities such as El Dorado, Warren and Monticello.

3.5 LAND USE

Land uses within the Project Area include a mixture of agricultural, residential, commercial, and industrial development. Agricultural activities, primarily forestry, dominate the western rural portions of the Project Area, with farmland (row crop production) dominating rural portions of Desha, Drew and Chicot Counties. Residential, commercial, and industrial developments are primarily associated with the communities of El Dorado, Smackover, Warren, Monticello, and McGehee. Residential land use primarily consists of single family houses of brick or frame construction, or mobile homes. Multi-family homes and apartments are also found in the above communities. The remainder of the Project Area is populated by low-density rural residential development often associated with state and county roadways. Formal land use plans have not been developed for any locations within the Project Area.

3.5.1 Agricultural Land

Agricultural land uses consist of forestry, crop production, and poultry and livestock operations. Livestock operations are primarily small ranch operations with small acreages. Poultry farms, although increasing throughout southern Arkansas, require minimal land space. Both livestock farms and poultry farms are scattered throughout the Project Area.

Forestry activities dominate Project Area land use and include extensive forested tracts owned and operated by forest industries including Potlatch Corporation, Plum Creek, and Georgia Pacific, Inc. A number of smaller locally based private timber growers are also present. The Project Area falls within the southwest forest survey region of Arkansas that produces almost two-thirds of the state's annual timber harvest.

All major Project Area crop production is limited to the bottomland soils adjacent to Bayou Bartholomew and east toward the Mississippi River. The primary commercial crops in this area are cotton and soybeans with some rice production. In addition, tomatoes are a major crop in Bradley County.

3.5.2 Commercial and Industrial Land

Commercial and industrial areas are primarily located within the larger Project Area communities. However, a substantial planning effort is on-going that will lead to the development of a large-scale

commercial/industrial complex in the northern portion of the Project Area. The Southeast Regional Intermodal Facilities Authority was established in 1997 to plan, construct, and operate a regional intermodal facility that would integrate rail and highway transportation of freight in southeast Arkansas. The Authority plans to locate the 413 acre facility near existing rail, gas, and transmission lines in the Wilmar area. The facility would serve as a warehousing and distribution center and include a bulk freight terminal, with freight transfer and tracking capabilities, logistic services, export/customs services, and a container pool service.

An 80 acre industrial park is located off US Highway 63 just east of El Dorado. This site is part of the Golden Triangle FiberPark which has coordinated the installation of a modern, optical fiber ring connecting three distinct industrial sites (El Dorado, Camden, and Magnolia) for seamless fiber connectivity worldwide.

Although located just outside the Project Area, the Highland Industrial Park is mentioned here because of its importance to the area economy. Nearly 4,000 people are employed at this park, located primarily in East Camden, Arkansas. The current 17,000 acre park is part of the former Shumaker Naval Ammunition Depot (NAD) that covered nearly 70,000 acres in Calhoun and Ouachita Counties. The NAD site was operated by the U.S. Navy from 1944 until 1957 for the manufacture, testing, storage, distribution, and destruction of ammunition, bombs, and explosives, principally rockets. The NAD site included a system of railroad tracks and spurlines, hundreds of reinforced concrete storage magazines, loading dock facilities, headquarters and administration buildings, and an eight mile long rocket test range. The facility was declared excess by the General Services Administration (GAS) in 1960 and was subsequently purchased by International Paper (roughly 40,000-forested acres) and Highland Resources (roughly 25,000 acres which included the old headquarters compound, production facilities, and hundreds of warehouses and underground bunkers) who transformed this area into Highland Industrial Park.

During the 1980s, defense related production and employment increased at the park, where missiles, rockets, launch vehicles, and other munitions were produced. By the end of the decade, defense spending cutbacks drastically reduced weapons productions at the industrial park. The Highland Industrial Park continues to serve as an important munitions storage and testing facility for Defense Department contractors including Lockheed-Martin, Atlantic Research Corporation, BEI Defense Systems Company, Hughes Missile Systems, and Hitech Incorporated. In addition to defense related industries, the Highland Industrial Park includes a 228,000 square foot, state of the art, manufacturing

building and a 55,000 square foot office space with fiber optic connectivity.

Seven miles north of El Dorado is the Union Powers Partnership Project, a natural gas-fired power station currently expected to open operation in late 2003. This station is the largest merchant power plant in the nation (2,200-megawatts) and is expected to serve over 2,000,000 homes and businesses. A non-riparian permit was obtained from the Arkansas Soil and Water Conservation Commission to pump water from the Ouachita River to cool the natural gas powered turbines that generate the plants power. The Arkansas Soil and Water Conservation Commission places restrictions on non-riparian users. The commission has determined the amount of excess surface water available in the Ouachita Basin per year and does not issue diversion of surface water permits beyond this value. In addition, in times of low flow, the Commission can impose restrictions on surface water use.

There are additional smaller industrial/business parks located in or near the towns of Warren, Monticello and McGehee that are actively recruiting tenants. The city of Warren is working with the Bradley County Industrial Development Corporation to manage a 30-acre industrial park site located on U. S. 278. Monticello has four industrial sites ranging in size from 31 to 99 acres. The closest Interstate to both the Warren and Monticello sites is currently I-530, approximately 40 miles to the north. The 97-acre McGehee Industrial park, owned by the City of McGehee, is located 12 miles from Yellow Bend Port on the Mississippi River. The closest Interstates are I-530 located some 60 miles to the north and I-20 located around 90 miles to the south.

3.6 GEOLOGIC RESOURCES

Millions of years ago, warm shallow seas existed within the Project Area that resulted in the vast accumulation of sediments. Subsurface sediments consist of sand and gravel near the surface to poorly consolidated layers of sand, silt, clay, limestone and lignite to consolidated deposits of clay, shale, limestone, marl, chalk, sand, and gravel. Within these sediments, oil, natural gas, bromine, lignite, sand, and gravel have accumulated and are available for extraction.

3.6.1 Oil and Natural Gas

The southern part of the Gulf Coastal Plain of south Arkansas contains all the oil producing fields in the state (AGC, 2005). Over 50 oil and gas well fields occur within the Project Area, the two largest being the Smackover and West El Dorado fields (Exhibit 3-2). The Smackover field generally encompasses an area of land between the towns of Norphlet, Smackover, and Louann, while the West El Dorado field lies primarily south and west of El Dorado.

Project Area

Preferred Corridor

Proposed Sparta Mine

Warren Prospect

Kingsland

Thornton

Bearden

Chidester

Ouachita

Calhoun

Tinsman

Warren

Banks

Bradley

East Camden

Camden

Hampton

Harrell

Stephens

Louann

Smackover

Norphlet

Calion

H.K. Thatcher Lock and Dam

Lisbon

El Dorado

Newell

Hillsboro

Strong

Junction City

Union

Jersey

Hermitage

Ingalls

Sumpter

Rye

Johnsville

Huttig

Felsenthal

Felsenthal Lock and Dam

Lake Georgia Pacific

Felsenthal National Wildlife Refuge

Moro Bay State Park

Ouachita River

Saline River

Lake Monticello

Cut-off Creek

Bayou Bartholomew

Wilmar

Monticello

Green Hill

New Hope

Drew

Seven Devils Swamp

Selma

Collins

Dermott

McGehee

Desha

Lacey

Fountain Hill

Cut-Off Creek Wildlife Management Area

Lake Jack Lee

Crossett

Ashley

Hamburg

Portland

Montrose

Parkdale

Chicot

Overflow National Wildlife Refuge

Arkansas

Louisiana

LEGEND

- OIL AND GAS FIELD
- BROMINE FIELDS
- LIGNITE AREAS
- SAND AND GRAVEL MINES

I-69 Location Study
El Dorado to McGehee

Exhibit 3–2

GEOLOGIC RESOURCES

Baker

SCALE IN MILES 0 1 2 3 4 5

Oil and gas wells are scattered throughout the western portion of the Project Area in a variety of land use settings. In south Arkansas, several wells have been drilled to depths exceeding three miles. Oil and gas were first discovered in southern Arkansas in 1920. Commercial production of oil did not begin until 1921. In 1925, Arkansas was the 4th largest oil producer in the nation. After 1939, oil production dramatically decreased. As of 2002, Columbia County had the greatest oil production in southern Arkansas with a total of over two billion barrels, followed by Lafayette, Ouachita, Miller, and Union Counties.

3.6.2 Bromine

The ancient seas that covered the Project Area in southern Arkansas contained the element bromine. Bromine was extracted from seawater by seaweed and plankton. Decomposition of these organic materials released the bromine, which was incorporated into the salt brines associated with oil and gas deposits. Bromine occurs in abnormally high concentrations in salt brines of the Smackover Formation.

In 2001, Arkansas bromine plants accounted for 90 percent of the United States bromine production and bromine produced from plants in Arkansas and Michigan accounted for 42 percent of the world's bromine supply. Some of the products produced from bromine include fire retardants, ingredients in bug and fungus sprays, antiknock compounds in gasoline, water treatment compounds, and oil well completion fluids (Arkansas Geological Commission 2003). Albermarle Corporation and Great Lakes Chemical Corporation operate bromine-processing plants in southern Arkansas. Within the Project Area, Great Lakes Chemical Corporation obtains brine from supply wells in three designated tracts of land called brine units (Exhibit 3-2). Brine is pumped from the underlying geologic formation to the surface through supply wells and piped to the processing plants where the bromine is removed from solution. The remaining brine is then piped to disposal wells and returned to the geologic formation.

3.6.3 Lignite

Lignite is a low-rank, consolidated, brownish-black coal with high moisture and low sulfur content. Lignite has a high content of volatile matter that makes it more convertible into gas and liquid petroleum products than the higher-ranking coals. A test burn in a power plant in 1988 demonstrated that Arkansas lignite resources were suitable as an alternative source for the generation of electric power.

Historically, lignite was mined before the Civil War in south Arkansas by underground methods. Lignite has been used as fuels for steam boilers and small locomotives near mines in Ouachita County. In 1907, two small distilling plants were operating in Ouachita County that produced oils from lignite

mined by open pit methods in the Camden field (Arkansas Geological Commission 2003). In the 1940s, Vandyke brown dye was extracted from lignite and used as stain for ammunition boxes during World War II.

Coordination with the Arkansas Geological Commission identified two proposed mine locations within the Project Area where lignite resources were considered as an alternative fuel source during the energy crisis of the 1970's. These sites are known as the Sparta Mine site near Hampton and the Warren Prospect site near Warren and are shown on Exhibit 3-2.

In 1977, Arkansas Power and Light conducted investigations to evaluate and develop the proposed lignite mine sites. A coal-fired power plant was to be constructed at the Sparta Mine and production was to begin in the late 1980's. The mine was intended to produce more than eight million tons of coal per year. However, as the energy crisis of the 1970's decreased, plans to develop these mines were discontinued. International Paper owns most of the land that encompasses the Sparta Mine site.

Although still considered to be a valuable resource, Arkansas lignite is not used as an energy source in the Project Area or in the state of Arkansas. Currently, low sulfur coal is still being transported from mines in the Powder River Basin of Wyoming to provide most of the energy needs in the state of Arkansas.

3.6.4 Sand and Gravel

Deposits of sand and gravel are widely distributed across all of Arkansas and are present as alluvial deposits in the floodplains, beds, and terraces of rivers and streams (Arkansas Geological Commission 2003). Numerous sand and gravel deposits are located in Union, Ouachita, Calhoun, and Bradley counties, in addition to the western portions of Drew County. Coordination with the ADEQ's Surface Mining and Reclamation Division identified 11 sand and gravel mines within the Project Area (Exhibit 3-2).

3.7 FARMLANDS

The Natural Resources Conservation Service (NRCS) administers the Farmland Protection Policy Act (FPPA 1981) to insure that federal programs minimize unnecessary and irreversible conversion of farmland soils to nonagricultural uses. Farmland as defined by the FPPA includes Prime Farmland, Unique Farmland, or land of Statewide Importance.

The NRCS defines Prime Farmland as soils that have the best combination of physical and chemical characteristics to economically produce high yields of agricultural crops when treated and managed according to acceptable farming practices. Current land uses of areas having Prime Farmland soils include cropland, pastureland, and timberland. Land

in urban or residential development is not considered Prime Farmland. Coordination with the NRCS identified Prime Farmland soil types within the Project Area.

Statewide Important Farmland is land that has been identified by state or local agencies for agricultural use, but is not of national importance. These farmland soils generally demand a slightly higher level of management than Prime Farmland soils for statewide production of agricultural crops. Coordination with the NRCS identified Statewide Important Farmland soils within the Project Area.

The location of Prime and Statewide Important Farmland soil types was obtained from the published Soil Surveys of Ouachita, Calhoun, Bradley, Drew, and Desha counties. Currently there is no published Soil Survey for Union County, but soil location maps were reviewed at the Camden NRCS office.

3.8 WATER QUALITY

3.8.1 Surface Water Resources

The Project Area is primarily located within the Lower Ouachita River Basin, which covers over 7,600 square miles in the southeastern portion of Arkansas. The Ouachita River, Saline River, Moro Creek, L'Aigle Creek, and Bayou Bartholomew are the major streams within this basin. Surface water resources within the Project Area include perennial and intermittent rivers or bayous, wetlands, and man-made reservoirs and ponds.

The Arkansas Department of Environmental Quality's (ADEQ) 2002 Integrated Water Quality Monitoring and Assessment report was used to broadly assess existing surface water quality within the Project Area. ADEQ and the Arkansas Soil and Water Conservation Commission (ASWCC) were involved during project scoping and provided information.

Lower Ouachita River and Associated Tributaries

The Ouachita River originates in the Ouachita Mountains at the base of Rich Mountain in Polk County, Arkansas, and flows southward through the western and central portions of the Project Area. Major tributaries in this segment of the Project Area include Smackover Creek, Champagnolle Creek, Moro Creek, and L'Aigle Creek.

Waters within this segment have been designated by the State as suitable for the propagation of fish/wildlife, primary and secondary contact recreation, and public, industrial, and agricultural water supplies. However, some of the most severe water quality problems exist in an unnamed tributary draining from the El Dorado Chemical Company, in Flat Creek and in Salt Creek (ADEQ, 2000) between El Dorado and Norphlet. The unnamed tributary contains toxic levels of ammonia and very high levels of nitrates and minerals. Flat Creek and Salt Creek have very high levels of chlorides, sulfates, and minerals. Additionally, oil,

brine, and bromine extraction industries have contributed point and nonpoint source contamination to these waters for many years. Mercury contamination continues to be a major problem for the Ouachita River and some of its tributaries.

Saline River and Associated Tributaries

The Saline River is the longest free-flowing stream in the state of Arkansas. Headwaters of the Saline River drainage system originate in the Ouachita Mountains and flow south to their confluence with the Ouachita River west of Crossett, Arkansas in the Felsenthal National Wildlife Refuge. The Saline River flows through the central portion of the Project Area between Warren and the Felsenthal Refuge. Major tributaries in the Project Area include Hudgins Creek and Hurricane Creek.

State water use designations within this segment include areas suitable for the propagation of fish/wildlife; public, industrial, and agricultural water supplies; and primary and secondary contact recreation. Water quality has been degraded by both point and nonpoint source pollutants. Primary point sources of pollution are direct discharges from aluminum mining and processing industries, while a major nonpoint pollutant source is erosion occurring on forestland from timber activities.

The segment of the Saline River within the Project Area is on the Arkansas System of Natural and Scenic Rivers and is considered an Ecologically Sensitive Waterbody, and an Extraordinary Resource Water by the Arkansas DEQ. Additionally, the National Park Service lists this portion of the Saline River on the Nationwide Rivers Inventory of significant free flowing rivers.

Bayou Bartholomew and Associated Tributaries

Bayou Bartholomew, known as the world's longest bayou, begins in Jefferson County, Arkansas and flows through the northeastern portion of the Project Area southward to Louisiana to its confluence with the Ouachita River. Major streams in this segment include Cutoff Creek, and Ables Creek.

State water use designations within this segment include areas suitable for the propagation of fish/wildlife; public, industrial, and agricultural water supplies; and primary and secondary contact recreation. Water quality in much of this segment is impacted by nonpoint source pollution generated by row crop agriculture. Silt loads and turbidity are consistently very high, degrading the aquatic life in many of these streams. The entire stretch of Bayou Bartholomew has been assessed as not meeting the aquatic life uses due to siltation and turbidity. In addition, pesticide contamination has resulted in periodic fish kills along the entire stretch of Bayou Bartholomew, and mercury contamination from an unknown source is limiting fish consumption in the basin.

Despite water quality concerns, Bayou Bartholomew and its tributaries are used

extensively for agricultural irrigation. However, seasonal low flows compounded by agricultural irrigation demands have resulted in periodic water shortages in this area (ASWCC, 1987).

Reservoirs/Ponds

Lake Georgia Pacific in Ashley County is the largest impoundment in the Project Area. The lake is approximately 1,700 acres and is used as a public water supply near the Felsenthal Refuge in the south central portion of the Project Area. Lake Monticello in Drew County is 1,520 acres in size and offers a number of recreational opportunities to area residents. Wallace Lake, located south of McGehee in Drew County, encompasses an area of approximately 362 acres. Calion Lake northeast of El Dorado in Union County is approximately 510 acres in size. Wallace and Calion Lakes are used for public fishing. Many small ponds are also found throughout the Project Area. Those observed were generally associated with agricultural operations.

3.8.2 Groundwater Resources

Groundwater can be obtained from several aquifers that lie within the Gulf Coastal Plain of southern Arkansas. The Alluvial and Sparta aquifers are of most importance in the Project Area. The Alluvial aquifer is mostly used for agricultural irrigation and commonly yields as much as 1,000 to 2,000 gallons per minute (gpm). The Sparta aquifer is the most extensively used aquifer as a source of public water supply in the Project Area. The Sparta aquifer is a confined aquifer of great regional importance that extends across much of eastern and southeastern Arkansas and into adjoining states (Hays 1999). In Arkansas, water use from the aquifer has doubled since 1975 (Holland 1995). This over dependency on the Sparta aquifer has resulted in water level declines in many areas. Water levels in the aquifer have declined at rates averaging 1 foot per year for more than a decade in areas of southern Arkansas and northern Louisiana (an average decline greater than 4.5 ft/yr in El Dorado since 1943) (Baker and others 1948; R.L. Joseph, U.S. Geological Survey, written commun., 1999). The amount of groundwater withdrawn from the aquifer in recent years significantly exceeds recharge to the aquifer (Hays et al 1998). Additionally, this increased demand has resulted in the development of large cones of depression within the aquifer. A cone of depression can be defined as a depression in the groundwater table that has the shape of an inverted cone and develops around a well from which water is being withdrawn. The city of El Dorado is installing new wells and inactivating some existing wells, effectively moving its well field away from the current cone of depression centered beneath the town (Hays 2001). In 1996, in response to these declining water levels, the Arkansas Soil and Water Conservation Commission designated five counties in southern Arkansas (Columbia, Union, Ouachita, Calhoun, and Bradley) as Critical Ground Water

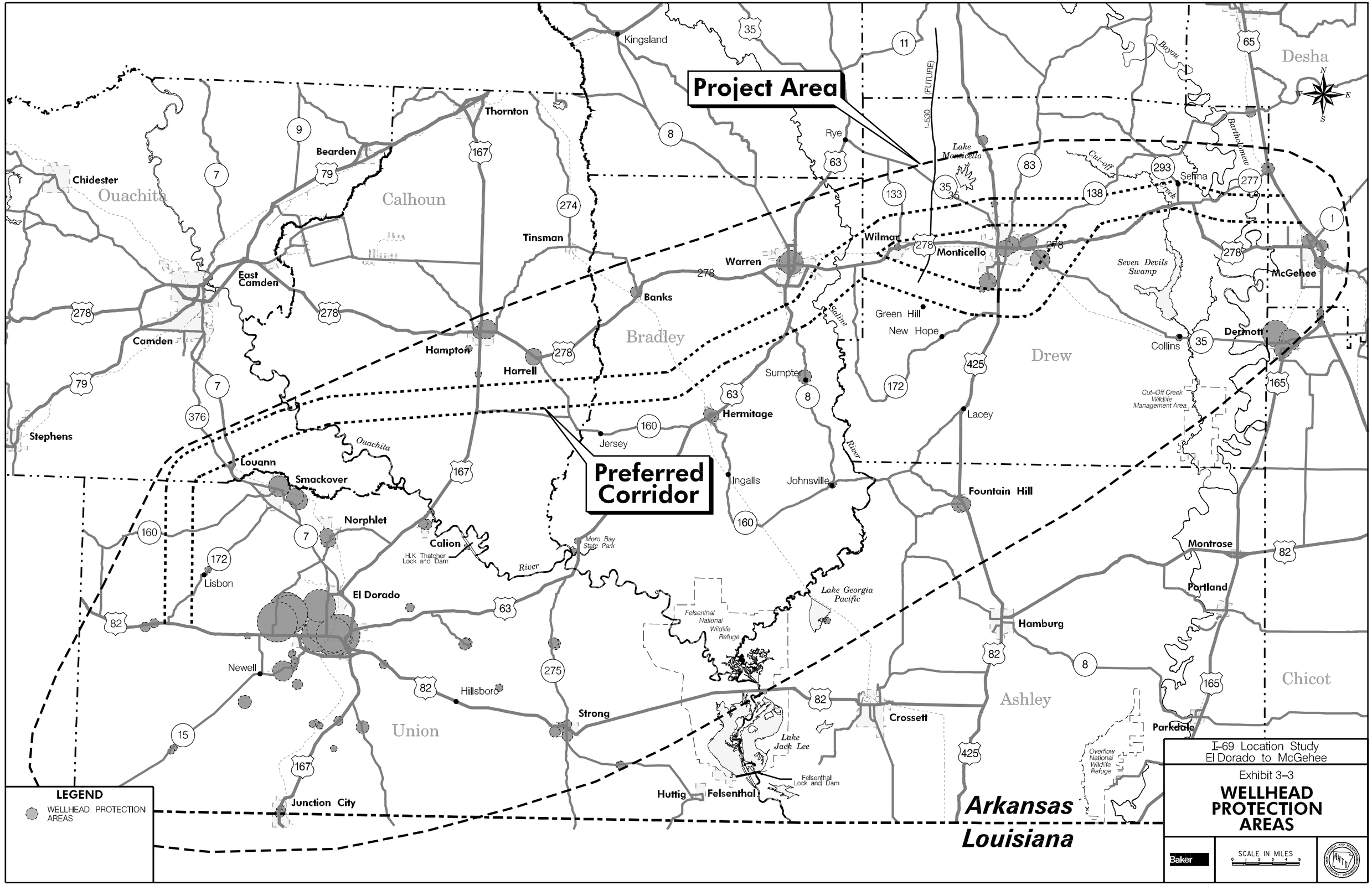
Areas. Critical groundwater designations encourage local interests to develop a plan of action to address problems. In 1999, the Arkansas legislature passed a law authorizing the creation of groundwater conservation boards in counties designated as critical groundwater areas. The Union County Water Conservation Board was the first board formed and began the process of regulating groundwater use in Union County. The board implemented a usage fee for groundwater users and began the development of a Water System Master Plan to determine how to best serve the long-term water supply needs of the county. One alternative identified as the quickest and most cost-effective was to supply raw water from the Ouachita River to area industries in place of groundwater. In 2002, the Board received a grant from the U.S. Environmental Protection Agency to study the recovery of the Sparta aquifer as these industries and other users reduced their reliance on groundwater.

3.8.3 Public Water Supplies

Several Federal laws help protect groundwater quality. Section 1424(e) of The Safe Drinking Water Act (SDWA) of 1974 and amendments passed in 1986, included the establishment of the Wellhead Protection Program and the Sole Source Aquifer Demonstration Program. To fulfill requirements of the (SDWA) as directed by the Environmental Protection Agency, the Arkansas Department of Health (DOH) provides protection of public water supply systems through the Arkansas Source Water Assessment Program.

The DOH was contacted to identify the location of any Wellhead Protection Areas (WHPA's) within the Project Area. Currently 102 WHPA's have been designated within the Project Area and are shown on Exhibit 3-3.

The U.S. EPA was contacted to determine the location of any sole source aquifers (SSA's) within the Project Area. A SSA is defined as an aquifer that is needed to supply 50 percent or more of the drinking water for a given area and for which there are no reasonably available alternative sources should the aquifer become contaminated. No sole source aquifers are located within the Project Area.



LEGEND

WELLHEAD PROTECTION AREAS

I-69 Location Study
El Dorado to McGehee

Exhibit 3-3

WELLHEAD PROTECTION AREAS

Baker

SCALE IN MILES
0 1 2 3 4 5

3.9 FLOODPLAINS AND FLOODWAYS

The protection of floodplains and floodways is required by Executive Order 11988, Floodplain Management; 23 CFR Part 650, Location and Hydraulic Design of Encroachments on Floodplains; and US DOT 5650.2, Floodplain Management and Protection. These regulations were designed to minimize highway encroachments within the 100 - year floodplain where practicable, and to avoid land use development inconsistent with floodplain values.

Flood Insurance Rate Maps and Flood Hazard Boundary Maps were obtained for Bradley, Calhoun, Desha, Drew, Ouachita, and Union Counties and used to identify the limits of the 100 - year floodplain and regulatory floodways.

The largest floodplains in the Project Area are associated with the Ouachita River, Saline River and Bayou Bartholomew (Exhibit 3-4). These areas are characterized by relatively large expanses of agricultural and forested land with gradual topographic gradients adjacent to existing waterbodies. During periods of high water, floodplains serve to moderate flood flow, provide water quality maintenance, act as areas for groundwater recharge, and serve as temporary habitat for a number of plant and animal species.

3.10 WETLANDS

To help slow and minimize wetland losses nationwide, Executive Order 11990 (EO 11990, May 1977) entitled, “Protection of Wetlands”, established a national policy to:

> "Avoid to the extent possible the long-term and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative”

Wetlands have been evaluated in accordance with EO 11990 during the project development process (see Section 2) and wetland impacts are discussed in detail in Section 4. Project Area wetlands are shown in Exhibit 3-4.

Wetlands are defined by the Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (COE) as:

> “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (40 CFR 230.3 and 33 CFR 328.3).

Wetlands often have very important functions and values in the overall ecosystem such as providing nutrient sources and catchment areas, floodwater storage, water purification, and habitat for a diverse variety of plant and animal species.

3.10.1 Wetland Communities

Wetlands within the Project Area were classified as herbaceous, scrub-shrub or forested based on dominant vegetative characteristics (Cowardin et al. 1979). The predominant wetland communities in the Project Area are forested riverine and depressional wetlands typically associated with stream or river systems. Consequently, forested wetlands found in the Ouachita and Saline River basins and other smaller creeks in the Project Area would be the dominant wetland community impacted by the proposed project.

Soils associated with Project Area wetlands generally consisted of level to gently sloping loamy and clay soils that reduced soil permeability and resulted in poor drainage. Most wetland soils were dark gray to gray within the upper 20 inches. This soil color is characteristic of hydric soils (USCOE 1987).

Herbaceous Wetlands

Herbaceous wetlands were found associated with farm ponds and bayou fringes in depressional areas. Herbaceous wetland vegetation within the Project Area consists primarily of a mixture of grasses, sedges and rushes. Typical herbaceous species identified include soft rush (*Juncus effusus*), alligator weed (*Alternanthera philoxeroides*), shallow sedge (*Carex lurida*) smartweeds (*Polygonum spp*.), spike rushes (*Eleocharis spp*.), and cattail (*Typha latifolia*).

The herbaceous wetlands were generally small and ephemeral. Evidence of wetland hydrology and vegetation is often limited to the spring and early summer when rainwater is trapped for extended periods of time due to low soil permeability.

Scrub-Shrub Wetlands

Scrub-shrub wetlands were also found associated with ponds and streams and in depressional areas previously cleared for timber or agricultural purposes. These areas are often associated with both herbaceous and forested wetlands. Common shrub species observed includes black willow (*Salix nigra*), wax myrtle (*Myrica cerifera*), and buttonbush (*Cephalanthus occidentalis*).

Forested Wetlands

Bottomland hardwood forests were the dominant riverine and depressional wetland types in the Project Area. Most were associated with the floodplain area of streams or bayous. Historically, large areas of loblolly pine (*Pinus taeda*) flats were found associated with lower alluvial terraces within the floodplain of rivers and streams in the Coastal Plains region, primarily east of the Ouachita River. Most of these sites have been dramatically altered by forest management, drainage, and changes in fire frequency, timing, and intensity. Typical bottomland forest canopy species observed include bald cypress (*Taxodium distichum*), water, overcup, and willow oaks (*Quercus nigra, Q. lyrata, Q. phellos*), sugarberry (*Celtis laevigata*), sweetgum (*Liquidambar styraciflua*), red maple (A*cer rubrum*) and green ash (*Fraxinus pennsylvanica).*

Project Area

Preferred Corridor

Kingsland
Thornton
Bearden
Chidester
Ouachita
Calhoun
Rye
Tinsman
Wilmar
Monticello
Warren
Banks
Bradley
East Camden
Camden
Hampton
Harrell
Stephens
Louann
Smackover
Norphlet
Calion
Lisbon
El Dorado
Newell
Hillsboro
Union
Junction City
Jersey
Hermitage
Sumpter
Ingalls
Johnsville
Green Hill
New Hope
Lacey
Drew
Fountain Hill
Collins
Selma
Dermott
McGehee
Desha
Montrose
Portland
Hamburg
Ashley
Chicot
Crossett
Parkdale
Strong
Huttig
Felsenthal
Lake Village

Lake Monticello
Cut-off Creek
Bayou Bartholomew
Seven Devils Swamp
Saline River
Ouachita River
H.K. Thatcher Lock and Dam
Moro Bay State Park
Felsenthal National Wildlife Refuge
Lake Georgia Pacific
Lake Jack Lee
Felsenthal Lock and Dam
Cut-Off Creek Wildlife Management Area
Overflow National Wildlife Refuge

Arkansas
Louisiana

LEGEND
- WETLAND
- FLOODPLAIN
- FLOODWAY

I-69 Location Study
El Dorado to McGehee

Exhibit 3–4

WETLANDS AND FLOODPLAINS

Baker

SCALE IN MILES

Wetland Wildlife

Herbaceous, scrub-shrub, and forested wetlands are generally diverse vegetative communities that provide habitat for a wide array of vertebrate species. Project Area species occurrence information was obtained from a variety of published sources (Sealander and Heidt 1990, James and Neal 1986, Conant and Collins 1991) and through field observations. Common mammalian species using wetland areas include beaver (*Castor canadensis*), opossum (*Ondatra zibethica*), white-tailed deer (*Odocoileus virginianus*), mink (*Mustela vison*) and raccoon (*Procyon lotor*). Birds associated with wetland habitats include warblers, vireos, thrushes, wading birds, and waterfowl. The barred owl (*Stryx varia*), and red-shouldered hawk (*Buteo lineatus*) are birds of prey commonly associated with these habitats. Permanent and ephemeral ponded water areas within these wetlands are used by a number of reptile and amphibian species including frogs, turtles, snakes, and salamanders.

3.11 UPLAND COMMUNITIES

Upland vegetative communities within the Project Area include pine (including pine plantations), oak-hickory, and oak-pine forests. Non-forested upland communities include pastureland/old-field and cropland.

3.11.1 Forests

Natural and planted pine forests dominate the Project Area. Ashley and Union Counties have the greatest acreage of pine forests (213,000 and 209,000 acres respectively), while Bradley County has the least (114,000) (Hines and Vissage 1988). Loblolly (*Pinus taeda*) and short-leaf (*Pinus echinata*) pine are the most common conifer species. Less dominant forest types include oak-pine, oak-hickory, and oak-gum-cypress forests. Tree species within these forests include southern red oak (*Quercus falcata*), post oak (*Quercus stellata*), blackjack oak (*Quercus marilandica*), mockernut hickory (*Carya tomentosa*), bitternut hickory (*Carya cordiformis*), shagbark hickory (*Carya ovata*), black gum (*Nyssa sylvatica*), and sweet gum.

