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US 71
BENTON COUNTY ARKANSAS AND McDONALD COUNTY MISSOURI
Bella Vista to Pineville

Final
Environmental Impact Statement

Submitted Pursuant to 42 U.S.C. 4332 (2) (c)
and (if applicable) 49 U.S.C. 303 by the

U.S. Department of Transportation
Federal Highway Administration
and
The Arkansas Highway and Transportation Department

COOPERATING AGENCY
Missouri Department of Transportation
Department of Army, Corps of Engineers

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For AHTD

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Date of Approval

For FHWA

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The US 71 Location and Environment Study is a proposed transportation improvement extending 26.4 kilometers (16.4 miles) from the McKisic Creek Interchange south of Bella Vista, Arkansas to Missouri Route H, southwest of Pineville, Missouri. The project will improve US 71 to interstate standards along the existing alignment or a new alignment. This project will improve the safety and system efficiency of the facility. This document incorporates a description of the environmental conditions and evaluates the potential impact of each project alternative.

Comments on this Final EIS are due by Feb. 4, 2000, and should be sent to the persons listed above.

Summary

The Arkansas Highway and Transportation Department (AHTD), Missouri Department of Transportation (MoDOT) and the Federal Highway Administration (FHWA) are proposing to improve US 71 from south of Bella Vista, Arkansas to near Pineville, Missouri. In compliance with the appropriate provisions of the National Environmental Policy Act (NEPA), this environmental impact statement (EIS) has been prepared to aid in the decision-making process for the proposed action (i.e. improvements to US 71). This section provides a summary of the alternative improvements considered for US 71, the potential environmental impacts of these alternatives, and the identification of the Selected Alternative.

A. Description of US 71 Improvements

This EIS contemplates the improvement of US 71 to interstate standards through or around the community of Bella Vista, Arkansas connecting the existing US 71 bypass around Bentonville, Arkansas to the south with the planned four-lane improvements by MoDOT at or near the Missouri/Arkansas state line. These improvements entail the conversion of the existing two-lane and four-lane partially-limited access roadway to a freeway facility with fully-controlled access either on the existing alignment or on a new location alignment.

The extent and character of the planned MoDOT improvements were defined in a Final EIS completed in 1992 which considered US 71 improvements north of the state line (MoDOT Job Number J7P0427-FHWA-EIS-90-02-F). The selected alternative (Alternative 1 in the 1992 MoDOT EIS) consists of a divided dual-lane traffic facility, built to interstate standards, between I-44 and the Arkansas state line. The alignment of the selected alternative begins at Route I-44, approximately 4.8 km (3.0 miles) east of the City of Joplin, then proceeds south along the existing Route 71 corridor to the Arkansas state line. Those commitments enumerated in the MoDOT Final EIS and Record of Decision (ROD) (see Appendix L) will continue to be enforced except as modified by this EIS.

As shown on Exhibit S-1, the Study Area for this EIS extends from a southern terminus connection with the existing US 71 bypass around Bentonville to a connection with the planned MoDOT improvements at a point near Pineville, Missouri. This Study Area delineation was defined to fully encompass the areas in both Missouri and Arkansas which could potentially be impacted by possible route relocations on either side of the Bella Vista community.

B. Purpose and Need for US 71 Improvements

In 1991, the US Congress identified the existing US 71 corridor extending from Kansas City, Missouri to Shreveport, Louisiana as a high-priority corridor. As listed in the Intermodal Surface Transportation Efficiency Act (ISTEA), this corridor, possibly to be designated I-49, was identified as a high-priority north-south highway corridor from the Gulf of Mexico to the Midwest. Towards this end, both AHTD and MoDOT have begun implementing improvement programs to upgrade the corridor to current interstate standards.

Other purposes for the US 71 improvements that stem from the high-priority corridor status include:

- Improved traffic safety

- Elimination of roadway deficiencies
- Efficient operations of the regional transportation system
- Improved local access
- Sufficient capacity for future traffic conditions
- Improved access to nearby recreational facilities

C. Reasonable Alternatives

In compliance with federal regulations requiring the consideration of all reasonable alternatives, a full set of improvement alternatives was considered for US 71. The alternatives were defined in accordance with the needs of the Study Area and traffic considerations.

1. OVERVIEW OF IMPROVEMENT CONCEPTS

The following types of improvement concepts were considered:

- **"No-Build" Concept** - This concept consists of maintaining the existing roadway system plus any committed street and highway improvements within the Study Area. Committed improvements include Transportation System Management (TSM) measures applied to the existing US 71 roadway. These measures would include signalized intersection control at key intersections, intersection approach improvements and reductions in the posted speed (70 km/h (45 mph)). This concept provides a basis of comparison for the determination of the benefits and adverse impacts of the other improvement alternatives.

- **Non-Freeway Improvement to Existing Roadway Concept** - This concept would involve retrofitting the existing US 71 roadway to the fullest extent reasonable to meet future travel demands and safety needs. This concept would not provide a freeway improvement. These retrofits would entail a combination of roadway widening, improved access control and TSM improvements. Because this concept would not provide a freeway improvement, it would not comply with the high-priority corridor interstate standard. Consequently, this concept was not considered further.

- **"Freeway-Build" Concept** - This concept would involve the construction of a freeway facility either on new location or along the existing US 71 alignment. Based on current land use and the built-up environment of the Bella Vista area, several preliminary corridors have been identified – Far West, Near West, Existing and East. Exhibit S-2 shows the locations of the Study Corridors.

- **Other Concepts** - Public transportation alternatives, such as bus systems and rail transit, were considered as multi-modal options to the roadway alternatives. Due to the lack of land use and population densities and due to the highly dispersed trip origin/destination distributions of the Study Area, public transportation alternatives were not considered a reasonable alternative to the proposed action.

2. PRELIMINARY "FREEWAY-BUILD" STUDY CORRIDORS

As shown on Exhibit S-2, four preliminary 1,600 meter-wide (one mile-wide) Study Corridors were identified – Far West Corridor, Near West Corridor, Existing Corridor and East Corridor. The locations of these corridors were defined to minimize the potential adverse impacts to the

built environment, to minimize the length of the freeway improvements, and to provide the most direct connections to the existing US 71 bypass east of Bentonville and the planned MoDOT improvements to the north.

For the purpose of identifying the corridors which are reasonable and meet the stated purpose and need for the proposed action, a preliminary assessment, evaluation, and screening were conducted. The goals of this screening were to eliminate from further consideration those corridors with any "fatal flaws" or those that wouldn't comply with the project's stated purpose and need. Based on a total-project assessment of the Study Corridors' potential impacts on the social, environmental and engineering/traffic issues of the Study Area, it was determined that the East Corridor would not accomplish the goals of the project, primarily relating to traffic. Consequently, freeway improvements within the East Corridor were not considered further. No "fatal flaws" were identified in the other Study Corridors.

3. SUMMARY OF REASONABLE ALTERNATIVES

In accordance with the preliminary screening of the "Freeway-Build" Study Corridors, the following group of reasonable alternatives were defined and evaluated:

- "No-Build" Alternative
- "Freeway-Build" Alternative
  - Freeway Alternatives Within the **Far West Corridor**
  - Freeway Alternatives Within the **Near West Corridor**
  - Freeway Alternatives Within the **Existing Corridor**

Within each remaining preliminary Study Corridor (Far West, Near West and Existing), a group of reasonable alternative freeway alignments were defined in greater detail utilizing current aerial mosaic maps and topographic data. These reasonable alternative alignments and the corresponding labeling nomenclature, using segment designations, are shown on Exhibit S-3. In addition, aerial plan plates showing each of the alternatives are presented in Appendix C.

Due to the uncertainties of the collective abilities of AHTD and MoDOT to jointly and instantaneously construct the freeway improvements, regardless of the improvement corridor, and due to the need to provide short-term improvements to the existing US 71 roadway for safety considerations, both interim and ultimate improvements were defined for each corridor. The interim improvements would consist of short-term investments to address the safety and capacity concerns of US 71 until the ultimate freeway improvements can be constructed throughout the entire Study Area. Depending on the ultimate freeway alternative (Far West, Near West or Existing) and the compatibility of the ultimate freeway construction with the short-term needs of US 71, these interim improvements would consist of roadway-related construction along the existing US 71 Corridor in addition to what would be required for the ultimate freeway construction. For the Near West and Existing Alternatives, the interim improvements represent a staging of the ultimate freeway improvements such that little or no additional construction would be necessary. Table S-1 summarizes the extent of the interim improvements and provides a description of the improvements for each of the "Freeway-Build" Alternatives. The relationships of the ultimate and interim improvements are further clarified on Exhibit S-4.

TABLE S-1
SUMMARY DESCRIPTIONS OF INTERIM AND ULTIMATE IMPROVEMENTS
"FREEWAY-BUILD" ALTERNATIVES

Far West Alternative
• **Ultimate Freeway Improvements** - Construct a four-lane freeway on new location extending from a connection with the planned MoDOT improvements at Route H located southwest of Pineville to the existing US 71/US 71B Interchange south of Bella Vista on an alignment around the western edge of Bella Vista.
• **Short-Term (Interim) Improvements** - Construct a combination of four-lane expressway and five-lane urban arterial improvements from a connection with the planned MoDOT improvements at Route H to a connection with existing US 71 at the state line on an alignment concurrent with the existing US 71 roadway. Roadway approach and signal improvements would be provided at several existing intersections in Arkansas and Missouri, as warranted. The combination four-lane expressway and five-lane urban arterial improvements along the existing US 71 Corridor would be additional to the ultimate improvements.
Near West Alternative
• **Ultimate Freeway Improvements** - Construct a four-lane freeway extending from a connection with the planned MoDOT improvements at Route H located southwest of Pineville to the existing US 71/US 71B Interchange south of Bella Vista on an alignment along existing US 71 in Missouri and through the west-central area of Bella Vista in Arkansas. Roadway approach and signal improvements would be provided at several existing intersections in Arkansas and Missouri.
• **Short-Term (Interim) Improvements** - Construct the four-lane ultimate freeway improvements in Missouri from Route H to a point just north of the state line at which the ultimate freeway improvements diverge from the existing US 71 Corridor, and construct a four-lane improvement from this point to a connection with the existing US 71 roadway at the state line. Roadway approach and signal improvements would be provided at several existing intersections in Arkansas and Missouri, as warranted. The four-lane improvements from the divergence point (3.6 km north of the state line) to the state line would be additional to the ultimate improvements.
Existing Alternative
• **Ultimate Freeway Improvements** - Construct a four-lane freeway extending from a connection with the planned MoDOT improvements at Route H located southwest of Pineville to the existing US 71/US 71B Interchange south of Bella Vista on an alignment along the existing US 71 Corridor.
• **Short-Term (Interim) Improvements** - Construct the four-lane ultimate freeway improvements in Missouri from Route H to a connection with the existing US 71 roadway at the state line. Roadway approach and signal improvements would be provided at several existing intersections in Arkansas and Missouri, as warranted. No additional construction would be required.

For each of the "Freeway-Build" Alternatives, the interim improvements are consistent with the selected alternative from the MoDOT Final EIS (MoDOT Job Number J7P0427-FHWA-EIS-90-02-F). As such, commitments for the continued study and mitigation of adverse impacts from the interim improvements in Missouri would be fulfilled in compliance with and under the auspices of the documented MoDOT Final EIS and ROD. However, though the adverse impacts of the interim improvements are adjudicated by the previous MoDOT EIS, the total, cumulative impacts of the combined interim and ultimate improvements have been evaluated in this EIS.

D. Summary of Major Impacts

In order to compare the potential impacts of the competing reasonable alternatives, a two-phase process was required. Due to the number of reasonable alternative alignments identified, Phase 1 involved the selection of a single "Freeway-Build" Alternative within each Study Corridor. Because each Study Corridor was divided in segments, with each segment

offering several alternative alignments, the first step in Phase 1 required determining the best alignment within each segment. This was accomplished using detailed evaluation data regarding the engineering/traffic, environmental and social impacts for each alternative alignment within each segment. The combination of the best alignment for each segment then formed the reasonable alternative for the overall, total-project evaluation. Phase 2 then entailed the overall, total-project assessment, evaluation and comparison of the reasonable alternatives (i.e., "No-Build Alternative, Far West Alternative, Near West Alternative and Existing Alternative), using similar methodologies as Phase 1. The interim improvements associated with each of the ultimate "Freeway-Build" Alternatives would not change depending on the best alternative alignment within each respective Study Corridor.

1. STUDY CORRIDOR ALTERNATIVE ALIGNMENT EVALUATION (PHASE 1)

The results of the Phase 1 alternative alignment evaluations and comparisons are summarized in Table S-2. This table corresponds to the alignment locations and labels shown on Exhibit S-5. Factors, issues and impacts affecting the selection of the alternative alignments are summarized in the following section. The evaluation data and the overall matrices are included in Appendix B. Only those segments which included alternative alignments are summarized below. For those segments which included only one alternative alignment, an individual evaluation was not necessary as part of Phase 1.

TABLE S-2
SUMMARY OF ALTERNATIVE ALIGNMENT EVALUATIONS
BY STUDY CORRIDOR

Segment	Alternative Alignments	Best Alternative
Far West Corridor		
A	FWA1, FWA2, FWA3	FWA3
B/C	FWB1/C1, FWB2/C2	FWB2/C2
D	FWD1, FWD2	FWD1
H[1]	FW/NWH1, FW/NWH2	FW/NWH1
Near West Corridor		
A[2]	EX/NWA1	EX/NWA1
B[2]	EX/NWB1	EX/NWB1
C[2]	EX/NWC1	EX/NWC1
D/E	NWD1/E1	NWD1/E1
F[3]	NWF1, NWF2, NWF3, NWF4, NWF5	NWF2
G	NWG1	NWG1
H[1]	FW/NWH1, FW/NWH2	FW/NWH1
Existing Corridor		
A[2]	EX/NWA1	EX/NWA1
B[2]	EX/NWB1	EX/NWB1
C[2]	EX/NWC1	EX/NWC1
D	EXD1	EXD1
E	EXE1	EXE1

Note:
1) Far West and Near West Corridors are the same in Segment H.
2) Near West and Existing Corridors are the same in Segments A, B and C.
3) Alternative NWF1 = Links 1, 4 and 8
Alternative NWF2 = Links 1, 3, 5, 6 and 8
Alternative NWF3 = Links 2, 5, 6 and 8
Alternative NWF4 = Links 1, 3, 5 and 7
Alternative NWF5 = Links 2, 5 and 7

a. **Far West Corridor**

- **Segment A** - Alternative FWA3 was identified as the best alternative for this segment. Even though FWA2 would be the alternative with the lowest cost, it could potentially impact Cave Hollow – a cave located north of the state line – in an adverse way. Alternative FWA1 would have unacceptable impacts to an existing swine farm located near Route H, and maintaining access to the farm would be cost prohibitive. No other evaluation factors show an advantage of one alternative over another.

- **Segment B/C** - Alternative FWB2/C2 was identified as the best alternative for this segment. Measurable advantages of this alternative include lower construction costs, fewer impacts to forests, and less potential adverse effects regarding habitat fragmentation. Due to its closer location to the Highlands development within the western area of Bella Vista, Alternative FWB2/C2 would provide less division of the existing forested area and less potential secondary impacts due to development.

- **Segment D** - Alternative FWD1 was identified as the best alternative for this segment. By virtue of its westerly crossing of Route 72, west of Hiwasse, Alternative FWD1 would provide significantly better traffic service than Alternative FWD2. Alternative FWD1 would be slightly more costly to construct due to its longer length and second interchange. Alternative FWD1 would have less adverse impacts to forests, but greater adverse impacts to farmlands. Located on the south side of Hiwasse, FWD1 would have less adverse impacts to existing residences (displacements and noise) and would adversely impact fewer architectural sites.

- **Segment H** - Alternative FW/NWH1 was identified as the best alternative for this segment. The anticipated construction costs for the two alternatives would be roughly equivalent and the adverse environmental impacts would not be notably different. But due to the proximity of Alternative FW/NWH2 to the Bella Vista development and its infrastructure, FW/NWH2 would be more disruptive. Alternative FW/NWH1 would have fewer displacements and adverse noise impacts.

b. **Near West Corridor**

- **Segment F** - Alternative NWF2 was identified as the best alternative for this segment. The combination of Links 1, 3, 5, 6 and 8 comprises this alternative. (Segment F is defined by various combinations of alignment links.) Due to the adverse impacts of Link 4 on Gordon Hollow Creek, its associated wetlands and adverse impacts to the Scotsdale Golf Course, Link 4 was determined to be unacceptable. By eliminating Link 4, a channel relocation of Gordon Hollow Creek would be avoided. Similarly, Link 2 would adversely impact Marshall Cave and was not viewed favorably. Considering the segment as a whole, Alternatives NWF2 and NWF4 would be the least costly to construct. However, NWF4 would be located (Link 7) along bottomland forest including wetlands. While all the alternatives would have similar adverse impacts to existing structures and noise, Alternative NWF1 would have unacceptable impacts to Gordon Hollow (Link 4) and Alternatives NWF2 and NWF3 would adversely impact the Highland Christian Church which is currently under construction.

- **Segment H** - Alternative FW/NWH1 was identified as the best alternative. Since the Far West and Near West Corridors are the same for this segment, see Far West Corridor discussion.

2. TOTAL-PROJECT REASONABLE ALTERNATIVE EVALUATION (PHASE 2)

Utilizing the results of Phase 1, a total-project evaluation was performed for the "No-Build" Alternative and the best "Freeway-Build" Alternative within each of the three Study Corridors (see Exhibit S-5). Similar methodologies were used for the total-project comparison as were used earlier. As shown in Table S-3, evaluation factors reflecting Engineering, Traffic, Environmental and Social issues were quantified for each of the alternatives. The data shown in the table reflect the total impacts of the alternatives including the ultimate improvements and the short-term improvements necessary for the interim construction.

TABLE S-3
"FREEWAY-BUILD" REASONABLE ALTERNATIVES - IMPACT SUMMARY TABLE

EVALUATION FACTOR	UNITS	FAR WEST	NEAR WEST	EXISTING
ENGINEERING				
Length - Ultimate (Interim)	Kilometers	30.5 (15.3)	30.7 (3.6)	26.4 (0.0)
Construction Cost				
Construction	Dollars (Million)	169.6	139.5	124.9
Right-of-Way	Dollars (Million)	4.9	9.3	15.5
Total Construction Cost	Dollars (Million)	174.5	148.8	140.4
Staged Construction	Rating[1]	2	3	4
Maintenance of Traffic	Rating[1]	4	4	1
TRAFFIC				
Local Access	Rating[1]	3	3	2
Long-term Corridor Capacity				
Corridor Capacity (US 71 and US 71B)	vpd	125,000	125,000	68,000
V/C Ratio in 2020	Volume/Capacity	0.68	0.63	1.00
Incident Management	Rating[1]	5	3	1
Regional MOE's (2020) Change from "No-Build"				
Daily Vehicle Kilometers of Travel	Kilometers	167,000	131,000	44,000
Daily Vehicle Hours of Travel	Hours	-9,100	-8,300	-12,300
Projected Reduction in Crashes (2020)				
Fatal Crashes	Number	2	2	2
Personal Injury Crashes	Number	79	71	69
Property Damage Only (PDO) Crashes	Number	175	158	155

TABLE S-3 (Continued)
"FREEWAY-BUILD" REASONABLE ALTERNATIVES - IMPACT SUMMARY TABLE

EVALUATION FACTOR	UNITS	FAR WEST	NEAR WEST	EXISTING
ENVIRONMENTAL				
Parkland	Type	0	0	0
	Number	0	0	0
Waters of the U.S.				
Special Aquatic Sites:	Number	0	1	1
	Hectares	0.00	0.01	0.01
Regulated Ponds:	Number	0	2	2
	Hectares	0.00	0.17	0.17
Streams (Culverted):	Number	4	5	5
	Hectares	0.34	0.37	0.33
Streams (Bridged):	Number	8	5	8
	Hectares	0.95	0.83	0.98
Floodplain (100 Year)	Hectares	15.7	11.7	15.5
Floodplain Crossings	Meters	2,465	1,220	1220
Threatened and Endangered Species	Number	0	0	0
Natural Community Impacts				
Dry Limestone-Dolomite Forest	Hectares	11.0	30.7	19.7
Dry Mesic Limestone-Dolomite Forest	Hectares	200.2	142.9	36.7
Dry Mesic Bottomland Forest	Hectares	0.6	0.0	0.0
Woodlot	Hectares	26.1	0.0	0.0
Unimproved Pasture	Hectares	167.7	124.9	78.1
Habitat Fragmentation	Number[2]	1	1	0
Prime Farmlands	Hectares	21.36	14.4	9.74
Statewide Important Farmland	Hectares	55.65	31.44	17.63
Visual and Aesthetic Considerations	Rating[1]	3	3	4
Air Quality	Rating[1]	4	4	4
Cultural Resources				
Predictive Archeological Sites (Impact Probability)	Rating[1]	3	3	4
Previously Recorded Archeological Sites	Number	8	8	13
Historic Sites	Number	0	0	0
Architectural Sites	Number	5	4	1
Hazardous Waste Sites				
High Risk	Number	0	0	1
Moderate Risk	Number	0	2	3
Low Risk	Number	2	2	1
Natural Features and Caves	Number	1	3	2

TABLE S-3 (Continued)
"FREEWAY-BUILD" REASONABLE ALTERNATIVES - IMPACT SUMMARY TABLE

SOCIAL AND ECONOMIC				
Impacts to Existing Structures (Relocations)				
Residential				
House	Number	15	26	12
Mobile Home	Number	4	7	3
Business				
General	Number	2	8	15
Poultry	Number	0	0	0
Public Use	Number	0	1	3
Noise Impacts				
NAC Receptors	Number	11	44	122
Additional "Substantial" Increase Receptors	Number	58	77	15
Total NAC Receptors Along Existing US 71	Number	146	110	319
Compatibility w/ Current Land Use/Master Plan	Rating	4	1	3
Adverse Impacts to Businesses During Construction	Rating	5	5	1
Economic Considerations				
Highway User Cost Savings	Dollars (Million)	113.6	92	143.5
O&M Costs	Dollars (Million)	4.2	4.9	2.4
Environmental Justice	Rating(1)	4	4	4

Notes:

(1) Rating Scale

5 - Excellent (High), 4 - Good (Medium/High), 3 - Fair (Medium), 2 - Marginally Poor (Low/Medium), 1 - Poor (Low)

(2) Number of 202 Hectare Forest Blocks (500 Acre Forest Blocks)

The following sections summarize the major impact factors for the three "Freeway-Build" Alternatives (ultimate and interim improvements) as presented in Table S-3:

a. Engineering

- **Length** - The length of the Existing Alternative (26.4 km (16.4 miles), measured from the common northern and southern termini of the Study Area, is approximately 4.1 km (2.5 miles) and 4.3 km (2.7 miles) shorter than the Far West and Near West Alternatives, respectively. This is due primarily to the more direct alignment of the Existing Alternative through the Study Area.

- **Construction Cost** - The construction cost, consisting of the freeway improvement construction costs, additional interim improvement construction costs and right-of-way costs, would be the lowest for the Existing Alternative ($140.4 million).

- **Staged Construction** - This factor, expressed as a rating, is a subjective measure of an alternative's ability to be constructed in stages in which commensurate incremental benefits would be realized during each construction stage. Due to the ability of the Existing Alternative to be constructed in smaller individual stages, with each stage having independent utility and benefit, a higher rating was given to this alternative. Conversely, the Far West Alternative, and to a lesser extent the Near

West Alternative, would essentially have to be constructed in its entirety before the improvements would be utilized and returns on the public investment would be realized. Consequently, the Far West was given a lower rating. This factor would be of significance if the construction period was protracted due to unsteady funding.

- **Maintenance of Traffic** - This factor is a rating of how easily the existing traffic could be maintained on the adjacent roadway system during the construction of the improvements. Because both the Far West and Near West Alternatives are relocation alternatives and would not interact with the existing US 71 roadway during construction, these alternatives would have fewer impacts on traffic maintenance issues. For each of these alternatives, the interim improvements would involve some maintenance of traffic impacts in Missouri. However, these impacts would be relatively minor compared to the total project maintenance of traffic impacts associated with the Existing Alternative. Conversely, during construction of the Existing Alternative, existing traffic would be difficult to maintain due to its alignment along the existing US 71 roadway and the changes in profile grade of the new US 71. Due to the increased costs and additional adverse construction impacts of maintaining four US 71 lanes during construction for the Existing Alternative, it was assumed that maintaining a single lane in each direction during construction would be acceptable. Over 2 million hours of traffic delay could be incurred annually during the construction of the Existing Alternative. The existing four lanes of traffic would be maintained with either the Far West or Near West Alternatives.

b. Traffic

- **Local Access** - This factor is a relative measure of the changes in local traffic circulation due to the improvements. Because some out-of-direction travel, compared to current travel patterns, would be required for local access with the Existing Alternative, it was given a lower rating. Crossroad bridges across US 71 would be provided in several locations with the Existing Alternative, but not at all current access locations. Frontage roads would be utilized to maintain access to all local roads. Consequently, some out-of-direction travel would likely be required for local trips which cross US 71. Furthermore, because of the greater local trip volumes in the vicinity of the improvements, the aggregated effect of the increased out-of-direction travel would be accentuated with the Existing Alternative.

- **Long-term Corridor Capacity** - For the purposes of establishing the design characteristics of the alternatives, a design year of 2020 was utilized. Each of the alternatives would provide the desired traffic service (level-of-service C) up to the design year. However, in the case of the Existing Alternative, additional freeway lanes would need to be constructed soon after 2020 to maintain the target service level. This construction, beyond the horizon of this EIS, would be costly due to the tight constraints of the Existing Alternative and would further impact adversely the adjacent areas. In contrast, both the Far West and Near West Alternatives would have considerable additional roadway capacity which could be utilized as traffic volumes continue to grow beyond 2020. Additional construction beyond 2020 would not be anticipated within the foreseeable future for either of these alternatives.

To reflect these observations, the Long-term Corridor Capacity consists of two measures -- the total daily capacity of the US 71 Corridor and a measure of the 2020 corridor-wide traffic volume/capacity ratio for US 71. The capacity reflects the vehicle throughput capacity for level-of-service C for the total US 71 corridor (US 71 and US 71B). As shown, the Far West and Near West Alternatives would provide measurably better long-term capacity to meet the needs of the region beyond 2020. The 2020 traffic volume for the Existing Alternative would approximately equal the capacity of US 71, whereas the bypass alternative would have roughly 30% of the total capacity available for future growth.

- **Incident Management** - As a high-priority corridor and an important north-south interstate facility, US 71 would need to provide reliable service to both commercial and multi-state traffic. One reliability issue is the ability of an alternative to maintain some semblance of through service in the event of an incident. As a measure of this issue, this factor is a subjective rating of an alternative's ability to maintain service should an incident temporarily prohibit the through operation of US 71. Because the Far West Alternative would maintain service for the existing US 71 roadway throughout the Study Area, which could be utilized as an alternative route for incident management, it was given the highest rating.

- **Regional MOE (2020) Change from "No-Build"** - Regional measures of effectiveness (MOE) of each "Freeway-Build" Alternative were estimated in comparison to the "No-Build" Alternative for 2020. These transportation impact factors, expressed as the change in regional daily vehicle kilometers (miles) of travel and hours of travel from the "No-Build" Alternative, provide a measure of the improved travel efficiencies of the regional transportation system. Reflecting the shorter length and closer proximity to currently denser land use, the Existing Alternative would provide greater improvements in the efficiency of the roadway system in 2020. As shown, the increase in daily travel distances would be the lowest with the Existing Alternative and approximately 12,300 hours of daily travel time would be saved in 2020. However, as reflected in the discussion for the Long-term Corridor Capacity factor, the capacity limitations of the Existing Alternative would constrain the apparent regional travel efficiencies of the alternative after 2020. Because the capacity of US 71 would be reached in 2020 with the Existing Alternative, the bypass alternatives would provide greater overall benefits regarding regional travel efficiencies in the long-range.

- **Projected Reduction in Crashes (2020)** - These projections measure the anticipated reductions in 2020 crashes and improvements in safety throughout the Study Area for each alternative in comparison to the "No-Build" Alternative. This measure includes the benefits of the interim improvements and the diversion of trips from existing roadways to the new facilities. The concentration of existing crash problems along the existing US 71 roadway would be addressed by each "Freeway-Build" Alternative. Because of the more tightly-spaced interchanges and more urban-like setting of the Existing Alternative, and because of its overall superior travel efficiencies, the Far West Alternative would provide the best crash benefits of the three alternatives. Furthermore, research regarding elderly drivers, such as in the Bella Vista community, suggests that those alternatives which separate local trips from high-speed through trips would provide additional safety benefits. Research has concluded that the elderly have diminished vehicle operation abilities due to the physiological and cognitive changes which accompany aging. The safety

hazards associated with the elderly are further exacerbated when elderly drivers are interspersed with truck traffic. For these reasons, the Far West Alternative is viewed more favorably due to its ability to separate through traffic, including trucks, from the local Bella Vista traffic.

c. **Environmental**

- **Parkland** - This factor is the number of publicly-owned recreational areas impacted by an alternative. No parklands are present within the Study Area and therefore none would be adversely impacted by the project.

- **Waters of the U.S.** - This factor measures the number and surface area of wetland resources which would potentially be directly impacted by the project. Several types of wetland resource impacts were quantified – special aquatic sites, regulated ponds and streams, classified by type of roadway crossing. As shown, the Far West Alternative would have less adverse impacts to special aquatic sites and regulated ponds. For stream wetland resources, the alternatives would have similar adverse impacts, measured by the number of stream crossings and the cumulative surface area impacts of the crossings.

- **Floodplain Impacts** - As an overall measure of an alternative's potential impacts on flooding risks and other natural benefits of floodplains, this factor is expressed by the surface area of the alignment within floodplains and the cumulative length of the roadway over streams. The Existing Alternative and the interim improvements associated with the Far West Alternative would have similar conceptual designs and locations, and therefore, would have similar impacts to potential floodplains.

- **Threatened and Endangered Species** - The measure for this factor is the number of habitat sites for threatened and endangered species that would be adversely impacted by the alternatives. No known sites would be impacted.

- **Natural Communities** - This factor, quantified by the surface area of potential impacts, measures the degree of the loss of terrestrial habitats due to the alternatives. Five types of communities were identified – Dry Limestone-Dolomite Forest, Dry Mesic Limestone-Dolomite Forest, Dry Mesic Bottomland Forest, Woodlot, and Unimproved Pasture. As shown, the Existing Alternative would have less adverse impacts to existing forest resources.

- **Habitat Fragmentation** - This factor measures the number of 202 hectare (500 acre) or greater block tracts of contiguous forested area which would be directly impacted by the project. This measure reflects the potential fragmentation impacts of the project on terrestrial habitats. Due to the fact that the Existing Alternative is located along an existing transportation corridor, its primary and secondary impacts would be considerably less than the relocation alternatives. Because the western area of Bella Vista and those adjacent areas in McDonald County are currently undeveloped, the Far West Alternative would have the greatest potential for secondary impacts relating to habitat fragmentation. Secondary impacts, if any, would be concentrated near the interchange access points for the Far West Alternative.

- **Prime Farmlands** - This factor measures the surface area of prime farmlands and farmlands of statewide importance that would be directly converted to other uses due to the project. The Far West Alternative, though the impacts would not be considered significant, would have the greatest adverse impact on farmlands.

- **Visual and Aesthetic Considerations** - This factor consists of a subjective rating of the visual and aesthetic impacts of the project on the existing visual environment. The alternatives were rated similarly with no significant adverse impact.

- **Air Quality** - This measure consists of an overall rating of an alternative's adverse impacts on the regional and local air quality, as compared to the "No-Build" Alternative. The region's air quality is in compliance with the National Air Quality Standards and each of the alternatives would equally affect the area's air quality.

- **Cultural Resources** - This factor reflects an alternative's likelihood of adversely impacting cultural resources based on predictive models and the presence of known archeological, historic and architectural sites within or adjacent to the alternative's route. Because the Far West Alternative is located in undeveloped areas where there is greater flexibility in roadway alignment controls and where fewer cultural sites have been previously recorded, it is anticipated that the freeway improvements for this alternative would have fewer adverse impacts to known sites and would be less likely to adversely impact unknown archaeological sites. The interim improvements associated with the Far West Alternative would have similar potential for adverse archeological impacts as the Existing Alternative, due to their similarities in concept and location.

- **Hazardous Waste Sites** - The unit of measure for this factor consists of the number of recorded or observed sites which have been confirmed or are suspected of containing hazardous materials which would be adversely impacted by the project. A rating (High, Moderate or Low) is assigned to each site to reflect the characteristics of the site and the eminent risk of the site to adversely affect public health or construction costs. One previously recorded high-risk site (Site B-25 - Bella Vista Landfill) would potentially be impacted by the Existing Alternative. This site is listed on the CERCLIS No Further Remedial Action Planned (NFRAP) list and the Arkansas Permit Data Systems (PDS) list. In addition, the Existing Alternative would adversely impact three moderate-risk sites. The Far West Alternative would not adversely impact any known high-risk or moderate-risk sites.

- **Natural Features and Caves** - This factor consists of the number of recorded natural feature sites or caves that would be adversely impacted by the project. None of the alternatives would adversely impact any recorded natural feature sites. However, the Existing Alternative would potentially impact adversely two known caves – Henson Cave and Wind Cave. Because the Near West and Existing Alternatives are concurrent within portions of Missouri, Henson Cave would also be adversely impacted by the Near West Alternative. The interim improvements for the Far West Alternative would also adversely impact Henson Cave. It has been determined by the USDOI, Fish and Wildlife Service that these impacts would not adversely affect the gray bat. Impacts to Henson Cave can not be reasonably avoided and its entrance would need to be backfilled and capped. Avoidance would not be reasonable due to its close proximity to the existing US 71 roadway.

d. Social and Economic

- **Impacts to Existing Structures (Relocations)** - This factor enumerates direct impacts to existing residential, business and public use structures due to the proposed action. Impacts to existing residences, consisting of the displacement of houses and mobile homes, would be the greatest for the Near West Alternative due to its location within the center of the Bella Vista residential area. Adverse business impacts would be greatest for the Existing Alternative. This factor quantifies the number of existing businesses which would be displaced by the improvements.

  Though other business-related adverse impacts regarding patron access, parking and business visibility are not enumerated by this factor, it is recognized that the Existing Alternative, by virtue of its location along US 71, would have the greatest indirect impact to existing businesses. The determination of these indirect impacts is subjective, but for some businesses along existing US 71, the improved regional access may be of benefit. However, as was commented at the public meetings by some business owners, the changes in local access and visibility created by the Existing Alternative would not be favorable with the business owners.

  Though no public lands would be adversely impacted by the project, three public use facilities would be displaced by the Existing Alternative – AHTD Rest Area, American Legion Post 341 and Bella Vista Museum.

- **Noise Impacts** - The noise impact factor represents the number of existing structures which would experience noise levels beyond the FHWA Noise Abatement Criteria (NAC) level in 2020 due to the US 71 improvements. To reflect the full extent of noise impacts generated by the proposed action, the number of existing structures (i.e. noise receptors) were counted for three impact issues: 1) Number of additional noise receptors along the freeway improvements within the NAC, 2) Number of noise receptors which would experience a "substantial" increase in existing noise levels (measure of proximal impacts), and 3) Number of noise receptors along the existing US 71 roadway which would remain within the NAC. The Existing Alternative would have the greatest number of both additional and total receptors which would experience 2020 noise levels beyond the NAC criterion.

- **Compatibility with Current Land Use/Master Plan** - This land use impact factor is a subjective measure, in the form of a rating, of how well an alternative would interface with the Study Area's current land use, would promote the continued evolution of the current development trends and would support the master plan for the community. Conventional land use planning would suggest that because the existing land use patterns have evolved around and in association with the current roadway network, of which the principal element is US 71, the Existing Alternative would best complement and promote the area's current land use and infrastructure, albeit only to its development capacity. However, Bella Vista is unique in its composition and character, and has developed or evolved in accordance with the Village's corporate master plan. Though the US 71 corridor through the Study Area is very urban like, the surrounding areas are not densely developed. It is this quality that has attracted so many residents, mostly retirees, to the Bella Vista area. Continued concentrated development of the US 71 corridor would alter the character of the development. For this reason, the Far West Alternative is rated highly in

regard to the support of the Bella Vista master plan. The Near West Alternative, due to its location within a developed residential area which has evolved exclusive of transportation-related uses, would have a significantly adverse impact on adjacent land use, the community social structure and interactions within and between the residential neighborhoods.

Outside of Bella Vista Village, the Study Area is rural with some agricultural uses. The construction of the Far West Alternative would have impacts to the rural setting of the Study Area, particularly in McDonald County. This alternative would result in the direct conversion of farm and ranch uses to highway right-of-way while the Existing or Near West Alternatives would have minimal takings of rural property for highway right-of-way.

- **Impacts to Businesses During Construction** - As a subjective measure of the temporary adverse impacts to existing businesses during the construction of the improvements, this factor reflects that the Existing Alternative would have the greatest temporary impacts on existing businesses along US 71 during construction. Though construction would be conducted in general within or immediately adjacent to the existing AHTD right-of-way, some inconveniences to patrons would result. In addition, some temporary access adjustments would be required in front of the existing businesses as part of the US 71 roadway detouring. Furthermore, because the Existing Alternative would likely be constructed in a number of stages, the staging of construction could add to the duration of the temporary construction impacts to businesses. The Far West Alternative would have relatively no adverse impacts to existing businesses during construction. Concerns about adverse construction impacts along the Existing Alternative were expressed by the local residents at the public meetings.

- **Economic Considerations** - This factor is a measure in dollar terms of the cost-effectiveness of the project. As an investment of public dollars, the construction of the improvements would result in a public benefit or return. These benefits would be realized by the users of the improved roadway system as compared to the project having not been constructed (i.e. "No-Build" Alternative). These user-cost savings are typically measured as the annualized savings of improved travel times, vehicle operating costs and reduced crash risks. For this analysis, only those benefits up to 2020 were captured. As part of the overall economic considerations, the changes in the annual operations and maintenance (O&M) costs were considered. The O&M costs for the alternatives would not be notably different.

  As discussed for the Long-term Corridor Capacity factor, the economic benefits of the Far West Alternative would exceed those of the Existing Alternative in the long-term due to the capacity constraints of the Existing Alternative after 2020 – the design horizon for this EIS. For long-range planning beyond 2020, the Far West Alternative would provide the best benefit for the original investment because additional transportation investments would not be required in the foreseeable future beyond 2020. Soon after 2020, six-lane widening of the Existing Alternative would be required to meet the growing travel demands, whereas the bypass alternatives would both have unused capacity to absorb the continued US 71 traffic growth.

- **Environmental Justice** - This factor consists of a subjective rating of how well each alternative complies with federal regulations regarding the avoidance of disproportionate adverse effects on certain designated population segments within the Study Area. Since the presence of environmental justice indicators, such as minority or low-income populations, have not been detected within the Study Area, none of the alternatives would disproportionately impact any distinct population segments within the area.

E. Selected Alternative

The selection of the preferred alternative is based on three primary considerations – the effectiveness of the alternatives in accomplishing the goals of the proposed action (i.e. Purpose and Need), the comparison of the alternatives' overall impacts and benefits, and input from the public and review agencies, including the public hearing. Based on these three considerations, **the Far West Alternative has been selected as the preferred alternative** for the US 71 improvements between Bella Vista, Arkansas and Pineville, Missouri (see Exhibit S-6).

The recommendation of the Far West Alternative as the preferred alternative was presented in the Draft EIS, published on March 13, 1998, and at the associated location public hearing held on May 21, 1998. Comments received from the public and review agencies regarding the Draft EIS did not present any additional information that warranted substantial revisions of the alternative analysis, as documented in the Draft EIS, which resulted in the selection of the Far West Alternative as the preferred alternative. Although some questions and concerns were submitted, each of the comments has been addressed in this Final EIS. In general, public and agency comments have affirmed the selection of the preferred alternative. As a result, more detailed assessments of the preferred alternative (i.e., Far West Alternative) regarding impacts to the Waters of the U.S. and to cultural resources have been performed subsequent to the public hearing. The results of these more detailed assessments are documented in the following sections and in the relevant sections of Chapter IV – Environmental Consequences. A summary of comments received from the Draft EIS and responses to these comments are presented in Chapter VII – Comments and Coordination.