Common understory species include flowering dogwood (*Cornus florida*), blueberries (*Vaccinium* spp.), serviceberry (*Amelancheir arborea*), yaupon (*Ilex vomitoria*), southern blackhaw (*Viburnum rufidulum*), poison ivy (*Toxicodendron radicans*), japanese honeysuckle (*Lonicera dioica*) and greenbriers (*Smilax* spp.).

A variety of wildlife species are present within the upland forests of the Project Area ranging from the white-tailed deer to the nine-banded armadillo (*Dasypus novemcintus*). Important small game and furbearing mammals include the fox squirrel (*Sciurus niger*), gray squirrel (*Sciurus carolinensis*),

coyote (*Canis latrans*), red fox (*Vulpes fulva*), raccoon, and opossum. Forest dwelling small mammals including mice, moles, and shrews provide a valuable food resource for larger forest predators such as the coyote and red fox.

Forest birds include a variety of warblers, wrens, thrushes, vireos, and woodpeckers. Forest raptors include the barred owl, coopers hawk (*Accipiter cooperii*), and red-shouldered hawk.

The presence of forest floor litter such as decayed logs, flat rocks, fallen limbs, and leaf material is an important habitat component, providing foraging cover and daytime refuge for many reptile and amphibian species. Common species include the box turtle (*Terrepene carolina*), fence lizard (*Sceloporus undulatus*), hog-nosed snake (*Heterodon platyrhinos*), copperhead (*Agkistrodon contortrix*), and spring peeper (*Hyla crucifer*).

3.11.2 Pastureland / Old-Fields

Previously forested portions of the Project Area have been cleared for agricultural use. This is especially true in the floodplain of Bayou Bartholomew. The floodplains of the Ouachita and Saline rivers have only marginal clearing for row crops. Scattered pasture areas are primarily used for raising livestock and/or growing forage crops to feed livestock. Pasturelands generally consist of a variety of native and cultivated grasses and legumes such as bahiagrass (*Paspalum notatum*), bermuda grass (*Cynodon dactylon*), tall fescue (*Festuca arundinacea*), clovers (*Trifolium* spp.), broomsedge (*Andropogon virginicus*) and lespedezas (*Lespedeza* spp.). Old-field communities contain similar herbaceous species with the addition of blackberry (*Rubus* spp.), japanese honeysuckle, and scattered pioneer shrub and tree species such as sumac (*Rhus* spp.), cedar (*Juniperus virginiana*), winged elm (*Ulmus alata*) and black locust (*Robinia psuedoacacia*).

Pastureland / old-field communities provide habitat for a number of wildlife species adapted to early successional vegetation. In addition, these communities can create surrounding edge environments where they intersect with one another or with other habitat types such as forests or wetlands. The resultant edge environment often provides greater habitat diversity and attracts a greater number of vertebrate species than the individual communities by themselves.

Vertebrate wildlife species are typically dominated by small mammals, primarily the cottontail rabbit (*Sylvilagus floridanus*) and a variety of mice, voles, moles, and shrews. Larger predators such as the coyote and fox frequently hunt for small mammals in these areas where multiple habitat types are interspersed and interconnected.

A variety of bird species forage in pasture-old field areas and use the shrubby edge habitat for nesting and cover. Typical species include the indigo

bunting (*Passerina cyanea*), sparrows (*Ammodramus savannum*, *Chondestes grammacus*, and *Spizella, Zonotrichia, Melospiza* spp.), eastern meadowlark (*Sturnella magna*), cardinals (*Cardinalis cardinalis*), eastern bluebird (*Sialia sialis*), and blackbirds. In addition, these areas are utilized as foraging habitat by raptor species such as the red-tailed hawk (*Buteo jamaicensis*) and American kestral (*Falco sparverius*).

The relative open space and lack of adequate ground cover within these habitats generally results in poor species diversity and population numbers for most reptile and amphibian species. However, some snake species such as the black rat snake (*Elaphe obsoleta obsoleta*), garter snake (*Thamnophis sirtalis*) and the hog-nosed snake, prey on the resident small mammal and insect populations.

3.11.3 Cropland

Within the Project Area, cropland or land in the row crop production of soybeans, cotton, and corn is generally limited to the eastern portion of Drew County and the western portion of Desha County along the Bayou Bartholomew basin. Wildlife community diversity in croplands is reduced due to the large expanses of monotypic stands of row crops that provide marginal habitat for most wildlife species. Wildlife use of these areas is largely dependent on the crop being grown and the time of year. Crops such as corn and rice provide cover and food for a number of birds and small mammals. After harvest, waste material attracts many resident, migrating, and wintering bird species, while spring flooded fields provide habitat for many species of shorebirds and waterfowl.

3.12 AQUATIC COMMUNITIES

As described in Section 3.7.1, surface water resources within the Project Area include perennial and intermittent rivers or bayous, wetlands, and ponds. These water bodies provide important habitat for a number of fish and wildlife species. Bayous, reservoirs, and ponds within the Project Area typically support species such as mosquitofish (*Gambusia affinis*), catfish (*Ictalurus spp.*), gizzard shad (*Dorosoma cepedianum*), bowfin (*Amia calva*), sunfish (*Lepomis* spp.), and bass (*Micropterus salmoides*). Area waterbodies also provide foraging and nesting habitat for a number of wading bird and waterfowl species including the great blue heron (*Ardea herodias*), great egret (*Ardea alba*), green heron (*Butides virescens*), and wood duck (*Aix sponsa*). Numerous species of turtles, frogs, and snakes also utilize these habitats.

3.13 THREATENED AND ENDANGERED SPECIES

The Endangered Species Act (ESA) of 1973 (16 USC §1531-1543) declares the intention of Congress to protect all federally listed threatened

and endangered species and designated critical habitat of such species occurring both in the United States and abroad. Section 7 of the ESA requires that Federal agencies, such as FHWA, ensure that any action authorized, funded or carried out by an agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat. The USFWS is the primary regulatory agency responsible for ESA compliance.

The state of Arkansas relies upon Federal legislation to protect vertebrate and plant resources. The Arkansas Natural Heritage Commission (ANHC) maintains a database with the known locations of federally listed threatened and endangered species as well as a list of state species of special concern. State species of special concern are not afforded legal protection, as are federally listed threatened and endangered species. Potential impacts to these species were considered throughout the planning process including the development of corridors and subsequent alignment development.

The ANHC, USFWS, and the Arkansas Game and Fish Commission were contacted to determine the location of federal and state listed species within the Project Area.

3.13.1 Federally Listed Species

Twenty six plant and animal species (20 animal and six plants) are federally listed as threatened or endangered in the state of Arkansas. Consultation with the U.S. Fish and Wildlife Service indicated that there are five federally listed species that may occur within the Project Area that should be investigated further; *Geocarpon minimum,* red-cockaded woodpecker (*Picoides borealis*), Florida panther (*Puma concolor coryi),* bald eagle (*Haliaeetus leucocephalus,*) and the pink mucket (*Lampsilis abrupta.*) Additional coordination with the AGFC identified the winged mapleleaf (*Quadrula fragosa*), a freshwater mussel, as also potentially occurring within the Project Area (Posey 2004).

Geocarpon minimum is a diminutive annual plant species with an ephemeral life cycle (typically completed in about four weeks) that is often overlooked in the field (Pittman 1988). The distribution and habitat requirements of this plant are extremely specific. In Arkansas, all known sites are restricted to saline soil prairies and potential habitat within the Project Area exists in Drew and Bradley counties. The plant is most likely to occur on areas of Lafe, Foley, or Bonn soils.

The red-cockaded woodpecker (RCW) was listed as an endangered species in October 1970 (35 FR 16047). This bird's range is closely tied to the distribution of southern pine forests. Open stands of pine with a minimum age range of 80 to 120 years provide suitable nesting habitat. Foraging habitat is provided in pine and pine/hardwood stands 25 years or older. Habitat Conservation

Plans for RCW are employed by several area timber companies that actively manage forest stands for foraging habitat and cavity tree replacement. Early coordination with these timber companies was initiated to identify these areas. The ANHC also identified several historic areas of RCW activity within the Project Area.

The Florida panther was listed as endangered in 1967. Although its range is believed to be limited to Florida, all other similar species (*Puma concolor*; all subspecies) were listed as endangered in 1991 due to difficulty in differentiating between subspecies. Habitat varies from hilly hardwood forests and pine flatwoods, saw palmetto and drier scrub areas.

The bald eagle was originally listed as endangered in March 1967 (32FR 4001) and then reclassified to threatened status in July 1995 (60FR 35999-36010) within most of the lower 48 states, including Arkansas. This reclassification was prompted by the continued increase of the bald eagle population observed over 20 years throughout the majority of its range. This improvement was the direct result of removal of pesticides such as DDT from the market, habitat protection, and from other recovery efforts. The bald eagle status is currently under review for delisting from the threatened list. Foraging habitat is provided in tall mature forests near riverbanks or lakes.

The pink mucket was listed as endangered throughout its entire range in June 1976 (41FR 24062-24067). This mussel is found in sand and gravel in shallow riffles and shoals swept free of silt in major rivers and tributaries. Dams and reservoirs have flooded some of the mussel's habitat and affected the distribution of its fish hosts. Impoundments are fatal to most riverine mussels, and silt, caused by erosion and farming, can clog the mussel's feeding siphons and even bury it completely.

The winged mapleleaf was listed as endangered throughout its entire range in July 1991 (56 FR 28345 28349). Little is known about the ecology and habits of the winged mapleleaf, presumably because of its historic rarity and early population reductions. The species was historically found in well-preserved large to medium-sized clear-water streams in riffles or on gravel bars. These areas have been lost due to the development of impoundments, channelization, soil erosion, and sediment accumulation originating from land use practices. Silts caused by erosion and farming can clog the mussel's feeding siphons and even bury it completely.

3.13.2 Species of State Special Concern

The ANHC identified 105 different elements of special concern within the Project Area; 68 plants, 26 vertebrates, two invertebrates, eight natural communities, and one colonial nesting site for

water birds. These species do not have any special protection, but project coordinators will continue to work with the AHNC to protect these species and special areas wherever feasible.

3.14 NATURAL AREAS

Early project coordination with the ANHC identified two ANHC natural areas within the Project Area; the Warren Prairie Natural Area located in Drew and Bradley Counties and the Seven Devils Swamp Natural Area in Drew County. Natural areas are either state owned properties or private properties with conservation easements that protect a unique or important component of the natural diversity of Arkansas. In addition, 36 potential natural areas were also identified within and near the Project Area. Preliminary analysis suggests that these areas have high natural value, however, additional field surveys are needed to confirm the existing site conditions. The location of all sites was considered during the project development process.

In addition to the ANHC natural areas, Bayou Bartholomew was identified by many resource agencies and the Bayou Bartholomew Alliance as an important resource within the Project Area. Bayou Bartholomew has been the focus of private, state, and Federal conservation and restoration efforts in recent years. Coordination with the Alliance identified restoration areas and planned future restoration areas.

3.15 CULTURAL RESOURCES

Human occupational environments in the Project Area have been divided according to the archeological record into the Felsenthal and Bartholomew Macon regions, as defined by the *State Plan for the Conservation of Archeological Resources in Arkansas* (Davis 1994). Cultural history in these regions can be divided into three eras: Prehistoric, Proto-historic, and Historic periods. The Prehistoric period refers to pre-contact between Native American inhabitants and Europeans. The Proto-historic period refers to the time of initial contact between Native American inhabitants and Europeans, while the Historic period refers to the time of European settlement up to the present.

3.15.1 The Prehistoric Period (9500 B.C. to A.D. 1500)

The prehistoric culture history of the Felsenthal and Bartholomew Macon regions has been summarized and presented numerous times. Presentations of this sequence have ranged from the very general to the specific, based on the cultural phase and geographic comparison being made. The human occupational history of the Project Area is best thought of as a shifting mosaic through time, influenced by the Mississippi River environment, coastal and inland weather patterns, and surrounding trade networks. Table 3-9 outlines the basic prehistoric cultural history for south central and southeast Arkansas. For a more specific

review of locations within the Felsenthal and Bartholomew Macon regions, the reader is directed to Davis (1994), Jeter et al. (1989), and Mainfort and Jeter (1999).

3.15.2 The Proto-Historic Period (A.D. 1500-1700)

The Project Area was thought to be inhabited by Native Americans from the Quapaw, Tunica, and Koroa tribes during the Proto-Historic period. The western most portion of the Project Area may also have been home to Caddoan groups. The Tunica and Koroa were last recorded in Southeastern Arkansas in the 1690s. The Quapaw remained in southern Arkansas through the 1700s with their population remaining fairly constant while the number of European settlers increased.

Table 3-9
PREHISTORIC CULTURAL SEQUENCE FOR SOUTH CENTRAL AND SOUTHEAST ARKANSAS

Cultural Period	Cultural Phase	Date Range –Years Before Present (B.P.)	Site (s)
Early Paleo-Indian	Paleo-Indian	9,500-8,500 B.C.	Montgomery
Late Paleo-Indian	Dalton Culture, San Patrice Complex, Snow Hill	8,500-7,500 B.C.	Snow Hill, Coon Island, Hudgens Creek
Early Archaic Period	Scottsbluff	7,500-6000 B.C.	Derriesseaux Creek
Middle Archaic Period	Tom's Brook Culture, Crystal Mountain Phase, Big Creek Culture, Dorhceat	6,000-3,000 B.C.	Gulpha, Cooper, Hudgin Creek, Bog Creek,
Late Archaic Period	Williams Point complex, Poverty Point	3,000-600 B.C.	Calion, Coon Island, Green Island, Woodard Lake
Woodland Period	Tchula, Tchefuncte, Middle Fourche Maline, Marksville,	600 B.C. – A.D. 1000	Coon Island, Goulett Island, Godfrey Landing, Derriesseaux Creek, Eagle Lake
Coles Creek/ Plum Bayou	Coles Creek, Plum Bayou, Fourche, Maline-Early Caddoan	A. D. 700-1200	Toltec, Eagle Lake, Gordon, Fraser
Mississippi Period	Gran Marais, Plaquemine, Caddo II, Caney Bayou	A. D. 1200-1500+	Boytt's Field, False Indigo, Eagle Lake, Gordon, Fraser, Evan Field

Source: Davis (1994), Jeter et al. (1989), and Mainfort and Jeter (1999).

3.15.3 The Historic Period (A.D. 1700-Present)

The District of Arkansas was officially formed within the Louisiana Territory in 1806. Arkansas was admitted to the U.S. as its own territory on March 2, 1819 (Hanson and Moneyhon 1989). Early communities such as El Dorado, Camden, and Warren grew up along primary trail networks of rivers, streams, and trails associated with commercial timber operations, as noted on maps from the mid 19th century (Sidell 1850). These

settlements spurred further development and towns such as Magnolia, Monticello, Dumas, and McGehee were founded a few years later and connected by a developing roadway network (DeArmond 1980; Paulson 1998).

Southeast Arkansas's expansive forests provided hardwood and pine material for many human occupational necessities (DeArmond 1980). By the time of the Civil War, timber was the major industry in the region (DeArmond 1980). Civil War troop stops, and courier and recruiting stations were known near sawmill and community locales, but few Civil War battles are recorded within the Project Area (Cordell 1984).

By 1875, the Mississippi, Red River, and Ouachita Railroad (later the Missouri Pacific and Rock Island Railroad) ran across the Project Area through Camden, Warren, Monticello, and modern day McGehee, while the Ouachita Valley Railroad ran from Camden to El Dorado (Webber 1875). These arteries of commerce facilitated Southeast Arkansas's settlement growth and connection to other cities in the United States, carrying exports such as cotton and lumber to destinations throughout the nation.

In the early 1920s, the Great Arkansas Oil Boom brought thousands of people to the El Dorado area (Paulson 1998). Within weeks, the population of El Dorado increased from 4,000 to 15,000 inhabitants as the enormous underlying oil reserves were brought to market. However, these boom times were relatively short lived as over-drilling drastically reduced production, and by the late 1920s and early 1930s, the effects of the Great Depression were evident. By the 1940s, production of natural gas had eclipsed oil production (Paulson 1998), and the boost from manufacturing and industry resulting from World War II, spurred growth once again in the region. The introduction and use of the tractor in the 1930s and the use of mechanical cotton pickers and harvesters in 1948 reduced the amount of labor required for farming and the use of herbicides in the 1950s served to increase the size of operations and healthy yields of primary crops in the region such as rice, cotton, and soybeans. Changes also occurred in the timber industry that focused on the long-term development of forest resources. In addition to raw timber, new forest products such as pulp, paper, and packaging materials were developed increasing economic returns for timber growers. Current communities now reflect a more stabilized economy brought on by a boost from manufacturing and industry resulting from World War II and the production of natural gas (Paulson 1998).

3.15.4 Archeological Sites and Historic Properties

All known cultural resources within the Project Area were identified to provide the greatest opportunity

to identify a corridor that best avoided significant sites and properties. A background search that included a literature review and records check was conducted for the Project Area. Lists of properties on the National Register of Historic Places (NRHP) were reviewed at the Arkansas Historic Preservation Program (AHPP) office, along with historic structure data. Reports, files, and maps pertaining to previous archaeological and historic surveys conducted in the Project Area were examined at the Arkansas Archeological Survey. Known archeological site information was obtained from the Automated Management of Archeological Site Data in Arkansas (AMASDA) data files and the Arkansas Archeological Project Listing. County maps, early Government Land Office plats, early railroad and trail maps, and geographic site reports for early post offices and mail routes were examined at the Arkansas History Commission. Additional information was gathered from private collectors and avocational archeologists. All of the data collected was added to the project GIS. High probability areas for unrecorded archeological sites such as floodplains, terraces, and prominent nearby landforms were also added to the project GIS in addition to the known sites.

3.16 AIR QUALITY

Ambient air monitoring is conducted at various locations throughout Arkansas by the National Air Monitoring System (NAMS) and the State and Local Air Monitoring System (SLAMS) program. The existing air quality in all Project Area counties is designated as being in attainment for Carbon Monoxide (CO), Ozone (O_3), Particulate Matter (PM_{10}), and Nitrogen Oxides (NO_x) based on historical monitoring data. Attainment areas are those areas identified by the Environmental Protection Agency as being in compliance with the National Ambient Air Quality Standards (NAAQS) and therefore not subject to transportation conformity requirements.

3.17 NOISE

Noise is defined as unwanted or excessive sound. Sound is any physical disturbance in the air, or any medium, which is capable of being detected by the human ear. Sound is emitted from many sources including highway vehicles, airplanes, factories, railroads and power plants. Highway vehicle noise or traffic noise is generally composed of engine exhaust, drive train, tire-roadway interaction, and the vehicle's aerodynamics.

Sound becomes noise when it interferes with normal everyday activities such as sleeping, reading, and conversation. Degrees of sound disturbance depend on several factors including the amount and nature of the intruding noise, the relationship between the background noise and intruding noise, the type of activity where the noise is heard, and the time of day that the noise is generated.

Noise is energy and produces a wave that strikes the human ear in the form of pressure. The response to this pressure is defined as the sound pressure level (SPL) and is measured in units called decibels (dB). A decibel level below 50 is considered to be quiet outdoors while levels above 70 are considered to be noisy.

3.17.1 Noise Sensitive Areas

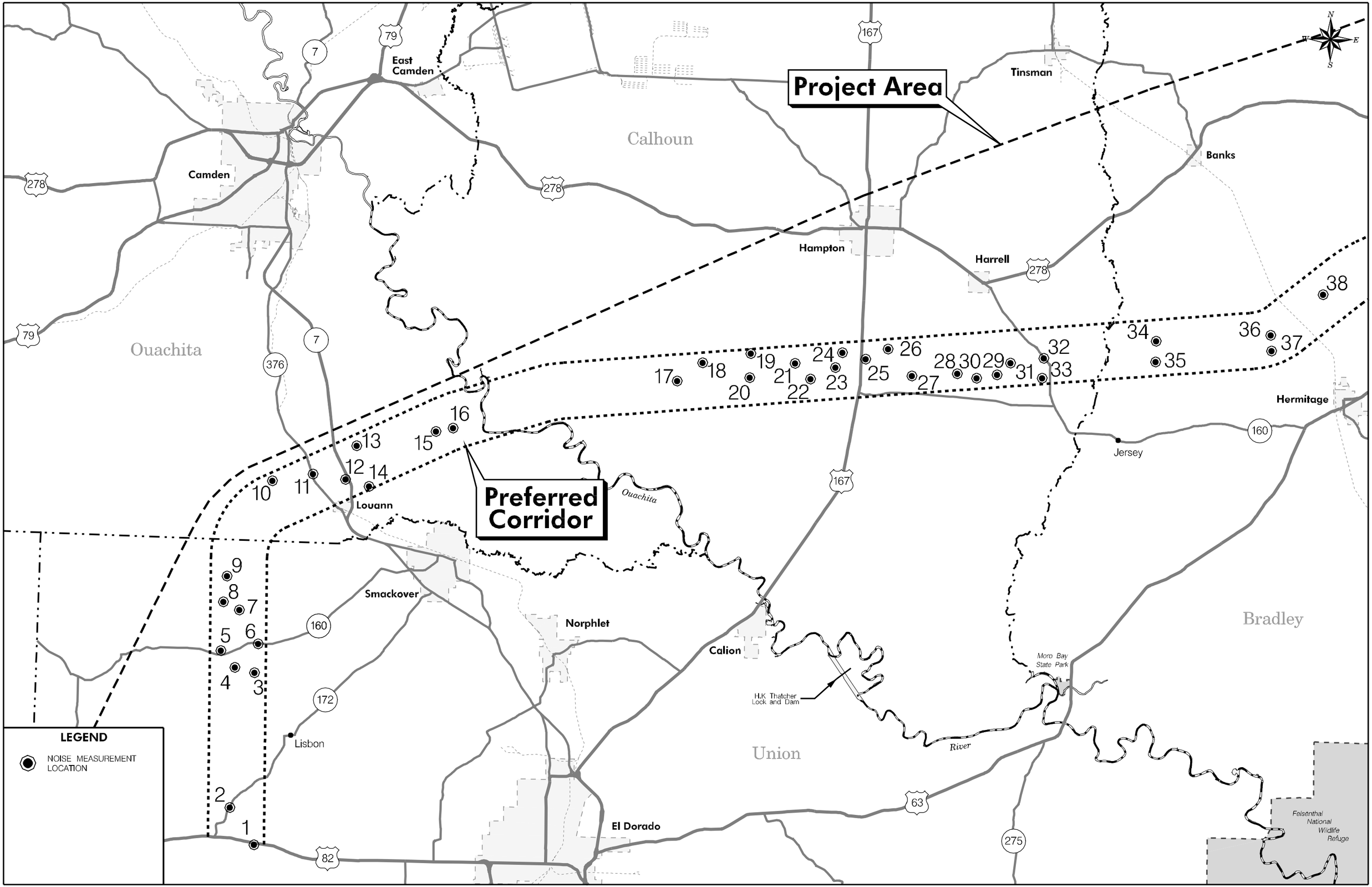
Land use is an important factor in determining the noise sensitivity of an area. Areas associated with residences, churches, schools, community centers, and parks are sensitive to noise levels. Land uses, which are less sensitive to noise, include industrial and commercial properties, agricultural areas, and undeveloped open and forested land. Land use within the Project Area is predominantly agricultural and forested land with varying amounts of residential, commercial, and recreation uses.

3.17.2 Measured Noise Levels

Eighty-seven short-term ambient noise measurements were taken along the alignment alternatives under consideration (Exhibit 3-5). These measurements represented the existing sound environment within the SIU 13 Project Area. Noise measurements were 15 minutes in length and were taken using a Metrosonics dB-312 sound level meter. A log was kept noting time of day, meteorological conditions, calibration results and any unusual sound sources experienced during each measurement. The meter was calibrated before and after each noise measurement. Simultaneous traffic counts were recorded for nearby roadways, as applicable and included a classification of vehicles observed (automobiles, medium and heavy trucks). Existing noise measurements are shown in Table 3-10.

3.18 VISUAL CHARACTERISTICS

The visual characteristics of the Project Area are dominated by a gently rolling landscape of expansive timber producing forests and scattered parcels in pasture and row crop production. Contrasting types of forested vegetation are limited to stream crossings where deciduous trees replace the dominant pine forests. Pasture and farmed parcels are interspersed throughout the Project Area providing some visual relief from the forested landscape. Residential and commercial development is confined to the cities of El Dorado, Warren, Monticello, and McGehee. Single-family dwellings located adjacent to county roads and highways characterize the majority of the Project Area. In summary, the Project Area is primarily a rural landscape dominated by pine forests with relatively limited visual resources. Based on the above description of the visual environment, the Project Area does not contain sensitive visual resources nor is the Project Area considered a visually sensitive rural setting.


Project Area
Preferred Corridor
East Camden
Camden
Calhoun
Ouachita
Tinsman
Banks
Hampton
Harrell
Hermitage
Jersey
Louann
Smackover
Norphlet
Calion
Lisbon
El Dorado
Union
Bradley
H.K Thatcher Lock and Dam
Moro Bay State Park
Felsenthal National Wildlife Refuge
River
LEGEND
NOISE MEASUREMENT LOCATION
1
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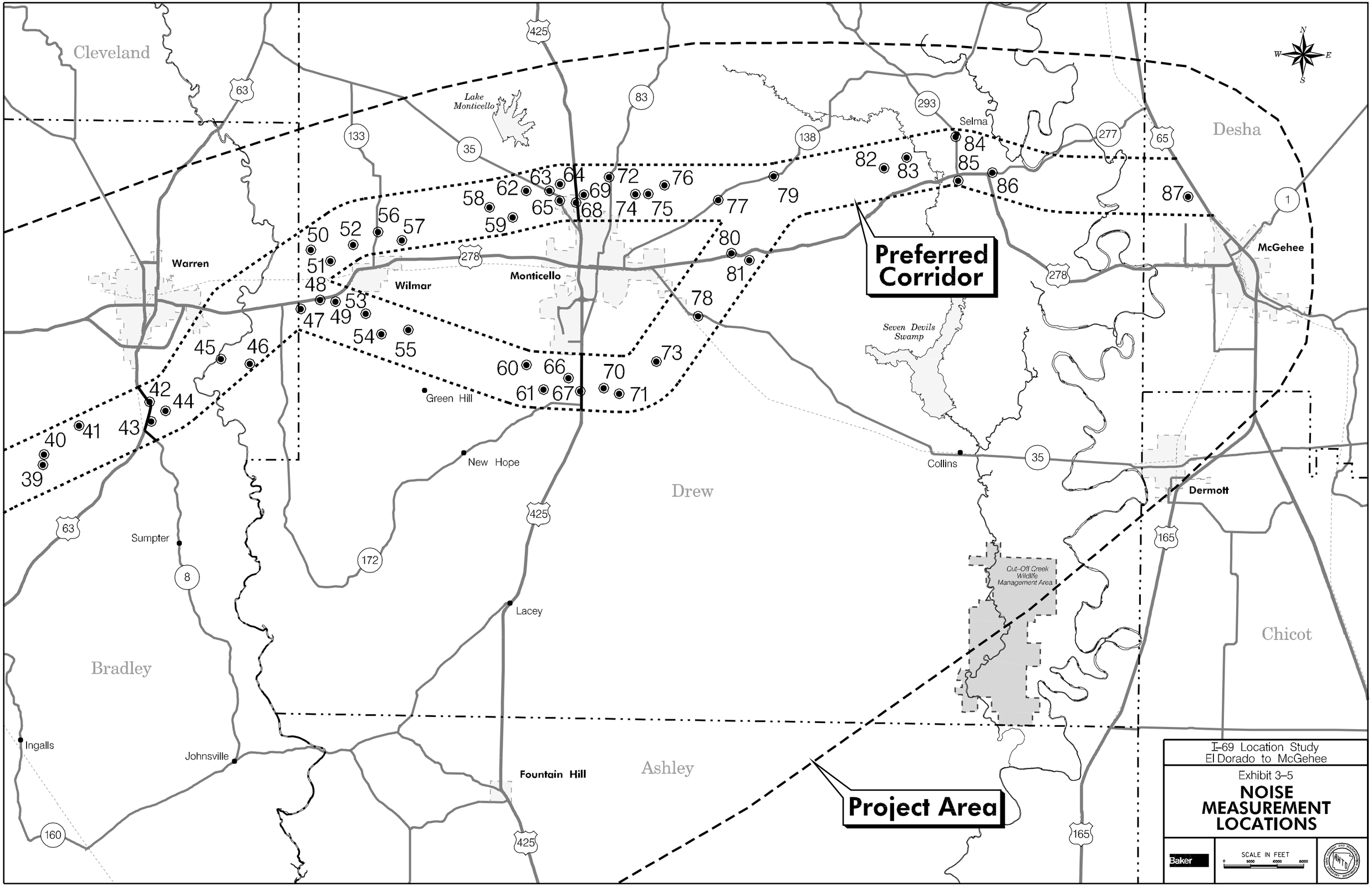


I-69 Location Study
El Dorado to McGehee

Exhibit 3–5

NOISE MEASUREMENT LOCATIONS

Baker

SCALE IN FEET
0 5000 10000 15000

Table 3-10
MEASURED AMBIENT NOISE LEVELS WITHIN PROJECT AREA*

Measurement Location Number	Land Use	L_{eq} (dBA)	General Location
1	Residential (SFH)	58	US Route 82 (Magnolia Hwy.)
2	Residential (MH)	54	State Route 172 (Lisbon Road)
3	Yocum Cemetery	48	County Route 407
4	Residential (MH)	45	Sandy Creek Road
5	Residential (SFH & MH)	52	Near Intersection of Silver Hill Loop & SR-160
6	Sweet Canaan Baptist Church	50	State Route 160 (Mount Holly Hwy.)
7	Residential (MH)	42	Sugarland Road
8	Residential (SFH)	45	Near Intersection of Smith Lane & Silver Hill Loop
9	Residential (SFH)	41	Silver Hill Loop
10	Liberty Methodist Church	54	County Route 2
11	Residential (SFH)	52	State Route 376
12	Residential (SFH)	53	State Route 7
15	Residential (SFH)	54	County Route 67
16	Residential (SFH)	54	Off of CR-67 on local road
17	Residential (SFH)	53	County Route 19 (Little Bay Road)
18	St. Paul Cemetery	57	County Route 19 (Little Bay Road)
19	Residential (SFH)	40	County Route 22
20	Residential (MH)	47	County Route 22
21	Residential (SFH & MH)	42	County Route 192
22	Antioch Baptist Church	47	Near Intersection of CR 26 and CR 27
23	Residential (SFH)	43	County Route 26
24	Residential (SFH)	44	Near Intersection of CR 26 and CR 25
27	Residential (SFH)	49	County Route 93
28	Residential (SFH)	46	County Route 141
29	Residential (SFH)	34	County Route 94
31	Residential (SFH)	45	County Route 36
32	Residential (SFH)	57	State Route 160
33	Residential (SFH)	46	County Route 94
34	New Bethel Primitive Baptist Church	50	County Route 177 off of Banks Jersey Road
35	Residential (SFH)	49	Near Intersection of Banks Jersey Road and CR 175
36	Spring Hill Freewill Baptist Church	49	Near Intersection of CR 6 & CR 5N (Lanark-Gravel Ridge Road)
37	Residential (SFH)	54	County Route 6 (Castleberry Crossing)
38	Residential (SFH)	48	County Route 32 (Farmville Road)
39	Packer Prospect Cemetery	53	County Route 25 (Prospect Road)
40	Residential (SFH)	46	County Route 25 (Prospect Road)
42	Residential (SFH & MH)	64	US Route 63
43	Residential (SFH)	45	Off of US Route 63 on private road
44	Residential (SFH)	40	County Route 70

Table 3-10
MEASURED AMBIENT NOISE LEVELS WITHIN PROJECT AREA*

Measurement Location Number	Land Use	L_{eq} (dBA)	General Location
45	Residential (SFH)	44	County Route 360 (Old Monticello Road)
46	Residential (SFH)	46	County Route 360 (Old Monticello Road)
50	Residential (SFH & MH)	48	County Route 111 (Wilmar Loop)
51	Church	38	County Route 111 (Wilmar Loop)
52	Residential (SFH & MH)	45	County Route 57 (Sanderlin Road)
53	Residential (SFH)	50	County Road 359 (Gardner Road)
55	Residential (SFH)	43	County Road 16 (South Allis Road)
56	Residential (SFH)	57	North 7th Street (State Route 133)
58	Residential (SFH)	54	County Route 96 (Barkada Road)
59	Residential (SFH)	45	County Route 96 (Barkada Road)
61	Residential (SFH)	44	Marshall Lane off of CR 21 (Burton Road)
62	Residential (SFH)	52	Lakewood Estates off of SR 35
63	Rose Hill Freewill Baptist Church	63	State Route 35
64	Residential (SFH)	52	Near Intersection of Old Hwy. 13 & CR 90 (Wilson Lane)
65	Residential (SFH)	56	State Route 35
66	Residential (SFH & MH)	48	County Route 21 (Burton Road)
67	Residential (SFH)	60	Near Intersection of US Route 425 & Scenic Drive
68	Residential (SFH)	61	US Route 425
69	Residential (MH)	46	County Route 131 (Hoover Lane)
70	Residential (SFH)	43	County Route 23 (Scrouge Out Road)
71	Residential (SFH)	43	County Route 1816 (Midway Route)
73	Residential (SFH)	47	County Route 46 (Old Troy Road)
74	Residential (SFH)	41	County Route 80 (Florence Road)
75	Residential (SFH & MH)	48	County Route 80 (Florence Road)
76	Residential (MH)	44	Donaldson Drive off of CR 80
77	Residential (SFH)	56	State Route 138
78	Residential (SFH)	63	State Route 35
79	Residential (SFH)	52	State Route 138
80	Residential (SFH & MH)	55	US Route 278
81	Residential (SFH)	46	County Route 74 (Bordeaux Road)
82	Residential (SFH)	48	County Route 75 (North 16th Section Road)
83	Residential (SFH & MH)	38	County Route 401 (Lucas Lane)
86	Residential (SFH)	56	Near Intersection of SR 277 & CR 76
87	Residential (SFH)	58	State Route 159 (Old Tillar Highway)

Note: Only noise measurement locations used in the alignment alternative's noise analysis are presented in the table.
Source: Michael Baker Jr., Inc.