The following sections present the reasoning for the selection of the Far West Alternative as the preferred alternative:

1. EFFECTIVENESS IN ACCOMPLISHING THE PURPOSE AND NEED

As described in Chapter I, several goals and objectives for the US 71 improvements have been defined based on the description of the current and projected transportation-related problems in the Study Area. Each of the "Freeway-Build" Alternatives would accomplish in varying degrees the stated purpose and need for the proposed action. However, in evaluating the overall effectiveness of the improvements in accomplishing the defined goals, the Far West Alternative is superior to the other two alternatives in several respects. Each of the alternatives would equally provide a multi-state interstate facility, upgrade the US 71 design features, improve the efficiency of the system for the movement of people and goods, and facilitate access to nearby regional recreational activities. However, the Far West Alternative has distinguished itself from the other alternatives because of its superior effectiveness in improving traffic safety and its overall roadway capacity.

a. Traffic Safety

The safety analysis of "Freeway-Build" Alternatives has determined that the Far West Alternative would provide better reductions in projected crashes than the other two alternatives. The superiority of the Far West Alternative is primarily due to the tighter physical constraints and more urban-like setting of the other alternatives. The Far West Alternative would also have the benefit of diverting trips from less safe highways to the new US 71 facility. But more importantly, the Far West Alternative would provide a separate facility for those trips passing through the Study Area and would eliminate the safety hazards of mixing the local, elderly traffic with the higher-speed through traffic. Research suggests that elderly drivers, such as in Bella Vista, have diminished driving abilities due to the effects of aging, and as such, present a higher risk of crashes, particularly when mixed with truck traffic. For these reasons, the Far West Alternative would be more effective regarding crash reductions and overall system safety.

b. Roadway Capacity

Each of the US 71 alternatives has been designed to provide the targeted level-of-service (LOS C) in the design year 2020. However, the bypass alternatives distinguish themselves from the Existing Alternative due to their ability to meet travel demands beyond 2020 without requiring additional investments. As a four-lane freeway facility, the Existing Alternative would effectively reach its capacity around 2020. Additional lanes would need to be constructed for the Existing Alternative, generally in the southern segments, to efficiently serve the travel demands beyond 2020. What further complicates this issue are the tight physical constraints of the Existing Alternative and the alternative's inherent difficulties with future roadway widening. If the study horizon was extended beyond 2020, the Existing Alternative would not be the lowest cost improvement and its adverse impacts to the surrounding environments would be measurably greater.

Should future capacity improvements for the Far West or Near West Alternatives ever be needed, the incremental construction costs would be considerably less than the Existing Alternative and would not be nearly as difficult to construct. The Far West and Near West Alternatives would incorporate adequate right-of-way for future expansion, however, corridor preservation is important to protect the alignments established by these studies. The existing roadway is an expressway with numerous curb cuts and the new project would be a freeway which would control access to adjacent development. The bypass alternatives would provide additional capacity to efficiently serve the growing travel demands of US 71 well beyond 2020. It is not anticipated that additional capacity would be required with the Far West or Near West Alternatives within the foreseeable future beyond 2020. In addition, as bypass alternatives, the Far West and Near West Alternatives would provide the greatest overall system capacity, considering both the new bypass facility and the existing US 71 roadway. This system redundancy would provide better overall capacity and superior flexibility for incident management within the system.

2. COMPARISON OF OVERALL IMPACTS AND BENEFITS

The process of evaluating the improvement alternatives involves a balancing of the benefit/impact tradeoffs with regard to the engineering, traffic, environmental and social considerations, with the concerns and interests of the commenting public and review agencies. Particular issues and concerns which may be important to some may in fact conflict with the

concerns of others. It is therefore the overall total-project comparison of the alternatives which helps guide the selection of the best alternative.

Each of the alternatives would have varying degrees of adverse impacts and benefits, and for a number of the impact issues, none of the alternatives differentiate themselves (see Table S-3). But from an overall perspective, the Far West Alternative presents the best alignment based on the overall comparison of the benefits and adverse impacts. As shown in Table S-4 and the following discussion, there are several issues which support this conclusion. For each of the general evaluation categories, those factors which differentiate the alternatives from one another and substantiate the identity of the best alternative have been listed. The comparison is based on a five-part rating scale which considers the balance of the alternative's benefits and adverse impacts for each major evaluation category. The Far West Alternative has been shaded signifying its selection as the best alternative regarding its balance of benefits and adverse impacts.

TABLE S-4
"FREEWAY-BUILD" REASONABLE ALTERNATIVES
OVERALL IMPACT COMPARISON SUMMARY

Major Categories (Evaluation Factors)	Far West	Near West	Existing	Distinguishing Factors or Issues
• Engineering	+	+	-	✓ Long-range Costs ✓ Maintenance of Traffic
• Traffic	++		-	✓ Safety (Traffic Mix) ✓ Long-term Corridor Capacity ✓ Incident Management ✓ Crash Reduction
• Environmental	-		+	✓ MoDOT EIS/ROD ✓ Secondary Impacts ✓ Waters of the U.S.
• Social/Economic	++	--	-	✓ Adverse Impacts to Businesses During Construction ✓ Impacts to Existing Structures (Relocations) ✓ Noise Impacts ✓ Compatibility with Current Land Use/Master Plan

Rating Scale: ++ Benefits >> Adverse Impacts
+ Benefits > Adverse Impacts
Benefits = Adverse Impacts
- Benefits < Adverse Impacts
-- Benefits << Adverse Impacts

- **Engineering**

  ✓ **Long-range Costs** - From an engineering perspective, if the current study horizon was extended, additional roadway investments would be required at or near 2020 such that the present worth construction cost for the Existing Alternative would increase. Foreseeable additional roadway capacity improvements for the Far West and Near West Alternatives would not be required beyond 2020. As the existing highway corridor develops, the costs associated with acquisition of adjacent property would continue to increase past the project's planning period.

- ✓ **Maintenance of Traffic** - Due to the complexities of the Existing Alternative and its close spatial relationship to the existing US 71 roadway, maintenance of traffic during construction for this alternative would be especially difficult. Existing traffic patterns and local access would be disturbed during the construction of the Existing Alternative. Furthermore, to minimize the construction costs and adverse environmental impacts of the Existing Alternative, it was assumed that only two lanes of US 71 traffic would be maintained during the construction period – resulting in potentially significant increased traffic delays. For these reasons, and because existing US 71 and local traffic can be maintained so easily with the bypass alternatives, the Far West and Near West Alternatives are far superior regarding traffic maintenance.

- **Traffic**

  - ✓ **Safety (Traffic Mix)** - The nature of the typical Bella Vista driver creates unique traffic hazards. Bella Vista, being a large retirement area, has a substantial number of elderly drivers. Typically, elderly drivers have slower reaction times than the average driver and tend to be involved in a higher portion of crashes. In a report entitled *Transportation in an Aging Society: Improving Mobility and Safety for Older Persons*, published by the Committee for the Study on Improving Mobility and Safety for Older Persons, it is stated that the "accumulated skill and judgement gained over a lifetime of driving tend to be offset by other factors (physiological and cognitive changes that accompany aging)." Research also suggests that crash risks increase sharply when the elderly driver is interspersed with truck traffic, as is currently the case in Bella Vista. This mix of traffic is further complicated by the incompatibility of the varying expectations of the local and interstate drivers. Local trips, typically involving an elderly driver, expect slower travel speeds, whereas the driver of a through trip is expecting non-stop, higher speed service through the Study Area. These issues strongly support the benefits of the Far West Alternative due to its ability to effectively separate the local trips from the through trips.

  - ✓ **Long-term Corridor Capacity** - From a long-range planning perspective, the Far West Alternative, and to a lesser extent the Near West Alternative, would provide a superior framework for the long-term transportation needs of the Study Area. Service needs for the interstate trips would be better met with a bypass facility for much longer into the future. A four-lane bypass improvement would provide the capacity needed now to relieve the current congestion along US 71, and would provide additional capacity for the future travel demands to grow into.

  - ✓ **Incident Management** - The bypass alternatives provide greater flexibility for the management of incidents on US 71. Either the new facility or the existing US 71 roadway would provide an alternative north-south route for the continued operation should a crash cause congestion on the other facility. Improved emergency vehicle operations and routing would also be advantages of the bypass alternatives. For this benefit to be fully realized, an incident management plan would need to be developed.

  - ✓ **Crash Reduction** - The Far West Alternative distinguishes itself by its superior ability to reduce crashes within the Study Area. This distinction is due to its greater overall travel efficiencies, shifting more travel to safer facilities, and due to its more rural-like driving environment. This benefit is even further magnified when the issue of traffic mix is considered.

- **Environmental**

  - ✓ **MoDOT EIS/ROD** - For the purposes of evaluating the "Freeway-Build" Alternatives, the cumulative impacts of the ultimate and interim improvements were considered. (Quantities shown in Table S-3 reflect the total impacts of the proposed action.) Though the total impacts have provided the basis for the evaluation, the previously completed EIS and Record of Decision by MoDOT for the US 71 improvements in Missouri will provide the basis for any subsequent environmental investigations, permits or mitigation for the interim improvements in Missouri. This arrangement is possible due to the consistency of the interim improvements with the preferred alternative from the MoDOT EIS. Consequently, for the Far West Alternative, the construction of the interim improvements in Missouri would be performed in compliance with the MoDOT EIS and any ultimate improvements would be completed through this document.

  - ✓ **Secondary Impacts** - By virtue of its location outside of the developed areas of Bella Vista, the Far West Alternative has the overall advantage of fewer direct impacts to the manmade and some of the natural environments. Though some direct impacts would be realized by those residents and property owners located along the alignment, as a whole, the Far West Alternative would not be as disruptive to the existing setting of the Study Area – permanently as well as during construction. This fact is reflected in the lower number of potential impacts to high-quality wetland resources, hazardous waste sites, caves, existing structures, and noise receptors. However, because the surrounding areas are generally undeveloped, the Far West Alternative would have the greatest potential for adverse secondary impacts regarding land use, water quality, and aquatic/terrestrial habitat resources. With the Far West Alternative, it is reasonable to conclude that the planned development of the western portions of Bella Vista, as documented in the corporate master plan for the community, would likely develop at a quicker pace due to the new access provided by the bypass. For this reason, the Far West Alternative is viewed slightly less favorably as the Existing Alternative for this issue.

  - ✓ **Waters of the U.S.** - As shown on Table S-3, the Far West Alternative would have the least potential impact to special aquatic sites and regulated ponds.

- **Social/Economic**

  - ✓ **Adverse Impacts to Businesses During Construction** - By virtue of its location along the existing US 71 corridor, the Existing Alternative would have considerably greater adverse impacts to existing businesses during construction. While construction is in process, which could be a significant period of time, the existing businesses along US 71 would experience temporary changes in access, parking, visibility, construction noise, and construction dust. A common theme heard from the residents of the Study Area was concerns about the adverse construction impacts of the improvements. These impacts would not be incurred to nearly the same degree with either the Far West or Near West Alternatives.

  - ✓ **Impacts to Existing Structures (Relocations)** - The Far West Alternative would cause the relocation of considerably fewer existing residences and businesses.

- ✓ **Noise Impacts** - The Far West Alternative would increase noise levels at considerably fewer existing noise receptors.

- ✓ **Compatibility with Current Land Use/Master Plan** - As supported by comments received by the majority of attendees at the various public meetings, the Far West Alternative is the most compatible alternative with both current and projected land use. The Far West Alternative is consistent with the retirement, low-density nature of the Bella Vista community and would not adversely affect the current social structure of the Village. The Far West Alternative is also consistent with the long-range master plan for Bella Vista. Conversely, the Near West Alternative would destroy the social structure of the Bella Vista community due to its location within the heart of the residential areas of the community. This issue is a primary reason for not considering the Near West Alternative as the best option. Other factors that reflect the high degree of adverse social impacts by the Near West Alternative include impacts to existing residences and noise impacts. The Existing Alternative would support the existing land use trends of Bella Vista, but would quickly reach the effective development capacity of the corridor.

3. PUBLIC/AGENCY PARTICIPATION AND COMMENT

The residents of Bella Vista and the surrounding communities have been very active in the US 71 study process. Input gathered through public meetings, Corridor Advisory Council meetings, location public hearing, and other activities have directly contributed to the decision-making process by prompting the inclusion of various evaluation factors. Additionally, in some cases public input has affected the measure of each factor. Public comments have centered on roadway safety, community cohesion, air quality, noise levels, environmental preservation, and integrity of area amenities and economic concerns.

In general, there has been some degree of support for or opposition to all the ultimate improvement alternatives considered. However, the majority of Bella Vista residents clearly favor the Far West Alternative. While these residents also express extreme opposition to selection of the Existing Alternative, their comments are offset to some degree by other residents, particularly from McDonald County and the Hiwasse areas, who support the use of the existing route. Opposition to the Existing Alternative by the Bella Vista residents has centered on changes to access, adverse noise impacts, inconveniences during construction and impacts to the golf courses. The Near West Alternative has received little support and a great deal of opposition.

Resource agency coordination has been ongoing throughout the US 71 study. Environmental scoping to identify issues and concerns which would affect the definition and evaluation of the alternative improvements was performed since the beginning of the study, including the formal scoping meeting. In addition, individual meetings were held with various agencies to discuss the environmental issues and concerns in more detail. Resource agency comments regarding the Draft EIS have been addressed in the Final EIS. In general, comments offered by the resource agencies have requested further clarification on secondary and cumulative impacts and impacts to cultural resources. Appropriate clarification of these issues has been provided in the relevant sections of this Final EIS. Through the clarification of these issues and the reconciliation of unresolved issues, as identified in the Draft EIS, there are no outstanding resource agency issues potentially affecting the selection of the preferred alternative.

Based on public input which has been received, two generalizations can be made regarding public consensus -- 1) the Far West Alternative is preferred due to its limited impact on the status quo, and 2) safety and capacity issues need to be addressed along existing US 71. With both interim and ultimate considerations, both of these issues are addressed by the Far West Alternative. The interim improvements, consisting of roadway widening in Missouri and intersection improvements in Arkansas, would meet the more immediate concerns of the public regarding the existing US 71 roadway. The ultimate bypass improvements would then ultimately provide a bypass facility around Bella Vista maintaining the nature and character of the Village while providing an efficient regional transportation system.

4. SUMMARY OF ISSUES

a. Areas of Controversy

In the project planning and development of the US 71 improvements, some issues of potential controversy have become apparent through the active coordination with resource agencies and involvement of the general public. As with almost any public improvement project of a complex nature, there are varying and diverse viewpoints regarding certain aspects of the proposed improvements. In the case of the US 71 project, an active community involvement program utilizing a pre-location public meeting, a scoping meeting, design information public meetings, Corridor Advisory Council meetings and project information mechanisms such as newsletters and a project phone line have facilitated the identification of these issues. Consequently, project planning was adjusted as needed to adequately address these potentially controversial issues.

The two most prevailing issues include:

- General opposition to the Existing Alternative by the Bella Vista residents and general support of the Existing Alternative by residents in McDonald County and other outlying areas:

  Despite measures to reduce direct impacts to adjacent properties, the Existing Alternative would directly impact the areas surrounding the existing roadway and Bella Vista residents are generally opposed to the Existing Alternative due to these adverse impacts. Specific concerns expressed by many residents relate to direct impacts to the area's golf courses and other amenity-related concerns including impacts to the area's shopping centers. With the Existing Alternative, local access would be changed and the visibility of the shopping centers would be affected. Access would be provided via interchanges and frontage roads. This type of access would change the current degree of access and would not complement the driving capabilities of the local elderly population. In the area of Sugar Creek Center, the elevated US 71 roadway over the interchange area would affect the visual setting of the area.

  In addition to amenity-related concerns, residents have also expressed concern about the driver demands of the Existing Alternative. A freeway facility with its higher operational speeds would require a greater degree of ability for drivers to negotiate safely. Partially-continuous frontage roads would be provided with the Existing Alternative such that some local trips would not necessarily need to enter the freeway. This provision would mitigate some of the concerns of traffic mix on the

freeway but not all. For all local trips to avoid the freeway entirely, undoubtedly a number of trips would experience out-of-direction travel. Further mitigation could include lengthened acceleration lanes for the interchange ramps or auxiliary lanes between the interchanges but this would increase the adverse impacts of the alternative.

Many Missouri residents have expressed concerns regarding the present US 71 capacity and safety. Most feel that a bypass facility would not divert the through traffic away from the existing facility. In light of the immediate need for capacity and safety improvements, interim improvements were included as part of the Far West Alternative. As such, the expressed needs of both the Bella Vista residents and the McDonald County residents would be served with the Far West Alternative.

- Interaction of the US 71 improvements with the planned Northwest Arkansas Regional Airport:

  The Northwest Arkansas Regional Airport is a new airport located southeast of Bentonville. Located approximately 14.0 km (8.7 miles) due south of the Far West Alternative, previous traffic studies completed for the airport planning have shown that the area of travel influence for the airport extends just north of Bentonville, at the southern end of the US 71 Study Area. Because regional access to the facility will be provided by the combination of US 71 south of Bentonville and US 412, additional access to the airport from the US 71 improvements through or around Bella Vista was not considered by this study.

b. Unresolved Issues

The potential impacts of each alternative have been assessed, evaluated and compared in sufficient detail to characterize the degree of impact and the relative differences of the competing alternatives. For some issues, more detailed analyses were performed subsequent to the location public hearing to more precisely quantify the absolute impacts of the project. These analyses, conducted for only the preferred alternative (i.e. Far West Alternative) after the location public hearing, included wetlands and cultural resource investigations.

Wetland Resources Investigations

Pursuant to the regulations of the Clean Water Act (CWA) as administered by the US Army Corps of Engineers (USACE), more detailed assessments and impact quantity estimations for wetland impacts were performed after the public hearing for the Far West Alternative (i.e., preferred alternative). Separate reports summarizing the potential impacts were prepared and submitted for the ultimate improvements in Benton County, Arkansas and McDonald County, Missouri. (Section 404 Permit coordination for the interim improvements in Missouri will be performed by MoDOT in accordance with the previously completed EIS and Record of Decision for US 71 – MoDOT Job Number J7P0427-FHWA-EIS-90-02-F.) Based on the findings of the more detailed investigations, as documented in the summary reports, the USACE has authorized the construction of the Far West Alternative pursuant to the requirements of the Department of the Army Nationwide Permit No. 14 (Nationwide Permit No. 13862) for McDonald County and Department of the Army General Permit GB (General Permit No. 13862) for Benton County. Copies of these permits are included in Appendix E. Subsequent design development and construction activities for the Far West Alternative ultimate improvements will need to be performed in accordance with these permits. Other than the fulfillment of the requirements of

these permits by MoDOT and AHTD, respectively, no other issues relating to Waters of the US or jurisdictional wetlands remain unresolved.

Cultural Resources Investigations

In accordance with the Historic Preservation Program standards, including the MoDOT cultural resources protocol for Missouri resources, additional investigations of the Far West Alternative (i.e., preferred alternative) were performed to more definitively determine its impacts to cultural resources. The recommendation of the preferred alternative, as documented in Table S-3, was based on a consistent methodology for all reasonable alternatives and consisted of a predictive archeological impact factor, impacts to previously recorded archeological sites, impacts to historic sites, and impacts to architectural sites determined to be potentially eligible to the National Register of Historic Places. Since the location public hearing, additional Phase I archaeological studies and determinations of effect for the Far West Alternative have determined, in concurrence with the State Historic Preservation Officers for Missouri and Arkansas:

- One archeological site in Arkansas (Site 3BE634) requires a Phase II investigation.
- No architectural sites determined to be eligible for inclusion in the NRHP would be adversely impacted.

A Phase II assessment was conducted at 3BE634 and it was determined by the AR-SHPO to not contain intact subsurface cultural features or deposits or otherwise have the potential to contain information important in prehistory. Consequently, the AR-SHPO has determined that no additional work is necessary for this resource. During the construction of the Far West Alternative, compliance with Section 106 requirements would be fulfilled by MoDOT and AHTD as necessary. For the interim improvements in Missouri, the current MOA executed in association with the previous MoDOT EIS will govern the cultural resources investigations.

Roadway Alignment and Design Features

Though it was determined by the AR-SHPO as part of the cultural resources that all five of the architectural sites determined to be eligible for the NRHP would not be adversely impacted by the Far West Alternative. Therefore, special attention to roadway design issues should be provided in subsequent design development activities in the vicinity of Site BE2177 – New Home Church. To augment the SHPO's determination of no effect, roadway noise considerations should continue to be evaluated in the vicinity of the church.

A meeting with the New Home Church members was held in August, 1999 to discuss noise abatement issues related to the proposed US 71 Highway relocation located adjacent to their historic church. Abatement measures discussed included increasing the distance of the highway from the Church, using a typical noise barrier, using a small berm and/or rock wall, and using architecture soundproofing such as storm windows. These measures and various combinations were discussed to determine a preference among the church members in attendance. Moving the highway a sufficient distance to allow acceptable noise levels at the church was the group's first preference with the combination of a rock wall/berm combination used with some soundproofing as their second choice. The group did not support the use of a typical noise barrier which would reduce noise levels but would also result in creating an unacceptable visual barrier.

In the detailed design phase of this project, the Department will move the highway final alignment as far as possible, but still within the existing engineering and environmental constraints of this interchange area near McKisic Creek. If this design alignment change is not sufficient to reduce the noise levels below the Federal Highway Administration criteria; then a small berm/rock wall combination with appropriate vegetation cover will be designed and coordinated with the church. Soundproofing options may be included if the berm/wall combination is not sufficient to achieve acceptable noise levels (FHWA criteria).

One of the more commonly heard comments from the location public hearing regarding the roadway alignment and design features of the Far West Alternative was the location of the roadway relative to the Highlands Golf Course and associated residences on the western edge of the Bella Vista Village. Concerns of proximal impacts were expressed by the area's residents. Though no existing residences would require noise abatement based on AHTD noise abatement criteria, consideration should be given to shifting the roadway's alignment (FWB2/C2) farther to the west to provide more suitable distance between the roadway activities and the nearby visual and aural receptors. This potential shifting of the alignment, to be considered during subsequent design development activities, would likely be acceptable due to the undeveloped nature of the area to the west. Relatively minor adjustments of the alignment would be acceptable as long as the environmental impacts of the improvements would not be measurably changed from those documented in this EIS or to the extent that the revised impacts would affect the decision of the preferred alternative.

Additional Work for the MoDOT EIS and ROD

As stated in the previous paragraphs, the completed EIS and ROD by MoDOT and FHWA for the US 71 improvements in Missouri will govern the environmental processing of the US 71 improvements along the existing roadway (i.e., interim improvements) in Missouri. This arrangement is appropriate due to the consistency in location and design concept of the interim improvements with the preferred alternative from MoDOT's EIS. Future actions by MoDOT and the FHWA will include the continued processing of the appropriate environmental clearances for the interim improvements in Missouri. In addition to the wetland and cultural resource investigations, these activities will include the continued review of the future design details with the planning assumptions and intentions specified in the earlier completed MoDOT EIS.

5. SUMMARY OF FUTURE ACTIONS

As a result of the environmental evaluation of the selected alternative, a number of identified actions are necessary during the design development and construction phases of the project. The following is a list of these actions:

- Continue coordination with the Bentonville/Bella Vista Trailblazers Association, Inc. during design development and construction to coordinate the planning of a pedestrian/ bicycle trail that would connect the two communities of Bentonville and Bella Vista with the US 71 improvements.

- Coordinate the design development and construction activities with the US Fish & Wildlife Service.

- Continue coordination of mitigation measures for impacts to the surrounding environment which address environmental and social impacts including:

- Continued consideration of noise abatement measures with "New Home" Church and the Highlands Golf Course as part of the design development phase of the project.

- Continued refinement to the highway final alignment within the evaluated corridor to avoid impacts. During design development, alignment refinements will be investigated, so that impacts to existing water resources in the vicinity of McKisic Creek will be minimized. In an attempt to minimize the proximal impacts to residences located within the Highlands, alignment refinements will be investigated during the design development phase of the project. Refinements to the final alignment will be investigated during design development to avoid impacts to Wetland B-3a.

- Continue investigation of residential displacements during design development.

- Continue coordination of the Section 404 Permit for compliance with the provisions of the Clean Water Act. Coordination with the US Army Corps of Engineers (USACE) as part of design development activities will entail fulfillment of the requirements of the permits.

- Continue coordination with Missouri Dept. of Natural Resources (MDNR) and Arkansas Department of Environmental Quality to ensure that a proper construction water pollution control program is implemented during the design development and construction phases of the project.

    - Make sure Standard Erosion Protection Plans are followed with proper inspection and maintenance.

    - Identify and monitor any wells that would be impacted by the alignment.

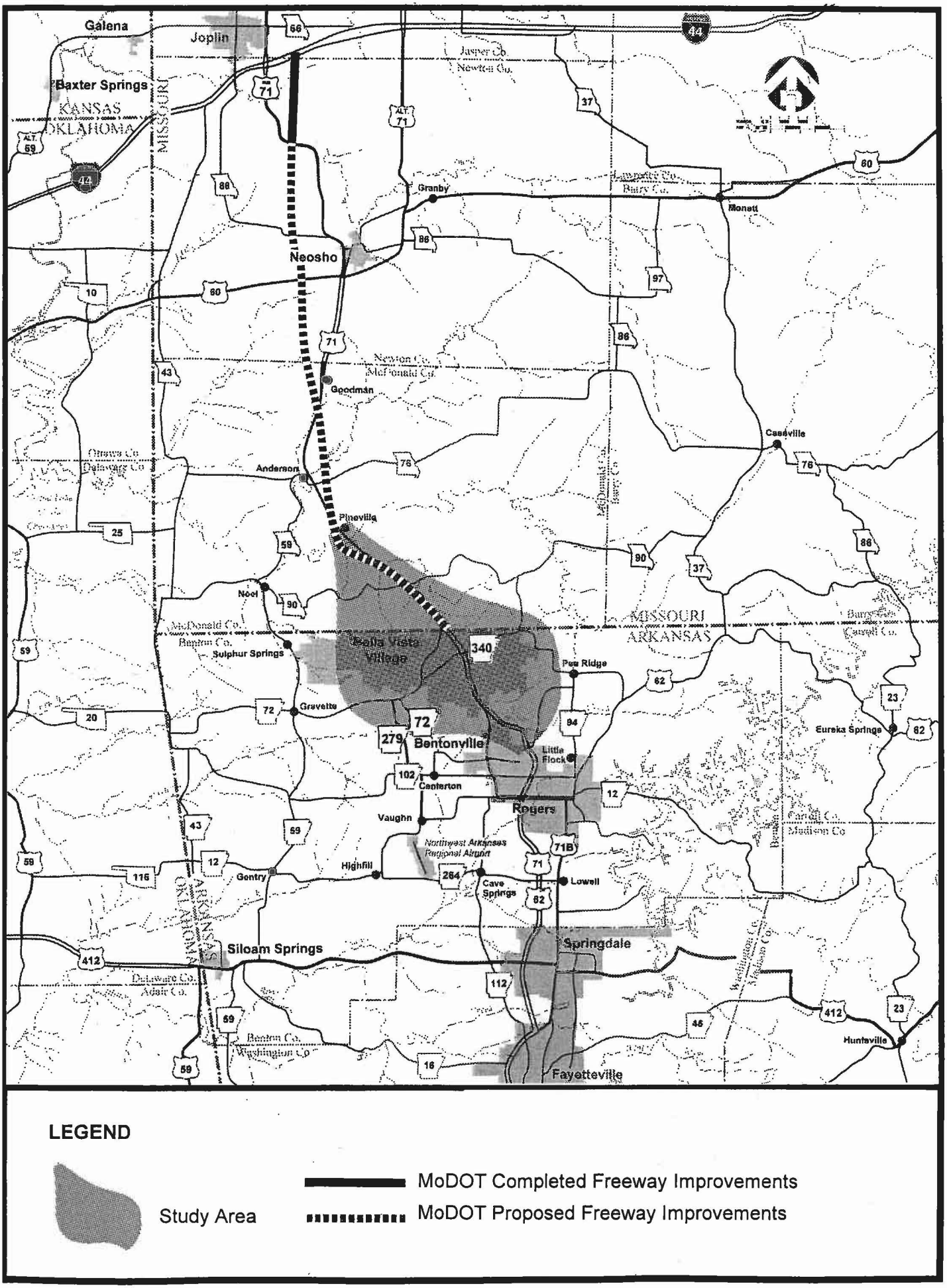
    - Ensure that "Best Management Practices" are being used by contractors during design and construction.

- Continue coordination with Missouri Dept. of Natural Resources (MDNR), in Missouri, to ensure that a proper construction water pollution control program is implemented during the design development and construction phases of the project.

    - Ensure that Stream Channel Modification Guidelines are followed when modifying channels or relocating streams.

- Develop a "Construction Management Plan" for the improvements through the Bella Vista Community, as part of detailed design.

- Continue coordination with Missouri Speleological Survey (MSS) or Arkansas Association of Cave Studies (ASCS) to document any new caves discovered during final design or construction.



LEGEND

Study Area

MoDOT Completed Freeway Improvements

MoDOT Proposed Freeway Improvements

Exhibit S-1 Regional Transportation System

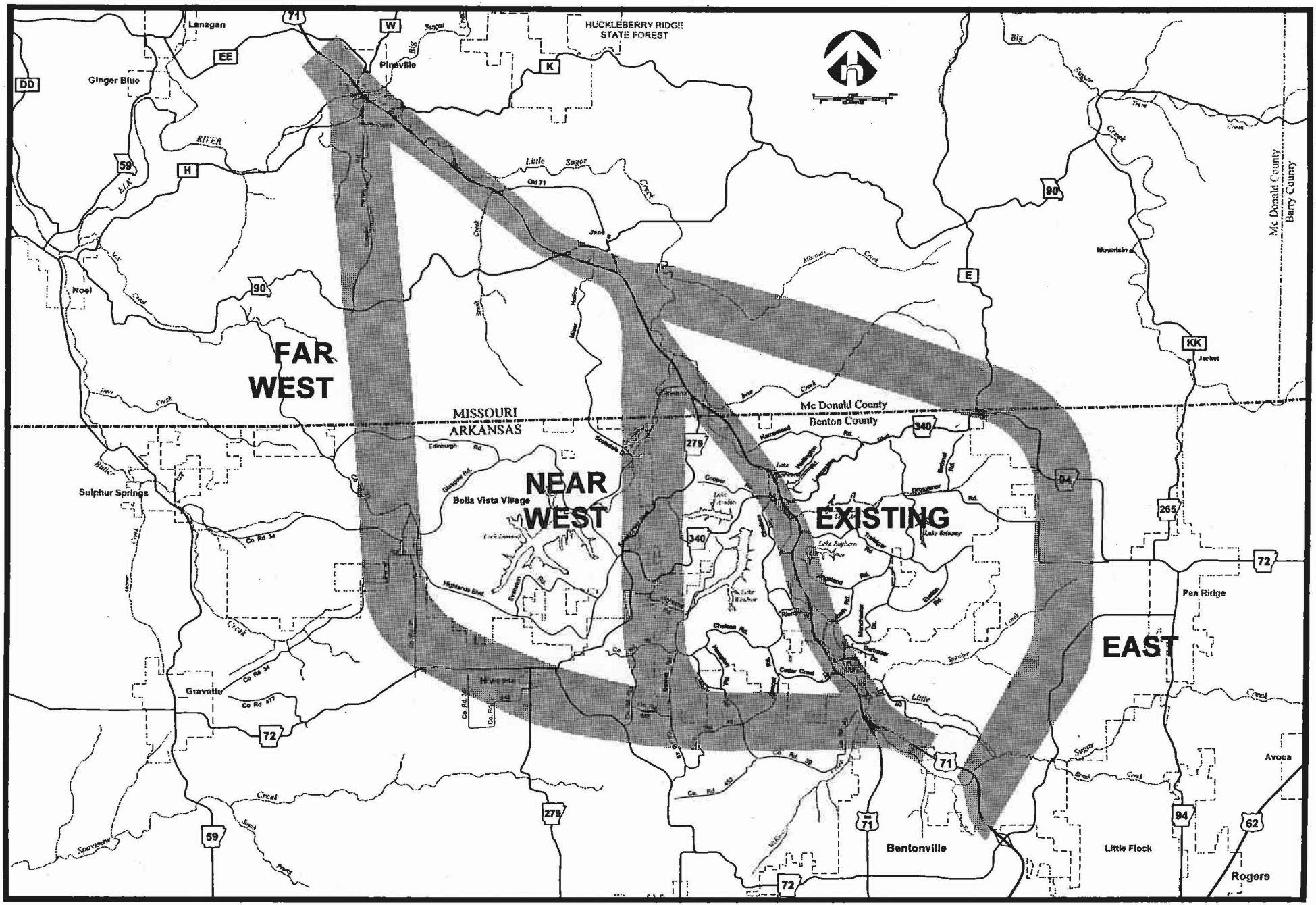


Exhibit S-2 Study Corridors

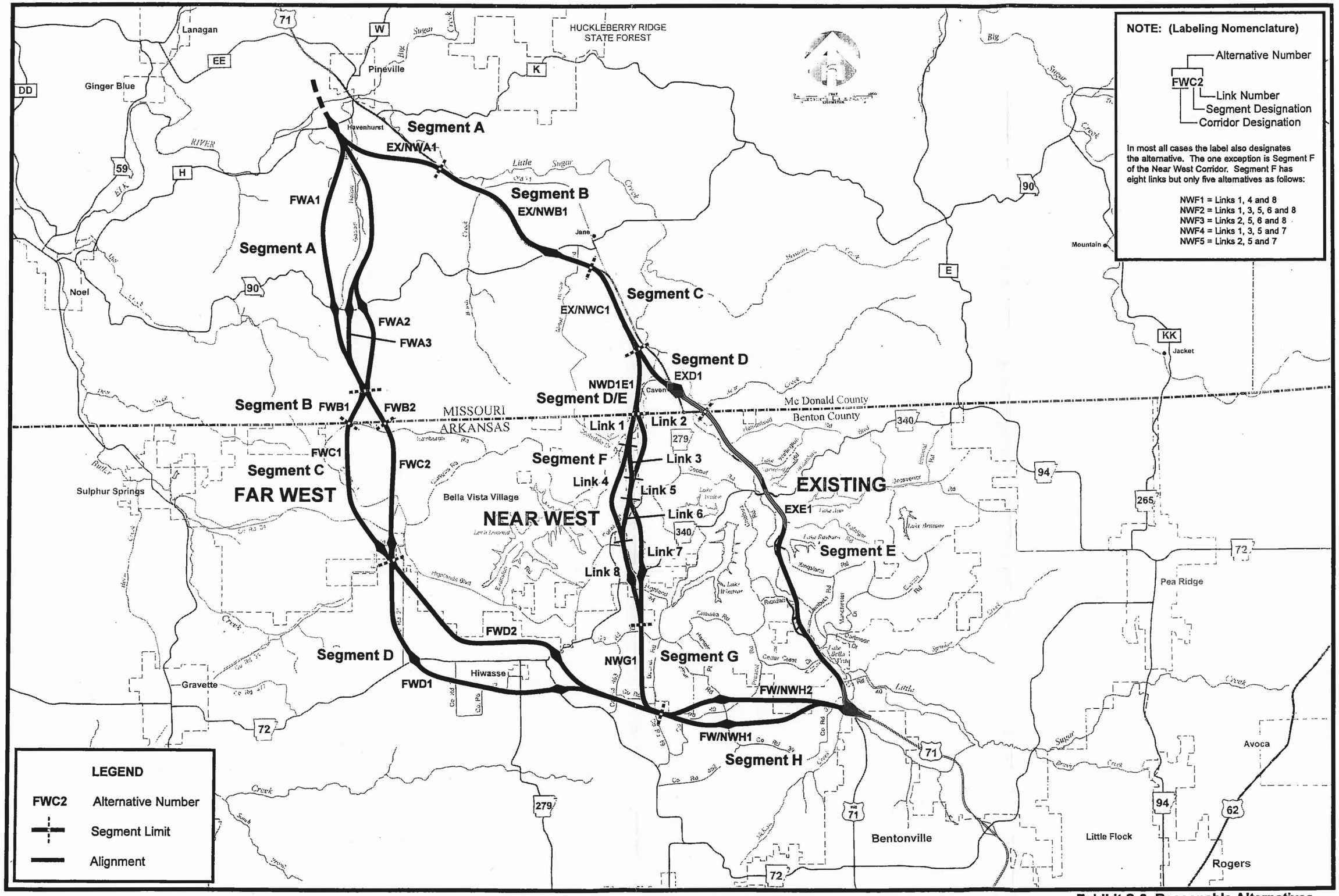
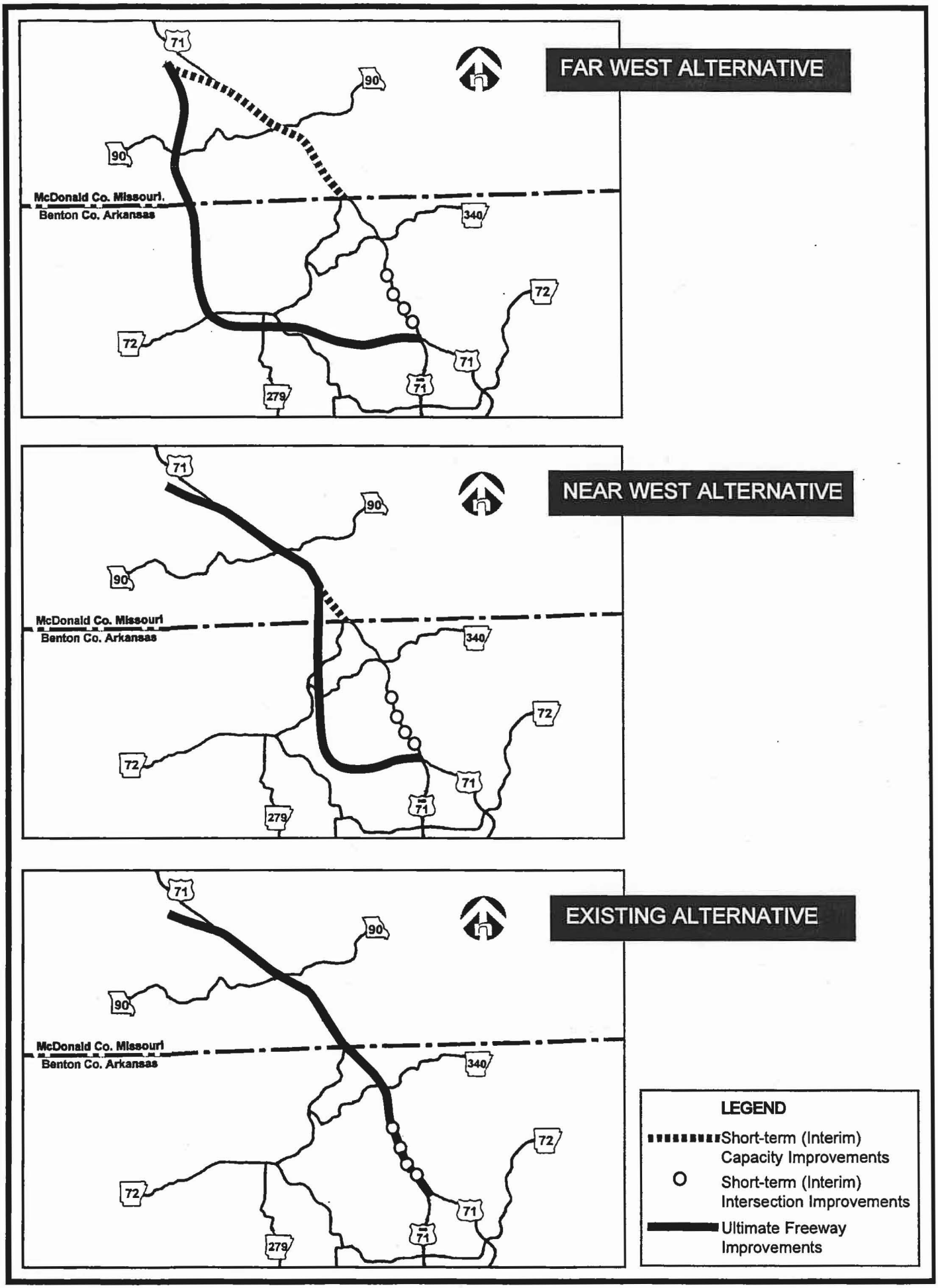


Exhibit S-3 Reasonable Alternatives



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Chapter I - Purpose and Need for Action

The Arkansas Highway and Transportation Department (AHTD), Missouri Department of Transportation (MoDOT) and the Federal Highway Administration (FHWA) are proposing to improve US 71 from south of Bella Vista, Arkansas to Pineville, Missouri.