3.19 HAZARDOUS MATERIALS

An initial site assessment was conducted within the preliminary corridors to identify the location of any hazardous materials sites through coordination with the Arkansas Department of Environmental Quality (ADEQ). The ADEQ's Hazardous Waste Division implements Arkansas' Resource Conservation and Recovery Act (RCRA) Subtitle C waste management program governing the management and disposition of hazardous wastes, used oils, and universal wastes. Arkansas also implements the cleanup program for abandoned hazardous waste sites in cooperation with EPA's Superfund program. The ADEQ maintains a list of current hazardous waste generators (RCRA), NPL sites, registered underground storage tanks (UST), registered above ground storage tanks (AST), and facilities that have reported releases from regulated storage tanks. Additionally, the location of known landfill sites was obtained from the ADEQ. No known RCRA, NPL, UST, AST, reported releases or landfills were identified within the Preliminary Corridors.

Section 4: ENVIRONMENTAL CONSEQUENCES

This section identifies and discusses the beneficial and adverse social, economic, and environmental effects that may result from the construction of the SIU 13 Project in south Arkansas.

4.1 SOCIAL IMPACTS

Due to the rural setting of this project, the presence of a new Interstate highway will result in some community changes regardless of the alignment location. However, the alignment alternatives were specifically developed and located to minimize community, residential, and business impacts while attempting to maximize public access to this new transportation facility. With the exception of Monticello, the alignment alternatives do not pass within the city limits of any communities along the proposed routes.

Due to their close proximity, all highway alignments are expected to have similar social impacts unless otherwise noted. Social impacts associated with the No-Action alternative would be minimal and are described where appropriate.

4.1.1 Land Use and Land Cover Changes

The SIU 13 Project will have direct and secondary impacts to existing land use and land covers. The construction of the highway will result in the direct conversion of land dominated by forest and pasture/cropland to a transportation use. While no secondary development is currently planned, land that has direct access to a new highway may experience indirect or secondary land use/cover impacts resulting from potential new or increased residential, commercial, or industrial development.

Land Use Conversion

Land use was evaluated using 1998-99 Landsat imagery obtained from the University of Arkansas' Center for Advanced Spatial Technologies (CAST). This imagery uses satellites to identify land uses in block sizes of 247 acres. While this level of land use definition does not detect small or individual residential and commercial properties, it is a very useful and efficient tool for general land use evaluation and comparison.

Land directly used for the proposed highway would be converted from its present use to a transportation or highway use as shown in Table 4-1. The majority of the land would be converted from forested lands. Impacts to these land uses and vegetative communities are discussed in Section 4.9. Line 1 would convert the least amount of land to highway use, while Line 2 would convert the greatest.

Impacts to residential areas and properties were identified during the extensive public involvement process as issues of primary concern and were fully considered during alignment development. No portion of any large residential or commercial area (247 acres or greater for the CAST data) would be impacted by the alignments. Individual residential and commercial impacts are discussed in detail in Section 4.1.4.

Table 4-1
SUMMARY OF LAND USE / LAND COVER IMPACTS

Alignment	Land Use			
	Residential / Commercial (Acres)	Forest Land (Acres)	Pasture / Cropland (Acres)	Totals (Acres)
No-Action*	-	-	-	-
Line 1	-	2,817	837	3,654
Line 2	-	3,084	895	3,979
Line 3	-	2,812	870	3,682
Line 4	-	3,128	838	3,966
Preferred (Line 5)	-	3,048	815	3,863

Source: Michael Baker Jr., Inc.
*Land use impacts would occur with widening and passing lane construction activities, although the extent of these impacts is not known at this time.

The No-Action alternative would result in future land use impacts as minor safety improvements and additional widening or passing lane projects are implemented within the Project Area. The size of these impacts is not known at this time as detailed design for future improvements has not been completed. All future projects will include measures to minimize land use impacts, including wetland impacts, to the extent practicable.

Secondary Development

The SIU 13 Project could facilitate secondary development in the Project Area to some extent regardless of the alignment selected. This development could take several forms:

- Commercial development at interchanges
- Industrial development in existing or planned industrial parks, or the formation of new industrial parks
- Single site industrial developments by manufacturing enterprises that locate in the area due to increased access
- Residential development that may result due to community growth and improved access to nearby job markets.

Hartgen and Kim (1998) found that the actual extent and type of commercial development at interchange locations is influenced by many variables including the size of and distance to nearby communities, and the existing local services offered. In general, more development would be expected at interchanges near larger communities and would likely decrease as the interchange location moves further from the population centers. Population size and distance variables are not absolute and exceptions to these general trends can and often do occur. Due to the many variables involved, precise predictions of type and extent of development are not possible.

However, based on this study and on other observations of rural Interstate interchanges, little development would be expected at the majority of the proposed interchanges for this project. Most interchanges are located to provide access to the local highway network, facilitating Interstate travel opportunities for the majority of rural Project Area residents. Proposed interchanges near El Dorado, Warren, and Monticello are close enough to a sizeable population that some secondary development is likely to occur at these locations. However, in Monticello and Warren a variety of services such as gas stations and restaurants currently exist near these proposed interchanges, which could serve to limit secondary development. The interchanges proposed north of El Dorado on S.H. 7 and west on US Highway 82 are close enough to a sizeable population base and far enough away from existing services that light commercial development is likely to occur. Both locations currently are surrounded by undeveloped upland areas that could accommodate some form of limited development.

The planned 413 acre Southeast Arkansas Intermodal Facility will be located south of US Highway 278 in the Wilmar area. If a southern alternative is selected from Wilmar to Monticello (Lines 2, 4 or 5) then it is possible that the I-69 Connector would be extended approximately two miles further south to connect directly to I-69. Regardless of the alternative, the proximity of the proposed highway to this industrial development would provide increased transportation efficiency for this regional facility for the transportation of freight in southeast Arkansas.

Single site industrial development could occur near the proposed highway where land is available. This development would be limited by the services and infrastructure local communities could provide. As the proposed route traverses mostly forested and or agricultural lands, this development would likely be confined to the El Dorado, Warren, and Monticello areas where supporting infrastructure could be available in the future.

The No-Action alternative would not result in any development beyond what the current development trends would indicate. Scattered residential development will continue to occur as land becomes available, particularly in the Monticello area. Plans for commercial and industrial development for the Southeast Arkansas Intermodal Facility will continue and could necessitate further expansion of the existing highway network.

Consistency of Highway and Secondary Development with Land Use Plans

There are no Regional Planning Commissions or Metropolitan Planning Commissions in this portion of Arkansas. Furthermore, formal land use plans have not been developed within the Project Area. However, leaders from all communities have actively participated in the project development

process and have provided information on proposed land uses in their respective communities.

4.1.2 Community Changes

The SIU 13 Project would result in changes to neighborhoods, community access, travel patterns, community services, and property values. These changes would be most evident in communities adjacent to the alignment alternatives. All highway alignments are expected to have similar community impacts.

Neighborhoods and Community Cohesion

The alternatives development process was designed to fully consider potential community impacts at both the corridor and alignment level of study. Corridor location involved an attempt to avoid all area communities and neighborhoods to the greatest extent practicable, and subsequent alignment development focused on avoidance of individual residences and businesses. No established neighborhoods of any size would be crossed by the alignments due to the extensive effort made to minimize residential relocations throughout the project development process. Furthermore, due to the rural nature of the majority of this project, all attempts were made to avoid small clusters of residences in outlying areas. Public outreach efforts determined that many residences of these rural housing clusters have developed a close-knit relationship with their neighbors, who are often extended family members. These areas have been avoided to preserve the cohesive elements of these existing rural neighborhoods. Community cohesion for the more scattered residences in the rural Project Area would be maintained via highway overpasses of the local roadways.

In some areas, such as along US Highway 278 between Monticello and Warren, residences and the community overall could benefit from a diversion of through and heavy truck traffic. This diversion would reduce traffic noise and improve safety for local residents and their families. Rural residents would also benefit as truck traffic could be reduced on state and county highways through diversion to the new Interstate facility.

The No-Action alternative would not directly impact neighborhoods. Widening projects may disrupt individual residents, but would not likely divide any existing neighborhoods.

Community Access and Travel Patterns

Grade separations are proposed for all alignments at all existing US highways, state highways, and the majority of county road crossings via overpass or underpass structures depending on the roadway alignment and terrain. Access within and between communities would not appreciably change as a result of this project. Maintenance of access to individual property parcels would be considered and addressed during the final design of the highway.

Most communities within the Project Area will have reasonable access to the proposed highway via 12 interchanges. Access to the El Dorado and Smackover areas would be available by interchange locations at US Highway 82, S.H. 160, S.H. 7, and C.R. 67. An interchange at US Highway 167 would provide access to Hampton and El Dorado. Smaller communities between El Dorado and Warren (Harrell, Hermitage, and Farmville) would be accessed by interchanges at S.H. 160 and C.R. 32. The most direct and closest access to the proposed highway would be provided at interchange locations along US Highway 63 and US Highway 278 for Warren, US Highway 278 for Wilmar, and US Highway 278, S.H. 35, and S.H. 138 for Monticello. In the far eastern portion of the Project Area, access would be provided to the community of Selma with an interchange at S.H. 277. An interchange at U.S. 65 would provide access to the communities of McGehee, Reed, Tillar, Dumas and other cities in the southeast Arkansas delta area.

The No-Action alternative limits the accessibility to an Interstate highway for many area residents. Most Project Area residents use U.S. 278 and U.S. 63, and to a lesser extent, S.H. 160 and S.H. 172 for east/west travel across southern Arkansas. While these roads are acceptable for community travel, they do not provide the convenience and safety of an Interstate highway such as I-69.

Travel patterns in the Project Area may change as a result of the proposed highway. Depending on their final destinations, residents would have a choice of traveling on existing east/west travel routes or on I-69. Travel time between McGehee and El Dorado would be reduced and safety would be increased through use of the new facility.

Changes in Local Traffic

Changes in local traffic would result from all highway alignments. In general, traffic volumes would tend to increase on highways for which interchanges have been proposed. These traffic increases would result from travelers accessing the proposed highway and travelers exiting the proposed highway to access nearby communities for additional services or recreational activities.

Residents living along these highways would experience the effects of this increased traffic as well as a different mix of trucks and cars. Truck traffic could increase on these highways. Travelers on streets that intersect with these highways near a proposed interchange may experience delays in turning onto these highways, particularly when crossing traffic. Access to businesses and residences along these highways may be similarly affected.

Residents living or traveling along roads such as U.S. 278, U.S. 63, U.S. 167, S.H. 160 and S.H. 172 between McGehee and El Dorado may experience a decrease in traffic volumes, particularly truck

traffic, as through trips are diverted to the new highway facility. Most truck traffic currently traveling these routes within the Project Area would benefit from the increased transportation efficiency provided by an Interstate highway facility.

Community Services and Facilities

Many rural area residents travel along U.S. 278, U.S. 63, or other state and local roads for medical and other professional services available in Warren, Monticello, El Dorado and Camden. Many of these residents would experience improved access to these and other community services from all alignments of the proposed highway. Universities in Monticello and El Dorado would be more accessible expanding higher education opportunities to a greater number of area residents as well as those from neighboring states.

Adequate fire and police services are important for the protection of citizens and property in all communities. Construction of I-69 would benefit the Project Area by reducing emergency response times between communities and by removing through and truck traffic from the local roadway network.

The proposed highway would not adversely affect access to churches, schools, public facilities and parks. Grade separations proposed at all existing U.S. highways, state highways, and the majority of county and local road crossings via overpass or underpass structures would maintain facility access. The No-Action alternative would not improve emergency response times or community service accessibility.

Property Values

Property values could increase near proposed interchange locations as land becomes more desirable for commercial and industrial development. Commercial development and associated increased property values are more likely to occur at interchange locations near existing communities such as Monticello and El Dorado.

The value of residential units adjacent to the proposed highway is difficult to predict. Individual home values are based on each owner's and the potential buyer's perception of the benefits of an adjacent highway and would vary on a case-by-case basis.

Secondary Community Impacts

Secondary development may occur as a result of the proposed highway and could affect the daily lives of residents in nearby communities. Potential secondary development would be similar for all alignments. The degree to which secondary development may occur is dependent on many variables and is difficult to precisely predict. Residential areas may become more densely populated, utility and social service demands may increase, and forest, pasture, and croplands may be converted to residential areas or other forms of land use. This growth is likely to occur over an extended period of time and is likely to follow

current residential growth patterns observed in the Project Area where local community officials, planners, developers, and service providers have provided the basic infrastructure (utilities, roads) conducive to residential development.

Secondary development and potential community change can be perceived as both positive and negative. To some, this change is unwanted and development is undesirable as land is converted to residential and commercial uses and area populations increase. However, for others, new development often means new jobs and increased economic vitality that are important quality of life factors in an area where many median household incomes are lower and unemployment levels higher than the statewide averages.

Development that may occur at interchanges could indirectly affect the residents living along these highways. The land directly adjacent to the proposed interchange could change from solely residential to light commercial use such as restaurants and service stations. While nearby residents may enjoy the convenience of these services, the previous rural character of the area would have changed permanently.

The No-Action alternative would not likely result in secondary development or associated change in communities beyond the current development trends.

Community Mitigation

Mitigation of short-term negative construction impacts on local communities would include the provision of appropriate construction detours, informative signing, and maintenance of access to residences, farms, businesses, and community facilities where practicable. Furthermore, AHTD will hold additional public hearings during the final design process to discuss specific community and landowner concerns prior to construction of the highway.

4.1.3 Safety

The construction of I-69 would have an overall positive impact on Project Area highway and public safety, including bicycle and pedestrian safety. However, additional studies may be required to address safety issues (potential increase in traffic) on local highways where interchanges have been proposed. All highway alignments would have a similar effect on safety.

Highway Safety

Safety improvements would primarily include diversion of truck traffic from local roads to the new highway. Diversion of truck traffic to the proposed highway could reduce the need to pass, thereby reducing the potential number of head-on collisions on existing roadways. In addition, all traffic on the proposed highway would encounter fewer access points than on the existing routes within the Project Area, a factor that correlates to accident rates. Traffic traveling on existing roadways frequently

encounter vehicles turning onto or out of side roads or driveways which can lead to accidents.

The No-Action alternative could result in additional traffic accidents, fatalities, and property damage along the Project Area roadways if there is a future increase in traffic volumes and increased congestion.

Pedestrians and Bicyclists

Pedestrian and bicycle activity exists within the Project Area, but is limited to roadways within local communities. Increased traffic on crossroads connecting to the proposed highway could negatively affect pedestrian and bicycle safety. However, pedestrian and bicycle safety could improve as through traffic and truck traffic are diverted to the proposed highway.

The No-Action alternative could result in decreased pedestrian and bicycle safety along the Project Area roadways. The predicted future increases in traffic volumes, particularly truck traffic, and increased congestion in the communities of Monticello, Warren and El Dorado could increase the likelihood of a pedestrian/bicycle collision with motor vehicles.

4.1.4 Relocations

Structures were initially identified on aerial photographic mapping, field verified, and entered into the project GIS for impact assessment. Revisions and updates were made to this information during the Alignment Study to include all currently existing residences and businesses. An effort to minimize residential, business, and community facility impacts was made during both the Corridor and Alignment Studies.

Minimization of residential relocations was identified as a major issue during public involvement meetings. Structures were identified as impacted if they were within the alignment construction limits. All alignments would displace residences, but would avoid all businesses and community facilities within the Project Area (Table 4-2). The Preferred Alignment (Line 5) would have the least amount of residential impacts while Line 1 and 2 would impact the most.

Based on comments received at the June 2004 Public Hearings, additional efforts were made to locate residential structures that may be impacted by the alignments. Two additional residences were identified in the Monticello area and were added to the project database. Table 4-2 has been updated to reflect these efforts.

The No-Action alternative could result in future relocations as minor safety improvements and additional widening or passing lane projects are implemented within the Project Area. All future projects will include measures to minimize relocations to the extent practicable. Due to the existence of numerous residences along area highways, it is reasonable to assume that some impacts to residences would occur as improvement projects are implemented in the future.

Table 4-2
RELOCATION SUMMARY

Alignment	Structure Type			
	Residences	Business	Community Facilities	Total
No-Action*	-	-	-	-
Line 1	16	0	0	16
Line 2	16	0	0	16
Line 3	14	0	0	14
Line 4	10	0	0	10
Preferred (Line 5)	5	0	0	5

Source: Michael Baker Jr., Inc.
*Relocations could occur with widening construction activities, although the extent of these impacts is not known at this time.

Relocation Mitigation

Further steps to minimize relocations will be considered during the final design of the highway. Where avoidance is not possible, the acquisition and relocation process will be conducted in accordance with the Uniform Relocation Assistance and Real Property Policies Act of 1970. Relocation assistance will be made available to all residential relocatees without discrimination as to race, color, national origin, age, sex, or religion. In all cases, AHTD will assure that decent, safe, and sanitary housing is provided for all relocatees.

The availability of residential real estate was reviewed to determine if adequate replacement housing existed within the Project Area for displaced homeowners. In June 2003, the availability of residential housing was determined from information obtained from the Monticello and El Dorado multi-list real estate services and local newspapers. Over 242 homes were available in the El Dorado area with 82 of those homes priced between $50,000 and $150,000. Approximately 20 homes were available in the Monticello area with nine homes priced between $50,000 and $150,000.

AHTD is committed to locating replacement housing within the occupant's financial means and within the general vicinity of the project and when necessary, providing housing of last resort. Real estate availability will be reassessed once final design of the proposed highway has been completed.

4.2 ENVIRONMENTAL JUSTICE

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*, directs all Federal agencies to determine whether a proposed action would have an adverse and disproportionately high impact on minority and or low-income populations. In addition, elderly populations (>65 years old) were also assessed. The objective of the Environmental Justice policy is not to develop alternatives that simply move the impacts from one affected group to another, but to fully and equitably consider

potential project impacts to minority and low-income populations during the project development process.

4.2.1 Methodology

Thirty-one U.S. Census Bureau Census Tracts were identified within the Project Area and initially examined to determine the presence of minority, low-income, or elderly populations within the Project Area (Table 3-8, Exhibit 3-1). Fifteen of these 31 tracts would be crossed by the proposed I-69 alignments. Further analysis of this Census Tract information was conducted to establish county reference populations for comparative purposes in determining disproportionate project impacts. When possible, county reference populations consisted of only those Census Tracts within the Project Area. For example, the proposed project would potentially affect only the populations of portions of western Desha County. It would not be appropriate to compare populations affected by the proposed highway to the overall county populations, which include large areas outside the Project Area that were not considered for the location of the proposed highway. For Ouachita County, due to the nature of the tract location within the Preferred Corridor, the reference population used was the same as the impacted population.

Table 4-3 presents the minority, low-income, and elderly populations potentially affected by all developed highway alignments compared to the appropriate reference population. The majority of Census Tracts traversed by all alignments showed no indication of disproportionate impacts. The shaded cell in the table represents a value considered substantially different than the reference population values and identified Census Tracts where disproportionate impacts may occur. This area was examined in greater detail to determine the extent of any project impacts, positive or negative.

Drew County Census Tract 9902 was the only tract traversed by the proposed alignments with a substantially higher percentage of minorities (60%) when compared to the reference population (33%). A closer field review of Tract 9902 revealed several sites with small clusters of homes on rural roads. These were identified and avoided by all alignments in order to preserve community cohesion.

In addition to the analysis of Census Bureau data, early public involvement identified small clusters of minority residences potentially impacted by one or more of the proposed alignments near Louann on County Road 63, U.S. 63 south of Warren, Wilmar Loop Road east of Wilmar, and Highway 138 and North Section Sixteen Road between Monticello and McGehee. No alignments would disrupt community cohesion or exclude these areas from broader county community activities and services. Lines 1 and 4 have the greatest potential to disrupt individual residences in the North Section Sixteen Road area.

Table 4-3
CENSUS TRACTS POTENTIALLY AFFECTED BY THE ALIGNMENT ALTERNATIVES

County	Census Tract*	Population	% Minority	% 65 and Older	Median Household Income	% in Poverty (Persons)
Desha	9505	2,256	39	12	26,648	21
	9504	3,630	54	15	19,893	33
Desha County Reference Population		10,938	41	14	25,277	27
Drew	9901	2,756	25	12	31,458	16
	9902	2,621	60	10	26,628	18
	9903	5,752	20	13	31,026	17
	9904	3,352	30	15	25,670	22
	9905	4,242	28	13	30,131	16
Drew County Reference Population		18,723	33	13	28,982	18
Bradley	9501	2,825	28	20	23,682	26
	9503	2,397	47	12	23,490	29
	9504	1,913	34	17	28,125	15
	9505	3,465	40	14	23,026	31
Bradley County Reference Population		12,600	37	16	24,977	24
Calhoun	9801	2,896	29	18	26,579	18
	9802	2,848	18	14	30,466	14
Calhoun County Reference Population		5744	24	16	28,522	16
Ouachita	9503	6,193	28	16	34,669	17
Ouachita County Reference Population		6,193	28	16	34,669	17
Union	9504	6,180	22	13	34,167	11
Union County Reference Population		45,629	35	16	29,613	19

Source: U.S. Department of Commerce - Bureau of the Census - 2000 - Census of Housing and Population
*Shading indicates values substantially different than the reference populations

No transit services to minority groups would be impacted by any of the alignment alternatives. No Project Area communities have citywide bus service and no form of inter-community public transportation exists that would be impacted by this proposed project.

No disproportionate impacts to minority, low-income, or elderly population groups would be expected by any of the alignment alternatives.

4.2.2 Environmental Justice Mitigation

Further steps to minimize relocations will be considered during the final design of the highway. Where avoidance is not possible, the acquisition and relocation process will be conducted in accordance with the Uniform Relocation Assistance and Real Property Policies Act of 1970. Relocation resources are made available to all residents and businesses without discrimination.

4.3 ECONOMIC IMPACTS

Economic impacts related to the development of the SIU 13 Project include a temporary increase in construction related employment, an increase in other employment areas, a reduction in travel costs, and additional local and regional income generation from sources such as transportation related taxes. Economic impacts would be similar for all alignments.

4.3.1 Employment Opportunities

Construction of the proposed highway would positively impact local economies of Project Area communities. New employment opportunities would be generated by highway construction activities, in addition to the services required to support a large-scale construction operation. A recent national FHWA study on employment impacts of highway investment, (*Highway Infrastructure Investment and Job Generation: A Look at the Positive Employment Impacts of Highway Investment*, USDOT, FHWA, 1997) found that every $1 billion in Federal-aid highway investment supported approximately 42,100 total full-time equivalent jobs. Jobs were further classified as:

- Direct or on-site highway construction jobs specifically involved with the highway improvement project such as construction laborers, engineers, and construction managers
- Indirect or supply industry jobs at firms that supply equipment, materials, and administrative support
- Secondary or induced jobs are created when construction-based employees spend their wages on various goods and services throughout the area.

An estimate of the number of jobs potentially created by the proposed highway project is shown in Table 4-4.

Table 4-4
ESTIMATED EMPLOYMENT IMPACTS OF HIGHWAY CONSTRUCTION

Job Category (person-years)	Jobs per $1 billion of Construction Costs[1]	No-Action	Build Alternatives (Average in Billion $)[1]
Average Construction Costs (Billions)		$0.00	$0.800
Direct/On-site Jobs	7,900	0	6,320
Indirect Jobs	19,700	0	15,760
Induced Jobs	14,500	0	11,600
Total Jobs	42,100	0	33,680

Source: Michael Baker Jr., Inc., FHWA, 1997
[1]Does not include Right-of-Way costs.

Individual employment projections were not made for each alignment due to the similarity in estimated construction costs. Based on an estimated project cost, approximately 33,680 temporary jobs could be generated by construction of the proposed highway. Actual employment numbers would vary depending on the timing and staging of construction activities. Given the length of the highway, these economic impacts could continue for several years.

Many Project Area residents would benefit from the proposed highway. Increased accessibility to the Interstate system would allow commuting Project Area residents to reach their employment destinations in a safer and more time efficient manner. Access to the Interstate could also expand potential employment opportunities by reducing commuting times to more distant and larger job markets.

It is possible that some highway-related businesses along U.S. 425, U.S. 278, S.H. 7, U.S. 65, and U.S. 63, and S.H. 167 could experience in decreased sales due to a reduction in local traffic. The amount of lost revenue would be dependent on the type of business, the traffic changes that occur, and the proximity to other traffic generators. Highway related businesses that depend in large part on through traffic might be negatively impacted. Impacts to these businesses would also be dependent on their proximity to proposed interchanges.

The No-Action alternative could have a negative economic impact on the Project Area. The No-Action alternative would not result in construction employment, could limit rural resident employment opportunities, and increase travel and vehicle operating costs through a decreasing level of service on area roadways.

4.3.2 Secondary Economic Impacts

Secondary economic impacts would be tied to potential secondary development throughout the Project Area. Secondary development could

provide improved access to the Southeast Arkansas Intermodal Facility. Improved access and development of this facility could in turn provide increased employment opportunities and additional corporate tax revenues for Monticello and Drew County. Secondary development could improve truck access to serve manufacturing and industrial sites and the timber industry in McGehee, Warren, Monticello, Camden, Magnolia, and El Dorado, and oil fields and bromine fields near El Dorado. This could promote expansion and further development in these communities, including growth in residential development and an increase in the demand for consumer services in retail, banking, healthcare and recreation. Additionally, commercial development at interchanges would have varying economic effects on the local economy depending on the extent of this development.

4.4 VISUAL

The proposed highway would alter the urban and rural setting as it moves from El Dorado to McGehee. Visual impacts would take two forms: views of the proposed highway from various points along the alignments and views from the proposed highway of the surrounding landscape. All alignments would have similar visual impacts. The No-Action alternative would not alter the existing visual resources.

4.4.1 Views of the Proposed Highway

Most of the landscape traversed by the alternative alignments from El Dorado to Monticello is dominated by forestland that would provide limited views of the highway. The exception would be for the scattered rural residential development within these areas. Residents that would not be displaced by the highway facility, but who are within close proximity, would experience the greatest visual impact. Other residents living in the relatively flat terrain between Monticello and McGehee would be less affected by views of the highway except in areas where elevated grade separations occur at area road crossings. These areas include the terrain associated with agricultural activities adjacent to Bayou Bartholomew near Selma and McGehee.

4.4.2 Views from the Proposed Highway

The views of the surrounding southeast Arkansas landscape from the proposed highway could be considered a beneficial impact as travelers pass through a predominantly rural viewshed marked by forestland and scattered agricultural activities. Viewshed opportunities may be enhanced at elevated grade separations that would allow motorists expanded views of cotton and soybean fields, extensive pine forests, and distant rural communities. Scenic views of wetland systems would also occur from bridge crossings at the Ouachita and Saline Rivers.

4.4.3 Visual Mitigation

Where practicable, visual mitigation measures could include naturally vegetated medians, minimizing right-of-way clearing, and promoting roadside native wildflower planting programs. Native plants will be considered for roadside re-vegetation where practicable, to improve the visual aesthetics and to control the introduction and spread of invasive species.

4.5 GEOLOGIC RESOURCES

4.5.1 Oil and Natural Gas Resources

Oil and gas well locations were obtained from Tobin International, Inc. for the Preferred Corridor and entered into the Geographic Information System to determine impacts to each alignment. Wells were identified as impacted if they were within 50 feet of the alignment construction limits.

The proposed highway would impact abandoned and active wells. Abandoned wells are defined as producing or non-producing wells that have been plugged to stop the flow of water, oil, and gas. An active well is defined as a well that is capable of producing oil and gas in commercial quantities. Well impacts are summarized in Table 4-5.

Table 4-5
OIL WELL IMPACTS

Alignment	Abandoned	Active
No-Action	0	0
Line 1	4	0
Line 2	4	1
Line 3	3	0
Line 4	3	0
Preferred (Line 5)	4	0

Source: Michael Baker Jr. Inc. Tobin International, Inc.

Impacts to active and abandoned wells would occur to the west of the Ouachita River. Line 2 would impact one active oil well. All alignments would impact abandoned wells. Line 1, Line 2, and the Preferred Alignment (Line 5) would impact an equal number of and the most abandoned wells while Lines 3 and 4 would impact the least. The No-Action alternative would not impact any wells.

The loss of an active oil well may result in economic impacts to the owner of the well and the surrounding property owner. In conjunction with the property acquisition process, a qualified petroleum engineer would conduct a feasibility study to determine estimated reserves. Results of this study would determine whether the well would be replaced or compensation would be provided to the owner of the well based on estimated reserves.

The Arkansas Oil and Gas Commission (AOGC) would be contacted regarding the impact of any active or abandoned well locations by the proposed highway. All wells would be properly abandoned according to the rules and regulations established by the AOGC.

4.5.2 Bromine

Coordination with the Arkansas Geological Commission (AGC) early in the planning process determined that approximately 1,900 acres of Great Lakes Chemical Corporation's West Brine Unit is located within the Preferred Corridor from U.S. 82 to just south of S.H. 160 (See Exhibit 3-2). The location of pipelines, disposal wells, and supply wells within the brine unit was also provided. Although Line 1 and Line 2 veer westward into land designated for the brine unit north of Bethel Road, no pipelines or wells would be impacted by any alignment.

4.5.3 Sand and Gravel

Coordination with the ADEQ's Surface Mining and Reclamation Division identified three sand and gravel mines within the Preferred Corridor near U.S. Highway 167 south of Hampton. Sand and gravel mine permit boundaries are shown on Exhibit 4-1.

All Lines would impact the Samco Pit No. 2 mine located adjacent to Champagnolle Creek. This is an active sand and gravel mine operated by Southern Arkansas Materials Corporation. Line 3 and Line 4 would impact the most land at 8.9 acres while Line 1 would impact the least at 7.4 acres. The Preferred Alignment would impact 8.5 acres of the current operation. If construction begins during the life of this mine, compensation would be provided to the owner based on lost sand and gravel resources.

The South Hampton Quarry mine site, operated by Martin Marietta Minerals, Inc., is located immediately adjacent to U.S. Highway 167 and slightly north of S.H. 172. Line 1 and the Preferred Alignment (Line 5) would impact this site at less than one tenth of an acre. Currently, the South Hampton site is still under reclamation and has not been released by ADEQ. Grading has been completed, but the required vegetative cover has not been established (Stephens, 2003). Adjustments could be made during final design to avoid this reclaimed sand and gravel mine.

The International Mine No. 2 is located approximately 1.3 miles north of S.H. 172 and 3,200 feet east of Loyd Creek. This mine was left abandoned by Jet Asphalt and Rock Company and is still pending reclamation. None of the developed alignments would impact this mine.

Champagnolle Creek

Little Champagnolle Creek

Blann Creek

167

N

W E

S

International No. 2 Mine

Samco Pit No. 2

Line 2

Line 3 & 4

Line 1

Preferred (Line 5)

South Hampton Quarry

Preferred Corridor

172

Creek

167

Loyd

LEGEND

- SAND AND GRAVEL MINE PERMIT BOUNDARY
- LINE 1
- LINE 2
- LINE 3
- LINE 4
- PREFERRED (LINE 5)
- PROPOSED INTERCHANGE

I-69 Location Study
El Dorado to McGehee

Exhibit 4–1

SAND AND GRAVEL MINES

Baker

SCALE IN FEET
0 500 1000 2000 3000

AHTD

4.6 WATER QUALITY IMPACTS

4.6.1 Surface Water Resources

Surface water resources crossed by all alignments include perennial and intermittent streams, bayous, and man-made ponds. Perennial streams crossed by the alignments from west to east include, Bert Creek, Camp Creek, Sandy Creek, Smackover Creek, Brushy Creek, Wolf Creek, North Fork Creek, Blackwater Creek, Mayner Branch, Jim Dunn Creek, Champagnolle Creek, Little Champagnolle Creek, Dunn Creek, Moro Creek, L'Aigle Creek, Beech Creek, Brushy L'Aigle Creek, Flat Branch Creek, Langford Creek, Tenmile Creek, Clear Creek, Godfrey Creek, Adcock Creek, Hurricane Creek, Piney Creek, and Cutoff Creek. Intermittent streams crossed by the alignments include Bear Creek, Lloyd Creek, Rocky Branch, Springhill Creek, California Branch, and Carmichael Creek. Additionally, all alignments would cross the Ouachita River, Saline River, and Bayou Bartholomew. Stream resources are shown on Exhibit 4-2.

The Saline River is considered an Ecologically Sensitive Waterbody, Natural and Scenic Waterway, and an Extraordinary Resource Water by the Arkansas DEQ. The Arkansas Department of Environmental Quality's Regulation No. 2 "Regulation Establishing Water Quality Standards For Surface Waters of the State of Arkansas" provides extra protection for Extraordinary Resource Waters. Water bodies with this designation shall be protected by the highest level of pollution prevention, especially for new road and bridge construction, maintenance of natural flow regime, and protection of instream habitat.

Water quality impacts would be similar for all alignment alternatives and likely be confined to the temporary influx of sediment laden surface runoff associated with culvert and bridge placements during construction activities. No long-term adverse impacts would be expected.

Stream Modifications

Preliminary investigations indicate that stream channel realignments and modifications would occur along each alignment under consideration. The extensive meandering of Project Area streams would likely result in several proposed stream channel modifications that would allow more perpendicular stream crossings and would reduce the overall highway bridge lengths. Any channel modifications and resulting stream mitigation measures will be determined during the final highway design process and will be coordinated with the COE, the U.S. Fish and Wildlife Service, and state agencies as appropriate.

Construction Impacts

In general, construction activities would include removal of existing vegetation during clearing and grubbing that would temporarily expose soils adjacent to stream crossings and within the right-

of-way limits. As a result, a temporary increase in stream sedimentation could occur due to stormwater runoff and would be greatest in the immediate vicinity of the crossings. Suspended solids could adversely impact both aquatic invertebrates (aquatic insects, mussels, and zooplankton) and fishes by altering the existing substrate, reducing light penetration and in-stream photosynthesis, reducing dissolved oxygen, and increasing biological oxygen demand within the water column. Elevated suspended sediment concentrations could cause mortality in adult fish by clogging the gill filaments and preventing normal water circulation and aeration of blood. In addition, excess sedimentation could disrupt species productivity by smothering spawning areas, reducing egg viability, and preventing the emergence of fry.

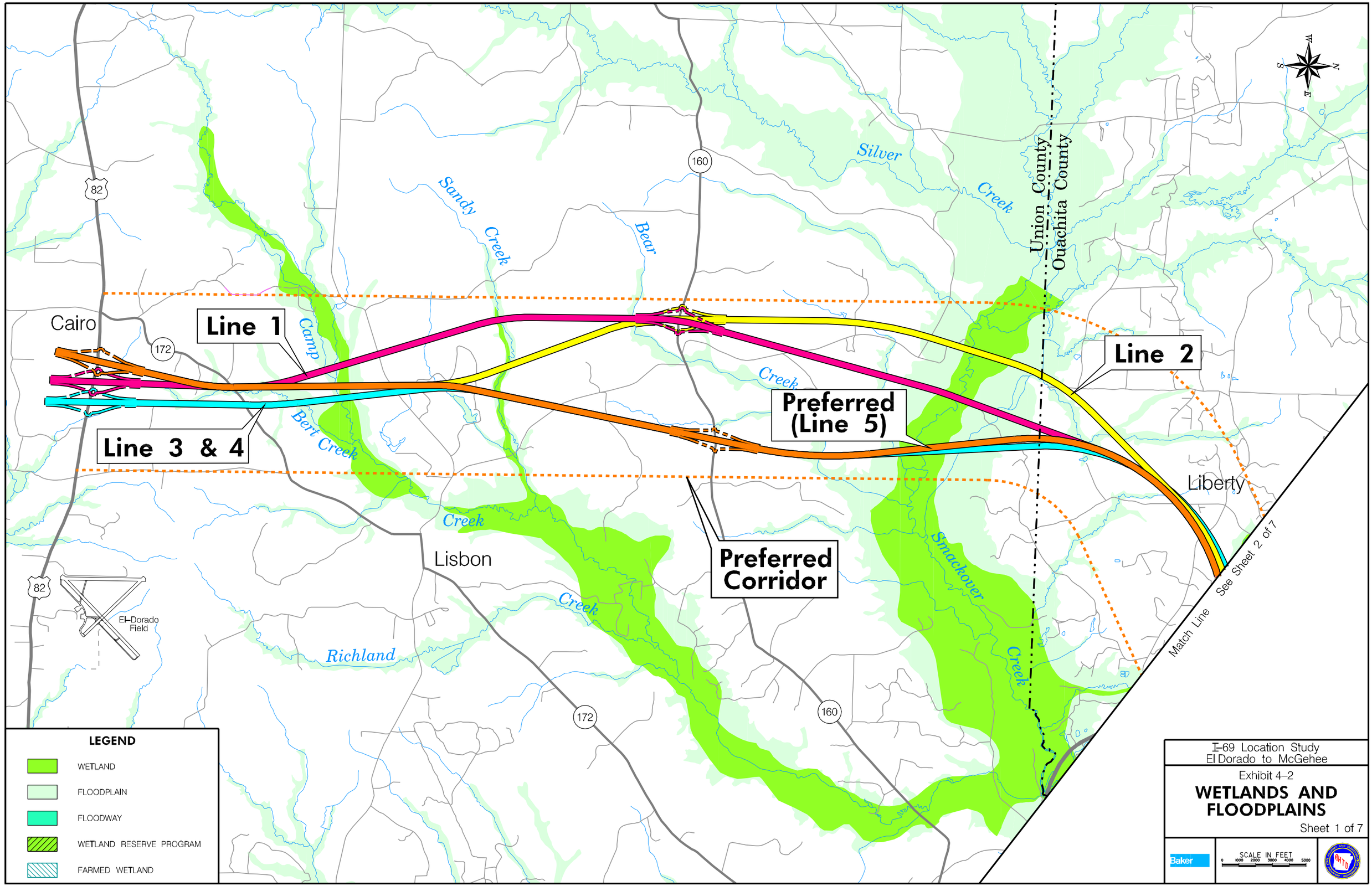
All alignments would cross the same soil types and associated slopes adjacent to impacted streams. The substrate within stream segments crossed is nearly identical from location to location. Therefore, potential construction impacts to the surface water quality would be non-alignment specific and could occur regardless of the alternative selected. Impacts from any of the alignments would be minimized through site specific erosion and sedimentation control measures at all stream and bayou crossings.

Secondary or Operational Impacts

The operation and maintenance of the highway would produce additional sources of surface water pollutants. During highway operation, sources of potential pollutants include vehicles (heavy metals such as copper, lead, and zinc from tire and brake wear, motor oil additives, and vehicle rust) and roadway maintenance practices such as sanding, deicing, and application of herbicides on right-of-way. However, the mild winter climate throughout the Project Area would limit the use of deicing materials. Deicing materials and herbicides have not been found to be significant pollutants in highway runoff (Maestri et. al., 1988).

The rate of deposition and subsequent 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.

The primary mechanism for removal of highway pollutants from the road surface is stormwater runoff. Highway construction would increase the impervious surface in the watershed and would generate additional runoff to receiving streams. The effects of highway runoff on streams are variable and dependent on the length of time since the last storm event, the quantity of stormwater runoff delivered to the stream, volume of flow in the stream, the duration of the storm event, and traffic volume (Barrett et al. 1993).



I-69 Location Study
El Dorado to McGehee

Exhibit 4-2

WETLANDS AND FLOODPLAINS

Sheet 1 of 7

Baker

SCALE IN FEET
0 1000 2000 3000 4000 5000

Preferred Corridor

Line 2

Preferred (Line 5)

Line 1

Line 3 & 4

Match Line See Sheet 1 of 7

Match Line See Sheet 3 of 7

376

7

CO 67

160

Louann

Cross Roads

Smackover

Kenova

Snow Hill

Union County

Ouachita County

Calhoun County

Ouachita River

Bayou Locust

Bayou Mayner

Brushy Creek

North Fork Wolf Creek

Creek

Blackwater Branch

Creek

Little Bay Lake

Ben Davis Lake

Cages Lake

Smackover Creek

Creek

N

W

E

S

LEGEND

- WETLAND
- FLOODPLAIN
- FLOODWAY
- WETLAND RESERVE PROGRAM
- FARMED WETLAND

I-69 Location Study
El Dorado to McGehee

Exhibit 4-2

WETLANDS AND FLOODPLAINS

Sheet 2 of 7

Baker

SCALE IN FEET
0 1000 2000 3000 4000 5000

Preferred (Line 5)

Line 2

Preferred Corridor

Line 1

Line 3 & 4

Hampton

Harrell

Artesian

278

203

274

167

160

172

Champagnolle Creek

Little Champagnolle Creek

Blann Creek

Dunn Creek

Jim Brake

Tom Cook Brake

Loyd Creek

Hurricane Creek

Gilbert Creek

Rocky Branch

Branch

Match Line See Sheet 2 of 7

Match Line See Sheet 4 of 7

N

W E

S

LEGEND

- WETLAND
- FLOODPLAIN
- FLOODWAY
- WETLAND RESERVE PROGRAM
- FARMED WETLAND

I-69 Location Study
El Dorado to McGehee

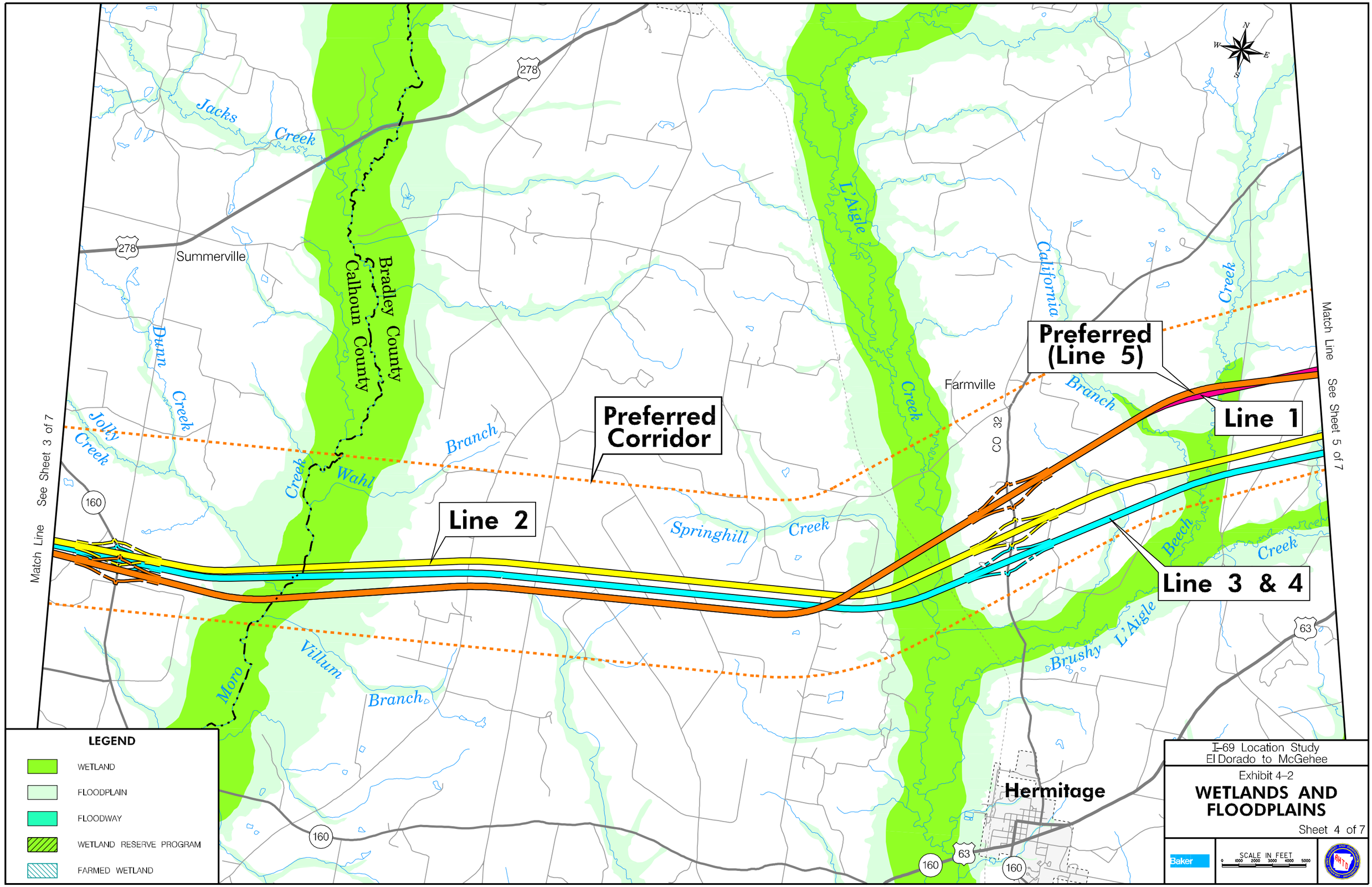
Exhibit 4-2

WETLANDS AND FLOODPLAINS

Sheet 3 of 7

Baker

SCALE IN FEET
0 1000 2000 3000 4000 5000


Jacks Creek
278
Summerville
Bradley County
Calhoun County
Dunn Creek
Jolly Creek
Wahl Branch Creek
Moro Creek
Villum Branch
Springhill Creek
L'Aigle Creek
California Creek
Farmville
CO 32
Beech Creek
Brushy L'Aigle
Hermitage
160
63
Preferred Corridor
Preferred (Line 5)
Line 1
Line 2
Line 3 & 4
Match Line See Sheet 3 of 7
Match Line See Sheet 5 of 7
N
W
E
S
LEGEND
WETLAND
FLOODPLAIN
FLOODWAY
WETLAND RESERVE PROGRAM
FARMED WETLAND
I-69 Location Study
El Dorado to McGehee
Exhibit 4-2
WETLANDS AND FLOODPLAINS
Sheet 4 of 7
Baker
SCALE IN FEET
0 1000 2000 3000 4000 5000
ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

Warren
Wilmar
Carmel
Preferred (Line 5)
Line 4
Line 3
Line 1
Line 2
Preferred Corridor
Carmichael Creek
L'Aigle Creek
Brushy Creek
Saline River
Flat Branch
Tennile Creek
Bradley County
Drew County
63
278
8
133
172
N
W
E
S
See Sheet 4 of 7
Match Line
See Sheet 6 of 7
Match Line

LEGEND

- WETLAND
- FLOODPLAIN
- FLOODWAY
- WETLAND RESERVE PROGRAM
- FARMED WETLAND

I-69 Location Study
El Dorado to McGehee

Exhibit 4–2

WETLANDS AND FLOODPLAINS

Sheet 5 of 7

Baker

SCALE IN FEET
0 1000 2000 3000 4000 5000

AHTD

Future I-530

Line 3

Proposed Road Alignment by AHTD

Line 1

Preferred Corridor

Line 2

Farmed Wetland

Monticello

Monticello Airport

Proposed I-530 Extension

College Heights

Preferred (Line 5)

Enon

Line 4

Preferred Corridor

Langford Creek

Lower Cutoff Creek

Creek

Godfry Creek

Hurricane Creek

Piney Creek

Tenmile Creek

Clear Creek

Adcock Creek

Sandy Creek

Creek

Match Line See Sheet 5 of 7

Match Line See Sheet 7 of 7

35 425 83 138 278 172

N W E S

LEGEND

- WETLAND
- FLOODPLAIN
- FLOODWAY
- WETLAND RESERVE PROGRAM
- FARMED WETLAND

I-69 Location Study
El Dorado to McGehee

Exhibit 4-2

WETLANDS AND FLOODPLAINS

Sheet 6 of 7

Baker

SCALE IN FEET
0 1000 2000 3000 4000 5000

Highway runoff may adversely affect the water quality through short-term loadings associated with storm events and through chronic effects as a result of long-term accumulation and exposure.

Research indicates that runoff from rural highways would generate few substantial impacts with average daily traffic (ADT) of less than 30,000 vehicles and that toxic effects are limited to urban facilities with ADTs exceeding 50,000 vehicles per day (Maestri et al. 1988). Based on the volume of traffic predicted for this proposed highway of approximately 14,000 (total I-69 build out) vehicles per day, no measurable differences in surface water quality would be expected from highway runoff.

Hazardous or toxic materials spills could occur during construction or operation of the proposed highway and could impact area streams. The reporting of hazardous and toxic materials spills is the responsibility of law enforcement or the AHTD District Engineer. Spills are normally reported to the AHTD Telecommunications Operator. The Office of Emergency Service's hotline is called for official notification and response. Clean-up procedures for hazardous and toxic materials spills related to construction are outlined in Section 110, Abatement of Water Pollution, and AHTD Standard Specifications for Highway Construction (2003).

The No-Action alternative would have limited impacts to water resources. Normal roadway maintenance, minor safety improvements, and programmed widening and passing lane construction may result in the temporary influx of sediment laden runoff to area waters.

Surface Water Mitigation

AHTD will comply with all requirements of the Clean Water Act, as amended, for the construction of the proposed project. This includes Section 401 Water Quality Certification, Section 402 National Pollutant Discharge Elimination System (NPDES), and Section 404 Permits for Dredging or Placement of Fill Material. The Clean Water Act declares the discharge of any pollutants into water of the United States from any point source as unlawful, except under terms and conditions of a permit issued under NPDES.

The NPDES permit is required from ADEQ for stormwater discharge for any construction activity disturbing an area of five acres or more and will require the preparation of a Stormwater Pollution Prevention Plan (SWPPP) prior to construction. This plan will include all specifications and best management practices (BMP's) necessary for control of erosion and sedimentation due to construction related activities. The SWPPP will be prepared during final highway design to best integrate the BMP's with the design process. All highway alignments would have similar impacts to

surface and ground water resources, as well as to public water supplies.

Impacts to Project Area streams and bayous will be avoided by bridging perennial streams where practicable. Bridging would minimize the placement of culverts and/or stream relocations. In addition, transverse crossings of perennial streams would be minimized to reduce the use of culverts and pipes. Horizontal and vertical alignment adjustments to reduce the width of the construction limits at all stream crossings will be considered where practicable.

Avoidance of crossing surface water resources is not possible within the Project Area. The developed highway alternatives run roughly west to east, while the existing drainage patterns of regional streams run mainly north to south. Design and construction considerations will be used to minimize potential impacts. Mitigation measures include, but are not limited to:

- Implementation of an ADEQ approved Erosion and Sedimentation Control Plan
- Use of properly sized and engineered culverts for stream crossings to minimize impacts attributed to flood height and flood duration
- Construction of detention treatment facilities where necessary
- Perpendicular stream crossings where practicable.

In addition, the following measures are examples that could be implemented as part of the design and construction phases of this project to reduce impacts resulting from stormwater runoff. These measures include, but are not limited to, the following:

- Scheduling construction activities to minimize exposed area and duration of exposure
- Prompt re-vegetation of all disturbed areas
- Minimize duration of in-stream work by heavy equipment
- Control runoff within the right-of-way limits using temporary stormwater management ponds before discharging into receiving streams
- Use of gentle slopes and wide shallow channels for grassed swales to remove pollutants through filtration, settling, and infiltration
- Designation of impervious areas for construction equipment, vehicle storage, and refueling areas to contain accidental spills

4.6.2 Groundwater Resources

The construction of the proposed highway and subsequent stormwater runoff would have minimal impacts on groundwater quality. Construction would increase the amount of impervious cover within the local watersheds, which would reduce the amount of infiltration to recharge underlying aquifers. However, because of the remaining

amount of undeveloped land available for groundwater recharge, the change in land use associated with the proposed project would have a negligible effect on recharge.

Highway stormwater runoff could provide a potential source of pollutants to the groundwater system. However, through the implementation of a properly designed erosion and sedimentation control plan, minimal impact to groundwater resources would be anticipated.

The No-Action alternative would not impact groundwater resources.

4.6.3 Public Water Supply

No Lines cross any Wellhead Protection Areas (WHPA) within the Preferred Corridor. The majority of public water supply systems with designated WHPA's from El Dorado to McGehee obtain their source of water from the underlying Sparta Aquifer.

The No-Action alternative would not impact public water supplies.

4.7 FLOODPLAINS AND FLOODWAYS

A floodplain evaluation was conducted in accordance with EO 11988, "Floodplain Management", 23 CFR 650, Subpart A, "Location and Hydraulic Design of Encroachments on Floodplains", and US DOT 5650.2, "Floodplain Management and Protection". The locations of 100-year floodplains for creeks and bayous throughout the Preferred Corridor, as identified on Flood Hazard Boundary Maps and Flood Rate Insurance Maps, are shown on Exhibit 4-2.

4.7.1 Floodplain Impacts

Avoidance of impacts to floodplains was not possible due to the numerous drainages encountered along the proposed project. In order to minimize potential floodplain impacts, all alignments were designed to the greatest extent possible to cross the major watercourses at perpendicular or near perpendicular angles. All alignments would have the same number of floodplain encroachments associated with major stream and river crossings as shown on Exhibit 4-2.

Table 4-6 represents a comparison of impacts by alignment. Line 1 would have the greatest impact on floodplains while Line 4 would have the least.

Table 4-6
FLOODPLAIN IMPACTS

Alignment	Acres
No-Action*	-
Line 1	856
Line 2	850
Line 3	820
Line 4	769
Preferred (Line 5)	778

Source: Michael Baker Jr., Inc.
*Floodplain impacts would occur with widening and passing lane construction activities, although the extent of these impacts is not known at the time.

The greatest floodplain impacts would be associated with the Ouachita River, Saline River, and Bayou Bartholomew and would be similar for all alignments. All alignments would have similar smaller floodplain impacts associated with

perennial and intermittent stream crossings as shown in Exhibit 4-2. No regulatory floodways are impacted by any alignment.

The No-Action alternative could result in future floodplain impacts as minor safety improvements and additional widening or passing lane projects are implemented within the Project Area. All future projects will include measures to minimize floodplain impacts to the extent practicable.

Detailed hydraulic studies will be performed during the final design phase of the project to determine any changes in flood elevations due to construction. AHTD and FHWA will review these studies to confirm that adequate measures have been taken to ensure that floodplain encroachment does not increase the risk of flooding to adjacent properties. When final design is completed, construction plans and hydraulic data will be available to the local communities for review, approval, and permitting as specified by local ordinances.

Mitigation measures will continue to focus on avoidance of and/or reduction of encroachment into floodplains during final design of the highway. In addition, where practicable, larger or multiple culverts could be used to reduce floodwater elevations and durations, and bridges could be lengthened to minimize placing fill within the floodplain.

4.7.2 Secondary Floodplain Impacts

Interchange locations within floodplain areas were analyzed for potential secondary development that could promote incompatible floodplain development. Floodplain areas involved were associated with Wolf Creek, L'Aigle Creek, Saline River, an unnamed tributary to Langford Creek, an unnamed tributary to Tenmile Creek, tributary to Godfrey Creek, Clear Creek and associated tributary, Hurricane Creek and associated tributary, Cutoff Creek, and Bayou Bartholomew. Interchange locations are shown in Exhibit 4-2.

All alignments have an interchange proposed at S.H. 7 that would encroach upon the Wolf Creek floodplain. No secondary development would occur for any of the alignments at this location. This interchange would function as a freeway-to-freeway connection and would not accommodate adjacent secondary development.

All alignments would have an interchange proposed at County Road 32 south of Farmville. Line 3 and Line 4 would encroach upon a floodplain associated with L'Aigle Creek. Sufficient undeveloped land exists to the east and west of County Road 32 outside of the floodplain area that could support secondary development.

Line 1 and Line 3 would have proposed interchanges located at U.S. 278 east of Warren. Line 1 would encroach upon floodplains associated with Flat Branch and Tenmile Creek to the east of

S.H. 172. Very little land would be available for development outside of the floodplain. Secondary floodplain impacts due to interchange development could occur at this location.

Line 3 would have a proposed interchange that would encroach upon the floodplain associated with the Saline River. Sufficient land would be available north of the proposed interchange. Existing residential land could be converted to commercial purposes avoiding incompatible floodplain development.

Line 2, Line 4, and the Preferred Alignment (Line 5) would have an interchange proposed south of U. S. 278 between County Road 361 and the Drew/Bradley County Line. All Lines would encroach upon floodplains associated with Tenmile Creek and Flat Branch. Land suitable for development would exist north of the proposed interchange in the vicinity of County Road 361.

Line 1 and Line 3 would encroach upon floodplains associated with an unnamed tributary to Langford Creek with the intersection of the future I-530 south of the Barkada community west of Monticello. Sufficient land exists in this area for secondary development.

Additionally, Line 1 and Line 3 have a proposed interchange at S.H. 138 east of Monticello that would encroach upon the floodplain of Godfrey Creek. Sufficient undeveloped land is available that could support secondary development east of S.H. 138.

Line 2, Line 4, and the Preferred Alignment (Line 5) would have a proposed interchange with the future I-530 south of the planned Southeast Arkansas Intermodal Facility that would encroach upon the floodplain of an unnamed tributary to Tenmile Creek. Sufficient land is suitable for secondary development at this location.

Line 2, Line 4, and the Preferred Alignment (Line 5) would have a proposed interchange at U.S. 425 that would have a minor encroachment upon a floodplain associated with an unnamed tributary to Clear Creek south of Monticello. Sufficient undeveloped land exists at this location that could support secondary development.

Line 2, Line 4, and the Preferred Alignment (Line 5) would have a proposed interchange at S.H. 35 east of Monticello. Line 2 would encroach upon the floodplains associated with Jordan and Adcock Creeks. Sufficient land is suitable for secondary development west of the interchange along S.H. 35. Line 4 and the Preferred Alignment (Line 5) would encroach upon the floodplain of Adcock Creek. Sufficient undeveloped land would be suitable for secondary development north and south of S.H. 35.

Line 2 would have a proposed interchange at U.S. 278 east of Monticello that would encroach upon a floodplain associated with Hurricane Creek and an

unnamed tributary to Hurricane Creek. Sufficient land is available north of U.S. 278 that would support secondary development.

All alignments would have an interchange proposed at S.H. 293 south of the Selma community that would encroach upon the floodplain of Cutoff Creek. All alignments would have sufficient land outside the floodplain for secondary development.

All alignments have an interchange proposed at U.S. 65 north of McGehee that encroach upon the floodplain associated with Bayou Bartholomew. Avoidance of the Bayou Bartholomew floodplain is not practicable at this location due to the expansive nature of the floodplain. However, suitable land exists on the western side of U.S. 65 that could support secondary development.

4.8 WETLANDS

4.8.1 Methodology

Potential wetland systems were initially identified using color infrared aerial photography (CIR, 1"=2,000') and USDA Soils Survey mapping. Identified wetland systems were entered into the project GIS as part of the environmental inventory conducted during the Corridor Study phase of the project. This information was overlaid on project aerial photography and was used to aid in field verification of potential wetlands.

Soil survey information was obtained from the Ashley, Chicot, Desha, Drew, Bradley, Calhoun, and Ouachita County published USDA Soil Surveys and was reviewed to determine areas containing hydric soils. Soils maps for Union County were reviewed at the NRCS office. Large areas of hydric soils that did not correspond to the photo interpreted wetland information were further investigated in the field.

In addition, NRCS offices were contacted to obtain information on farmed or prior converted wetlands. Farmed wetlands are wetland areas that have been manipulated and used to produce an agricultural commodity prior to December 23, 1985, but continue to be seasonally flooded for at least 15 consecutive days during the growing season at least once every two years. Farmed wetlands still meet the COE wetland delineation criteria and are considered as jurisdictional or regulated wetlands.

Coordination with NRCS identified several potential farmed wetland sites located in Drew County within the Project Area. Most of these sites are associated with agricultural fields near Bayou Bartholomew.

Using the above information, wetland areas potentially impacted by the alignment alternatives were field verified (where reasonably accessible and where landowner permission was granted) using the methods outlined in the Corps of Engineers *Wetlands Delineation Manual* (COE Manual, January, 1987). Where access was

limited, verification of wetlands was based on aerial photography and soil survey information. The Corps of Engineers was involved at all stages of project development, has participated in alignment field reviews, and has been consulted regularly with respect to the wetland issues on this project. The COE has concurred with the methodology employed to date to address wetland resources. This effort provides the necessary detail to consistently compare potential wetland impacts between alternatives and provides a foundation for wetland mitigation requirements and discussions.

Continuing coordination between the COE and AHTD will assure that all regulatory concerns are adequately addressed. During the final design process continued efforts will be made to further avoid and/or minimize wetland impacts through consideration of design alternatives. The Section 404 permit application will be prepared and submitted to the Corps of Engineers for review after the Record of Decision has been signed.