This chapter provides a description of the proposed action, the transportation-related problems which are to be addressed by the proposed improvements and the purpose and need for the project.

A. Project Status

1. PROJECT HISTORY

In 1991, the US Congress identified the existing US 71 corridor extending from Kansas City, Missouri to Shreveport, Louisiana as a high-priority corridor. As listed in the Intermodal Surface Transportation Efficiency Act (ISTEA), this corridor, possibly to be called I-49, was identified as a high-priority north-south highway corridor from the Gulf of Mexico to the Midwest (see Exhibit I-1). Prior to ISTEA, the Federal-Aid Highway Act of 1987 also identified US 71 as a highway corridor of national significance. In response to the 1987 legislation, a multi-state corridor study (Kansas City, Missouri to Shreveport, Louisiana Highway Feasibility Corridor Study) was conducted by AHTD in cooperation with the FHWA and its neighboring states – Missouri, Texas and Louisiana. This study concluded that the US 71 corridor was essential to the economic growth of the central region of the country.

Since the 1987 study and in accordance with the federal legislation, the AHTD has begun implementing an improvement program to upgrade US 71 to a freeway facility, extending from the Arkansas/Louisiana state line south of Texarkana, Arkansas, to the Missouri/Arkansas state line north of Bella Vista. (A freeway is a multi-lane, typically four or more, highway with access provided only at interchanges.) The total improvement of the US 71 corridor within the state is at varying stages of development – planning, construction or open to traffic. In general, these improvements consist of interstate-type improvements with four-lane widening on new or existing alignment with access control upgrades. In some communities, new bypass facilities have been provided. Immediately south of Bella Vista, new bypass facilities have been constructed and are currently in operation for the communities of Bentonville, Springdale and Fayetteville.

Similar to AHTD, the Missouri Highway and Transportation Commission has made a commitment to upgrade existing US 71 to a freeway facility from the Missouri/Arkansas state line to Kansas City. South of the city of Joplin, where the US 71 corridor intersects the I-44 corridor, decisions regarding the location of the freeway facility have already been made (MoDOT Job Number J7P0427, FHWA - EIS-90-02-F). Construction of a new four-lane freeway facility has been completed immediately south of the new US 71/I-44 Interchange and construction is anticipated in the near future for the next phase to the south.

In addition to issues relating to freeway upgrades, US 71 through Bella Vista, Arkansas, has seen a significant growth in traffic over the years. Increased through-trips and intra Bella Vista trips have caused an increase in traffic crashes in the area. The growth in traffic and decreased safety within the region, in addition to regional corridor commitments, have resulted in the need for improvements to US 71.

2. BI-STATE STUDY

One of the remaining portions of the US 71 corridor within the state of Arkansas where the specific location details of the freeway improvements have not yet been identified or implemented extends north from the recently completed bypass around Bentonville north to the state line. Decisions regarding the location and nature of the US 71 improvements in Arkansas have implications on the corresponding improvements in Missouri, and vice versa. Therefore, this bi-state study is considering the area as a whole, extending from south of Bella Vista, Arkansas to Pineville, Missouri, and AHTD and MoDOT have collaborated to conduct this study. The necessary coordination of policies and standards for AHTD and MoDOT has been provided for this study.

The identified Study Area, extending from south of Bella Vista to Pineville, Missouri, has logical project termini along US 71. The project termini tie into proposed or completed improvements along existing US 71. The study termini have independent utility separate from other portions of the Kansas City to Shreveport high-priority corridor and serve a population activity center in Northwest Arkansas and Southwest Missouri.

3. MAJOR INVESTMENT STUDY

The southern end of the Study Area (extending from a connection with the existing US 71 bypass around the east side of Bentonville, Arkansas to Pineville, Missouri) is located within the jurisdictional boundary of the Metropolitan Planning Organization (Northwest Arkansas Regional Planning Commission) for the Bentonville-Rogers-Springdale area. The southern terminus is defined as a connection with the US 71 freeway bypass around the eastern side of Bentonville. Due to the project's southern terminus location within the MPO long-range planning boundary, and given the nature of the proposed action (i.e., capacity improvements), consideration was given by the MPO, AHTD and the FHWA as to the need for a major investment study (MIS). In compliance with the Metropolitan Planning Regulations and in consultation with other agencies, it was agreed by the MPO and the FHWA that a MIS would not be necessary for this project, due to the lack of multi-modal options for the capacity improvements. This decision was coordinated with the Federal Transit Administration.

B. Project Description (Existing Route)

1. REGIONAL TRANSPORTATION SYSTEM

In addition to being an important highway of national significance, US 71 is also the primary north-south mobility provider for the Northwest Arkansas and Southwest Missouri regions. Within these regions, several larger cities and economic activity centers are served by US 71. These communities include Neosho, Joplin and Carthage within Missouri, and the cities of Bentonville, Rogers, Springdale and Fayetteville in Arkansas. The village of Bella Vista, a retirement/recreation community, is also primarily served by US 71. Other regionally significant

activity centers which are indirectly served by US 71 through interchanges with other highways include Springfield, Missouri via I-44 and Siloam Springs, Arkansas via US 412. Exhibit I-2 shows the regional transportation system which surrounds and serves the project area.

Within the multi-state area of northwest Arkansas, southwest Missouri, southeast Kansas, and northeast Oklahoma, the significant north-south highway corridors, in addition to US 71, include US 69 to the west and US 65 to the east. US 69 is roughly aligned parallel to US 71 and is located approximately 100 km (62 miles) to the west, serving eastern Oklahoma and eastern Kansas. To the east, US 65 is located approximately 90 km (56 miles) away, serving west-central Arkansas and Missouri. It is not anticipated that significant traffic from these north-south roadways would be diverted to US 71 as a result of the improvements.

As shown on Exhibit I-2, other secondary north-south highways are more proximal to US 71. Traffic volumes and travel patterns that could be impacted include: Route 59 extending from US 412 in Arkansas to the city of Anderson, Missouri. In addition, there are a number of secondary routes that traverse through the area which directly or indirectly interact with US 71 and provide regional mobility and accessibility. Table I-1 provides a brief description of the regional transportation facilities within the area.

TABLE I-1
REGIONAL TRANSPORTATION SYSTEM

Regional Route	Description
Arkansas	
Route 340	Route 340 provides northeast/southwest access through Bella Vista.
Route 279	Route 279 provides secondary north/south access through Bella Vista.
Route 72	Route 72 provides east/west access through the southern portion of Bella Vista and provides access between Gravette and Bentonville.
Route 94	Route 94 provides secondary north/south access on the east side of Bella Vista.
Missouri	
Route 90	Route 90 provides east/west access between the cities of Noel and Jane, located near the intersection of Route 90 and US 71.
Route E	Route E provides secondary north/south access to the east of US 71 as an extension of Route 94 in Arkansas on the east side of Bella Vista.
Route H	Route H provides east/west access to the city of Pineville and provides direct access between Pineville and Noel.

2. DESCRIPTION OF EXISTING US 71

Within the Study Area, through the area of Pineville, Missouri and extending south to the state line, the existing US 71 roadway consists of a rural two-lane highway with stabilized shoulders and partially-limited access control. At the state line, the existing roadway section transitions to a four-lane divided roadway. This roadway section is maintained through the Bella Vista area up to the connection with the freeway bypass around Bentonville. The four-lane section in Arkansas includes a raised concrete median with stabilized outside shoulders. Access control through Bella Vista is partially controlled with a short segment of fully-controlled access near the US 71/Route 340 Interchange – the only existing interchange on US 71 within the project limits. Continuing south, fully-controlled access is provided along US 71 at the US 71/US 71 Business Interchange north of Bentonville. The freeway section around Bentonville consists of a four-lane roadway with a grassy, depressed median.

North of the Study Area, extending to north of Neosho, the existing US 71 roadway is similar to the rural two-lane section through Pineville. South of the Study Area, up to a point just south of Fayetteville, the existing US 71 roadway consists of a four-lane freeway facility.

3. PLANNED IMPROVEMENTS

Both the states of Missouri and Arkansas have stated their commitments to improve US 71 to interstate standards in accordance with ISTEA legislation. In the vicinity of Bella Vista, other segments of US 71 have already been improved or are planned.

In 1992, the Final Environmental Impact Statement (EIS) for US 71 from I-44 to the Arkansas State Line in Jasper-Newton-McDonald Counties, Missouri; (MoDOT Job Number J7P0427, FHWA-EIS-90-02-F), was approved by the FHWA and MoDOT. Soon after, the Record of Decision was executed. This EIS defined a selected alternative for the improvement of US 71 in Missouri from I-44 to the state line. As shown in Exhibit I-3, the selected alternative consists of freeway improvements along the existing US 71 alignment to incorporate as much of the existing facility as possible. (A freeway is a multi-lane highway, typically four or more lanes, with access provided only at interchanges. Freeways typically have higher operating speeds.)

C. Overview of Purpose and Need

The general purpose of the project is to provide a safe, efficient, environmentally sound and cost-effective transportation facility that responds to the needs of the study area and the region. The specific purpose and needs being addressed by the proposed action are summarized as follows:

- Multi-State Interstate System - Provide a freeway as part of the multi-state, high-priority transportation corridor extending from Shreveport, Louisiana to Kansas City, Missouri, as established in ISTEA.
- Traffic Safety - Reduce the number and severity of traffic-related crashes occurring along US 71 between Bella Vista and Pineville.
- Roadway Design Features - Upgrade current roadway design features along US 71 including roadway alignments and roadway cross-sections.
- Movement of People and Goods - Provide for the efficient transport of people and goods through the region by reducing the total hours of travel through the Study Area.
- Local Access - Provide improved local access to the US 71 facility utilizing interchanges and frontage roads wherever needed while providing efficient through service for non-local trips and truck traffic.
- Roadway Capacity - Increase roadway system capacity in accordance with the projected travel demands to improve the general operating conditions of US 71.
- Recreational Activity Access - Facilitate the usage by motorists of nearby regional recreational facilities through improved accessibility.

Each of these specific needs is discussed in the following sections.

1. MULTI-STATE INTERSTATE SYSTEM

In 1991, President Bush signed the Intermodal Surface Transportation Efficiency Act (ISTEA). One provision of the ISTEA legislation identified high-priority corridors for transportation improvements. One of the high-priority corridors identified (see Exhibit I-1) was US 71 from Kansas City, Missouri to Shreveport, Louisiana. Recognized as a highway corridor of national significance, this corridor would be improved to interstate standards and would provide an extension of I-49, which connects New Orleans with Shreveport via I-10. With this corridor, new and improved transportation access would be provided from the international ports of the Gulf of Mexico to the Midwest.

In association with the designation of US 71 as a nationally significant transportation corridor, the states of Arkansas and Missouri have developed their respective statewide plans to include and complement the commitments to the US 71 corridor.

2. TRAFFIC SAFETY

The current roadway configuration, with at-grade intersections feeding traffic to a two-lane rural highway in Missouri and a divided four-lane urban expressway in Arkansas, contributes to higher crash experience than would a modern four-lane freeway facility. For example, the two-lane rural highway in Missouri has limited passing areas, few shoulder areas for vehicles with mechanical problems to park, lower visibility for motorists driving in the area's hilly terrain, as well as roadway and driveway intersections with uncontrolled access for turning vehicles. As a result, the less-safe portions of this highway have crash rates approximately 90% higher than similar facilities within the respective states.

While the existing four-lane facility in Arkansas has lower crash rates in general than the two-lane facility in Missouri, the Arkansas facility still has several design features that contribute to its higher than average crash rates. For example, there is only partial access control, with several streets and driveways connecting directly with US 71.

Additionally, the nature of the typical Bella Vista driver creates additional traffic hazards. Bella Vista, being a large retirement area, has a substantial number of elderly drivers. Typically, elderly drivers have slower reaction times than the average driver and tend to be involved in a higher portion of crashes. In a report entitled Transportation in an Aging Society: Improving Mobility and Safety for Older Persons, published by the Committee for the Study on Improving Mobility and Safety for Older Persons, it is stated that the "accumulated skill and judgement gained over a lifetime of driving tend to be offset by other factors (physiological and cognitive changes that accompany aging)."

The crash risks increase sharply when the elderly driver is interspersed with truck traffic, as is the case in Bella Vista. Based on statistics compiled by the Fatal Accident Reporting System (FARS), the following is documented in a report entitled, The Safety Record of Heavy Trucks and Older Drivers: An Analysis of Five Years of Large-Scale Accident Data:

> *American drivers over the age of 65 are over fifty percent more likely to be involved in a fatal heavy truck accident than younger drivers. Mile for mile, senior drivers are over three times more likely to be both involved in, and killed by, a fatal truck accident, as compared to displaying less than twice the risk per mile of a fatal encounter with other automobiles.*

a. Current Crash Statistics

Utilizing five-year historical data provided by the AHTD and by MoDOT for the period between 1992 and 1996, a crash analysis along existing US 71 was performed. During these time periods, there were 251 crashes in Arkansas between the US 71/US 71 Business Interchange and the state line, including one fatal crash. In Missouri, between Route H and the state line, there were 216 crashes, including five fatality crashes. The total number of crashes by year are presented in Table I-2.

TABLE I-2
TRAFFIC INCIDENTS BY YEAR AND TYPE

Location and Year	Property Damage Only	Injury	Fatality	Total
Arkansas [1]				
1992	26	16	0	42
1993	29	12	0	41
1994	30	9	0	39
1995	43	20	0	63
1996	42	23	1	66
Total	170	80	1	251
Missouri [2]				
1992	21	13	0	34
1993	26	14	1	41
1994	30	13	3	46
1995	40	21	1	62
1996	22	11	0	33
Total	139	72	5	216

Note: (1) US 71/US 71 Business Interchange to state line.
(2) Route H (Pineville, MO) to state line.

The historical crash figures in Arkansas indicate a consistent range of crashes without a distinct trend higher or lower. The annual crash figures in Arkansas generally range from between 40 and 70 crashes every year. The crash information for Missouri, on the other hand, varies from the yearly high of 62 in 1995 to 33 in 1996.

To provide a common basis of comparison, a crash rate was established for various segments along US 71. The crash rates are typically expressed in crashes per hundred million vehicle kilometers (miles) of travel (acc/HMVK(M)T), with one vehicle kilometer of travel representing one vehicle traveling one kilometer.

The crash rates along US 71 within the Study Area vary between 64 (100) and 248 (400) acc/HMVK(M)T in Arkansas and 55 (90) to 255 (410) acc/HMVK(M)T in Missouri. The crash rates for the various US 71 segments are presented in Exhibit I-4. As shown, the segment of US 71 with the most crashes is located just north of the Arkansas/Missouri border with 255 (410) acc/HMVK(M)T. The segment along the state line has a high number of access points serving both local residences and business establishments where traffic entering and exiting the highway create numerous traffic conflict points. Conflicting moves between the traffic on

the main highway (i.e. US 71) and traffic on the access points (i.e. driveways) have been cited in the traffic crash reports.

By comparison, the state average for rural two-lane highways in Missouri over the same time period is 134 (215) acc/HMVK(M)T. For four-lane divided highways in Arkansas, the state average crash rate is 76 (124) acc/HMV(M)T. There are portions of US 71 in Missouri that have over 90% more crashes than the typical two-lane rural highway in Missouri, and in Arkansas there are portions that have between 30% and 80% more crashes than the typical four-lane divided highway in Arkansas.

b. Crash Projections in Project Area

Based on current crash rates for US 71 and expected traffic growth in the corridor, the total number of crashes in 2020 was estimated and are presented in Table I-3. Assuming no roadway improvements along US 71, the total number of annual crashes is projected to increase by 176 percent in Arkansas and over 258 percent in Missouri by 2020.

TABLE I-3
PROJECTED INCREASE IN ANNUAL
TRAFFIC CRASHES ALONG US 71

Location and Year	Property Damage Only	Injury	Fatality	Total (Rounded)
Arkansas[1]				
Actual 1996	42	23	1.0	66
Projected 2020	124	56	1.6	182
Percent Increase	195%	143%	60%	176%
Missouri [2]				
Actual 1996	22	11	0	33
Projected 2020	80	36	1.1	118
Percent Increase	264%	227%	N.A.	258%

Note: (1) US 71/US 71 Business Interchange to state line.
(2) Route H (Pineville, MO) to state line.

c. Comparison with Proposed Improvements

With an improved four-lane freeway facility, the total number of crashes along US 71, as well as other highways in the area, would be expected to decrease. Depending on the location of the freeway improvements such as along the existing alignment or on new location, the proposed improvements would remove between 134 and 244 crashes per year from US 71 within the Study Area. (See technical report *Travel Efficiency Analysis*, March 1997.) Based on standard FHWA crash cost values updated to 1996 dollars, the total monetary crash cost savings of the freeway improvements would range between $6 and $11 million annually by 2020, with a discounted total savings between $40 and $82 million.

3. ROADWAY DESIGN FEATURES

a. Alignment

Roadway design features currently existing along US 71 are based on the prevailing design standards at the time of the original US 71 construction. Today, geometric design standards are more stringent than they were in the past.

For safety reasons, sight distance of sufficient length must be provided along a roadway so that drivers can control the operation of their vehicles to avoid striking an unexpected object on the traveled way. The minimum sight distance available on a roadway should be long enough to enable a vehicle traveling at or near the maximum safe driving speed, or design speed, to stop before reaching a stationary object in its path. Roadway alignments should also be gentle enough to permit smooth directional transitions for the traveling vehicle.

Based on a review of the existing horizontal and vertical alignments of US 71 within the Study Area, the existing roadway does not comply in its entirety with current American Association of State Highway and Transportation Officials (AASHTO) standards for a 110 km/h (70 mph) design speed. As shown in Table I-4, 100% of US 71 in Missouri meets the 110 km/h (70 mph) design standard. However, US 71 in Arkansas does have some geometrically deficient segments. Approximately 28% of the alignment in Arkansas, or approximately 3.1 km (2.0 mi.), does not meet this standard. Exhibit I-5 shows the existing horizontal and vertical curve design speeds along US 71.

TABLE I-4
GEOMETRIC DESIGN SUFFICIENCY
PERCENTAGE OF ALIGNMENT BASED ON DESIGN SPEED

Roadway Design Speed Standard	Missouri		Arkansas	
	% of Segment	Sub-segment Length km(mi)	% of Segment	Sub-segment Length km(mi)
110 km/h (70 mph)	100%	15.2 (9.4)	72%	8.1 (5.0)
100 km/h (60 mph)	100%	15.2 (9.4)	81%	9.1 (5.6)
90 km/h (55 mph)	100%	15.2 (9.4)	100%	11.2 (7.0)
Total	100%	15.2 (9.4)	100%	11.2 (7.0)

Note: % of Segment represents the percentage of the US 71 roadway length within the Study Area which does meet the given Roadway Design Speed Standard.

b. Roadside Hazards

Another standard of design, which has changed considerably over time, is the issue of roadside safety. While every reasonable effort is made to design roadways consistent with current design standards, motorists continue to have crashes in which they run off the road for one reason or another. Realizing that vehicles can potentially leave the roadway at any given location, a "forgiving roadway" should be maintained on US 71 to provide a safer roadside environment for the traveling public.