A general wetland function and value assessment was conducted for potentially impacted wetlands using guidance found in the Corps Descriptive Method (CDM) evaluation (COE, 1995) using a “best professional judgment” approach and is presented below. For the majority of the Project Area, functions and values of individual wetlands crossed by each alignment were similar. Most individual wetlands were crossed by all alignments in similar landscape settings and in close proximity to one another.

4.8.2 Impact Assessment

All wetlands identified within the Preferred Corridor were evaluated in accordance with Executive Order 11990 entitled "Protection of Wetlands". Wetland types and boundaries were placed into the GIS to determine total wetland size and encroachment for each alignment. Impacts are based on the wetland area within the alignment construction limits. Due to the relative number and spatial distribution patterns of wetland communities within the Project Area, as well as a thorough consideration of other environmental concerns including existing topography, residential structures, and communities, a practicable alignment that avoids all wetlands is not possible for any of the alignment alternatives. However, throughout alignment development, wetland impacts were minimized to the greatest extent practicable in accordance with the Section 404 b(1) Guidelines.

Wetland impacts are presented in Table 4-7. As individual wetland impacts associated with each alignment occurred in similar landscape positions and had similar functions and values, wetland impacts were compared across the alternatives by calculating and presenting total acreage impacts.

Table 4-7
TOTAL WETLAND IMPACTS (ACRES)

	Forested	Herbaceous	Farmed	Total
No-Action	-	-	-	
Line 1	332	18	0	350
Line 2	314	16	0	330
Line 3	332	17	0	349
Line 4	305	15	0	320
Preferred (Line 5)	256	14	0	270

Source: Michael Baker Jr., Inc.

All alignments would impact wetland resources. The Preferred Alignment (Line 5) would impact the least amount of wetlands (270 acres), while Line 1 and Line 3 would have the greatest impacts (350 and 349 acres respectively). The majority of wetland impacts would be to Palustrine Forested Wetland systems (PFO) adjacent to area streams, bayous, and rivers.

Other construction related impacts could occur including but not limited to erosion and sediment deposition, and altering water regimes and water quality. The majority of these impacts are temporary in nature and their severity can be mitigated during construction through implementation of the following:

- Wetlands outside the construction limits will not be used for construction support activities (borrow sites, waste sites, storage, parking access, etc.)
- Clearing of wetland vegetation will be limited to the minimum required for job completion
- Ensuring that all appropriate measures will be taken to protect the water quality of adjacent wetlands through the use of straw bales, silt fencing, and seeding and mulching.

Wetland impacts could also result from the relocation of utilities (electric, gas, water and sewage transmission lines). These issues were considered during the alignment development process. The proposed highway has been developed on new location and as such, involvement with major utilities has been minimized.

Alternatives Analysis

To more definitively assess and discuss potential wetland impacts, the Project Area was divided into five discrete sections based on wetland geographic location and vegetative and hydrologic characteristics. This provides a more detailed discussion of dominant wetland vegetation and of general wetland functions and values for wetlands in these areas. Wetland impacts by section are provided in Table 4-8.

Section 1: U.S. 82 to S.H. 7

Five separate wetlands would be impacted by all alternatives in this section of the project. Impacted wetlands located between U.S. 82 and S.H. 7 consist of narrow wetland systems associated with minor creeks such as Camp Creek, Sandy Creek, Smackover Creek, and Brushy Creek.

Table 4-8
WETLAND IMPACTS ASSESSMENT

SECTION	LINE	ACRES IMPACTED	COMMENTS
1	*1	22	The Preferred Alignment best minimizes residential and agricultural impacts and wetland impacts in this section.
	2	26	
	3	28	
	4	28	
	Preferred (Line 5)	28	
2	1	92	The Preferred Alignment minimizes wetlands in this section.
	2	78	
	3	120	
	4	120	
	Preferred (Line 5)	78	
3	1	65	The Preferred Alignment minimizes wetland impacts in this section.
	2	69	
	3	75	
	4	75	
	Preferred (Line 5)	65	
4	1	149	The Preferred Alignment minimizes wetland impacts in this section.
	2	134	
	3	103	
	4	75	
	Preferred (Line 5)	75	
5	1	22	Wetland impacts are similar for all alignments in this section.
	2	23	
	3	23	
	4	22	
	Preferred (Line 5)	23	

Source: Michael Baker Jr., Inc.
*Shaded areas represent least impacts for each section.

Dominant overstory species include water oak (*Quercus nigra*), sweetgum (*Liquidambar styraciflua*), green ash (*Fraxinus pennsylvanica*), American elm (*Ulmus americana*), and red maple (*Acer rubrum*). Primary functions and values identified for these wetlands include floodflow alteration, nutrient removal/retention, and wildlife habitat. Some functions may be limited due to development and alteration of the surrounding landscape. Impacts are similar for all lines in this section ranging from approximately 22 to 28 acres.

Section 2: S.H. 7 to U.S. 167

Six separate wetlands would be impacted by the alternatives in this section, the vast majority (> 90 percent) located in the Ouachita River floodplain east of the Ouachita River. A narrow band of wetlands occur on the river's west side due

to higher topographic elevations. The Ouachita River Basin wetlands complex is predominantly a forested system that includes a mix of bottomland hardwood forest, pine-hardwood mixed forest, pine flatwoods, and cypress sloughs. Cypress-dominated wetlands were avoided by all alternatives in this river basin. Areas described as part of this complex include all impacted wetlands west of U.S. 167.

Dominant overstory species include loblolly pine (*Pinus taeda*), water oak, willow oak (*Quercus phellos*), nuttall oak (*Quercus nuttallii*), overcup oak (*Quercus lyrata*), sweetgum, red maple, cypress (*Taxodium distichum*), and tupelo (*Nyssa aquatica*). Primary functions and values identified for these wetlands include floodflow alteration, flood storage, nutrient removal/retention, wildlife habitat, recreation, and aesthetics.

Lines 2 and 5 would impact the least wetland acreage in this section. Lines 2 and 5 impact approximately 14 acres less than Line 1 and approximately 42 acres less than Lines 3 or 4.

Section 3: U.S. 167 to U.S. 63

The alignment alternatives in this section impact five wetlands associated with Moro and L'Aigle creeks. Both systems are medium sized with many meandering, thread-like channels. Bottomland hardwood forests are the principal wetland community. Dominant overstory species include water oak, willow oak, nuttall oak, cypress, red maple, river birch (*Betula nigra*), slippery elm (*Ulmus rubra*), and loblolly pine. Primary functions and values identified for these wetlands include floodflow alteration, nutrient removal/retention, wildlife habitat, recreation, and aesthetics.

Impacts in this section vary slightly between alternatives with Lines 1 and 5 taking approximately 65 acres and Lines 3 and 4 taking approximately 75 acres.

Section 4: U.S. 63 to U.S. 425

The major wetland system crossed by all alignments in this section is in the Saline River Basin. Lines 1 and 3 cross this system north of U.S. 278 and do not encounter any other wetlands in this section, while Lines 2, 4, and 5 cross this system south of U.S. 278 and another small wetland area associated with Tenmile Creek. Wetland systems in this area include bottomland hardwoods, bottomland hardwood/pine mixed forests, pine flatwoods, and palmetto scrub/shrub flats. Dominant overstory species include water oak, willow oak, loblolly pine, slippery elm, sycamore (*Platanus occidentalis*), ironwood (*Carpinus caroliniana*), and palmetto (*Sabal minor*). Primary functions and values identified for these wetlands include floodflow alteration, flood storage, nutrient removal/retention, wildlife habitat, recreation, and aesthetics.

Lines 4 and 5 would impact approximately 75 acres of wetlands each, while Lines 1, 2, and 3 impact

149 acres, 134 acres, and 103 acres, respectively. Furthermore, Lines 4 and 5 cross the Saline River as close to U.S. 278 as practicable, minimizing encroachments on this extensive wetland system. Early resource agency coordination had identified this crossing location as the best opportunity to minimize impacts in this area. This was further verified at the June 2003 field review by all participating resource agencies, including the EPA, COE, and Arkansas Natural Heritage Commission.

Section 5: S.H. 425 to U.S. 65

The principal wetland system in this section is Bayou Bartholomew. Additionally, there are several creek systems containing minor impacted wetland acreages between Monticello and McGehee, such as Cutoff Creek and Hurricane Creek. This section has the least impacts of the sections discussed with a maximum of 23 acres of wetlands affected.

Bayou Bartholomew, located on the western reaches of the Mississippi Alluvial Valley has a history of meandering and changing course leaving behind cypress dominated oxbow lakes, cypress brakes, and depressional wetlands. This section is very different from the previous section in that it is flat with rich alluvial soils perfect for row crop agriculture. Consequently most of this area has been developed for farming and few wetlands remain. Great effort was made in the alignment planning process to avoid impacts to these remaining wetlands.

Substantial effort was made to avoid and minimize wetland impacts to the Bayou Bartholomew channel and the surrounding cypress and hardwood wetlands that remain in a dispersed pattern amid the agriculturally dominated landscape.

This is the only section in the Preferred Corridor that has farmed wetlands. These wetlands are primarily located east of Bayou Bartholomew and are not impacted by any of the proposed alignments.

Dominant overstory species include cypress, tupelo, slippery elm, willow oak, sweetgum, and water oak. Primary functions and values identified for these wetlands include flood flow alteration, flood storage, nutrient removal/retention, wildlife habitat, recreation, and aesthetics.

Impacts are very similar in this section with 22 or 23 acres of wetlands affected for all proposed alternatives.

Other than limited water quality and wildlife habitat impacts, no long-term effects on any of the primary wetland functions and values are expected from construction of any of the proposed alignments. In addition, wetland impacts would not substantially affect any area or regional wetland functions and

values. Wetland impacts for this project will be locationally specific, relatively minor in scope, and are not expected to decrease surrounding wetland's functions and values.

The No-Action alternative would likely avoid areas of larger wetlands, but could result in future minor wetland impacts as minor safety improvements and additional widening or passing lane projects are implemented within the Project Area. All future projects will include measures to minimize wetland impacts to the extent practicable.

4.8.3 Post Draft EIS Wetland Activities

Based on DEIS comments received from the U.S. Department of Interior (see Table 7-7 in Section 7), additional investigations where conducted along the Preferred Alignment to identify potential areas for sand hill seep wetlands. This specific type of wetland was identified within the Preferred Corridor by ANHC and USFWS personnel. These ecosystems are rare in Arkansas and can support unique plant communities. A review of the area between the Ouachita River and the Saline River using NRCS soils maps and through consultation with ANHC and USFWS personnel, identified 5 potential wetland seeps near the Preferred Alignment. A field review was conducted in October 2004 with the USFWS and the COE to investigate these sites. No seep wetlands or unique plant communities were observed at any of these 5 locations along the Preferred Alignment.

4.8.4 Wetland Finding

The identification of the Preferred Alignment has followed the multi-step project development approach that allowed avoidance and minimization of potential impacts to waters of the United States including wetlands to avoidance at both the corridor and alignment level.

Based on the wetland analysis conducted to date, it is determined that there is no practicable alternative to the proposed construction of the Preferred Alignment in wetlands. The Preferred Alignment includes all practical measures to minimize harm to wetlands as specified in Executive Order 11990.

4.8.5 Secondary Wetland Impacts

Interchange locations were examined to determine potential wetland impacts due to secondary development. The interchanges for Lines 2 and 4 with U.S. 278 east of Warren were relocated farther east to reduce potential secondary wetland impacts. This relocation required the addition of an access road linking I-69 to U.S. 278. A more efficient approach would have been to place an interchange at S.H. 172, which already provides access to U.S. 278, but the alternative described above was selected to minimize both direct and secondary impacts to wetlands.

With the exception of the U.S. 278 interchanges that include small portions of wetlands, the interchange locations proposed for all alignments do not contain

wetland areas. Land cover adjacent to existing highways that provide direct access to the proposed interchanges was also examined for wetland areas. Studies have found that the majority of interchange development in rural areas occurs within 0.5 miles of the interchange (Hartgen and Kim 1998). With the exception of U.S. 278 and County Road 32 south of Farmville, no wetlands occur along existing highways within one mile of the remaining proposed interchanges, and sufficient non-wetland areas exist to accommodate potential secondary development. Development and subsequent impacts to wetlands at any location would require coordination with the COE and other permitting agencies and would require an Alternatives Analysis documenting avoidance, minimization of impacts and possibly a mitigation plan.

The two proposed interchanges that would connect with the future I-530, one south of U.S. 278 and one north of U.S. 278 do not contain wetlands. Approximately one mile south of the southern proposed interchange there are wetlands associated with Tenmile Creek. However, according to AHTD there are no current plans to extend I-530 farther south, therefore these wetlands should not be impacted by foreseeable future development.

4.8.6 Wetland Mitigation Requirements

Wetland area lost due to construction of the proposed project would be replaced through mitigation activities. Coordination with the COE is on-going. Forested and herbaceous wetlands would be replaced at a ratio to be determined by application of the Charleston methodology for compensatory mitigation. Final mitigation ratios and requirements will be determined in conjunction with the Section 404 Permit process that will be finalized after the issuance of the Record of Decision for this project.

4.9 NATURAL COMMUNITIES

Impacts to terrestrial and aquatic communities would primarily result from the conversion of existing land to highway right-of-way (Table 4-9). Land conversion impacts to seven broad natural communities for each alignment were assessed using 1999 land use data sets in 247 acre blocks developed by University of Arkansas' Center for Advanced Technologies (CAST 100). These communities are described in Section 3.

Impacts are based on the area within the alignment construction limits. Wetland community impacts are described in detail in Section 4.8.

Impacts are similar for all Lines except where discussed. Pine and pine-mixed forest community types would be the most affected by all alignments. This is consistent with the dominant community types in the region.

Table 4-9
NATURAL COMMUNITY IMPACTS

Alignment	Community Types						
	PF (ac)	DAF (ac)	DSF (ac)	DUF (ac)	MF (ac)	PO (ac)	A (ac)
No-Action	0	0	0	0	0	0	0
Line 1	1,675	1,176	440	1,329	2,340	1,727	341
Line 2	1,964	1,114	430	1,178	2,933	1,796	415
Line 3	2,110	1,191	445	1,225	1,977	1,771	375
Line 4	2,100	1,117	477	1,127	2,908	1,692	375
Preferred (Line 5)	1,796	1,050	484	1,216	2,988	1,638	375

Source: Michael Baker Jr., Inc. PF=pine forest; DAF= deciduous alluvial forest; DSF= deciduous swamp forest; DUF= deciduous upland forest; MF= mixed hardwood/pine forest; PO= pasture and open land; A= agricultural land

Aquatic community impacts would be limited to the conversion and filling of several isolated ponds, primarily used for irrigation and cattle production, and increased levels of sedimentation at stream crossings during construction. Increased sedimentation could adversely impact both aquatic invertebrates and fishes and cause temporary habitat degradation for a number of species.

No terrestrial or aquatic species populations would be eliminated due to construction of any of the alignments. Some individual species mortality would occur to less mobile species, such as reptiles and amphibians during initial construction activities. Construction of the alignments would convert existing habitat communities to early successional grassy or shrubby vegetation commonly associated with highway right-of-way.

Potential wildlife impacts would likely follow those observed on other similar existing highways. Wildlife mortality will occur from road construction and collision with vehicles (Trombulak and Frissell 1999, Carr and Fahrig 2001, Gibbs and Shriver 2002). Vehicular traffic can be a major source of mortality for some species, particularly slow moving species such as turtles and amphibian species whose life cycles involve migration between upland and wetland habitats (Gibbs and Shriver 2002, Steen and Gibbs 2004, Fahrig et al. 1995, Hels and Buchwald 2001). In general, mortality increases with traffic volume, but adjacent and median habitat composition are also contributing factors (Tromblak and Frissell 1999).

Many wildlife species including cottontail rabbits, white-tailed deer, red fox, coyotes, a variety of small mammals, and a number of bird species would be able to utilize the new habitat created by the right-of-way and its associated edge. No community types would be extensively impacted based on their overall availability within the Project Area. For example, the greatest impacts would

occur to pine forests, which are the dominant community types comprising thousands of acres in the project and surrounding areas. As such, wildlife species that are unable to adapt to the limited right-of-way environment could relocate to suitable surrounding habitats. However, most species found within the Project Area display a broad habitat distribution and are not restricted to any particular habitat types.

The No-Action alternative would result in future land use impacts as minor safety improvements and additional widening or passing lane projects are implemented within the Project Area. All future projects will include measures to minimize land use impacts to the extent practicable.

4.9.1 Secondary Impacts

Wildlife mortality may result from secondary development as habitat is altered for commercial, industrial, or residential development. Roadway operation would continue to impact wildlife species through mortality resulting from collisions with motor vehicles. For most Project Area wildlife species, vehicle related mortality would not directly impact the overall survival of any species. In general, most wildlife species found within the Project Area are broadly distributed across southern Arkansas. It is unlikely that highway mortality would pose a serious threat to the continued existence of any of these species.

4.10 THREATENED AND ENDANGERED SPECIES

Coordination with the USFWS, the ANHC, and the Arkansas Game and Fish Commission (AGFC) is on-going and has occurred throughout the project development process. Representatives from the COE, USFWS, ANHC, and the AGFC participated in the June 2003 field review of the preliminary alignments and no issues or concerns were raised regarding threatened or endangered species or state species of special concern. The USFWS has reviewed the Project Area in accordance with the Endangered Species Act and the Fish and Wildlife Coordination Act and has identified six federally listed species that may occur within the Project Area; the plant *Geocarpon minimum,* the red-cockaded woodpecker, the pink mucket, the winged mapleleaf, the bald eagle, and the Florida panther. Potential involvement with these species at the Corridor and Alignment phases of study was fully evaluated.

4.10.1 Geocarpon minimum

During the Corridor Study, potential habitat for the plant *Geocarpon minimum* was identified through early coordination with the ANHC and a review of the soil surveys of Drew and Bradley counties for areas of Lafe, Foley, or Bonn soils. The Preferred Corridor avoided these soil types which are known locations for this species, and areas of saline soils southwest of Wilmar in the Warren Praire Natural Area. The ANHC concurred with the Preferred

Corridor location in this area during the June 2003 field review. All alignments avoid known habitat and locations for *Geocarpon minimum* and would not impact this species.

4.10.2 Red-cockaded Woodpecker

Early coordination with the ANHC and large property owning timber companies (Plum Creek, Deltic Timber, and Potlatch) identified all known red-cockaded woodpeckers (RCW) locations and potential red-cockaded woodpecker habitat within the Project Area. This early identification of known RCW locations enabled the development of a corridor and then subsequent alignments that avoid these areas. With the exception of one known RCW location in the Farmville area, all alignments are more than a mile from known RCW locations in the Project Area. Lines 3 and 4 are located less than one-half mile from an established and active RCW location southeast of the Farmville community in Bradley County and Line 2 is within a half mile of an inactive RCW location. Lines 1 and 5 are located north of and more than one mile away from the active site and more than one half mile from the inactive site.

Consideration was also given to identifying potential RCW habitat. Discussions with area RCW biologists determined that all alignments would impact some potential RCW habitat, particularly foraging habitat; however, these impacts were not quantified at this time. Due to the long term nature of this project, unknown future timber harvesting schedules, and the continual flux in RCW populations, conducting more extensive potential habitat or species surveys would not be prudent at this time. A more intensive survey for RCWs and its habitat will be conducted in conjunction with the final design process. Coordination with the FWS will continue to ensure that this issue is adequately addressed and resolved prior to highway construction.

4.10.3 Pink Mucket Mussell

This federally endangered mussel is found in sand and gravel and in shallow riffles and shoals swept free of silt in major rivers and tributaries. Coordination with FWS and ANHC identified no known locations of the pink mucket that would be impacted by any of the highway alignments. If appropriate, a more intensive survey for the pink mucket will be conducted of potential habitat in conjunction with the final design process. Coordination with the FWS will continue to ensure that this issue is adequately addressed and resolved prior to highway construction.

4.10.4 Winged Mapleleaf

This federally endangered mussel was historically found in well preserved large to medium-sized clear-water streams in riffles or on gravel bars. Coordination with the AGFC identified no known locations of the winged mapleleaf that would be directly impacted by any of the highway alignments.

Known locations of this species occur approximately four river miles upstream of the proposed Ouachita River crossing. If appropriate, a more intensive survey for winged mapleleaf will be conducted of potential habitat in conjunction with the final design process. Coordination with the AGFC and FWS will continue to insure that this issue is adequately addressed and resolved prior to highway construction.

4.10.5 Bald Eagle

The proposed project would not impact any known locations of bald eagle nests and would not impact the existing bald eagle population in Arkansas. Coordination with the FWS, ANHC, and the Arkansas Game and Fish Commission located no active nests within the Preferred Corridor. However, potential nesting and foraging habitat does exist and if appropriate, a more intensive survey for bald eagle nests will be conducted in conjunction with the final design process. Coordination with the FWS will continue to ensure that this issue is adequately addressed and resolved prior to highway construction.

4.10.6 Florida Panther

Although historically present in Arkansas, the current population of Florida panthers resides within the state of Florida. The proposed project would have no impact on this species.

4.10.7 Species of Special Concern

No locations of state species of special concern identified by the ANHC would be impacted by any of the alignments. Many of these locations and associated species were found within one or more of the ANHC Natural Areas that were avoided by the Preferred Corridor. Continuing coordination with the AHNC is proposed through the final design stage to avoid, as far is reasonable, impacts to small refugia for important species that may not be currently identified.

The No-Action alternative could impact several locations of state species of special concern within the Project Area that are adjacent to existing roadways through routine state or county maintenance of shoulders and right-of-ways, and in conjunction with widening or passing lane construction projects.

No secondary impacts to state species of special concern would be anticipated from construction or continued use of the proposed highway.

4.11 NATURAL AREAS

Early project coordination with the ANHC identified ANHC natural areas and potential natural areas within and near the Project Area that were considered during both the Corridor and Alignment Studies. The Preferred Corridor and all alignments avoid all of these areas.

In addition to the ANHC natural areas, Bayou Bartholomew was identified by many resource agencies as well as the Bayou Bartholomew Alliance as an important resource within the Project Area. Bayou Bartholomew has been the focus of private, state, and Federal conservation and restoration efforts in recent years and was considered as an important resource in project development.

Bayou Bartholomew is a winding convoluted bayou system for which a straight line crossing east and west often crosses over the bayou as many as three times. The selected alignments cross over the bayou only once, minimizing potential impacts.

4.11.1 Farmland Soils

All alignments would impact soils identified as prime and statewide important farmland (Table 4-10Table 4-10).

Table 4-10
FARMLAND IMPACTS

Alignment	Prime Acres	Statewide Important Acres
No-Action	-	-
Line 1	2138	145
Line 2	2517	299
Line 3	2104	146
Line 4	2353	273
Preferred (Line 5)	2199	259

Source: Michael Baker Jr., Inc.

A Farmland Conversion Impact Rating Form (Form AD-1006) was completed and forwarded to the appropriate NRCS office for review and completion. The completed forms are included in the Appendix.

The NRCS offices have reviewed the alignments to determine whether any are candidates for protection measures. The Farmland Protection Policy Act (FPPA) states that if the site assessment for any project alternative receives a score of 160 points or higher (Form AD-1006), then the site should receive consideration for farmland protection measures. The NRCS has determined that none of the alternatives exceed 160 points or higher in Union, Ouachita, Calhoun and Bradley Counties. Line 2, Line 4, and the Preferred Alignment (Line 5) exceed 160 by 0.8 points in Drew County. All Lines exceed 160 points in Desha County by 15.4 points.

Line 2 would impact the greatest amount of prime farmland and statewide important soils. Line 3 would impact the least amount of prime farmland soils while Line 1 would impact the least statewide important soils. Impacts to farmland soils in active agricultural production were minimized to the extent practicable.

The No-Action alternative would result in farmland impacts associated with widening and passing lane construction activities, although the extent of these impacts is not known at this time.

Secondary development at interchanges may result in additional impacts to farmland soils. These impacts cannot be quantified at this time.

Due to the extensive agricultural activity in this portion of the Project Area in Drew and Desha counties, there is no highway alternative that would avoid impacts to this resource. The alternative alignments were developed to the greatest extent practical to minimize impacts to productive farmland.

4.11.2 Active Farms

Four distinct areas of land are designated for row crop production between Monticello and McGehee. Line 4 and the Preferred Alignment (Line 5) would impact farming operations immediately adjacent to U.S. 278 east of Hurricane Creek. Avoidance of this farming operation is not practicable at this location. Westward avoidance would increase residential impacts along U.S. 278 and eastern avoidance would increase potential wetland impacts associated with Sandy Creek and Piney Creek.

All Lines would impact a large farming operation along S.H. 138 east of Shady Grove Church. Avoidance of this farming operation is not possible at this location. Northern avoidance would encroach upon the floodplains and potential wetlands associated with Cutoff Creek and Godfrey Creek. Southern avoidance would result in potential wetland impacts associated with Cutoff Creek, the Casey Jones Wildlife Management Area and residential impacts along U.S. 278.

All lines would impact farming operations north of U.S. 278 and west of North Sixteenth Section Road. Avoidance of the farming operation is not possible at this location. Northern avoidance by Line 2, Line 3, and the Preferred Alignment (Line 5) would impact another farming operation and an area designated within the Wetland Reserve Program. Additionally, an increase in residential impacts would occur along North Sixteen Section Road. Southern avoidance by Line 1 and 4 would result in increased wetland impacts associated with Cutoff Creek and the Casey Jones Wildlife Management Area.

The easternmost farming operations extend from S.H. 277 east of Selma to U.S. 65. All alignments would have similar impacts. The primary consideration for the location of the alternative alignments in this portion of the Preferred Corridor was for compatibility with the future I-69 Mississippi River crossing alignment. Due to the extensive nature of farming operations and wetlands adjacent to and within Bayou Bartholomew to the north and south, avoidance of farming operations is not possible in this area.

Impacts to this farmland have been minimized to the extent practicable given the number of surrounding residential and environmental

constraints. Final assessments of farm and other property access issues will occur during final design of the proposed highway and as part of any right-of-way acquisition process.

4.12 CULTURAL RESOURCES

The identification and assessment of potential cultural resource impacts within the Project Area was based on a review of available records regarding archeological and historic resources in the region. These records were evaluated with regard to the archeological regions in the State Plan (Davis 1994) and geographical settings that might influence the location of past settlements and sites. Records reviewed included: lists of properties on the National Register of Historic Places (NRHP) and historic structure data; reports, files, and maps pertaining to previous archeological and historic surveys conducted in the Project Area; Automated Management of Archeological Site Data in Arkansas (AMASDA) data files; historic county maps; early Government Land Office plats; early railroad and trail maps; and geographic site reports for early post offices and mail routes. Within the Project Area, 849-recorded sites were located and transferred to project mapping. High probability areas for unrecorded prehistoric archeological sites such as floodplains, terraces, prominent landforms near water, and known sites were also plotted onto Project Area mapping during the Corridor Study.

Within the Preferred Corridor, 77 previously recorded sites (including some recorded historic cemeteries such as Coulter Cemetery), 5 recorded historic structures, and approximately 37,173 acres of high probability areas for prehistoric sites were identified. Based on information from local historical resources and landowner information, three previously unrecorded historic cemeteries within the Preferred Corridor (the Silas Gaddy, Mooty, and Bear Creek Cemeteries) and three historic cemeteries just adjacent to the Preferred Corridor (the Ragland and Ridgel Family Cemeteries and Fannie Yarbrough Grave) were identified and added to the project database. One other previously unrecorded cemetery location north of US 82 was identified by area landowners. This possible location was inspected using walkover survey, ground clearing with leaf blowers, shovel testing, as well as metal detecting on surface and in shovel tests but the presence or absence of the cemetery could not be confirmed. The general boundary of the cemetery as identified by area landowners was added to the project database and the alignment alternatives were shifted to avoid impacts to that area.

Each alignment within the Preferred Corridor was compared with known settlement patterns and historic land use in order to identify “high probability areas” where prehistoric and historic sites and structures were likely to occur. This information was coupled with known site data and local informant knowledge to locate potential site

locations and historic structures that had not been identified during the records review.

4.12.1 Impacts to Cultural Resources

A summary of the cultural resources potentially impacted by the alignments is presented in Table 4-11. No known National Register Properties or known cemeteries would be impacted by the alignments.

Archeological Sites

All alignments would potentially impact known archeological sites. However, all of these sites have been previously surveyed, with half determined not eligible for nomination to the NRHP with no further work recommended and half pending additional investigation. Final design will provide the opportunity to further reduce or avoid impacts to the other known archeological sites with undetermined eligibility.

High Probability Areas were identified for areas that may contain prehistoric archeological resources and provided a rough indication of the potential magnitude of buried resources. An intensive archeological field survey was conducted for the Preferred Alignment and all sites discovered were evaluated for their significance and eligibility for nomination to the National Register of Historic Places (see Section 4.12.2 for more detailed discussions).

Table 4-11
SUMMARY OF CULTURAL RESOURCES WITHIN EACH ALIGNMENT

Alignment	National Register of Historic Places (NRHP) Properties	Historic Structures Evaluated by AHPP as NRHP Eligible	Recorded Archeological Sites		High Probability Area for Archeological Resources in Acres	Known Cemeteries	Historic Bridges
			Not Eligible	Undetermined			
No-Action	-	-	-	-	-	-	-
Line 1	0	1*	2	2	634	0	0
Line 2	0	0	1	1	705	0	0
Line 3	0	1*	2	1	769	0	0
Line 4	0	0	1	1	759	0	0
Preferred (Line 5)	0	0	1	2	693	0	0

*This structure is no longer standing.

Source: Michael Baker Jr., Inc.

Historic Structures

A reconnaissance level windshield survey was conducted within the Preferred Corridor to identify unrecorded historic structures along each alignment, as well as any obvious areas that might warrant avoidance or additional work. A total of 12 previously unrecorded historic structures were photographed and noted during this examination.

Eleven of these photographs and notations were sent to AHPP to determine if any were potentially eligible for NRHP listing (Refer to May 30, 2003 letter). The twelfth structure was found to have been demolished shortly after being noted. AHPP determined one of the eleven structures was eligible for NRHP listing based on its architectural significance (Refer to June 4, 2003 letter). This structure is a residence located along Murphy Road approximately 650 feet to the west of Line 1, Line 2, and the Preferred Alignment (Line 5).

A thorough review of archival records indicated Alignments 1 and 3 would potentially impact a structure listed as potentially eligible in the AHPP historic structures database. This structure, listed as a barn, was built in 1924 on the south side of SH 138 in Drew County. In 1979, it was recorded with an associated farm house on the north side of SH 138. A site visit revealed these two structures were no longer standing and had been demolished by the landowner prior to the initiation of the SIU 13 studies. Historic site potential was noted for these locales and for the historic structure demolished before its eligibility determination with AHPP.

Historic Bridges

A review of the Year 2000 Bridge Inventory at AHTD indicated two bridges listed on the NRHP in the Project Area. The first bridge (Bridge Number 2466) is a steel pratt pony truss which spans the Ouachita River and lies on the northeast edge of Camden. The second bridge (Bridge Number M2642) is a timber truss which spans the Little Cypress Creek and lies on SH 274 approximately 3 miles northeast of East Camden. Neither bridge is located within the Preferred Corridor. A review of the Year 2005 Bridge Inventory indicated two bridges in southern Union County will be eligible for listing to the NRHP in two years. Both of these bridges lie outside of the Project Area.

No-Action Alternative

The No-Action alternative could result in future cultural resource impacts associated with widening and passing lane construction activities. The extent of these impacts is not known at this time as detailed design for these proposed improvements has not been completed. Current levels of looting, vandalism, and non-scientific collecting would likely continue on known and discovered sites.

4.12.2 Cultural Resource Efforts for the Final EIS

An intensive cultural resources survey of the Preferred Alignment was conducted and a report detailing these efforts is in preparation and will be submitted to the SHPO and the consulting Native Tribes for review. This effort was conducted only where land owner access was granted and approximately 90 miles (88%) of the Preferred Alignment was surveyed. In addition, every effort was taken to identify unrecorded historic cemeteries during this effort. The cultural

resources survey included shovel testing and pedestrian reconnaissance to inspect the ground surface to be impacted. Deep subsurface testing and backhoe trenching in areas of potential deep impact were also conducted to inspect site presence in deep alluvium.

All sites and isolates located during the survey and deep testing efforts have been recorded and evaluated for their eligibility for nomination to the National Register of Historic Places. Results of the survey are listed in Table 4.12. A total of 34 sites were identified and recorded within the construction limits of the Preferred Alignment. Of these, 4 sites will be recommended for further testing to determine eligibility for nomination to the National Register of Historic Places. Some locations where deep construction impacts are anticipated in alluvial soils were not accessible by backhoe or landowner access was not granted. These remaining deep testing locations and all remaining areas not previously surveyed, including a small stretch near Champagnolle Creek in Calhoun County, will be recommended for survey and evaluation as outlined in "A State Plan for the Conservation of Archeological Resources in Arkansas" (Davis 1994).

Table 4-12
A Summary of Cultural Resource Sites Within the Preferred Alignment

State Site No.	Temp. Site No.	Cultural Affiliation	NRHP Status*	Recommendation
3DR72	Previously Recorded	Prehistoric – Undetermined (No cultural materials identified in or near ROW. Only a general site location was previously listed by private collector)	Undetermined	NFW
3DR272	Previously Recorded	Prehistoric- Undetermined (Located south of Hwy 278 and I-69 Connector Southern Termini in the Southeast Arkansas Intermodal Facility)	Not Eligible	NFW
3CA338	Previously Recorded	Prehistoric – Late Archaic (General area of site reported to be on parcel with no landowner access at time of current SIU-13 survey)	Undetermined	SURVEY
3DE252	SIU13-1	Prehistoric – Undetermined	Undetermined	TEST
		Historic – Mid 19th to Mid 20th Century	Not Eligible	NFW
3DE253	SIU13-2	Prehistoric – Archaic (one prehistoric feature was found in deep testing)	Undetermined	TEST
		Historic – Early 19th to Mid 20th Century	Not Eligible	NFW
3DE254	SIU13-3	Prehistoric – Undetermined	Not Eligible	NFW
		Historic – Isolate Early 19th Century to Present		
3DE255	SIU13-4	Prehistoric – Isolate Undetermined	Not Eligible	NFW
3DE256	SIU13-5	Prehistoric – Isolate Undetermined	Not Eligible	NFW
3DE292	SIU13-6	Prehistoric – Undetermined (one possible prehistoric feature found in deep testing)	Undetermined	TEST

Table 4-12
A Summary of Cultural Resource Sites Within the Preferred Alignment

State Site No.	Temp. Site No.	Cultural Affiliation	NRHP Status*	Recommendation
		Historic - Undetermined	Not Eligible	NFW
3DE293	SIU13-7	Prehistoric – Isolate Undetermined	Not Eligible	NFW
		Historic – Isolate Undetermined	Not Eligible	NFW
3DE294	SIU13-8	Historic – Late 19th to Early 20th Century	Not Eligible	NFW
3BR131	SIU13-9	Historic - 20th Century	Not Eligible	NFW
3BR132	SIU13-10	Prehistoric – Isolate Undetermined	Not Eligible	NFW
3BR133	SIU13-11	Prehistoric – Isolate Undetermined	Not Eligible	NFW
3OU258	SIU13-12	Historic – Early to Mid 20th Century	Not Eligible	NFW
3OU259	SIU13-13	Historic – Mid to Late 20th Century	Not Eligible	NFW
3OU260	SIU13-14	Historic – Mid to Late 20th Century	Not Eligible	NFW
3CA342	SIU13-15	Historic – Isolate Early to Mid 20th Century	Not Eligible	NFW
3DR295	SIU13-16	Prehistoric – Isolate Undetermined	Not Eligible	NFW
		Historic – Isolate Mid 19th to Mid 20th Century		
3DR289	SIU13-17	Historic – Mid 19th to Mid 20th Century	Not Eligible	NFW
3DR290	SIU13-18	Historic – Late 20th Century	Not Eligible	NFW
3DR291	SIU13-19	Historic – Mid 19th to Mid 20th Century	Not Eligible	NFW
3OU257	SIU13-20	Historic – Mid 19th to Mid 20th Century	Not Eligible	NFW
3CA343	SIU13-21	Historic – Isolate Late 19th to Early 20th Century	Not Eligible	NFW
3OU262	SIU13-22	Historic – Likely Mid to Late 20th Century	Not Eligible	NFW
3OU261	SIU13-23	Historic – Undetermined	Not Eligible	NFW
3OU263	SIU13-24	Historic – Likely Mid to Late 20th Century	Not Eligible	NFW
3UN295	SIU13-25	Prehistoric – Isolate Undetermined	Not Eligible	NFW
Pending	SIU13-26	Prehistoric - Archaic	Not Eligible	NFW
Pending	SIU13-200	Prehistoric – Undetermined	Not Eligible	NFW
Pending	SIU13-201	Prehistoric – Undetermined	Not Eligible	NFW
Pending	SIU13-202	Historic – Late 19th to Mid 20th Century	Not Eligible	NFW
Pending	SIU13-203	Prehistoric – Undetermined	Not Eligible	NFW
		Historic – Late 19th to Mid 20th Century	Not Eligible	NFW
Pending	SIU13-400	Historic – Isolate Late 18th to Mid 19th Century	Not Eligible	NFW
Pending	SIU13-401	Historic – Early 20th Century	Not Eligible	NFW
Pending	SIU13-402	Prehistoric – Isolate Undetermined	Not Eligible	NFW
Pending	SIU13-403	Prehistoric – Woodland to Mississippian (may be associated with 3CA13 which is on NRHP)	Undetermined	TEST
		Historic – Late 19th to Late 20th Century	Not Eligible	NFW

Source: Michael Baker Jr., Inc.
*Pending Arkansas State Historic Preservation Officer Review

4.12.3 Mitigation Measures

Unavoidable adverse effects on cultural resources could be mitigated through strict adherence to the laws and regulations protecting significant sites. Recommendations for a no adverse effect determination include, but are not limited to the following:

- An archeological survey will be conducted on all areas of the Selected Alignment not previously surveyed, borrow pits, access roads, and any other areas to be disturbed by the Interstate type highway will be conducted. The survey will include deep subsurface testing or backhoe trenching in bottomlands where sites may be buried under alluvium.
- Sites identified in the archeological survey will be evaluated for their eligibility for nomination to the NRHP through archival research and/or archeological testing.
- All archeological work will follow standards defined in "A State Plan for the Conservation of Archeological Resources in Arkansas" (Davis 1994).
- The adverse effects would be mitigated for all sites found to be eligible for inclusion in the NRHP. A mitigation plan for properties eligible for inclusion in the NRHP will be submitted for review to AHPP, the Advisory Council on Historic Preservation, Native American Tribes, the Federal Highway Administration, and the Arkansas Highway and Transportation Department. A Programmatic Agreement may be drafted and agreed upon by participating parties.
- All known burials will continue to be avoided. If burials (historic or prehistoric) are encountered during archeological surveys and excavation or project construction, the Native American Graves Protection and Repatriation Act (NAGPRA) and the Arkansas Burial Law (Act 753) will be followed.
- All construction borrow or fill dirt which may be procured outside the right-of- way will be obtained from areas which have been surveyed and given archeological clearance by the Arkansas Historic Preservation Program.
- The area adjacent to the potential historic cemetery north of S.H. 172 in Union County is recommended to be monitored for evidence of historic graves during the clearing and grubbing efforts as well as the initial construction efforts of the Selected Alignment.
- All final bridge locations will be coordinated with the AHPP to evaluate the potential for submerged archeological materials prior to construction.
- If archeological materials are discovered during construction, the land disturbing activities in the immediate area will be halted and the AHTD Environmental Division will be immediately

notified. An archeologist will evaluate the significance of the deposits. If the site is found to be eligible for nomination to the NRHP, a mitigation plan will be submitted for review by the Arkansas Historic Preservation Program (AHPP), the Advisory Council on Historic Preservation, the Federal Highway Administration and the Arkansas Highway and Transportation Department with the Programmatic Agreement.

4.13 AIR QUALITY

The primary mobile source of air pollution emissions associated with the I-69 project are motor vehicles using the proposed highway system. An air quality assessment was performed following the guidelines established by AHTD, FHWA, and EPA. Currently, all Project Area Counties are designated as being in attainment for carbon monoxide (CO) and Ozone (O_3), based on historical monitoring data in the Project Area, therefore, this project is not subject to transportation conformity requirements.

This analysis discusses the assessment methodology, the existing mobile source (traffic-related) air quality in the Project Area, and the predicted impacts to the local air quality from construction of the proposed highway. Construction mitigation measures are discussed in Section 4.18.

4.13.1 Methodology

A microscale analysis was performed to predict the effects of CO changes to local air quality from the implementation of the proposed highway facility. The microscale analysis predicts the generation and transportation of CO in the immediate area. The years 2015 (interim year) and 2030 (design year) were analyzed and compared to the NAAQS. Interim year traffic volumes were developed from straight-lining the existing and design year volumes.

Motor vehicle emission rates were computed using EPA's MOBILE 5.0a emissions model (March, 1993). The emission factors were developed with conservative model inputs to provide a worst-case scenario. Carbon monoxide concentrations from highway vehicles were calculated by using CAL3QHC, a Gaussian dispersion model and extension of the CALINE 3 model.

A realistic worst-case approach was taken for nearly all meteorological conditions. Three hundred sixty (360) wind directions were analyzed at one-degree intervals to determine the maximum CO concentrations. Other factors included a wind speed of one meter per second, a rural stable atmospheric condition (E) based on the Auer technique, a mixing height of 3,280 feet, (1,000 meters) and worst case minimum and maximum temperatures for January of 29.1°F and 49.0°F, respectively.

Modeling was done for the peak one-hour traffic condition. A background concentration of 2.0 parts per million (ppm) for the one-hour concentration was used to account for CO sources outside the Preferred Corridor. Speeds for the existing roadways and the proposed highway were based on the travel demand model inputs.

Receptor sites along the roadway were chosen at locations where the highest CO concentrations could be expected and where the general public would have access during the analysis periods. These were placed at representative points along the proposed right-of-way lines where human activity may occur. The CO concentrations were compiled to include the proposed highway, cross-streets, and background concentrations as necessary. A mesoscale or "regional" analysis was not performed for the project because the Project Area is in attainment for O_3 and will be included in the State's 2030 Transportation Plan.

4.13.2 Impacts

Table 4-13 shows the predicted highest one-hour CO receptor concentrations for the existing year, interim year 2015, and design year 2030.

Table 4-13
PREDICTED HIGHEST 1-HOUR CO CONCENTRATIONS

Receptor Links	Existing Year	Interim Year 2015		Design Year 2030	
		No-Action	All Build Alternatives	No-Action	All Build Alternatives
Worst-Case Existing Route: U.S. 278 located between U.S. 425 and S.H. 83	3.8	4.2	4.3	4.9	5.1
Worst-Case Proposed Intersection: I-69 and U.S. 65 ramps, unsignalized, multiple receptor sites.	3.0	3.0	3.3	3.3	4.1
Worst-Case Proposed I-69 Highway: Site located in Section 4 between U.S. 425 and S.H. 35 at nearest point of R-O-W line.	N/A	N/A	2.4	N/A	2.8

Source: Michael Baker Jr., Inc.
1-hour standard is 35 ppm
8-hour standard is 9 ppm
CO background of 2.0 ppm included in totals (EPA, Region 6)

The highest concentrations (which include a conservative one-hour background level of 2.0 ppm) would be located in areas where the greatest traffic volumes are moving at their slowest probable speed. These locations are:

- The section of U.S. 278, located between U.S.425 and State Highway 83, in Monticello. This is representative of the highest peak-hour traffic volume link for the existing roadway network.
- At the proposed interchange of I-69 with existing U.S. 65, located between Reed and McGehee. This site is representative of the greatest potential queuing condition directly resulting from the proposed project.
- The proposed I-69 highway between U.S. 425 and S. H. 35, at the nearest right-of-way boundary line. This site is representative of the highest peak-hour traffic volume link on the proposed highway.

For the existing year, interim year 2015, and design year 2030 conditions, there are no receptor concentrations above the one-hour NAAQS criteria. Additionally, the predicted one-hour concentrations did not exceed the more stringent eight-hour concentration criteria of nine ppm for CO. As a result, an eight-hour analysis was not performed because 8eight-hour concentrations are typically found to be 60 to 70 percent of the one-hour concentrations and therefore will always be lower than their one-hour counterparts.

Based on the microscale analysis results, no mitigation measures are required for the proposed highway facility. Further, the project is in an area where there are no transportation control measures and is in attainment for the appropriate pollutants.

4.14 NOISE

The noise analysis was performed in accordance with the procedures and provisions of Title 23, Code of Federal Regulations (CFR), Part 772, U.S. Department of Transportation, Federal Highway Administration (FHWA), Procedures for Abatement of Highway Traffic Noise and Construction Noise. This established a requirement for a noise study for any proposed federal or federal-aid project. It is the policy of AHTD that highway traffic noise prediction requirements, analyses, and abatement criteria comply with the noise standards mandated by 23 U.S.C. 109(i).

The noise analysis included:

- Identification of existing activities, developed land, and undeveloped land which is planned, designed, and programmed
- Measurement of existing noise levels
- Prediction of design year No-Action noise levels
- Prediction of design year Build levels for the five alignment alternatives

Comparison of predicted noise levels to noise level guidelines

- Determination of traffic noise impacts, and

- Examination and evaluation of alternative noise abatement measures for reducing or eliminating the noise impacts of all alignments

4.14.1 Prediction of Traffic Noise Levels

Traffic noise calculations were performed for the design year 2030 using the FHWA Traffic Noise Model (TNM) 2.1 model. A speed limit of 70 mph was used for the proposed highway. The vehicle fleet mix for the proposed highway was provided through the traffic analysis and it was comprised of 86.0 percent autos (including pickup trucks, vans, and motorcycles), 2.0 percent medium trucks (including RV's), and 12.0 percent heavy trucks. Additionally, speeds for the pertinent cross streets were based on their current posted limits. Approximately 385 locations were modeled to account for receptor sites most likely affected as a result of the proposed project.

Table 4-14 shows the FHWA Noise Abatement Criteria (NAC) for various land use activity categories. In situations where the FHWA NAC was approached or exceeded at any receptor site, noise abatement must be considered.

Table 4-14
NOISE ABATEMENT CRITERIA*

ACTIVITY CATEGORY	L_{eq} (h)	DESCRIPTION OF ACTIVITY CATEGORY
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries and hospitals.
C	72 (Exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	--	Undeveloped lands.
E	52 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums

Source: Title 23 Code of Federal regulations (CFR) Part 772, U.S. Department of Transportation.
*Approach criteria are consistent with AHTD guidelines allowing for consideration of traffic noise impacts one dBA below the FHWA criteria

Activity Category B, representative of residences, schools, churches and parks, was used as the criteria for sensitive receptors identified in this analysis. Additionally, Activity Category C receptors were also noted when commercial establishments were part of a mixed land-use area. The approach criterion is defined as one dBA less than the NAC.

A substantial noise increase criteria established by the AHTD was also considered. Here, abatement must be considered if, as a result of the proposed action, the predicted noise level at a particular site

increased by 10 or more decibels over the existing condition.

4.14.2 Traffic Noise Impacts

Noise impacts are determined on the degree to which the projects noise levels exceed the established noise level activity category criteria and by how much the levels increase over the existing condition as a result of the proposed highway facility. Results of the noise analysis for each receptor group under all conditions modeled are presented in the Appendix.

FHWA Criteria Exceeded

Table 4-15 presents the number of sensitive receptors that would equal or exceed the FHWA criteria. There are currently receptors that approach or exceed the FHWA NAC for the existing condition. In design year 2030 Lines 2, 4, and 5 would have the greatest impacts to sensitive receptors, while Line 1 would have the least.

Exceedance of AHTD Substantial Increase Criteria

Table 4-15 shows the number of sensitive receptors where a substantial increase in noise would occur due to the proposed highway. For this criterion, Line 3 would have the greatest impact on sensitive receptors while Line 4 would have the least. The AHTD Substantial Increase Criteria does not apply for the existing condition.

Table 4-15
NOISE IMPACT SUMMARY

	EXISTING YEAR	2030 DESIGN YEAR No-Action	2030 DESIGN YEAR LINE 1	2030 DESIGN YEAR LINE 2	2030 DESIGN YEAR LINE 3	2030 DESIGN YEAR Line 4	2030 DESIGN YEAR Preferred (Line 5)
Total Number of Sensitive Receptors	492	492	409	339	409	339	339
Approaches or Exceeds FHWA NAC Criteria*	2	5	2	5	4	5	5
Substantial AHTD Noise Increase Criteria**	Not Applicable	0	8	9	17	6	8
Sensitive Receptors Exceeding Both Criteria	0	0	4	2	6	6	2
Total Receptors Impacted	2	5	14	16	27	17	15

Source: Michael Baker Jr., Inc.
* Approach Criteria is 66 dBA for Category B receptors.
** An increase of 10 or more dBA over the existing condition.

Exceedance of Both Criteria

In 2030, the predicted number of exceedances for both criteria would be zero for the No-Action alternative. Lines 3 and 4 receptor locations would have the greatest number of exceedances, while Lines 2 and 5 would have the least.

Total Number of Impacts

The total number of noise impacts is shown in Table 4-15. Line 3 would have the greatest number of total impacts while Line 1 would have the least.

4.14.3 Noise Abatement

Noise abatement must be considered for sites when the FHWA NAC criteria is approached or exceeded at any receptor location. In Arkansas, the approach criterion is 66 dBA for Category B receptors and the substantial increase criterion of 10 dBA or more are used. If a noise impact is identified, the abatement measures listed herein must be considered. When noise abatement measures are being considered, every effort would be made to obtain noise reductions of at least 10 dBA for at least one receptor and other benefited receptors having at least a five dBA insertion loss.

Mitigation measures are not required for the existing conditions or the Design Year No-Action Alternative because these measures are only analyzed for Type I highway noise impacts. Type I noise abatement measures are included as part of highway construction. The alignment study included efforts to avoid or minimize noise impacts to sensitive receptors through alignment shifts and overall avoidance of residential areas.

4.14.4 General Noise Reduction Measures

There are several types of noise reduction measures that could be considered for mitigation of highway noise impacts of the proposed highway. These measures include:

- Existing vegetation
- Alteration of vertical and horizontal alignments
- Acquisition of property rights for construction of noise barriers
- Noise insulation of public use or nonprofit institutional structures.

Existing dense highway vegetation can, under certain conditions, reduce traffic sound levels up to five dBA. This would require a vegetative cover of a minimum 100 feet in depth, 14 feet in height, and of sufficient density that no visual path through it exists between the highway and the adjacent land use area. Much of the Project Area is currently in wooded areas and may provide this benefit. A narrow width of vegetation would not provide any degree of effective sound level reduction. The use of highway plantings and existing vegetation alone would not be an effective solution for substantial noise reduction. However, where desirable vegetation exists between the proposed highway and the adjacent land use areas, efforts could be made to preserve and encourage its propagation.

Traffic management measures include control devices and signing for prohibition of certain vehicle types, time-use restrictions for certain vehicle types, and modified speed limits. The restriction of heavy vehicles or time-use restrictions by prohibitive signing does not serve the need to help reduce congestion on the local roadway system. This restriction would also be difficult to enforce.

Reasonable horizontal and/or vertical realignments were investigated to minimize the impacts. The current Lines were developed to minimize and/or avoid impacts to potentially sensitive areas. Any significant sound level reductions at impacted locations as a result of horizontal modifications may require large shifts in the alignment. This could entail additional property acquisition, require additional environmental studies, and could expose other areas to noise from the proposed project.

Vertical alignment alteration was also not considered to be a feasible noise abatement measure. Depressing the roadway would also entail some of the above impacts such as additional property acquisition. Also, elevating the roadway would only serve to propagate the highway noise farther away from its source and reduce the effects of tree shielding. Additional vertical and horizontal changes are bound by the engineering limitations required with the interchanges.

Noise reduction measures such as earth berms and barrier walls would provide the greatest degree of noise attenuation. A graded, vegetated earth berm that blends with the surrounding topography is one of the more aesthetically pleasing noise barriers. The feasibility of berm construction would be considered as part of the overall grading plan for the project, especially if there is an excess of cut material. There may be instances where an effective earth berm can be constructed within normal right-of-way or with a minimal additional right-of-way purchase. If right-of-way is insufficient to accommodate a full height earth berm, a lower earth berm could be constructed in combination with a wall to achieve the necessary height and attenuation. An earth berm may also provide slightly more attenuation (up to three dBA more) than a vertical barrier wall of the same height because of the better absorptive quality of the earth and ground vegetation.

A solid, acoustically opaque barrier (barrier wall) can theoretically reduce noise exposure to a property by as much as 15 to 20 dBA although a typical reduction is approximately five to ten dBA. The barriers can be constructed from common building materials such as concrete, wood, plastic, and recycled products. The design can range from relatively simple, straight-line walls to complex designs that blend in with local features such as terrain and neighborhood characteristics. The materials should be rigid and sufficiently dense to

provide adequate mitigation and drainage, while at the same time be attractive, durable, and relatively maintenance-free. Both the on-site cost and the degree of noise attenuation must be considered when selecting barrier wall materials.

For maximum effectiveness, barriers should be as close as possible to either the source or the receiver and should be high and long enough to adequately mitigate the site. Additionally, space limitations and public involvement often help in the determination of the type of barrier used. In some cases, the wall may also serve to control access and eliminate the need and cost of right-of-way fencing.

4.14.5 Determination of Reasonableness and Feasibility

The AHTD and FHWA would identify both noise abatement measures which are reasonable and feasible and which are likely to be incorporated in the project. Noise abatement considerations evaluate both feasibility and reasonableness. The feasibility of mitigating noise impacts deals primarily with quantitative elements such as topography, access points, drainage, safety, maintenance requirements, other noise sources, and whether the proposed insertion of a barrier provides minimum sound level reductions by a minimum of ten dBA.

Reasonableness is based on such factors as the cost effectiveness of protecting an isolated or small number of receptors, exposed wall heights, distances to receptors from the mitigated source, a minimum decibel changes of at least five dBA over the existing or future No-Action levels, residential support or desires for noise abatement features, and concerns for physical and visual access to commercial establishments. Where noise abatement considerations are warranted, every reasonable effort will be made to achieve adequate noise level reductions for locations where the levels exceed the NAC or where the projected noise levels exceed the substantial increase criteria.

Preliminary Noise Abatement Analysis

A preliminary analysis addressed the receptors that required noise abatement consideration. Many impacted group areas were eliminated from further noise abatement consideration because of the reasonable and/or feasible criteria issues identified below:

- Isolated or a small number of receptors in any one location would not typically warrant further consideration because of the potential cost of protecting one, two, or a few sites
- Areas where the predicted noise contributions from other roadways would reduce or negate the effectiveness of noise abatement proposed for the alignments.
- Overriding direct access requirements to the local roadways, driveways, ramps, etc.

- Other considerations, such as access to the general public.

A noise barrier meets AHTD criteria for feasibility and reasonableness if:

- The ability to achieve noise reduction is not limited by topography, access requirements for driveways or ramps, the presence of local streets, and other noise sources.
- The reasonableness scale for cost established by AHTD is met. It is unlikely that barriers exceeding $20,000 per benefited receptor will be built.
- "Most" impacted residents that are benefited want noise abatement features.
- The housing development predated the initial highway construction.
- The housing and/or sensitive development has been in place for at least ten years.
- The future noise levels would approach or exceed the dBA $L_{eq}(h)$ established as FHWA's Noise Abatement Criteria for its respective Activity Category.
- The future build noise levels are at least ten dBA $L_{eq}(h)$ greater than the existing noise levels.
- The future build noise levels are at least seven dBA $L_{eq}(h)$ greater than the future No-Action noise levels.
- At least one receptor receives a ten dBA reduction and other benefited receptors receive at least a five dBA reduction.

Locations were analyzed according to the conditions discussed in this section for implementing noise barriers. Preliminary abatement results were obtained by evaluating areas representative of the noise measurement locations, which may warrant noise abatement consideration. These estimates are assumed to be worst-case conditions and, if implemented, would most likely require less than the noise barrier lengths stated.

A final decision on barriers for noise mitigation will be made upon completion of the final design, additional barrier analyses (if necessary), and any public involvement (as required through the process). Any final engineering design and corresponding final noise mitigation analysis will take into account changes to the horizontal and vertical alignments, additional property acquisition, drainage requirements, costs, natural resource and environmental considerations, design criteria constraints, and interchange designs.

4.15 NAVIGATION EVALUATION

The proposed highway will include the construction of a new bridge over the Ouachita River, a navigable waterway. The U.S. Coast Guard regulates bridge construction over such waterways and this project will require a U.S. Coast Guard

Bridge Permit. The U.S. Coast Guard is participating in this project as a Cooperating Agency and has been involved throughout the alternatives development process. The information presented below is intended to assist the Coast Guard with their required evaluation of this proposed river crossing.

The Ouachita River provides a nine-foot deep channel from the Arkansas/Louisiana border upstream approximately 117 miles to Camden, Arkansas. The river is part of the more comprehensive Ouachita-Black Waterway that extends to the Mississippi River near Marksville, Louisiana. In Arkansas, the Ouachita River has two lock and dams operated by the U.S. Army Corps of Engineers, the H.K. Thatcher located at mile point 281.7 and the Felsenthal at mile point 226.8. These lock and dams were constructed in 1984 to control river water levels and provide a stable and viable route for interstate and intrastate commerce.

There are two public ports located on this stretch of the Ouachita River, Crossett Port located at mile point 237.0 and the Port of Camden located at mile point 351.8. The Port of Camden, owned by the Camden Port Authority, has a 30,000 square foot warehouse currently leased by Highland Industrial Park. The warehouse is in operation but the port facility is currently not in use. According to the Camden Port Authority, commercial use of the port is expected by the end of 2005 (Nunnally 2005). The Port of Crossett lies about five miles south of the confluence of the Ouachita and Saline Rivers along the eastern boundary of Union County. The facility is privately owned and consists of a docking peer, a turning basin, a four barge towing system and a 15,000 square foot warehouse. Additional private terminals used for commerce are also located on the river.

The alignments under consideration cross the Ouachita River at or near mile point 315 between Camden and El Dorado. Possible impacts of a bridge crossing at this location have been considered and are addressed in the following sections.

4.15.1 Current Usage

The main commodities transported on the Ouachita River in Arkansas are gasoline, fuel oils, wheat, and limestone. In 2000, the tonnage of materials moved through the H.K.Thatcher Lock and Dam was 279 tons and a total of 270 tons of materials was transported through the Felsenthal Lock and Dam (USCOE, LPMS 2000 data).

Private craft also utilize the river throughout the year primarily for fishing and water sports during the summer and for waterfowl hunting during the late fall and winter. A new large-boat marina (Steamboat Landing) that could handle pleasure crafts having up to a nine-foot draft is being constructed approximately one-quarter mile north

of the Port of Camden. Additionally, vessels involved in emergencies or for maintenance operate on the waterway throughout the year.

4.15.2 Navigation Impacts

The proposed bridge will provide similar horizontal and vertical clearances as the existing Ouachita River bridges (U.S. 167 bridge) and will provide adequate clearances for vessels engaged in emergency operations, national defense activities, or channel maintenance operations. The bridge, as proposed, will not adversely impact the safe passage of any vessels currently using the Ouachita River.

Minimum vertical clearance as required by the Coast Guard in this reach of the Ouachita River is 52 feet above the 2 percent flowline. Continued coordination with the Coast Guard will occur during the design phase of the proposed bridge to insure that clearances are met or exceeded. This will ensure that the necessary horizontal and vertical clearances and pier placement will be provided for the safe, efficient passage of vessels along the Ouachita-Black River Waterway system. When the proposed bridge is no longer used for transportation purposes, it will be removed completely from the waterway, in its entirety or to an elevation established by the Coast Guard. Such removal and clearance will be completed by and at the expense of AHTD using federal funding if available.

The proposed Ouachita River crossing location can be seen in Figure 2-6, sheet 2. While all alignments cross the river at a near perpendicular angle, there is a near 90° bend in the river approximately 2,200 feet (0.4 miles) south of Lines 3 and 4, approximately 3,200 feet (0.6 miles) south of Line 2, and nearly 4,000 feet (0.8 miles) south of Lines 1 and 5.

No other facilities such as existing bridges, repair shops or fueling stations are located near the proposed bridge location that would affect safe passage of vessels.

4.15.3 Hydrologic and Atmospheric Conditions

The average annual stream flow near Camden between 1995 and 2000 was 6,587 ft^3/sec (USGS 2000). The width of the river channel at the proposed bridge locations under normal conditions is between 250 and 300 feet for Lines 2, 3, and 4 and approximately 200 to 250 feet for Lines 1 and 5. Atmospheric conditions in the area would not influence the bridge location. There are no prevailing winds or other normal hydrological events that could create a hazard for passage through the proposed bridge.

4.15.4 Bridge Impact Summary

Prior to issuance of a Coast Guard Permit, all environmental issues associated with the proposed highway between the abutments of the bridge over the Ouachita River must be reviewed by the Coast

Guard. In order to confirm exact clearances, application for this permit would be made during the final design of the bridge. Impacts from abutment to abutment are as follows:

- Fish and wildlife - minor impacts - temporary and confined to construction activities
- Endangered species - none
- Wetlands - minimal – fill associated with pier placement
- Public water supply - none
- Floodplains - minor – fill associated with pier placement
- Air quality - none
- Land use impacts - none
- Hazardous waste - none
- Prime farmland - none
- Social - none
- Economic - none
- Relocatees - none
- Environmental justice issues - none
- Archeological resources - no known sites.

Construction impacts would cause temporary impacts to water quality. As described in Sections 3, 4 and the Appendix, measures to reduce and minimize erosion and sedimentation would be implemented during construction at this site.

Bridge construction could have temporary impacts on river traffic. The construction of falsework, cofferdams or other obstructions, if required, and the scheme for constructing and erecting the proposed bridge will be in accordance with plans submitted to and approved by the Coast Guard prior to construction of the bridge. Construction plans will ensure that free navigation of the waterway is not unreasonably interfered with and the present navigable depths are not impaired. Timely notice of any and all events that may affect navigation will be given to the Coast Guard during construction of the bridge. The channel or channels through the structure will be promptly cleared of all obstructions placed therein or caused by construction of the bridge.

4.16 HAZARDOUS MATERIALS

No known hazardous materials sites would be impacted by the any of the developed alignments within the Preferred Corridor as discussed in Section 3.16. If during subsequent field investigations areas of unknown contamination are identified, appropriate measures would be taken to avoid the site or an environmental investigation would be conducted. Appropriate measures would be employed to remediate these areas prior to construction. If contents are determined to be non-hazardous, the contents would be excavated and disposed of at the nearest landfill facility.

The No-Action alternative could result in impacts to hazardous materials sites in association with widening and passing lane construction activities,

although the extent of these impacts is not known at this time.