Typical roadway improvement cross-sections would utilize 3.6 m (12 ft) travel lanes with full-width paved shoulders. Furthermore, a clear zone area, free of roadside hazards such as trees, boulders or non-breakable signposts, would be provided adjacent to the roadway surface. The existing cross-section of US 71 does not meet these roadside safety standards in all cases.

Improvements along the existing alignment or on a new alignment would provide a safer roadside along US 71.

The elimination of roadside hazards, when combined with alignment improvements, would provide a considerably safer, more efficient roadway through the project area.

4. MOVEMENT OF PEOPLE AND GOODS

a. Historical Traffic Trends on US 71

The ability to provide a more efficient transportation system is an integral component of the US 71 improvements. US 71 in southwest Missouri and northwest Arkansas serves as a primary north-south highway for both commercial freight movements and private automobiles. Fayetteville, Springdale, Bentonville, and Fort Smith have industries that truck a large portion of their commerce through the US 71 corridor. J.B. Hunt, Wal-Mart and Tyson are all active industries in the area, as are several other large and medium-sized companies. As these companies continue to grow, and by association the local communities, the transportation situation along the US 71 corridor will continue to deteriorate.

In addition to the commercial truck movements in the area (16 percent), US 71 is also used as a local arterial by the citizens living in Bella Vista. The majority of the existing commercial activity is located along the highway, and US 71 is the primary facility providing access to those commercial activities not available in Bella Vista. Therefore, US 71 is carrying commercial and individual trips with relatively long trip lengths in addition to the relatively short local trips that would be more appropriately served by an arterial type roadway.

b. Current and Projected Traffic Volumes

The first step in evaluating the traffic implications of any corridor improvement is to establish the baseline from which all the alternatives are compared. This baseline would include the existing roadway system plus any reasonably anticipated or committed improvements. In other words, the analysis seeks to define what traffic conditions would be like in 2020 if only minor safety improvements were made, such as new traffic signals at existing major intersections. Exhibit I-6 shows the existing (1996) traffic volumes and the projected (2020) traffic volumes along the US 71 roadway within the Study Area. Over this time period, the following traffic patterns and conditions are likely to occur:

- Along US 71, traffic is expected to increase from approximately 12,600 vehicles per day (1996) north of the state line to approximately 23,700 vehicles per day in 2020, for an 88 percent increase. Just south of the state line the traffic is expected to increase from 13,000 to 28,300 vehicles per day for a 118 percent increase. Finally, near McKissic Creek, the traffic is expected to increase from 30,300 vehicles per day to about 63,200 vehicles per day for a 109 percent increase.

- The total vehicle kilometers (miles) of travel in the network would increase from approximately 1,787,200 (1,117,000) in 1996 to 4,150,400 (2,594,000) in 2020, for a 132 percent increase.

- The total vehicle hours of travel in the network would increase from approximately 28,600 to 84,500, for a 195 percent increase.

- The average vehicle speed in the network would decline from 63.5 km/h (39.7 mph) in 1996 to 49.1 km/h (30.7 mph) in the year 2020, for a 23 percent decline. This decline in average vehicle speed would be attributable primarily to the anticipated inclusion of traffic signals along US 71 to address the safety concerns, the growth in local trips, as well as the growth in traffic traveling through the area.

- The total number of through trips (trips with both an origin and destination outside the Study Area) would increase from 7,600 in 1996 to 17,700 vehicles per day in 2020. The vehicle split between through and local trips would increase from 5% and 95% of all trips in the network in 1996 to 6% and 94% in 2020. For trips using US 71, the percent of through trips increases from 30% (Arkansas) and 50% (Missouri) in 1996 to 40% (Arkansas) and 75% (Missouri) in 2020.

5. LOCAL ACCESS

US 71 within the Study Area is currently being utilized by both long-distance through trips and shorter, local trips. In effect, US 71 is functioning as both an urban arterial roadway and a regional highway. This dual function creates traffic hazards because the through traveler expects a regional highway without speed changes or at-grade turning movements. The local traveler expects an urban facility with slower speeds and frequent turns. Forced onto the same facility, this combination of driver expectations and speed differentials creates potential driver conflicts. In addition, US 71 divides Bella Vista into two parts. This division causes local motorists to either cross or utilize for short distances the US 71 roadway for local trips to commercial or residential areas on the opposite side.

Freeway-type improvements to US 71 would help alleviate the problem of serving local access while maintaining through-trip service. Contrasting with local service, a through-trip refers to a motorist on US 71, which begins and ends his or her trip outside the Study Area. If the existing roadway was upgraded to freeway standards, at-grade intersections (i.e. where roads intersect or connect at the same elevation or grade) would be eliminated. A frontage road/cross road system would funnel local traffic across US 71 using grade-separated facilities, thereby simplifying the movement for travelers crossing US 71. Grade-separated facilities refer to the crossing of roadways at different elevations using bridges. In addition, if US 71 were located on a new location around Bella Vista, through trips should be removed from existing US 71, thereby permitting the existing route to function more like an urban arterial with less traffic. Under this condition with a new bypass facility additional safety and efficiency can be gained by installing traffic signals at major intersections along the existing US 71 roadway.

6. ROADWAY CAPACITY

Roadway congestion is measured in terms of a facility's ability to serve a specific volume of traffic. Typically, traffic engineers assign a capacity to a specific roadway segment based on such characteristics as number of travel lanes, divided or undivided traffic flow, availability of roadway shoulders, travel speed, traffic composition, and other factors. Once a roadway segment's capacity is calculated, a comparison between the volume of traffic anticipated to travel on a roadway segment and its specific capacity results in a determination of level of service (LOS). For the purposes of this study, LOS C or better is the goal for future (2020) traffic conditions.

Levels of service are defined for the various classes of roadway in the "Highway Capacity Manual – Special Report No. 209" (HCM), 1994, prepared by the Transportation Research Board. The levels of service range from the most desirable (level A) to the theoretical capacity of the roadway (level E) and also forced flow congested conditions referred to as level F. General description of the operating conditions for freeway facilities for each of the levels of service from the HCM are as follows:

- *Level-of-Service A* - Level A describes primarily free-flow operations. Average travel speeds near 100 km/h (60 mph) generally prevail on 110 km/h (70 mph) freeway elements. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream.

- *Level-of-Service B* - Level B also represents reasonably free-flow conditions and speeds of over 92 km/h (57 mph) are maintained on 110 km/h (70 mph) freeway elements. The ability to maneuver within the traffic stream is only slightly restricted, and the general level of physical and psychological comfort provided to drivers is still high.

- *Level-of-Service C* - Level C provides for stable operations, but flows approach the range in which small increases in flow will cause substantial deterioration in service. Average travel speeds are still over 87 km/h (54 mph). Freedom to maneuver within the traffic stream is noticeably restricted at LOS C, and lane changes require additional care and vigilance by the driver.

- *Level-of-Service D* - Level D borders on unstable flow. In this range, small increases in flow cause substantial deterioration in service. Average travel speeds of 74 km/h (46 mph) or more can still be maintained on 110 km/h (70 mph) freeway elements. Freedom to maneuver within the traffic stream is severely limited, and the driver experiences drastically reduced physical and psychological comfort levels.

- *Level-of-Service E* - The boundary between LOS D and LOS E describes operations at capacity. Operations in this level are extremely unstable, because there are virtually no usable gaps in the traffic stream. Vehicles are spaced at approximately 24 m (80 feet), or 4 car-lengths, at relatively uniform headways. This, however, represents the minimum spacing at which stable flow can be accommodated.

- *Level-of-Service F* - Level F describes forced or breakdown flow. Such conditions generally exist within queues forming behind breakdown points.

Based on existing geometric conditions within the Study Area, US 71 roadway capacities have been estimated. These capacities reflect the maximum number of vehicles per day (vpd) that a particular roadway could serve and still maintain acceptable service (LOS C). These capacities are as follows:

- 2-Lane Highway (Missouri) 12,500 vpd
- 4-lane Expressway (Arkansas) 26,000 vpd

Utilizing these respective capacities, the US 71 traffic volumes have been analyzed to determine the capability each roadway segment would have to carry existing and future traffic volumes. As the existing traffic volumes indicate, the existing daily traffic volumes in Missouri are slightly over the 12,500 vpd capacity. Therefore, these segments currently operate at LOS

D and are considered undesirable. In Arkansas, depending on the roadway segment, the existing traffic volumes are below or slightly exceed the 26,000 vpd capacity of a 4-lane expressway. Consequently, US 71 in Arkansas currently operates near LOS C or better north of the Riordan Road area. South of this point, US 71 currently operates at LOS D.

The same comparison for future (2020) conditions indicates that all of US 71 would operate at unacceptable levels. The entire project length in Missouri would exceed the roadway capacity and operate at LOS F. In Arkansas, the roadway between Route 340 and Business 71 would exceed the roadway capacity and operate at LOS F. The roadway segment between State Line and Route 340 is anticipated to operate at LOS D. Table I-5 presents a summary of these capacity comparisons.

TABLE I-5
ROADWAY CAPACITY ANALYSIS
US 71 STUDY CORRIDOR

US 71 Segment	Segment Capacity	Existing (1996)		Future (2020)	
		vpd	LOS	vpd	LOS
Missouri					
Pineville to Rt. 90	12,500	13,000	D	23,200	F
Rt. 90 to State Line	12,500	12,600	D	23,700	F
Arkansas					
State Line to Rt. 340	26,000	13,000	C+	28,300	D
Rt. 340 to Riordan Rd	26,000	24,700	C+	45,700	F
Riordan Rd. to Bus 71	26,000	30,300	D	63,200	F

Note: C+ means LOS C or better.

7. RECREATIONAL ACTIVITY ACCESS

Tourism and recreational traffic have significantly affected the current travel demand along US 71. This influence on the Study Area's traffic volumes due to recreational traffic is expected to continue in the future.

a. Importance of Tourism to the States of Arkansas and Missouri

Tourism to sites such as Huckleberry Ridge State Forest, Pea Ridge National Park, Beaver Lake (all located outside of the Study Area), and the Bella Vista community is served by US 71. All of these recreational activities are important to Missouri and Arkansas' economic base. Purchases made by visitors to these areas create economic impacts to both the regions themselves, as well as to the state. Direct economic impacts are realized when these new dollars are spent in a defined area. Primary impacts of the initial expenditures go towards local income and employment; the rest is realized in state and local taxes. Secondary impacts are then realized as the initial dollars are used to purchase goods and services in other segments of the states' economies or in other geographic areas of the states. Improvements to the transportation system which serves and sustains tourism growth is critical for the continued realization of these statewide economic benefits.

b. Travel Demand from Recreational Activities

Recreational activity centers located in and near the Study Area draw traffic through the area. From October 1996 to September 1997, over 2.5 million people visited the Beaver Lake, US

Army Corps of Engineers' facilities. These visitors spent nearly 19 million visitor-hours at the Lake. Another nearby recreational attraction is the Pea Ridge National Park, with approximately 100,000 annual visitors. Each of these attractions draw traffic from the US 71 Corridor.

One of the biggest recreational destinations of the Northwest Arkansas and Southwest Missouri areas is the Bella Vista community. The Bella Vista community draws visitors from around the middle part of the country in all directions, with the majority using US 71 from the north and south of the Study Area.

With the travel demand created by the recreational activity centers located within and outside of the Study Area, improvements to US 71 are necessary to provide efficient and safe regional access to the recreational traffic.

D. Project Description (Proposed Improvements)

Described in the following section, this project consists of improving US 71 to interstate standards, through or around Bella Vista Village, and connecting the existing US 71 bypass around Bentonville, Arkansas to the south with the planned four-lane improvements by MoDOT at or near the Missouri/Arkansas state line.

1. STUDY AREA

As shown on Exhibit I-7, the Study Area extends from a southern terminus south of Bella Vista to the northern terminus near Pineville, Missouri, and encompasses the areas potentially impacted by possible route relocations. The potential improvement alternatives of upgrading the existing roadway or constructing the freeway facility on new location around either the east or west side of the Bella Vista Village are contained within the boundary of the Study Area. The southern terminus of the Study Area consists of a connection with the existing freeway bypass around Bentonville. The northern terminus represents a connection with the planned US 71 improvements to the north by MoDOT. The northern terminus consists of the planned US 71/Route H Interchange located southwest of Pineville.

The length of US 71 within the Study Area measured along the existing alignment is 15.2 km (9.4 mi.) in Missouri, measured from Route H to the state line, and 11.2 km (7.0 mi.) in Arkansas, measured from the state line to the existing US 71/US 71 Business Interchange. The total project length within the Study Area is approximately 26.4 km (16.4 mi.).

Located within McDonald County, Missouri and Benton County, Arkansas, the Study Area includes several municipalities. These small towns include Pineville and Jane in Missouri and Hiwasse in Arkansas. In addition, the northern city limits of Bentonville, Arkansas, crosses into the Study Area. The majority of the un-incorporated Bella Vista community comprises the Study Area in Arkansas.

2. ROADWAY TYPE

The US 71 improvements are proposed to be a freeway facility using fully controlled access (i.e. interstate standard). As shown in Exhibit I-8, the type of freeway improvement depends on the specific site application – freeway on new location or freeway along existing.

For the relocation option, the basic roadway would consist of two traffic lanes in each direction separated by an 18.3 meter (60 foot) depressed median. Full-width paved shoulders would be provided on each side of the traveled way. The roadway line and grade would be efficiently adapted to the topography of the area to the extent allowed by the design criteria. Frontage roads would be utilized where needed to provide access to adjacent properties.

The roadway type for freeway improvements along the existing roadway depends on the configuration of the existing roadway. Within Missouri, where the existing roadway consists of two lanes, the new freeway improvements would be similar to the freeway on new location – four-lane divided freeway with depressed median. For the US 71 segment in Arkansas which consists of a divided four-lane section, the existing traveled way would be utilized and the existing raised concrete median would be replaced with paved inside shoulders and a concrete median barrier. To the fullest extent possible, the existing roadway alignment would be utilized. Frontage roads would be provided to maintain access to adjacent areas.