4.17 ENERGY

All alignment alternatives, including the No-Action alternative, would require short-term energy consumption during construction activity. Construction related energy consumption would be generally based on the construction cost of the alternative. The amount of energy required for the production and placement of materials (asphalt, structures, cut, fill, etc.) during construction would be a fixed one-time cost. Construction related energy consumption would be short term in nature and could be offset by operational energy efficiencies gained through the use of an improved transportation facility over many decades. Energy impacts are a function of several variables including average running speed, vehicle-miles of travel, and the mix of vehicle types in the system.

The I-69 Location Study would improve fuel efficiencies due to higher levels of service resulting from uniform speeds, less congestion, and free flow of traffic across the Project Area. As traffic is diverted to the proposed highway, previously congested segments of U.S. 278 and U.S. 425 in the Monticello area and other area roadways would experience a decrease in traffic. Consequently, the operating efficiency would likely improve on most of these roads, improving levels of service, reducing travel times between destinations, and in turn, reducing overall fuel consumption.

The No-Action alternative could increase the future use of energy resources due to operating inefficiencies across the Project Area.

4.18 CONSTRUCTION IMPACTS

Highway construction impacts would be limited in duration to the actual construction period. These impacts could affect the residences of the immediate construction area and those traveling in the vicinity of the work in progress. Construction impacts would be similar for all highway alignments. The temporary impacts associated with highway construction activities could include:

- Temporary degradation of air, noise, and water quality.
- Temporary disruption of traffic for residents, businesses, and travelers, including maintenance, control, and safety concerns.
- Stockpiling and disposal of construction materials and waste.
- Use of borrow areas and the construction and use of haul roads.
- Temporary disruption of utilities.

4.18.1 Air Quality Construction Impacts

Construction activities can have a temporary impact on local air quality during periods of site preparation, primarily with particulate matter or

fugitive dust. This impact would occur in association with excavation and earth moving, asphalt aggregate handling, heavy equipment operation, use of haul roads and wind erosion of exposed areas and material storage piles. The effect of fugitive dust would be temporary and would vary in scale depending on local weather conditions, the degree of construction activity, and the nature of the construction activity.

Mitigative dust control measures may include: minimization of exposed erodible earth, stabilization of exposed earth with vegetation, mulch, pavement, or other cover as early as possible, periodic application of stabilizing agents (e.g. water), covering or stabilizing stockpiled material as necessary, and the use of covered haul trucks.

4.18.2 Construction Noise

A temporary increase in noise and vibration is expected during the highway construction period and would be limited to the immediate vicinity of the work in progress. Construction noise and vibration may be associated with ground clearing, demolition of and removal of existing structures, excavation, foundation placement, and finishing, including filling, paving, grading, and clean up. Noise at any given site would depend on the phase of construction and the type of equipment being used.

Noise abatement measures could include muffling all motorized equipment, locating haul roads away from sensitive areas, limiting the hours of operation at the construction sites, and construction of temporary noise barriers around noisy stationary equipment near sensitive areas.

4.18.3 Water Quality Construction Impacts

Water quality impacts are discussed in detail in Section 4.6. In general, construction activities can create temporary water quality impacts through increased sediment loading. An erosion and sediment control plan will be developed and implemented and will include all specifications and best management practices (BMP's) necessary for control of erosion and sedimentation due to construction related activities.

4.18.4 Maintenance and Control of Traffic

The maintenance of traffic, construction sequencing, and detouring will be planned and scheduled to minimize impacts to local residents, businesses, and the traveling public. Access to residences and businesses impacted by construction will be maintained by temporary driveway construction or temporary connections when necessary. Detours may be required at various locations throughout the construction process.

Any disruption to the delivery of community and emergency services during construction will be minimal. Intersections with major local roads will be grade separated or relocated to allow continuous operation and access. Local police and

fire departments and other emergency service providers will be notified in advance of any construction-related activities to allow for proper planning and alternate route identification.

4.18.5 Public Health and Safety

During the course of construction, the contractor will comply with all federal, state, and local laws governing safety, health, and sanitation. All reasonable safety considerations and safeguards necessary to protect the life and health of employees on the job, safety of the public, and the protection of property in connection with roadway construction will be taken.

4.18.6 Other Construction Impacts

Utilities in the Project Area include water, sewer, gas and oil pipelines, telephone, and electrical transmission lines. The contractor will contact the appropriate local officials to coordinate a work schedule that will avoid and minimize any disruption of utility services during construction.

The stockpiling and/or disposal of construction materials generated from clearing, grubbing, and other phases of construction would be conducted in accordance with local and state regulatory agencies permitting the construction operation. The use of borrow areas and construction of haul roads would also be coordinated with the appropriate local, state, or federal regulatory agencies as necessary.

Due to the length of the proposed project, it is likely that this highway would be constructed in stages or discrete segments, the number and location of which will be determined at a later date. Some of these construction projects may result in the temporary detouring of traffic to local roads to provide an interim or temporary connection to U.S. 425, U.S. 63, or other state highways in the Project Area. Appropriate environmental analyses and documentation will be prepared to evaluate the temporary impacts of these projects in accordance with state and federal requirements for the development of transportation projects.

4.19 CUMULATIVE IMPACTS

4.19.1 Methodology

Definition of Cumulative Impacts

Three types of impacts are routinely assessed for proposed federal actions and are defined by the Council on Environmental Quality (CEQ) regulations (40 CFR §§ 1500-1508). Direct impacts are defined as effects that are caused by the action and occur at the same place and time. Indirect impacts, also known as secondary impacts, are defined as effects that are caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable. Indirect effects may include growth induced effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems (40 CFR Sec. 1508.8). An example of a

direct impact is the taking of a wetland within the right-of-way. An indirect impact could be the conversion of forestland or farmland adjacent to an interchange location for commercial development due to new access provided by this proposed action. Direct and indirect impacts have been addressed throughout Section IV –Environmental Consequences.

Cumulative impacts are defined as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non federal) or person undertakes such other action (CFR 40 Sec. 1508.7). Cumulative impacts include the direct and indirect impacts of a project together with the reasonable foreseeable future actions of others. The cumulative impacts that result from an action may be undetectable but can add to other disturbances and eventually lead to a measurable environmental change.

The assessment of cumulative impacts is required by the CEQ regulations and although secondary and cumulative impacts are not specifically defined or referenced in FHWA regulations for preparation of environmental impact statements (23 CFR Part 771), they have been addressed in a FHWA 1992 position paper titled "Secondary and Cumulative Impact Assessment in the Highway Impact Development Process". This paper encourages incorporation of cumulative impact issues into the highway development process in order to fulfill the NEPA mandate of environmentally sensitive decision-making.

Description of Reasonably and Foreseeable Future Actions and Time Line

Three major Federal reasonably and foreseeable future actions have been identified in the vicinity of the SIU 13 Project Area that could induce potential cumulative effects on the social, natural, and cultural environments: the National I-69 Corridor, the Southeast Arkansas I-69 Connector, and the Southeast Arkansas Regional Intermodal Facility. These projects have already been or will be subject to separate environmental analysis; their quantifiable impacts are not included in this discussion.

The National I-69 Corridor was divided into 32 viable sections of independent utility (SIU) so that each can be constructed in a reasonable time frame by the states involved. A given SIU may be in place for several years before an adjacent section is completed and open to traffic (AHTD, 1999). Therefore, adjacent segments, SIU 14 and SIU 12, are considered as reasonable and foreseeable future actions. In December 2000 a Notice of Intent (NOI) was issued by the FHWA to prepare a Supplemental Environmental Impact Statement on a proposal to construct SIU 12 of the National I-69 Corridor. The new facility would

include a new roadway and bridge crossing of the Mississippi River connecting U.S. Highway 65 near McGehee in Arkansas with Mississippi Highway 1 near Benoit, Mississippi. SIU 12 lies to the east of SIU 13. Currently, this project is in the environmental documentation phase of study

In March 2003, a NOI was issued by FWHA to prepare an Environmental Impact Statement on a proposal to construct Section of Independent Utility SIU 14 of the National I-69 Corridor from I-20 near the town of Haughton in Bossier Parish, Louisiana to U.S. Highway 82 near El Dorado in Union County, Arkansas. SIU 14 lies to the south of SIU 13. Currently, this project is in the corridor selection phase of study.

The Selected Alignment for the Southeast Arkansas Project from I-530 at Pine Bluff to U.S. Highway 278 between Monticello and Wilmar (hereafter referred to as the I-69 Connector project), was issued in October 2001. Currently, the project is under final design.

The Southeast Arkansas Regional Intermodal Facility (SARIF) is proposed to be a regional industrial park located on the southern side of U.S. 278 approximately two miles east of Wilmar, Arkansas. The proposed location for SARIF is located within the Project Area of SIU 13. An environmental assessment was conducted for this project in April 2002 that subsequently resulted in a finding of no significant impact (FONSI).

Geographic Limits of the Analysis

The limits of the SIU 13 Project Area are contained within the corridor boundary of the National I-69 Corridor. Therefore, consideration of potential cumulative impacts as the result of the National I-69 Corridor and adjacent SIU's, as well as for the I-69 Connector and SARIF project, is limited to the geographic areas potentially affected by the SIU 13 Project when it becomes connected with, and becomes a part of the fully completed National I-69 Corridor.

4.19.2 Identification of Potential Cumulative Impact Issues

This section discusses the potential cumulative impact to specific human and environmental resources within the SIU 13 Project Area. Human and environmental resources discussed regarding potential cumulative impacts are similar to those that warranted discussion in this section. It should be emphasized that if a project alternative has not resulted in a direct impact to a particular resource, no cumulative impact would be expected to that resource in the SIU 13 Project Area.

Economics

It has been demonstrated previously (AHTD 1995, 1997) that construction of the National I-69 Corridor would provide positive economic benefits primarily derived from an increase in transportation

efficiency via the movement of freight and people. An increase in efficiency would result in time savings, reduced vehicle operating costs, improved safety (lower insurance costs, reduced crashes), and improved access to other regions of the state and country. Moreover, it is estimated that such a facility would result in thousands of additional jobs and billions of dollars in wages. The completion of the National I-69 Corridor would provide markets from beyond the Delta Region direct access to the local economic base. The construction of the SIU 13 Project would additionally help to stimulate the economic growth of the region.

Land Use

The SIU 13 Project would likely have cumulative impacts in terms of land development.. In general, more development would be expected at interchanges near larger communities and would likely decrease as the interchange location moves further from the population centers.. The construction of the National I-69 Corridor, SIU 12, SIU 14, and the I-69 Connector will provide greater opportunity for development which could induce cumulative impacts in these areas. This development may occur in stages as more sections of I-69 are completed. However, the potential for development would depend on the existing land use in the area and is not necessarily due to access to the area by an interchange. For the SARIF, it is expected that industrial and commercial development would occur along the south side of U.S. 278.

Displacements

One of the most important functions of the corridor location study is the identification of homes, churches, schools, businesses, and community centers. This process is undertaken to minimize to the greatest extent possible, impacts to the human environment. The majority of land traversed by the SIU 13 Project is rural consisting of pine, bottomland and hardwood forests, pastures and cropland. Denser residential areas are predominantly located near the larger population centers such as El Dorado, Warren, Monticello, and MeGehee. Scattered residences can be found in rural areas along state and U.S. highways.

Future construction of the National I-69 Corridor, adjacent SIU's, I-69 Connector and SARIF projects could induce additional displacements as the synergy of these large transportation facilities in close proximity to one another serve to draw additional business and industry to the region. However, the location and quantity of such displacements cannot be determined at this time.

Noise

Cumulative noise impacts could occur from the construction and operation of the National I-69 Corridor, the adjacent SIU's, the I-69 Connector, or the SARIF projects. As these projects are completed, traffic volumes could increase on SIU

13 and additional traffic related noise could be generated. However, the noise analysis for SIU 13 found very few receptors that would experience a noise impact due to the rural setting of the Project Area. This trend would be similar for any future cumulative noise.

Environmental Justice

An environmental justice analysis (See Section 4.2) was conducted to insure that the proposed action does not disproportionately impact elderly, low income or minority populations. The analysis conducted for the SIU 13 project showed that no disproportionate impacts to minority, low-income, or elderly population groups would be expected by any of the alignment alternatives; therefore, no cumulative negative impact is anticipated by the identified foreseeable future actions. Future benefits by all socioeconomic classes could be further realized with the completion of the National I-69 and the SARIF as employment opportunities expand.

Farmland, Hazardous Materials, and Cultural Resources

No cumulative impacts to farmland, or hazardous materials are anticipated in the SIU 13 Project Area by the National I-69 Corridor, adjacent SIU, I-69 Connector, or the SARIF projects. No additional right of-way or direct farmland conversion between the projects termini (U.S 82 near El Dorado and U.S. 65 at McGehee) would result from the future construction of these projects. Currently, a cultural resource investigation is underway for the SIU 13 Project Area and a complete assessment cannot be made at this time.

Wetlands and Floodplains

Cumulative wetland and floodplain impacts could near interchange locations from additional development due to the construction of the National I-69 Corridor, adjacent SIU's, the I-69 Connector, or the SARIF projects. The availability of these large transportation facilities in close proximity to one another could serve to draw additional business and industry to the region.

Threatened and Endangered Species

Five federally listed species potentially occur in the SIU 13 Project Area. Known habitat for these species was avoided by this project and by the other projects, therefore no cumulative impacts are anticipated by any of the foreseeable future actions. Coordination will be on-going as these projects develop with FWS, ANHC, and Arkansas Game and Fish Commission to insure compliance with appropriate state and federal requirements

Wild and Scenic Rivers

No wild and scenic rivers are located within the SIU 13 Project Area. However, a portion of the Saline River within the Project Area is on the National Park Service's Nationwide Rivers Inventory list. No cumulative impacts are anticipated.

Surface Water Bodies/Water Quality

The SIU 13 Project Area traverses through portions of the Ouachita River, Saline River, and Bayou Bartholomew Bayou drainage basins. Within these basins exist dozens of intermittent and perennial streams. The operational use of additional traffic from the future construction of the National I-69 Corridor, adjacent SIU's, the I-69 Connector and SARIF projects would not induce additional physical alternations to these surface water bodies. However, future additional traffic could result in cumulative impacts to surface water resources due to additional roadway related pollutants and accidental spills of hazardous materials. Roadway related pollutants are best mitigated through the use of stormwater management practices.

Natural Communities and Wildlife

Future construction of the National I-69 Corridor, adjacent SIU's, I-69 Connector and SARIF projects could induce additional impacts to the natural community as the synergy of these large transportation facilities in close proximity to one another serve to draw additional business and industry to the region. Cumulative impacts to aquatic species and wildlife could occur due to construction of the National Corridor, the I-69 Connector, adjacent SIU's, or the SARIF projects. Additional vehicles could generate more sediment for deposition in area streams. The mortality rate of wildlife could also increase, however, as outlined in Section 4.9, wildlife in the Project Area display a broad habitat distribution and are not restricted to a particular habitat type.

4.20 RELATIONSHIP OF LOCAL SHORT-TERM USES VS. LONG-TERM PRODUCTIVITY

Short-term uses to the human and natural environment are anticipated by the construction of the proposed highway. All build alternatives would have similar impacts. Uses of the human environment would include relocation of homes for residents. Uses of the natural environmental would cause temporary erosion and siltation to local streams and bayous and disruption and displacement of species during construction. Additionally, there would be a considerable amount of resources allocated to construction of the proposed highway that would include such resources as earth, rock, cement, sand and fossil fuels.

The short-term effects would be relatively minor when compared with the positive effects of the proposed highway. The long-term effects will be a safer route of travel from El Dorado to McGehee that would stimulate economic growth as well as long-term employment opportunities. The long-term benefits of the proposed highway outweigh the negative aspects and are consistent with the use of resources and the short- term impacts upon the areas involved.

4.21 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Construction of I-69 will involve the commitment of several resources that include land, manpower, natural resources, and financial resources. The use of these resources is warranted for this proposed highway because construction will produce an overall improved transportation system. Land used for the proposed highway would be considered an irreversible commitment during the life of the facility. Manpower would be used to operate construction equipment and to fabricate construction materials from natural resources. Generally, these materials are not retrievable. The use of these materials would not have an adverse effect on the continued availability of these resources.

Construction of the proposed highway would require funding from federal and state sources. These funds would be committed to the construction and maintenance of the facility and not available for other uses.

4.22 SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Table 4-16 summarizes the impacts for the developed alignment alternatives discussed in Section 4. Impacts to the social, economic, natural, and cultural environment would result from construction of any of the alignments evaluated in detail in this document. The alignments were developed in a Corridor that allowed impact avoidance and minimization for a number of resources, while addressing the project Purpose and Need and providing feasible engineering alternatives.

It should be noted that due to the project development process, impacts to most resource categories are relatively small for a project over 100 - miles in length. Opportunities were taken at both the corridor and alignment development stages to avoid and/or minimize impacts to all resources to the greatest extent practicable. Further reductions will be investigated based on comments received from the public hearings on this document.

Table 4-16
SUMMARY OF ALIGNMENT ALTERNATIVE ENVIRONMENTAL CONSEQUENCES

Category	ALIGNMENT				
	Line 1	Line 2	Line 3	Line 4	Preferred (Line 5)
Social Impacts					
Land Use *Total Converted to Highway Uses in acres*	3,654	3,979	3,682	3,966	3,863
Relocations					
Number of Impacted Residences	16	16	14	10	5
Number of Impacted Businesses	0	0	0	0	0
Number of Impacted Churches and Community Facilities	0	0	0	0	0
Number of Impacted Cemeteries	0	0	0	0	0
Environmental Justice	No Disproportionate Impacts	No Disproportionate Impacts	No Disproportionate Impacts	No Disproportionate Impacts	No Disproportionate Impacts
Natural Resources					
Floodplain Impacted in acres	856	850	820	769	778
Regulated Floodways Impacted in acres	0	0	0	0	0
Total Wetlands Impacted in acres	350	330	349	320	270
Total Forestland Impacted in acres	2,817	3,084	2,812	3,128	3,048
Total Cropland and Pastureland Impacted in acres	837	895	870	838	815
Impacts to Known Locations of Threatened or Endangered Species	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts
Impacts to Threatened or Endangered Species Potential Habitat in acres	0	30	34	34	0
Natural Areas	No Impacts	No Impacts	No Impacts	No Impacts	No Impacts
Impacts to Prime Farmland Soils in acres	2,138	2,517	2,104	2,353	2,199
Impacts to Statewide Important Farmland Soils in acres	145	299	146	273	259
Cultural Resources					
National Register (NR) Properties	0	0	0	0	0
Structures Eligible for the NR	1*	0	1*	0	0
Recorded Archeological Sites	4	2	3	2	3
High Probability Areas in acres	634	704	769	759	690
Total Noise Receptors Impacted	14	16	27	17	15
Hazardous Materials Sites	0	0	0	0	0

Source: Michael Baker Jr., Inc., * Structure no longer standing

Section 5: LIST OF PREPARERS

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	W. Hal Thompson	Designer

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Section 6: **DISTRIBUTION OF STATEMENT**

Copies of the Final Environmental Impact Statement have been distributed to the following agencies and organizations:

FEDERAL AGENCIES

U.S. Army Corps of Engineers – Vicksburg, MS

U.S. Department of Housing & Urban Development, Little Rock, AR

U.S. Department of the Interior, Fish & Wildlife Service – Washington, D.C.

U.S. Department of the Interior, Fish & Wildlife Service - Conway, AR

U.S. Department of the Interior, National Park Service

U.S. Environmental Protection Agency - Dallas, TX

U.S. Environmental Protection Agency - Washington, D.C.

U.S. Federal Emergency Management Agency - Denton, TX

Advisory Council on Historic Preservation – Lakewood, CO

STATE AGENCIES

Arkansas Department of Health, Little Rock, AR

Arkansas Department of Parks & Tourism - Little Rock, AR

Arkansas Department of Environmental Quality - Little Rock, AR

Arkansas Forestry Commission - Little Rock, AR

Arkansas Game and Fish Commission - Little Rock, AR

Arkansas Historic Preservation Program - Little Rock, AR

Arkansas Industrial Development Commission - Little Rock, AR

Arkansas Natural and Scenic Rivers Commission - Little Rock, AR

Arkansas Natural Heritage Commission - Little Rock, AR

Arkansas Soil & Water Conservation Commission - Little Rock, AR

Arkansas State Planning and Development Clearinghouse - Little Rock, AR

Arkansas Waterways Commission - Little Rock, AR

Commissioner of State Lands - Little Rock, AR

Office of the Governor - Little Rock, AR

Office of the State Archeologist - Fayetteville, AR

NATIVE AMERICAN TRIBES

Caddo Indian Tribe of Oklahoma

Quapaw Tribe of Oklahoma

Tunica-Biloxi Indians of Louisiana

U.S. SENATORS AND REPRESENTATIVES

Representative Mike Ross - Washington, D.C.

Representative Vic Snyder – Washington, D.C.

Senator Blanche Lincoln - Washington, D.C.

Senator Mark Pryor - Washington, D.C.

STATE SENATORS AND REPRESENTATIVES

Representative Johnnie Bolin – Crossett, AR

Representative Stephanie Flowers – Pine Bluff, AR

Representative Willie Hardy – Camden, AR

Representative Jodie Mahony – El Dorado, AR

Representative Allen Maxwell – Monticello, AR

Representative David Rainey – Dumas, AR

Representative Randy Rankin – Eudora, AR

Representative Gregg Reep – Warren, AR

Senator Bobby Glover - Carlisle, AR

Senator Jerry Taylor - Pine Bluff, AR

Senator Gene Jeffress – Louann, AR

Senator Jimmy Jeffress - Crossett, AR

Senator Percy Malone - Arkadelphia, AR

Senator Hank Wilkins, IV – Pine Bluff, AR

COUNTY JUDGES

Ashley County Judge

Bradley County Judge

Calhoun County Judge

Chicot County Judge

Cleveland County Judge

Desha County Judge

Drew County Judge

Jefferson County Judge

Lincoln County Judge

Ouachita County Judge

Union County Judge

LOCAL COMMUNITY LEADERS

Mayor of Arkansas City

Mayor of Banks

Mayor of Calion

Mayor of Camden

Mayor of Crossett

Mayor of Dermott

Mayor of Dumas

Mayor of Eudora

Mayor of El Dorado

Mayor of Felsenthal

Mayor of Fountain Hill

Mayor of Hamburg

Mayor of Hampton

Mayor of Harrell

Mayor of Hermitage

Mayor of Huttig

Mayor of Lake Village

Mayor of Junction City

Mayor of Magnolia

Mayor of McGehee

Mayor of Monticello

Mayor of Norphlet

Mayor of Pine Bluff

Mayor of Smackover

Mayor of Star City

Mayor of Strong

Mayor of Tillar

Mayor of Warren

Mayor of Wilmar

LOCAL LIBRARIES

Barton Library – El Dorado, AR

Calhoun County Library

Dumas Public Library

Monticello Library

Paul Sullins Public Library - Crossett, AR

Pine Bluff Library

Smackover Public Library

Star City Library

Warren Library

University of Arkansas – Monticello Library

CHAMBERS OF COMMERCE

Bradley County Chamber of Commerce

Camden Area Chamber of Commerce

Crossett Chamber of Commerce

Dumas Chamber of Commerce

El Dorado Chamber of Commerce

Magnolia/ Columbia County Chamber of Commerce

McGehee Area Chamber of Commerce

Monticello/Drew County Chamber of Commerce

Smackover Chamber of Commerce

OTHER ORGANIZATIONS AND PLACES

Arkansas Archeological Survey Station Archeologist – U. of Arkansas Monticello

Arkansas Archeological Survey Station Archeologist – U. of Arkansas Pine Bluff

Arkansas Museum of Natural Resources – Smackover, AR

Felsenthal National Wildlife Refuge – Crossett, AR

Bradley County Industrial Development Corporation

Southeast Arkansas Regional Intermodal Facility

Southeast Economic Development District

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Section 7: COORDINATION AND PUBLIC INVOLVEMENT

Involvement and participation by community leaders, state and federal resource agencies, and the public throughout the study process was an integral part of the I-69 Location study. The public involvement program was specifically designed to encourage both written comments and informational visits to the project office in White Hall, Arkansas. This section discusses these efforts from project initiation through the publication and distribution of the Draft EIS. Tables at the end of this section provide information on meeting locations, dates, and the approximate number of attendees. Minutes and attendance records of the meetings are on file at AHTD. Agency and tribal correspondence is included in the Appendix.

7.1 SCOPING PROCESS

The objective of the scoping process was to identify environmental, socioeconomic, engineering, or other issues which should be considered during the study. Federal and state resource agencies and local community leaders were invited to participate in a series of meetings in May 1999. These meetings provided an opportunity for participants to gain an understanding of the study process, discuss project benefits and concerns, and identify key issues to be considered during corridor and alignment development. It was emphasized that early identification of environmental concerns maximized the ability to avoid and minimize impacts during alternatives development. Native American tribes were also contacted and invited to participate in the study process.

On December 7, 2001, a notice of intent was published in the Federal Register (Vol. 66, Number 236) that an Environmental Impact Statement (EIS) would be prepared for a proposed highway project in the Arkansas Counties of Ashley, Bradley, Calhoun, Chicot, Columbia, Desha, Drew, Ouachita, and Union.

7.1.1 Local Community Leader Involvement

Two scoping meetings were held with local community leaders on December 6, 2001 in Monticello and El Dorado, Arkansas. Many area business representatives also attended. The meeting presented an overview of the project study process and the proposed project area. Table 7-1 summarizes the project concerns and benefits discussed at the meeting.

Table 7-1
LOCAL OFFICIALS SCOPING MEETING
SUMMARY OF COMMENTS

Benefits of the Proposed Project
Increase jobs and industry
General economic development
Local impact on economy during construction
Access to metropolitan areas
Cheaper freight rates
Access to markets in Canada and Mexico
Help retain population
Improved delivery time for goods and services
Greater access to educational facilities
Increase tourism through increased accessibility to area
Improved safety by removed truck traffic from local roads
Better marketability for Southeast Arkansas
Greater access into Southeast Arkansas and better connectivity to Interstate system
Greater access to medical centers in Memphis and Shreveport
Increase access to recreation areas/facilities (Felsenthal National Wildlife Refuge)
Hazardous waste movement taken off local roads and put on to I-69
Concerns About the Proposed Project
Impacts to Bayou Bartholomew, Saline River, Ouachita River
Impacts to private property
Time frame for completion
Local community needs due to projected growth
Need for additional law enforcement, fire protection, and utilities
Funding for project

Source: Michael Baker Jr., Inc. December 6, 2002 Local Officials Meeting

7.1.2 Native American Tribe Involvement

Representatives from the Caddo Tribe of Oklahoma, the Tunica-Biloxi Indians of Louisiana, and the Quapaw Tribe of Oklahoma were invited to participate in the December 2001 agency scoping meeting to discuss the I-69 project study process and to identify any issues or areas of traditional religious and cultural importance that should be considered during both the corridor and alignment phases of study. No correspondence was received from any tribe identifying specific concerns. FHWA continues to work with these tribes on a Programmatic Agreement for all I-69 projects in Arkansas.

7.1.3 Resource Agency Involvement

A scoping meeting was held with state and federal resource and regulatory agencies on December 5, 2001 in Little Rock, Arkansas to initiate early agency involvement and cooperation in the study. The objective of this meeting was to discuss the SIU 13 project and to identify key environmental issues to be considered during both the corridor and alignment phases of study. Specific issues

identified and discussed included avoiding and/or minimizing involvement with Federally listed threatened and endangered species, specifically the red-cockaded woodpecker and *Geocarpon minimum* (a small plant species), Bayou Bartholomew, Seven Devil's Swamp, Cut-off Creek Wildlife Management area, Casey Jones Wildlife Management area, Felsenthal National Wildlife Refuge, H.K. Thatcher Lock and Dam on the Ouachita River, Moro Bay State Park, and wetland resources in the project area. Agencies in attendance included representatives from Arkansas Parks and Tourism, Arkansas Natural Heritage Commission, the U.S. Army Corps of Engineers – Vicksburg District, the U.S. Coast Guard, the U.S. Environmental Protection Agency – Region 6, U.S. Fish and Wildlife Service, Arkansas Department of Environmental Quality, Arkansas Department of Economic Development, and the Arkansas Game and Fish Commission.

7.2 CORRIDOR STUDY

Public, local community leader, and resource agency involvement was obtained during the corridor study. This phase of study focused on obtaining input on the corridors developed to aid in the identification of a corridor or corridors that provided the best opportunity to develop specific highway alignments within it that avoid and minimize overall project impacts.

7.2.1 Public Involvement

Open forum public meetings were held in McGehee, Monticello, and El Dorado, Arkansas on March 11-13, 2002. Project flyers announcing the meetings were sent to individuals on the general mailing list, including all local officials and were posted in various business establishments throughout the project area. The public meetings allowed citizens to review the corridor locations at their convenience and talk with project representatives.

The corridors were displayed in two formats. Both visually presented the environmental inventory information contained in the GIS and used for the corridor comparative analysis. Sensitive information such as endangered species locations and known archeological sites were not displayed to the general public. The first format used AHTD county highway mapping background to display the corridors relative to the area road network. The second used a 1998 black and white aerial photograph background (approx. scale of 1"=4,000') where land cover, timber and farming operations, and clusters of residential development were visible.

Several handouts including a corridor location map and comparative analysis table were distributed along with a comment form that encouraged input from the public regarding additional environmental information, proposed highway usage information,

and preferences on corridor locations. Over 100 people attended the public meetings. Public input received centered on potential economic development opportunities, community access, and property impacts.

7.2.2 Community Leader Involvement

Community leaders were invited to participate in corridor study review meetings held on March 12 and 13, 2002 to review the environmental inventory and the preliminary corridors developed. Concerns in the Monticello area focused on providing access to I-69 for the existing and planned industrial development southeast of town to promote further economic development and the possibility of removing truck traffic from local streets through town. Warren representatives believed that Corridor A and Corridor B would serve the community well and were located near the industrial portion of town. Representatives attending the El Dorado meeting, including the Mayors of El Dorado and Camden, supported Corridor A as providing the best economic development opportunities for the communities of El Dorado, Camden, Magnolia, and the surrounding area.

7.2.3 Native American Tribal Involvement

Correspondence inviting tribal participation in the study process and involvement in the Corridor Study was sent to the Quapaw Tribe of Oklahoma, the Tunica-Biloxi Indians of Louisiana, and the Caddo Indian Tribe of Oklahoma. This letter requested the identification of any issues or areas of traditional religious and cultural importance that should be considered during the development of project alternatives. This was followed by a Nation to Nation meeting in June 2002 between FHWA and the tribes discussing project constraints and the corridor study process.

7.2.4 Resource Agency Involvement

Federal and state agencies were invited to participate in a corridor study review meeting held on March 12, 2002 to review the environmental inventory and the preliminary corridors developed. Environmental factors influencing corridor development were discussed and issues of concern continued to focus on avoiding and/or minimizing involvement with Federally listed threatened and endangered species, specifically the red-cockaded woodpecker and *Geocarpon minimum*, Bayou Bartholomew, Seven Devil's Swamp, Cut-off Creek Wildlife Management area, Casey Jones Wildlife Management area, Felsenthal National Wildlife Refuge, the Ouachita River, Moro Bay State Park, and wetland resources in the project area. Agencies in attendance included representatives from the Arkansas Geological Commission, Arkansas Soil and Water Conservation Commission, Arkansas Natural Heritage Commission, the U.S. Army Corps of Engineers – Vicksburg District, Arkansas

Department of Economic Development, and the Arkansas Game and Fish Commission.

7.3 ALIGNMENT STUDY

The Alignment Study meetings were designed to obtain specific comments from meeting participants on the preliminary alignment locations. Many comments were received that resulted in alignment revisions and the development of an additional alignment.