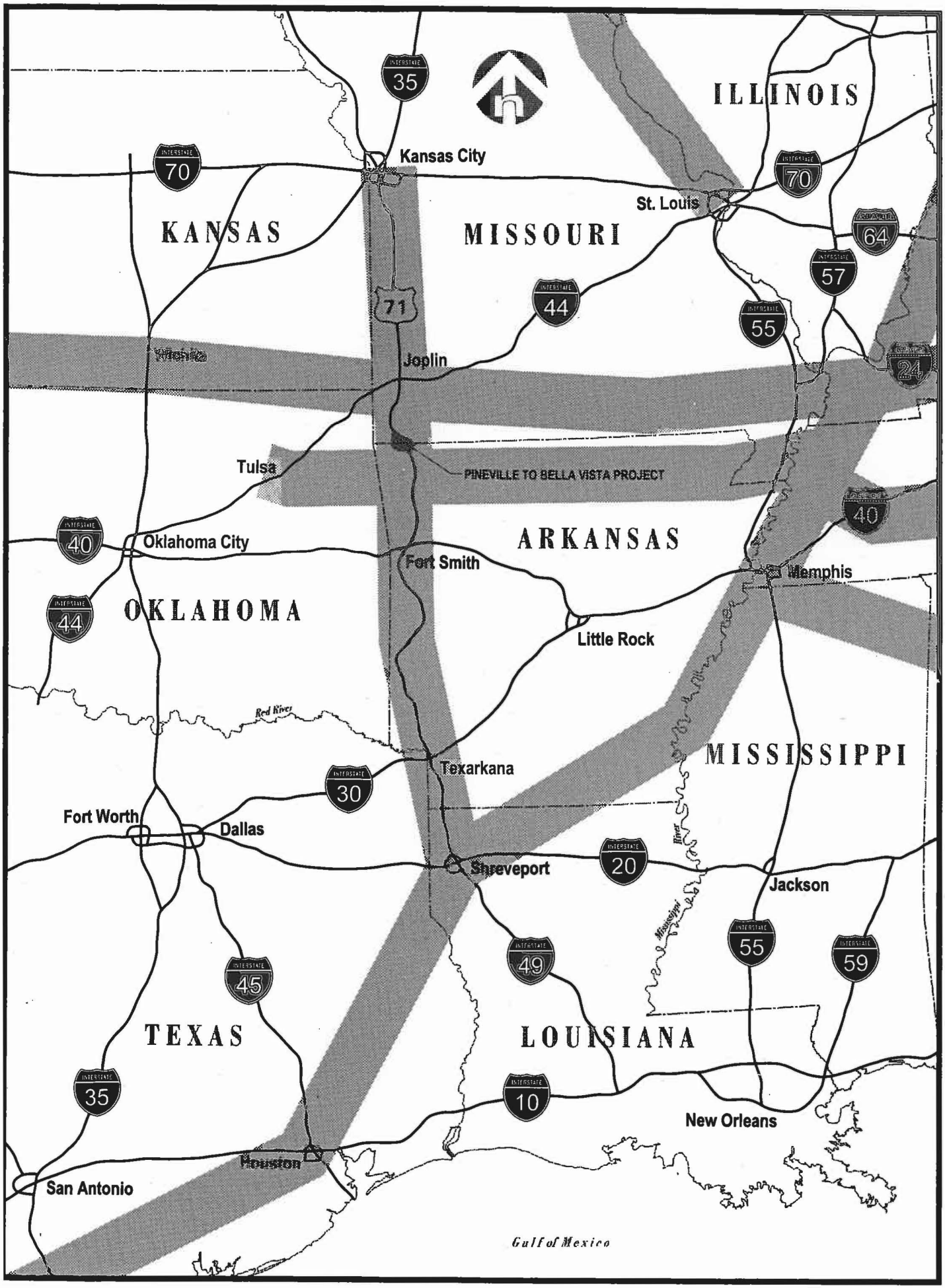


Exhibit I-1 High Priority Corridors

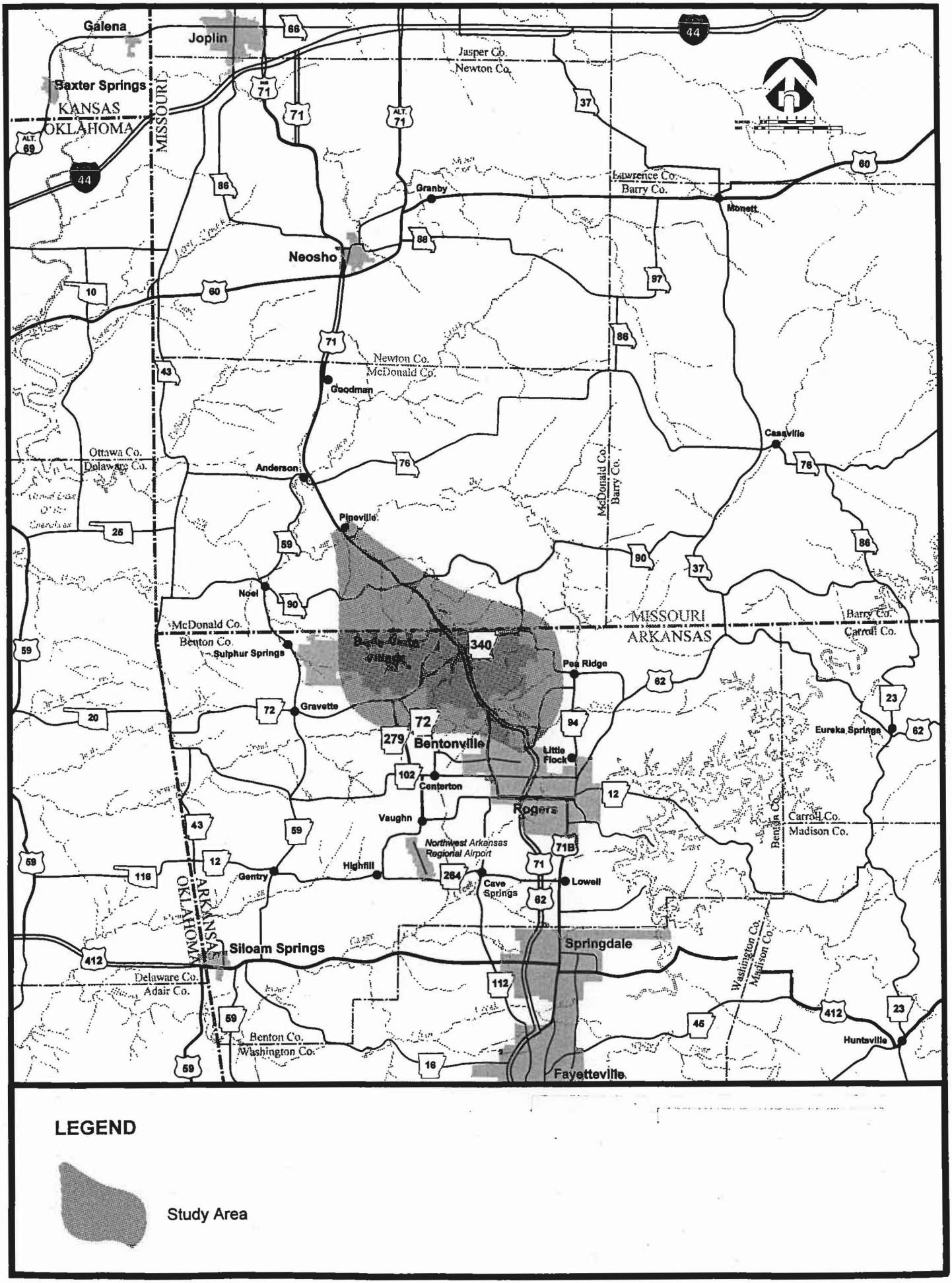


Exhibit I-2 Regional Transportation System

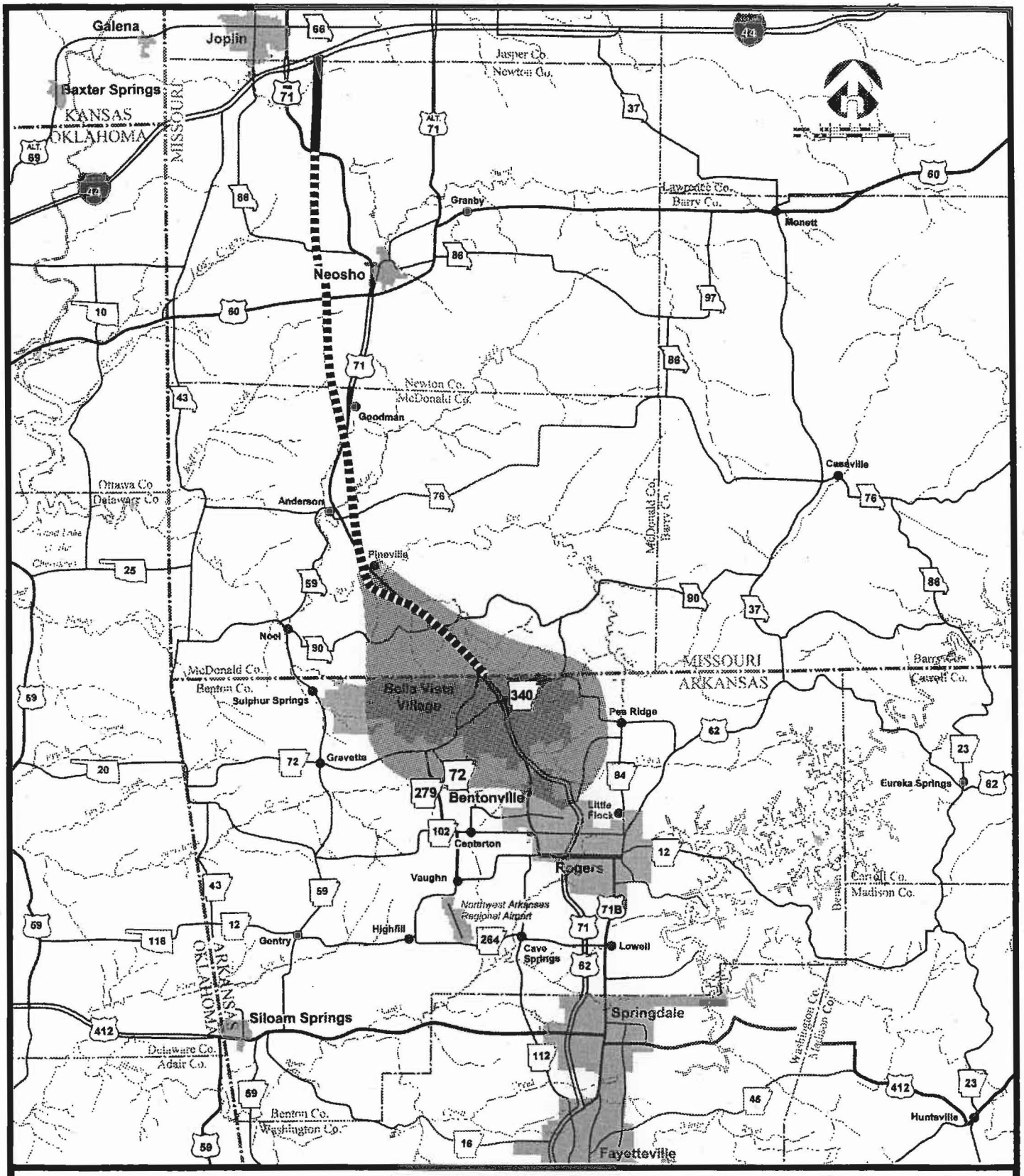


Exhibit I-3 MoDOT Planned US 71 Improvements

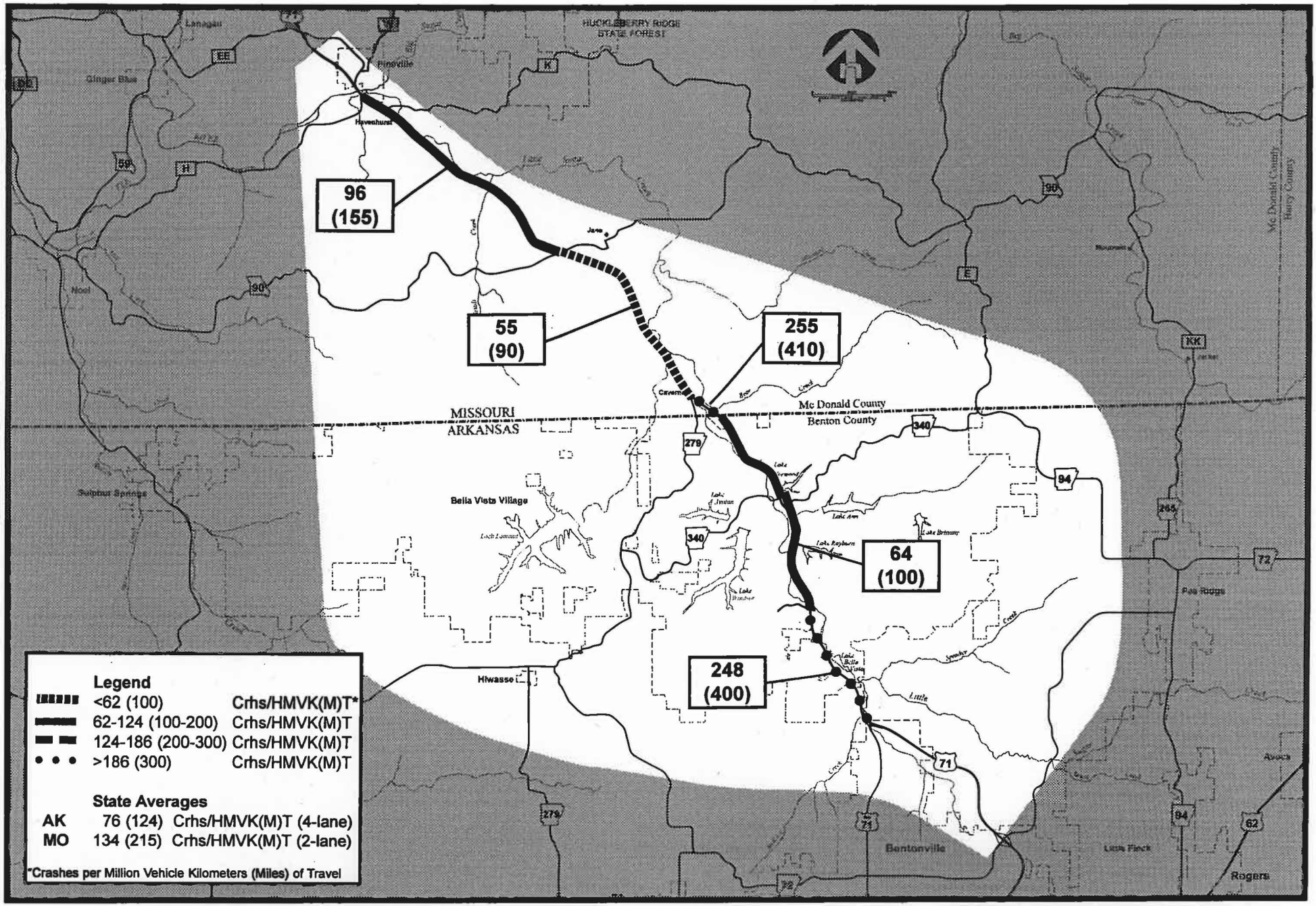


Exhibit I-4 Existing Crash Rates

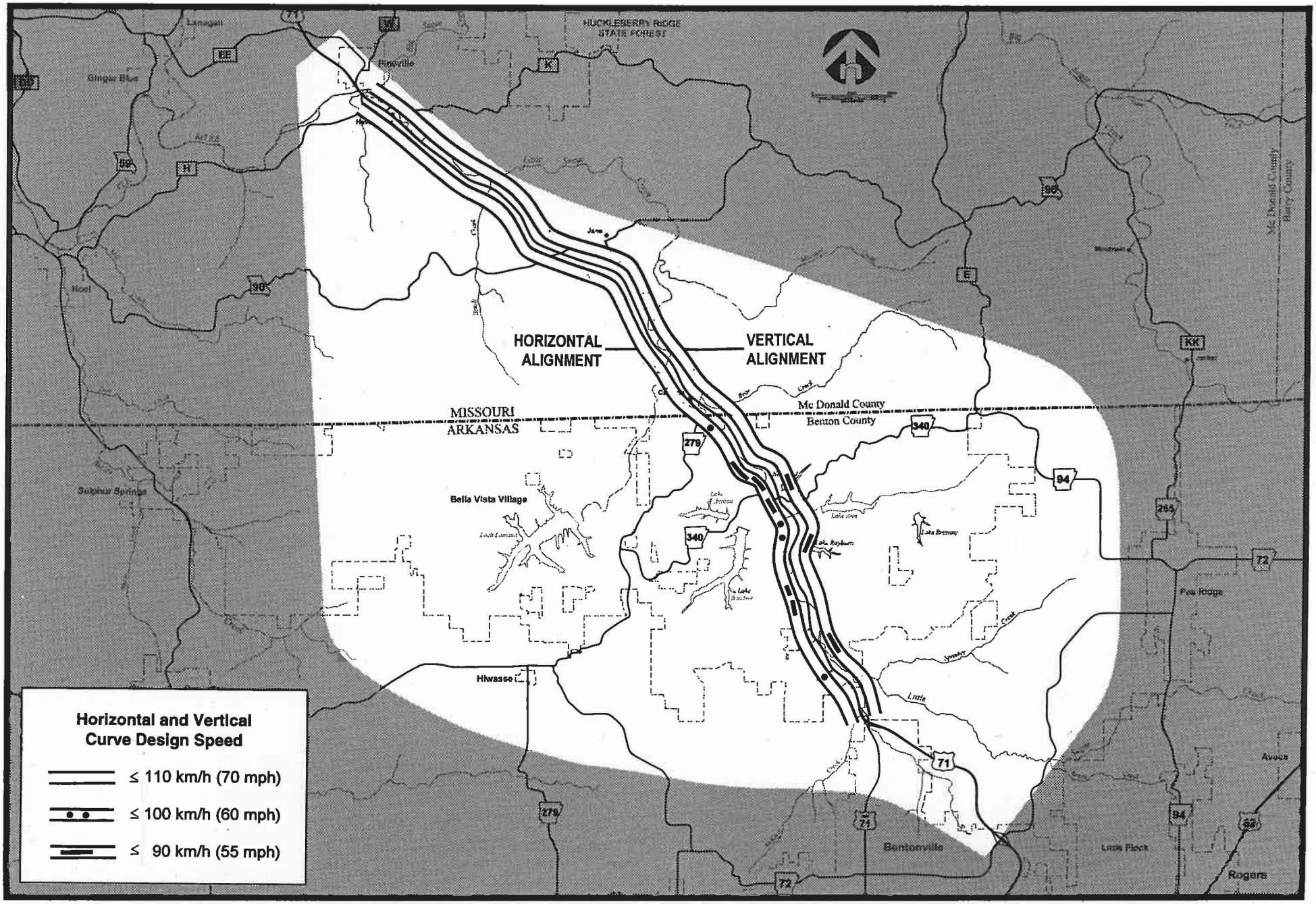


Exhibit I-5 Geometric Design Sufficiency

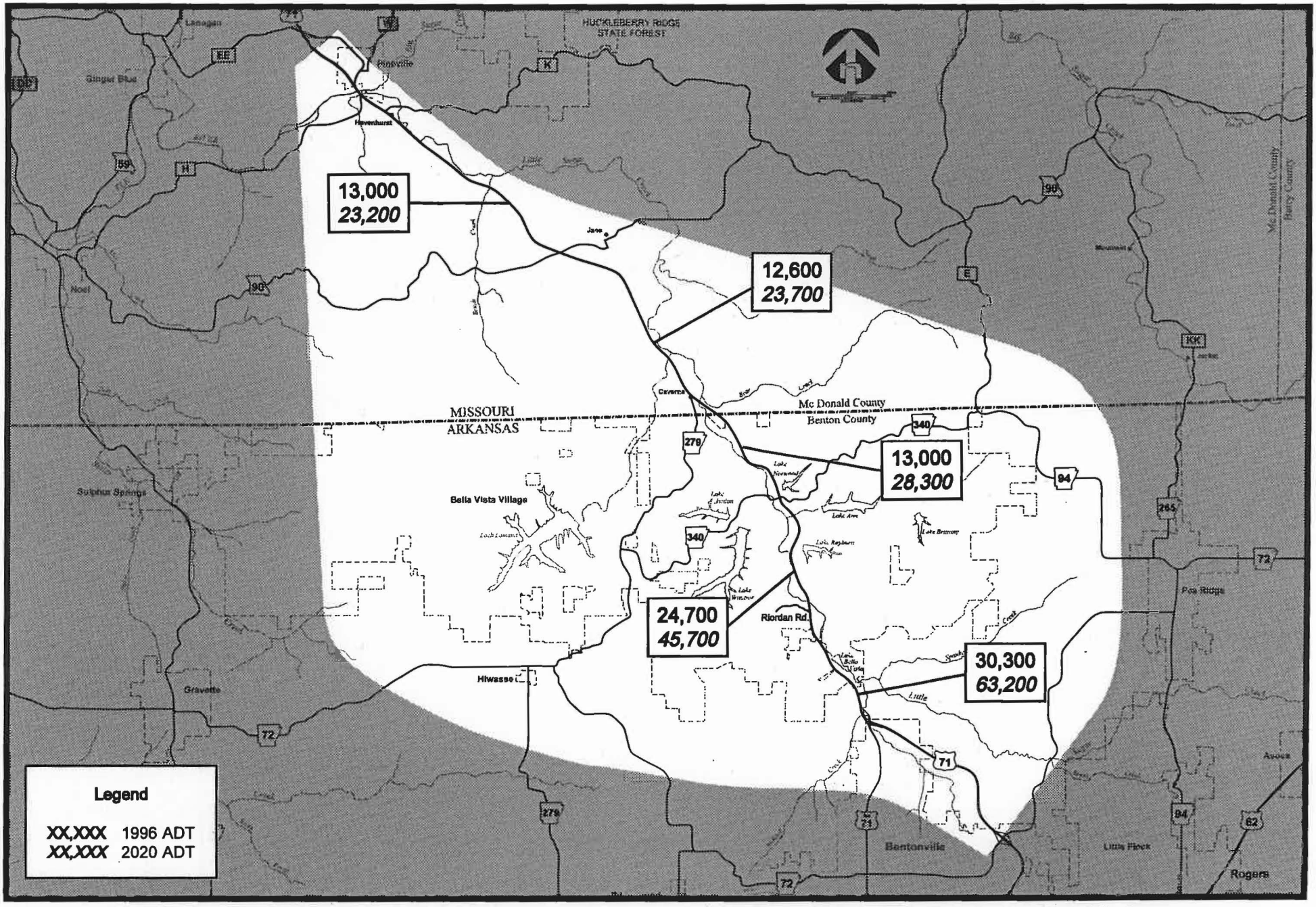


Exhibit I-6 Existing and Projected Traffic (1996 and 2020)