7.3.1 Public Involvement

Open forum public meetings were held in McGehee, Monticello, Warren, and Monticello Arkansas on March 10-13, 2003, respectively (Table 7-2). Information on meeting dates, locations, times, and content was publicized similar to the Corridor Study effort and included area newspapers, radio and television stations. Project flyers announcing the meetings were sent to all citizens on the general mailing list and to local officials and posted in various business establishments and community facilities throughout the project area.

Table 7-2
PUBLIC MEETINGS

DATE	LOCATION	ATTENDANCE
Corridor Study		
March 11, 2002	Council Meeting Room, McGehee Municipal Building	23
March 12, 2002	Monticello Junior High School Cafeteria	61
March 13, 2002	Billy McGehee Building Student Center South Arkansas Community College East Campus	21
Subtotal		**105**
Alignment Study		
March 10, 2003	Council Meeting Room, McGehee Municipal Building	98
March 11, 2003	Monticello High School Cafeteria	226
March 12, 2003	Warren High School Cafeteria	55
March 13, 2003	South Arkansas Community College East Campus	39
Subtotal		**418**
TOTALS		523

Source: Michael Baker Jr., Inc.

Preliminary alignments were displayed on a 1998 black and white aerial photographic background at an approximate scale of 1"= 2,000', that enabled those attending to identify individual properties, residences, and businesses. Several handouts including a preliminary alignment location map and comparative analysis table were distributed. Comment forms were distributed that requested alignment preferences, suggested revisions, and additional environmental information. Over 400 people attended the public meetings. Comments received focused on potential impacts to personal property. Requested revisions to the preliminary alignments centered on avoiding or reducing these impacts.

Following the public meetings, laminated alignment alternative maps and handouts were distributed to Crossett City Hall, Camden Chamber of Commerce, Dumas City Hall/Chamber of Commerce, El Dorado Chamber of Commerce, Monticello Economic Development Commission, McGehee City Hall, Smackover Municipal Building, and the Bradley County Industrial Development Corporation in Warren. A complete set of public meeting displays was made available for review at the project office in Whitehall.

7.3.2 Local Community Leader Involvement

Meetings with local community leaders were held in Monticello on March 11 and El Dorado on March 13, 2003 (Table 7-3) prior to public meetings to discuss the alignments in detail. The City of Monticello presented a letter that stated a preference for the southern alternative around Monticello, which was also supported by the Monticello Economic Development Commission. Community leaders in attendance at the El Dorado meeting stated no alignment preference.

Table 7-3
LOCAL COMMUNITY LEADER MEETINGS

Date	Location	Purpose
December 6, 2001	Monticello City Hall	EIS Scoping Process
December 6, 2001	South Arkansas Community College - El Dorado	EIS Scoping Process
March 12, 2002	Monticello Economic Development Commission	EIS Corridor Study Review
March 13, 2002	South Arkansas Community College – El Dorado	EIS Corridor Study Review
March 11, 2003	Monticello Economic Development Commission	EIS Alignment Study Review
March 13, 2003	South Arkansas Community College - El Dorado	EIS Alignment Study Review

Source: Michael Baker Jr., Inc.

7.3.3 Native American Tribal Involvement

Correspondence was sent to the Quapaw Tribe of Oklahoma, the Tunica-Biloxi Indians of Louisiana, and the Caddo Indian Tribe of Oklahoma inviting participation in the alignment study. This letter requested the identification of any issues or areas of traditional religious and cultural importance that should be considered during the development of preliminary alignment alternatives. This was followed by a Nation-to-Nation meeting in May 2003 between FHWA and the Native American Tribes to review the preliminary alignments and discuss a programmatic agreement that each tribe will be invited to sign prior to issuance of the Record of Decision.

7.3.4 Resource Agency Involvement

State and federal resource agencies were invited to participate in a field review of the preliminary alignments with AHTD and FHWA on June 10, 2003 (Table 7-4). The primary focus of the meeting was on the effect of the preliminary alignments on environmental resources and included general discussions of minimization and mitigation efforts. The field review was attended by representatives from the Arkansas Geological Commission, Arkansas Natural Heritage Commission, the U.S. Army Corps of Engineers – Vicksburg District, the U.S. Environmental Protection Agency – Region 6, Arkansas Department of Environmental Quality, the Arkansas Game and Fish Commission, and the USDA Natural Resource Conservation Service.

Table 7-4
RESOURCE AGENCY MEETINGS

Date	Agency	Purpose / Topic
December 5, 2001	Appropriate State and Federal Agencies	Scoping
March 12, 2002	Appropriate State and Federal Agencies	EIS Corridor Study Review
June 27, 2002	FHWA and Native American Tribes	Section 106 Coordination
October 30, 2002	Appropriate State and Federal Agencies	Wetland Mitigation
May 22, 2003	FHWA and Native American Tribes	Section 106 Coordination
June 10, 2003	Appropriate State and Federal Agencies	Preliminary Alignment Field Review

Source: Michael Baker Jr., Inc

7.4 ENVIRONMENTAL DOCUMENTATION

Public hearings were held in El Dorado, Monticello, and McGehee to obtain formal comment of the Draft Environmental Impact Statement. The hearing dates, locations, attendance, and number of individual received is presented in Table 7-5.

Table 7-5
PUBLIC HEARINGS

Date	Location	Attendance*	Number of Oral Comments	Number of Written Comments
June 22, 2004	Parkers Chapel School Gymnasium No. 2	33	0	2
June 23, 2004	Monticello High School Cafeteria	99	8	37
June 24, 2004	McGehee Municipal Building	17	1	0
TOTALS		**149**	**9**	**39**

Source: Michael Baker, Jr. Inc.
*Attendance based on hearing sign-in record

One hundred fifty written comments were received from local citizens and organizations by the close of the comment period on July 19, 2004. Nine oral comments were also received at the public hearings. Comment received on the DEIS have been fully evaluated and considered in the identification of the Preferred Alignment. All comments expressing project concerns have been summarized and a response has been provided in Table 7-5. A public hearing record of comments received through July 19, 2004 is on file at AHTD. State and Federal resource agency comment letters on the DEIS are provided in the Appendix. These comments have been summarized and a response has been provided in Table 7-6.

7.5 PUBLIC NOTIFICATION METHODS

Three types of direct mailing lists were maintained for the study: public, local community leader and resource agencies. The public mailing list was initiated from public meeting sign-in sheets from the corridor meetings. As each additional public meeting was held, or as each phone or written inquiry was received, these persons were added to the mailing list. The current public mailing list contains nearly 500 individuals. The local officials list includes representatives from federal, state, and local government and currently includes nearly 100 individuals. A combination of ten state and federal agencies participated throughout the project either through meeting attendance or through regular mailings regarding on-going project studies and project status. In addition, project information was sent to three representatives of area Native American tribes.

Additionally, notifications of meetings were handled in several other methods:

- Thirteen area newspapers: Ashley News Observer, Advance Monticellonian, Banner News, Camden News, Cleveland County Herald, Fordyce News Advocate, Eagle Democrat, El Dorado

News, Lincoln Ledger, McGehee-Dermott Times, Pine Bluff Commercial, South Arkansas Sun, Smackover Journal.

- Nineteen area radio stations: KCAC, KAMD, KCXY, and KMGC in Camden, KAGH and KHMD in Crossett, KBJT and KQEW in Fordyce, KKOL, and KDMS in El Dorado, KVMA in Magnolia, KVSA in McGehee, KGPQ, KHMB, and KXSA in Monticello, KOTN and KTRN in Pine Bluff, KWRF in Warren.
- Four television stations: KARK, KLRT, KTHV, and KATV in Little Rock.
- A project website (http://www.i-69.dina.org/) that was used to display public meeting handouts and notices of future public involvement opportunities.
- Additional copies of announcements sent to local officials for posting in their communities.

7.6 TOPICS OF PUBLIC COMMENT LETTERS ON THE DEIS

One hundred fifty nine comments were received between the publication of the Draft EIS and the close of the comment period on July 19, 2004. Over 75% of the comments received on the Draft EIS were in support of an alignment that would pass south of Monticello. Several citizens were concerned with personal property impacts as the result of the proposed highway. AHTD recognizes property owner concerns and has worked at all stages of the project to minimize the number of homes taken and the number or parcels impacted by the proposed highway. It would not be possible to construct any highway facility without some impact to personal property.

7.7 NATIVE AMERICAN TRIBAL INVOLVEMENT ON THE DEIS

The Draft EIS was sent to the Quapaw Tribe of Oklahoma, the Tunica-Biloxi Indians of Louisiana, and the Caddo Indian Tribe of Oklahoma for their review and comment. No Draft EIS tribal comments were received. All tribal correspondence is included in the Appendix.

Table 7-6
SUMMARY OF COMMENTS RECEIVED ON THE DRAFT EIS

COMMUNITIES AND ORGANIZATIONS	
Crossett Area Chamber of Commerce	
Comment:	Support the proposed location of I-69 south of the City of Monticello
Response:	Identification of a Preferred Alignment that would pass south of Monticello is detailed in Section 2.6.8.
Crossett Economic Development	
Comment:	Prefers to see Interstate 69 come as far south of Monticello as feasible.
Response:	Identification of a Preferred Alignment that would pass south of Monticello is detailed in Section 2.6.8.
INDIVIDUAL ORAL COMMENTS	
Comment:	6 citizens prefer the southern alignments around Monticello.
Response:	Identification of a Preferred Alignment that would pass south of Monticello is detailed in Section 2.6.8.
Comment:	1 citizen supports the northern alignments around Monticello.
Response:	Identification of a Preferred Alignment that would pass south of Monticello is detailed in Section 2.6.8.
Comment:	1 citizen concerned with Line 2 impacts to personal property.
Response:	Efforts have been made throughout the project development process to minimize property impacts to the extent practicable. Further efforts will be made during the final design process to minimize impacts to personal property.
Comment:	Senator Jimmy Jeffress stated that citizens in Ashley County and the southern part of Drew County prefer the southern route around Monticello.
Response:	Identification of a Preferred Alignment that would pass south of Monticello is detailed in Section 2.6.8.
INDIVIDUAL WRITTEN COMMENTS	
Comment:	27 citizens prefer the southern route around Monticello and concerned with property impacts for the location of a planned church.
Response:	Identification of a Preferred Alignment that would pass south of Monticello is detailed in Section 2.6.8. The referenced church is north of Monticello and would not be impacted by the Preferred Alignment.
Comment:	1 citizen supports the southern route around Monticello and the bypass from Highway 425 to Highway 35.
Response:	Identification of a Preferred Alignment that would pass south of Monticello is detailed in Section 2.6.8.
Comment:	84 citizens support the southern alignments in the Monticello area.
Response:	Identification of a Preferred Alignment that would pass south of Monticello is detailed in Section 2.6.8.

Table 7-6
SUMMARY OF COMMENTS RECEIVED ON THE DRAFT EIS

INDIVIDUAL WRITTEN COMMENTS (cont.)	
Comment:	15 citizens prefer the northern alignments in the Monticello area.
Response:	Identification of a Preferred Alignment that would pass south of Monticello is detailed in Section 2.6.8.
Comment:	2 citizens opposed to the southern route of 2, 4, and 5 for the proposed I-69.
Response:	Comment noted.
Comment:	3 citizens prefer the southern route around Monticello and concerned with personal property impacts.
Response:	Identification of a Preferred Alignment that would pass south of Monticello is detailed in Section 2.6.8. Efforts have been made throughout the project development process to minimize property impacts to the extent practicable. Further efforts will be made during the final design process to minimize impacts to personal property.
Comment:	1 citizen stated that this meeting was a waste of time.
Response:	Comment noted.
Comment:	1 citizen states that the southern route would cost more and the northern route is the most cost effective.
Response:	Comment noted.
Comment:	1 citizen opposes the proposed north routes and concerned with residential impacts along the northern routes.
Response:	Identification of a Preferred Alignment that would pass south of Monticello is detailed in Section 2.6.8. Efforts have been made throughout the project development process to minimize property impacts to the extent practicable. Further efforts will be made during the final design process to minimize impacts to personal property.
Comment:	1 citizen supports I-69 through southeast Arkansas.
Response:	Comment noted.
Comment:	1 citizen concerned with cost of I-69
Response:	Comment noted.
INDIVIDUAL EMAILED COMMENTS	
Comment:	1 citizen prefers the southern routes around Monticello and concerned with impact to personal property.
Response:	Identification of a Preferred Alignment that would pass south of Monticello is detailed in Section 2.6.8. Efforts have been made throughout the project development process to minimize property impacts to the extent practicable. Further efforts will be made during the final design process to minimize impacts to personal property.
Comment:	1 citizen supports Line 2, 4, or 5 south of Monticello.
Response:	Identification of a Preferred Alignment that would pass south of Monticello is detailed in Section 2.6.8.

Table 7-6 SUMMARY OF COMMENTS RECEIVED ON THE DRAFT EIS	
INDIVIDUAL EMAILED COMMENTS (cont.)	
Comment:	12 citizens prefer Line 1.
Response:	Identification of a Preferred Alignment that would pass south of Monticello is detailed in Section 2.6.8.
Comment:	1 citizen prefers Interstate should pass south of Monticello.
Response:	Identification of a Preferred Alignment that would pass south of Monticello is detailed in Section 2.6.8.
Comment:	1 citizen states the northern corridor is the best route to take for the I-69 alignment in the Monticello area.
Response:	Identification of a Preferred Alignment that would pass south of Monticello is detailed in Section 2.6.8. Efforts have been made throughout the project development process to minimize property impacts to the extent practicable. Further efforts will be made during the final design process to minimize impacts to personal property.
Comment:	1 citizen concerned with personal property impacts.
Response:	Efforts have been made throughout the project development process to minimize property impacts to the extent practicable. Further efforts will be made during the final design process to minimize impacts to personal property.
Comment:	On page 2-9 there is a reference to the collection of cultural resources information. This paragraph mentions cemeteries taken from USGS maps and from public involvement. I would like to point out that after aggressively soliciting information on at-risk cemeteries in Arkansas, it is my conclusion that fully 1/2 of the existing historic cemeteries in the state are not on USGS maps. Since south Arkansas has been declining in population and has been taken over in great extent by industrial timber enterprises for many decades, there are innumerable small, isolated historic cemeteries in this part of the state that are not in any database or on any map. There is no indication in your text that many cemeteries, not yet reported to your office, may still be within the corridor.
Response:	Many historic cemeteries in Southern Arkansas are not listed in any database or identified on any map. The project study process was developed to obtain information on important resources such as cemeteries throughout the Corridor and Alignment phases of work. As discussed in Section 2.6.4, an alignment shift was made to avoid a previously unrecorded cemetery based on information obtained during project public meetings. Section 4.12 lists 4 previously unrecorded historic cemeteries within and adjacent to the Preferred Corridor that were added to the project database based on information from local historical resources and landowner information. No additional cemeteries were located during the Phase I cultural resources survey of the Preferred Alignment.

Table 7-6 SUMMARY OF COMMENTS RECEIVED ON THE DRAFT EIS	
INDIVIDUAL EMAILED COMMENTS (cont.)	
Comment:	In addition, there is mention of 'High Probability Areas' in this section and on subsequent maps, but I find no discussion of how these areas have been determined. South Arkansas is woefully under-surveyed for cultural resources, so what we know of current site distribution does not reflect any more than accidents of reporting and modern land management practices. Moreover, this paragraph on page 2-9 mentions high probabilities for prehistoric archeological resources, but doesn't mention historic cultural resources. Historic archeological sites ranging from domestic settlements and small pre-Civil War plantations to Civil War skirmish sites, early trapper and trader caches, early industrial timber and mineral extraction camps, and riverboat landing sites are likely to be situated in the project area. Not all of these kinds of sites are likely to be near streams and on floodplains. It seems like a more robust historic context is necessary if any sort of probabilistic statement about these settlements is made.
Response:	During the data collection process for the entire study area an effort was made to identify high probability areas for unrecorded prehistoric archeological sites. This subjective assessment was based on a number of factors including the general ground slope, amount of previous disturbance, general soil conditions, distance to known water sources, presence of specific land forms, elevation, distance to previously recorded sites, and similarity of the landform and conditions to previously recorded sites. This subjective assessment was done on a quad map by quad map basis across the entire study area. The previously recorded site data was collected from the AMASDA system with some additional input from two of the local AAS station archaeologists and comments from private collectors.
Comment:	The several color maps (exhibit 2-6) showing alignments and other data layers including 'high probability areas for cultural resources' show virtually no high probability areas that I can clearly see. Perhaps because the key color is pale pink on top of the dark aerial photo mosaics I am missing these areas, but it seems like a vanishingly small proportion of the total corridor has been so identified. This is all the more troublesome because the alignment crosses three major streams that include the alluvial valleys of the Saline and the Ouachita Rivers where large tracts of land should be viewed as sensitive.
Response:	Exhibit 2-6 has been revised to more clearly depict these areas.
Comment:	There is no mention of submerged cultural resources at risk where bridges across the above streams, and other major creeks, would be constructed. There is likewise no mention of steps to be taken to search for and evaluate such resources. These could be either historic or prehistoric resources.
Response:	Continued coordination with the Arkansas Historic Preservation Program will continue during the Final Design process to address cultural resources.
Comment:	In the historic context section there is reference to communities growing up 'along trails' in the 19th century (3.15, page 3-40). This is a quaint and romantic notion, but it misrepresents some elements of south Arkansas history. Most communities of significance were at commercial and plantation boat landings, grew up in association with commercial timber and/or railroad development, or were situated near major roads rather than trails. Later, the oil boom sparked the explosive growth of formerly small towns as well. More work devoted to developing the historic context of this project area is recommended.
Response:	Section 3 has been revised to expand on the historical content of the project area.

Table 7-7 SUMMARY OF AGENCY COMMENTS AND RESPONSES ON DRAFT EIS	
Agency: United States Department of the Interior, July 12, 2004 **Stephen R. Spencer**	
Issue: General	
Comment:	The draft EIS and planning process provide ample evidence that the project sponsors are making good faith efforts to identify and avoid or minimize adverse impacts to important resources under our jurisdiction. We support continuation of that effort. Based on our understanding, the Department supports selection of the Line 5 alignment location as the preferred alternative. This alignment appears to have the least known adverse effects and avoids many already recognized adverse impacts. Some of the alignments would foreclose beneficial actions planned for the unique and otherwise special habitats and sites in the project area.
Response:	Comment noted
Issue: Section 4(f)	
Comment:	The draft EIS does not identify any properties that would be eligible for consideration under Section 4(f) of the Department of Transportation Act. However, it does appear that all cultural resources (archeological and architectural) have been inventoried. It is possible that historic properties that may be considered 4(f) resources may be found in subsequent work, which would require additional consultation with the Department.
Response:	Comment noted.
Issue: Wetlands	
Comment:	The draft EIS identified a number of wetland types that are found in the project area. However, a number of sand hill seep wetlands were recently identified in the selected corridor. The specific type of wetland is not identified in the draft EIS. Given their high quality, importance in the landscape, the species and ecological processes they support, and their rarity, these seep wetlands could be aquatic resources of national importance.
Response:	Comment noted: Additional investigations where conducted along the Preferred Alignment to identify potential areas for sand hill seep wetlands. A review of the area between the Ouachita River and the Saline River using NRCS soils maps and through consultation with ANHC and USFWS personnel, identified 5 potential wetland seeps near the Preferred Alignment. A field review was conducted in October 2005 with the USFWS and the COE to investigate these sites. No seep wetlands or unique plant communities were observed at any of these 5 locations along the Preferred Alignment. Section 4.8.3 has been added to the document to address this issue.
Issue: Vehicle Safety	
Comment:	The introduction of vehicles with adaptive cruise control systems means that many engineering constraints, such as level of service, and road curvature, either will not apply, or may be less rigidly applied. We encourage the project sponsors to incorporate new vehicle safety criteria with environmental concerns throughout the project area.

Table 7-7
SUMMARY OF AGENCY COMMENTS AND RESPONSES ON DRAFT EIS

Response:	Comment noted.
Agency: United States Department of the Interior, July 12, 2004 (cont.) **Stephen R. Spencer**	
Issue: Endangered Species Act	
Comment:	The draft EIS cites resource agency reports indicating that six federally listed or endangered species may occur in the project area. Continued coordination of plan development and related studies with the Fish and Wildlife Service in accordance with Section 7 of the Endangered Species Act should avoid adverse impacts to these species or the habitats they depend on.
Response:	The U.S. Fish and Wildlife Service has been involved throughout the project development process and coordination is ongoing.
Issue: Native American Trust Responsibilities	
Comment:	The draft EIS indicated that a number of Native American tribes have ancestral ties to the project area. We are not currently aware of any culturally sensitive, sacred, or other significant resources claimed by tribes in the proposed project footprint. However, should survey or construction activities uncover or discover culturally sensitive or sacred sites, the appropriate representatives should be notified immediately, and, if warranted, land disturbing activities halted.
Response:	Section 4.12 discusses project activities conducted to identify the cultural resources and Section 4.12.3 discusses specific mitigation measures that would address the above issue.
Agency: Arkansas Soil and Water Conservation Commission, June 3, 2004 **J. Randy Young**	
Issue: Document Evaluation	
Comment:	Staff from the Arkansas Soil and Water Conservation Commission have reviewed the DEIS, and based on Construction Cost, ROW/Utility Cost, Residential Structures, Natural Resource Impacts, and Cultural Resource Impacts, recommend that segments of Alignment 1 (in Sections 1, 2, and 3) and Alignment 3 (in Sections 4 and 5) be moved forward as the Preferred Alignment.
Response:	The identification of the Preferred Alignment is discussed in detail in Section 2.6.8.
Agency: Department of the Army, Corps of Engineers, Vicksburg District, May 25, 2004 **Elizabeth S. Guynes**	
Issue: Document Evaluation	
Comment:	The Corps will need to be included in the list of recipients for the mitigation plan for NHRP eligible properties.
Response:	Comment noted.

Table 7-7
SUMMARY OF AGENCY COMMENTS AND RESPONSES ON DRAFT EIS

Agency: Arkansas Forestry Commission, June 4, 2004 **James L. Northum**	
Issue: Document Evaluation	
Comment:	The project will have some adverse impacts on the forest resources of the area with the loss of acreage to right-of-way clearance and other construction. However, the losses should be more than offset by the economic boost to the region by the improvement in transportation provided by the new roadway.
Response:	Comment noted.
Agency: Arkansas Historic Preservation Program, May 21, 2004 Ken Grunewald	
Issue: Document Evaluation	
Comment:	We agree with the plan to conduct an intensive cultural resources survey of all aspects of this undertaking once a final alignment is selected.
Response:	Results of the intensive cultural resources survey are summarized in Section 4.12.2.
Agency: Arkansas Department of Health, June 1, 2004 **Larry Duncan**	
Issue: Water Distribution Systems	
Comment:	The relocation of rural water distribution systems' lines for clearing right-of-way or highway construction was not addressed.
Response:	The location of rural water distribution system lines will be addressed during final design of the highway.
Comment:	Drawings and Specifications for new and/or relocated water system mains must be submitted to the Arkansas Department of Health, Division of Engineering for review and approval prior to construction.
Response:	Comment noted.
Agency: Arkansas Geological Commission, June 7, 2004 **William Lee Pryor**	
Issue: Document Evaluation	
Comment:	The statement is made on page 3-18, Section 3.6.1, Oil and Natural Gas, that all of Arkansas's natural gas and oil is produced in southern Arkansas. This statement is incorrect as the Arkansas River Valley (Arkoma Basin) also produces natural gas in northwestern Arkansas.
Response:	Section 3.6.1 has been revised.

Table 7-7
SUMMARY OF AGENCY COMMENTS AND RESPONSES ON DRAFT EIS

Agency: Arkansas Natural Heritage Commission, July 21, 2004 Cindy Osborne	
Issue: Document Evaluation	
Comment:	We feel that a conscientious job has been done of selecting the least damaging corridor. We are pleased at the efforts that have been made to minimize wetland impacts within the Ouachita Pleistocene terraces in Bradley and Calhoun Counties.
Response:	Comment noted.
Issue: Warren Prairie Natural Area	
Comment:	Although alignments have been designed to avoid crossing Warren Prairie Natural Area, we remain concerned about secondary impacts associated with interstate construction. This agency is currently working with timber companies and private landowners to acquire and/or manage lands surrounding Warren Prairie in a way that will promote the unique biological diversity of the area. Alignments 1 and 2 cross the northern edge of this project area. These alignments could compromise the project by encouraging incompatible urban encroachment. This agency prefers the more northern placement presented by alignments 3, 4, and 5.
Response:	Line 5 has been identified as the Preferred Alignment for the I-69 Project and is discussed in detail in Section 2.6.8.
Issue: Rare Plant Species	
Comment:	The area located south of Hampton in Calhoun County is known to support an unusual suite of rare plant species. Most of the know occurrences near the proposed alignments are found along the shared highway/railroad right-of-way located approximately 2.3 miles east of U.S. Highway 167, south of Hampton, and include the following plants (See ANHC letter in Appendix for list of rare plant species). Careful planning will be required in this area to minimize impacts to these known occurrences which include a new state record plant, horned bladderwort (*Utricularia cornuta*), and one of only two locations in the state known to support yellow-eyed grass (*Xyris baldwiniana*).
Response:	Coordination with the ANHC and other resource agencies will continue during final design of the highway to minimize impacts to natural resources to the extent practicable.

Table 7-7
SUMMARY OF AGENCY COMMENTS AND RESPONSES ON DRAFT EIS

Agency: U.S. Environmental Protection Agency, July 29, 2004	
Issue: Document Evalation	
Comment:	EPA has rated the DEIS as LO, Lack of Objections. General and specific comments are enclosed which we believe will help strengthen the impact analysis and NEPA decision-making process.
Response:	The suggested comments are detailed below.
Issue: Effect of Roads on Wildlife	
Comment:	The statements and references on page-47 (2nd column, 1st paragraph) regarding the effects of roads are outdates (i.e. 1075, 1982). There have been many, many studies performed and peer reviewed articles written on the subject (as opposed to the gray literature representing citations on p. 4-47), only some of which are listed below. This section should be updated with current information, most of which suggest that there is some effect on wildlife due to roads. An undated bibliography is offered for your consideration in finalizing the DEIS.
Response:	Section 4.9 has been revised to reflect more current literature on this issue.
Issue: GIS Screening	
Comment:	EPA Region 6 used its GIS Screen Tool (GISST) to perform an analysis of thirteen criteria on Corridor A. EPA hopes that this information will aid AHTD in determining a preferred alignment within this corridor and for identifying opportunities for mitigation, especially for the avoidance and minimization of potential impacts. Socioeconomic criteria can be used as a starting point to assess environmental justice issues and to prepare communications strategies for scoping meetings or public meetings. Environmental criteria can be used as a starting point to determine and prioritize traditional "NEPA" issues. GISS issues GIS coverages and imposes a scoring structure on the data so that issues may be identified and prioritized. Criteria are ranking using a 1 to 5 scale, with 1 representing low concern and 5 representing high concern. Scores of "4" or "5" may need investigated further. Corridor A is converted into 1 kilometer squares and the GISST is applied to each square. The GISST can be used to identify and prioritize singles issues, such as agricultural lands, threatened and endangered species, 500 year flood plains, impaired waters, managed/public lands, hydrography (stream density), wetlands, wildlife habitat, economically stressed populations, minority populations, population density, ozone nonattainment, and regulated pollution sources. Additionally, these criteria can be summed to aid in determining potential cumulative impacts ("Sum of All Criteria" map). GIS-compatible electronic files of this information may be sent to AHTD upon request. For details on databases, references, and specific criteria used, an electronic file of the GISST User's guide as well as other information can be found at www.epa.gov/earth1r6/6en/xp/enxp2a3.htm. The following criteria are highlighted and have areas that scored "high" within the proposed corridor.
Response:	Comment noted.

Table 7-7
SUMMARY OF AGENCY COMMENTS AND RESPONSES ON DRAFT EIS

Agency: U.S. Environmental Protection Agency, July 29, 2004 (cont.)	
Issue: Federal Threatened and endangered (T&E) Species	
Comment:	There are several areas within the corridor where sensitive species may be present. Coordination with the U.S. Fish and Wildlife Service is recommended.
Response:	As discussed in Section 4.10, coordination with the USFWS has been ongoing throughout the project development process. Threatened and endangered species issues have been adequately addressed (See DOI letter dated July 12, 2004 in Appendix).
Issue: Wildlife Habitat	
Comment:	Using land cover GIS coverages, there is a large number of 1 kilometer squares throughout the corridor that contain habitat that could potentially be used by wildlife (wetlands, rangelands, forest lands, woodlands, and/or bottomlands) and may be impacted by the proposed project. These potentially impacted areas may be opportunities for mitigation.
Response:	As discussed in Section 4.1, Landsat imagery was used from the University of Arkansas' Center for Advanced Spatial Technologies (CAST) that identified existing land uses and land cover types in block sizes of 247 acres. Due to the similarity in resolution used by both CAST and the EPA GISST analysis to identify the various wildlife habitats, both methods would have generated similar results. Opportunities for mitigation will continue to be explored during the final design process.
Issues: Agricultural Lands	
Comment:	The eastern portion of the corridor shows a higher density of agricultural land, primarily between Monticello and McGehee, AR.
Response:	Aerial photography from 1996-97 at a scale of 1" = 800 feet was used, in addition to field verification, to identify agricultural lands within the Preferred Corridor. As stated in Section 4.11.2, distinct areas of agricultural land were identified between Monticello and McGehee.
Issue: Hydrography (Density of streams)	
Comment:	The entire length of the corridor is peppered with areas of high stream density. These potentially impacted areas may be opportunities for avoidance or other mitigation opportunities.
Response:	As discussed in Section 4.6.1, perennial streams crossed by the alignments have been identified and any channel modifications and resulting stream mitigation will be determined during the final highway design process and will be coordinated with the COE, U.S. Fish and Wildlife Service, and state agencies as appropriate.

Table 7-7 SUMMARY OF AGENCY COMMENTS AND RESPONSES ON DRAFT EIS	
Agency: U.S. Environmental Protection Agency, July 29, 2004 (cont.)	
Issue: Wetlands & 500 Year Floodplain	
Comment:	There are several areas that show a high density of wetlands, the largest one existing between Warren and Wilmar, AR. Additionally, there may be issues concerning the 500 year floodplain near Tillar, AR.
Response:	As discussed in Section 4.8, initially potential wetlands systems were identified using color infrared photography at a scale of 1"=2,000 and subsequently field verified. Section 4.8.2 identifies that the Saline River Basin contains the major wetland systems crossed by all alignments that includes the Warren/Wilmar area. Additionally, Section 3.9 discusses that the limits of 100 year floodplains within the Project Area were identified in accordance with guidance provide by FHWA Technical Advisory document TA6640.8A.
Issue: Minority Populations	
Comment:	There are several areas that show a high percentage of minority population. The largest of these exists west of Wilmar, AR and between Monticello and McGehee, AR. A score of "5" is greater than or equal to two times the state average of minorities (U.S. Census). This situation may factor into communication strategies concerning the project and environmental justice assessments.
Response:	The Environmental Justice assessment methodology is discussed in Section 4.2.1. U.S. Census Tract data identified a tract in Drew County with a substantially higher percentage of minorities which was located in the same general area as identified by the GISST analysis. Early public involvement helped to identified other small clusters of minority populations in the Louann, Warren, Wilmar, Monticello, and Selma areas which were also broadly identified by the GISST analysis.
Issue: Sum of All Criteria	
Comment:	The figure shows the sum for all 13 criteria analyzed using the GISST. The area between Warren and Wilmar, AR is an area identified as having multiple potential concerns or cumulative impacts and may need to be further addressed in the EIS.
Response:	The 13 criteria analyzed by the GISST have been investigated and evaluated throughout the project development process. The data used for the I-69 study was often more detailed than the GISST data and provided more site specific information.