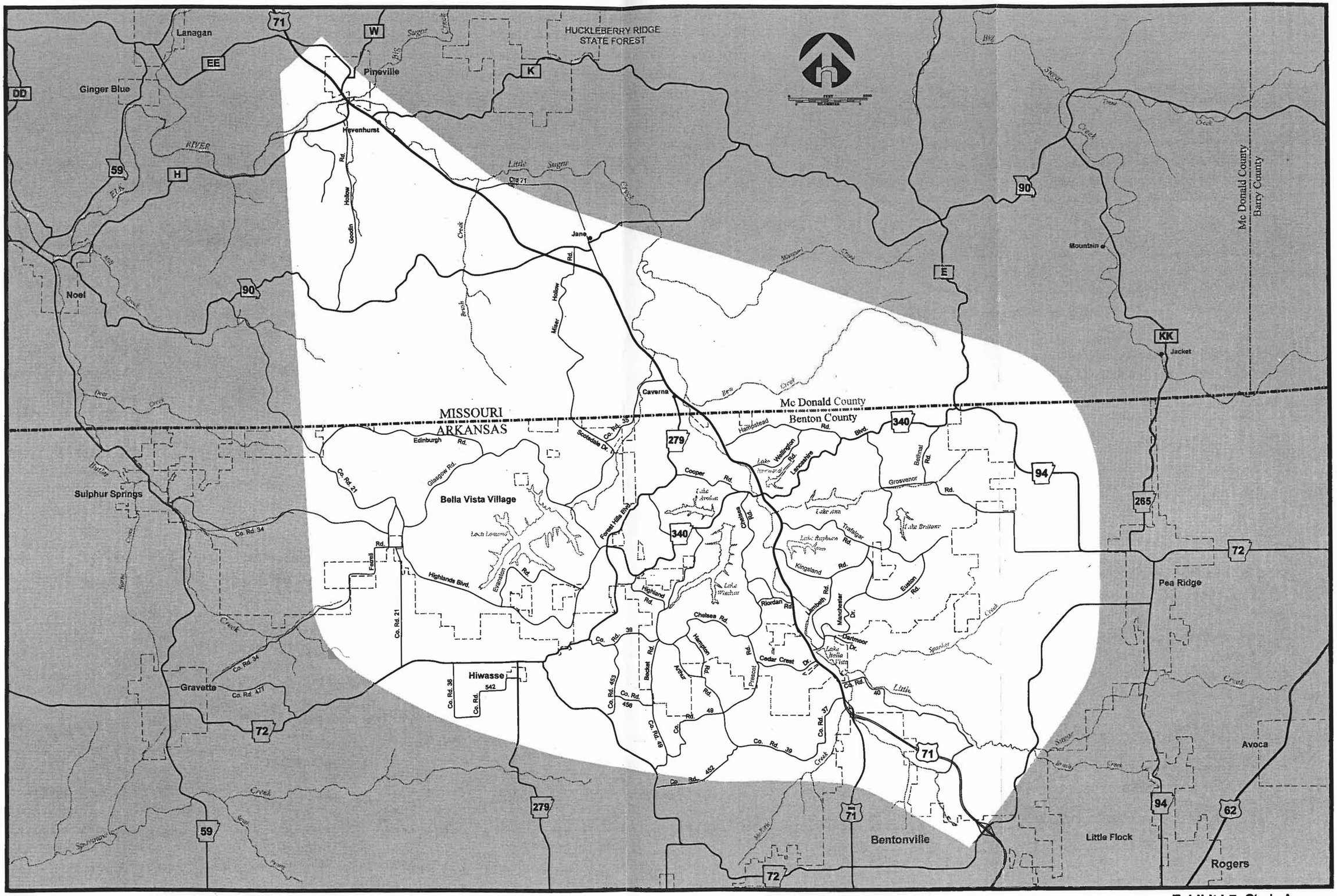
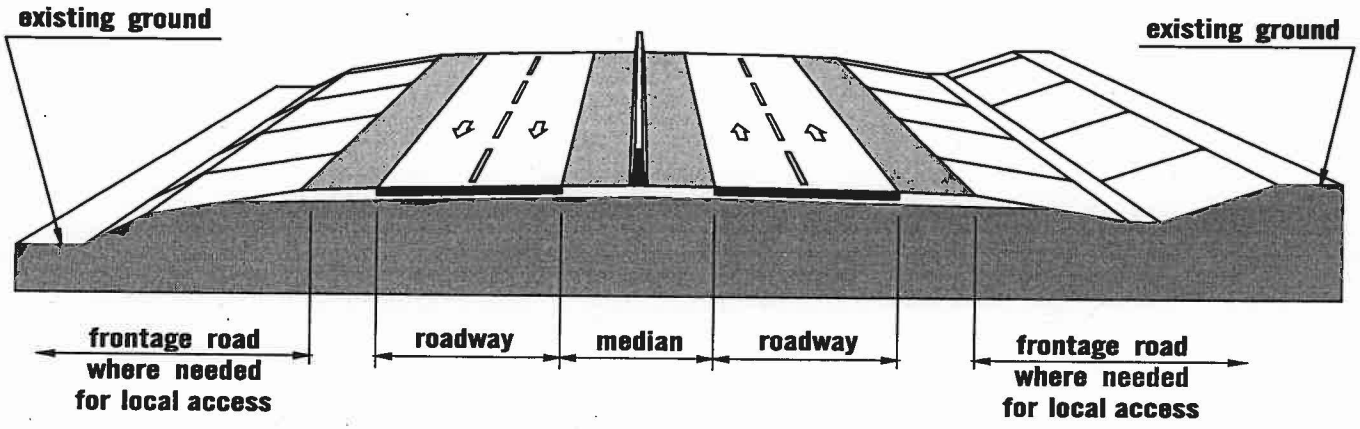
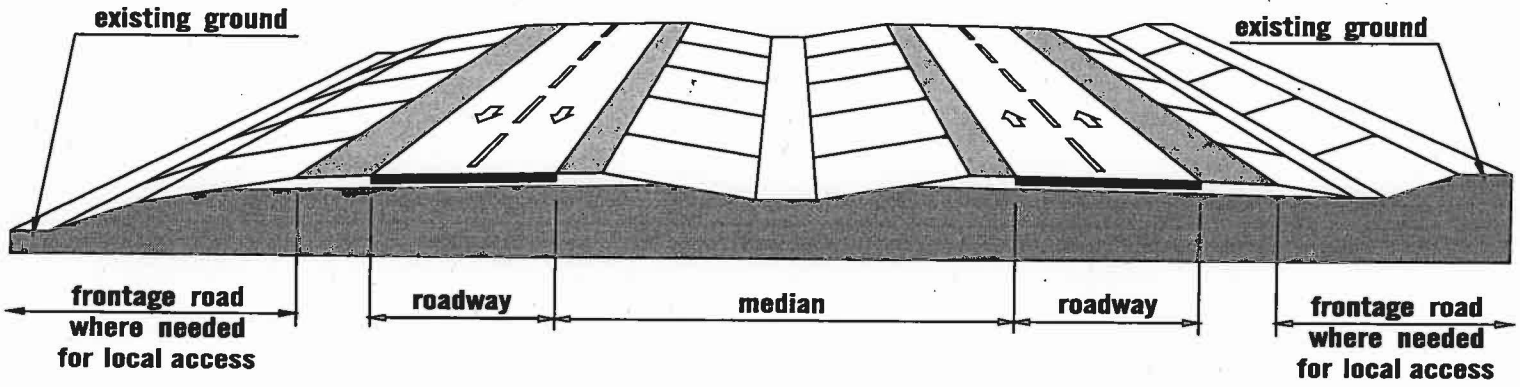


Exhibit I-7 Study Area



FREEWAY ALONG EXISTING (ARKANSAS)



FREEWAY ON NEW LOCATION

Chapter II - Alternatives

This chapter presents the definitions of the alternatives considered for the US 71 improvements between Bentonville, Arkansas and Pineville, Missouri. These descriptions of the alternatives include traffic considerations, construction cost estimates, and operations and maintenance cost estimates. These descriptions of the alternatives provide the basis for the assessment and evaluation of the potential impacts of the improvements.

A. Overview of Improvement Concepts

Based on the needs of the Study Area, as defined in Chapter I, and in compliance with federal regulations requiring the consideration of all reasonable concepts, a full set of improvement concepts has been developed. The following types of improvements have been considered:

1. "NO-BUILD" CONCEPT

The "No-Build" Concept represents the existing roadway system plus any committed street and highway improvements within the Study Area. Since no significant planned or committed roadway improvements other than the US 71 improvements have been identified, this concept consists of the current roadway network within the Study Area. This concept also consists of short-term, minor safety and maintenance improvements to continue the operation of the existing system.

2. NON-FREEWAY IMPROVEMENTS TO EXISTING ROADWAY CONCEPT

This concept consists of non-freeway roadway capacity and safety improvements along the existing US 71 roadway to meet future travel demands and future safety concerns. According to the Transportation Research Board's *Highway Capacity Manual*, capacity is the maximum rate of traffic flow, persons or vehicles, which can reasonably be expected for a roadway under prevailing conditions. As a result, an increase in capacity is an increase in the rate of traffic flow. This concept would not provide a freeway type of improvement, but would provide capacity improvements (i.e. additional lanes) to meet the growing traffic demands of the US 71 Corridor. However, this concept would not provide the same level of traffic service as the "Freeway-Build" Concepts.

3. "FREEWAY-BUILD" CONCEPT

"Freeway-Build" Concept includes the construction of a freeway facility either on new location or along the existing US 71 alignment. Based on the current land uses and built-up environment of the Bella Vista area, several preliminary corridors have been identified – Far West, Near West, Existing, and East. To minimize adverse impacts of the relocation corridors, the corridors have been defined to either skirt the built-up areas of Bella Vista Village (Far West and East), or to take advantage of undeveloped parcels located within the Village (Near West). North of the state line, these corridors are aligned in accordance with the most direct route back to the existing US 71 roadway alignment. Exhibit II-1 shows the locations of the Study Corridors.

4. OTHER CONCEPTS

Public transportation alternatives to highway improvements, such as bus systems and rail transit, are generally considered viable concepts in large metropolitan areas where land use intensity is relatively high, and where concentrated trip origins and/or destinations (such as central business districts) make mass transit a more viable alternative. (The origin is the place where a trip begins and a destination is the place where a trip ends.) Mass transit systems are generally not a viable concept in areas with low population densities and widely distributed origins and destinations, such as in Bella Vista. Public transportation is capable of carrying a large number of people in relatively few vehicles, which can increase the capacity of a facility. This would be measured in passenger-trips, and can contribute to a reduction in fuel consumption and vehicle emissions. However, these benefits are realized only if transit ridership is adequate and the construction costs of the transit system are not exorbitant. Based on the experiences of transit systems across the country, because of the low population density and the dispersed trip origins and destinations in the US 71 Corridor, public transportation would not likely provide the same level of mobility as would the construction of a freeway, nor would it likely provide the economic benefits that would be expected to accrue as the result of a "Freeway-Build" Concept. For these reasons, public transportation alternatives are not considered a reasonable alternative to the proposed action.

B. Traffic

The ability to provide a more efficient transportation system is an integral component of the US 71 improvements. US 71 in Southwest Missouri and Northwest Arkansas serves as a primary north-south highway for both commercial freight movements and private automobiles. Based on shipper surveys completed as part of this EIS, Fayetteville, Springdale, Bentonville, and as far south as Fort Smith have industries that truck a large portion of their commerce through the US 71 Corridor. J.B. Hunt, Wal-Mart and Tyson are all active in the area, as are several other large and medium-sized companies. As these companies continue to grow, and by association the local communities, the traffic conditions along the US 71 Corridor will continue to worsen.

In addition to the commercial truck movements in the area (16 percent), US 71 is also used as a local arterial by the citizens living in Bella Vista. The majority of the existing commercial activity is located along the highway, and US 71 is the primary roadway providing access to commercial activities not available in Bella Vista. Therefore, US 71 is carrying commercial and individual trips with relatively long travel distances in addition to the relatively short local trips.

To evaluate the relative traffic improvement expected with each alternative, a traffic model was developed. This model was utilized to develop the projected design year traffic volumes (2020) with and without each of the improvement alternatives. The results of the model were utilized in the evaluation of the alternatives' impacts on traffic patterns. In addition, the benefits of each alternative in terms of crash savings, travel time savings, and reductions in vehicle operating costs were estimated.

1. TRAFFIC DEMAND FORECASTS

A computerized regional traffic model procedure was used to simulate existing and future traffic within the US 71 Study Area. The TRANPLAN transportation modeling software was used in this analysis. Traffic forecasts were developed by applying a traditional travel demand modeling technique.

a. Methodology

The general procedure for evaluating the effectiveness of each roadway alternative involves calibrating the model to existing conditions, estimating the growth or decline in traffic into the future, and then comparing the roadway network with the alternative under investigation to the baseline network without the alternative. The differences between the two networks would then be attributable to the alternative.

More specifically, the effectiveness of each alternative depends on how much traffic would be removed from congested sections, as well as how efficiently traffic would move throughout the study region. The average annual daily traffic (AADT) is a model output which can be used to measure the change in traffic volumes as traffic diverts from existing roads to the improved roadway. AADT also indicates each alternative's ability to reduce traffic at specific locations. To assess overall efficiency, a series of measures were used. These measures of effectiveness (MOE) include vehicle hours of travel (VHT), vehicle kilometers (miles) of travel (VK(M)T), and the average vehicle speed. All four terms are defined as follows:

- **Average Annual Daily Traffic (AADT)** - Once the modeling procedure assigns trips to the roadway network, each roadway or roadway segment has a specific number of assigned vehicles. Fluctuations in the number of vehicles will occur based on seasonal factors, as well as variations throughout the day. The AADT averages these fluctuations and represents the number of vehicles crossing a specified point on an average day during the year.

- **Vehicle Hours of Travel (VHT)** - The amount of time vehicles are on the road is a function of how far motorists must travel between their origin and destination as well as the level of congestion encountered. The VHT is calculated by summing the travel time made by each vehicle trip in the network.

- **Vehicle Kilometers (Miles) of Travel (VK(M)T)** - The distance vehicles travel between their origin and destination is the primary determinant of the path chosen, with drivers typically choosing the shortest route. Sometimes, however, the shortest route has the most congestion and a longer route would actually be quicker. The model calculates a travel path for each trip in the network depending on both travel distance and time. By summing up the travel distances made by each vehicle, the traffic model can calculate the total VK(M)T for the network.

- **Average Vehicle Speeds** - The traffic model reports average network-wide speeds, based on congestion levels on the highway network.

b. Origin/Destination Study

In order to understand the travel characteristics of the Bella Vista area, a series of origin/destination surveys were conducted along area roads during the week of September 9, 1996. These surveys were conducted on ten separate crossroads with US 71 between Jane, Missouri and the south end of Bella Vista. (Surveys were not conducted on US 71 itself due to logistical difficulties and concerns about the safety of stopping traffic along US 71.) Surveys were conducted during daylight hours at each crossroad station. A total of 6,140 valid responses were obtained. In addition, data from two previous origin/destination studies was also used. The Northwest Arkansas Regional Airport EIS and the 1984 US Route 71 Corridor

Study by MoDOT were used to supplement collected data. Existing responses, combined with previously collected origination/destination data on US 71, provide detailed information about the origins and destinations of motor vehicle trips within the Study Area, as well as information about the reasons for those trips.

Table II-1 presents a brief summary of key trip origination/destination information based on three generalized travel zones – Bella Vista Village, Study Area, and Outside the Study Area. The Bella Vista Village zone represents any trip originating from or destined to the Village area. Trips coming from or going to the Study Area but outside of the Village would be associated with the Study Area zone. Finally, any point outside of the Study Area, whether associated with a regional trip or a multi-state trip, would be categorized in the Outside the Study Area zone. The information presented in Table II-1 was derived from the crossroad survey data. These data were used in conjunction with previous origin/destination surveys on US 71 itself to develop the traffic forecasting model, and to provide inputs into the travel efficiency analysis.

TABLE II-1
ORIGIN/DESTINATION TRIP INFORMATION

Origin Zone / Destination Zone	% of Total
Bella Vista Village / Bella Vista Village	36.3%
Bella Vista Village / Study Area	34.8%
Bella Vista Village / Outside Study Area	20.3%
Study Area / Outside Study Area	3.6%
Study Area / Study Area	3.3%
Outside Study Area / Outside Study Area	1.7%
Total	**100%**
Trip Purpose	**% of Total**
Work	34.0%
Shopping	19.0%
Recreation	14.9%
Other	32.1%
Total	**100%**

Sources: 1996 US 71 Origin/Destination Study.

c. "No-Build" Alternative

The first step in evaluating the traffic implications of a roadway improvement is to establish the baseline from which all the other alternatives are compared. This analysis defines what traffic conditions would be like in the design year (2020) if no highway improvements were made (i.e. "No-Build" Alternative) and then how each of the alternatives would alter the expected traffic conditions associated with doing nothing. Based on the definition of the "No-Build" Alternative, consisting of the existing roadway system plus committed improvements, safety upgrades along the existing US 71 roadway were incorporated into the traffic model. These upgrades would consist of signalized intersections at several locations in both Arkansas and Missouri, and an adjustment of the posted speed limit to 70 km/h (45 mph). (The currently posted speed of US 71 is 100 km/h (60 mph) in Missouri and 90 km/h (55 mph) in Arkansas. Within the Arkansas segment, a 70 km/h (45 mph) speed zone is provided near the Sugar Creek Center.) The Sugar Creek Center and other landmarks located in Bella Vista are shown in Exhibit II-2.

Exhibit II-3 depicts the existing traffic (1996) and the projected 2020 traffic for the "No-Build" Alternative. Over the next twenty-four years, the following traffic patterns would likely occur with the "No-Build" Alternative:

- Along US 71 in Missouri, traffic is expected to increase from approximately 12,600 vehicles per day (1996) north of the state line to approximately 23,700 vehicles per day in 2020, for an 88 percent increase. Just south of the state line the traffic is expected to increase from 13,000 to 28,300 vehicles per day for a 118 percent increase. Finally, immediately north of the US 71/US 71B Interchange, the traffic is expected to increase from 30,300 vehicles per day to about 63,200 vehicles per day for a 109 percent increase.

- The total vehicle kilometers (miles) of travel in the network would increase from approximately 1,787,200 (1,117,000) in 1996 to 4,150,400 (2,594,000) in 2020, for a 132 percent increase.

- The total vehicle hours of travel in the network would increase from approximately 28,600 to 84,500, for a 195 percent increase.

- The average vehicle speed in the network would decline from 63.5 km/h (39.7 mph) in 1996 to 49.1 km/h (30.7 mph) in 2020, for a 23 percent decline.

d. "Freeway-Build" Alternatives

Utilizing the traffic model developed for the "No-Build" Alternative, each of the four "Freeway-Build" Alternatives were coded separately into the model to develop the future travel projections. The differences of the traffic volumes and regional performance measures between "Freeway-Build" models and the "No-Build" model represent the changes attributed to each respective alternative. The effectiveness of each "Freeway-Build" Alternative was evaluated based on:

- The total amount of traffic that would use the improvements.

- The Alternative's ability to reduce the total vehicle hours of travel in the network.

- The Alternative's ability to reduce the total vehicle kilometers of travel in the network.

- The Alternative's ability to improve the average vehicle speed in the network.

The projected traffic volumes for the four "Freeway-Build" Alternatives – Far West, Near West, Existing, and East – are shown in Exhibit II-4 through Exhibit II-7.

Traffic Using Alternative

A primary goal of any highway improvement is to create enough incentive to attract vehicles from congested, more hazardous roadways to the improved facility. Generally, an alternative that provides a shorter, more convenient trip would draw more traffic than an alternative that is farther away and inconvenient.

As shown in Table II-2, with the exception of the East Alternative, each "Freeway-Build" Alternative involving a relocation of US 71 onto a new alignment, would be effective in diverting the through traffic (i.e. outside Study Area to outside Study Area trips) from existing US 71 to the new facility. Due to a longer length and resulting longer travel time, the East Alternative would not attract through trips. Consequently, the East Alternative would draw approximately 5,000 to 20,000 fewer daily trips than either the Far West or Near West Alternatives. With the East Alternative, it would be more attractive for through trips to utilize the existing US 71 roadway posted at 70 km/h (45 mph) than to use the east bypass posted at 110 km/h (70 mph). In order to make the eastern bypass more attractive, the existing US 71 roadway would need to be posted at a speed lower than 65 km/h (40 mph) – a speed too slow for an expressway-type facility.

Also shown in Table II-2 are the level-of-service (LOS) estimates for the "Freeway-Build" Alternatives. (See Chapter I, Section C.6 for definitions of LOS.) As shown, each of the alternatives, consisting of four-lane freeway improvements, would provide LOS C or better on the new facility in 2020. The improvements in service level along the existing US 71 roadway would depend on the bypass alternative – LOS estimates for the existing US 71 roadway are discussed in Chapter I, Section C.6. The existing US 71 LOS estimates shown in Table II-2 reflect the operations of the existing roadway configuration with the completion of the "Freeway-Build" Alternatives. The Existing Alternative would replace the existing US 71 roadway as a freeway. Consequently, no traffic volumes or LOS estimates are shown for the existing US 71 roadway with the Existing Alternative. As shown, the existing US 71 roadway would not adequately serve the 2020 traffic that would remain on the existing roadway with the "Freeway-Build" improvements. More details regarding the necessary US 71 roadway improvements are presented with the discussions of the alternatives following this section.

TABLE II-2
TRAFFIC UTILIZATION AND LOS FOR "FREEWAY-BUILD" ALTERNATIVES
YEAR 2020
(Average Daily Traffic / LOS)

Roadway Segment	"Freeway-Build" Alternative (ADT/LOS)			
	Far West	Near West	Existing	East
Existing US 71[1]				
Pineville to Jane	5,700 / B	—	—	—
Jane to State Line	5,800 / B	10,000 / C	—	16,000 / D
State Line to Route 340	12,800 / A	11,200 / A	—	22,000 / B
Route 340 to SCC[3]	25,800 / C	23,800 / B	—	36,400 / C
SCC[3] to US 71B	46,500 / E	42,300 / E	—	54,900 / E
New Freeway[2]				
Pineville to State Line	23,100 / B	24,400 / B	24,400 / B	10,900 / A
AR Northern Segment[4]	25,200 / B	19,700 / A	37,900 / C	15,700 / A
AR Southern Segment[5]	38,700 / C	35,900 / B	67,700 / C	21,100 / A

(1) LOS estimates based on current US 71 roadway configuration (2-lane in MO and 4-lane in AR).
(2) LOS estimates based on new four-lane freeway.
(3) SCC = Sugar Creek Center.
(4) Northern segment consists of the area from the state line to the first interchange.
(5) Southern segment includes the area from the first interchange to the southern terminus.

With the exception of the Existing Alternative, all the alternatives would result in a reduction in traffic along existing US 71. As shown in Table II-3, of the relocation alternatives, the Far West and Near West Alternatives would create the greatest reduction in traffic volumes along the

current US 71 roadway. The East Alternative would result in only a minor reduction of traffic along the existing roadway. In fact, the East Alternative is less than half as effective as the Far West Alternative in reducing traffic along existing US 71. Due to the increased attractiveness of improving the current US 71 facility to a freeway standard (i.e. Existing Alternative), the traffic volumes along the existing corridor would increase. This fact is reflected in the positive percent changes shown in Table II-3 for the Existing Alternative.

TABLE II-3
2020 TRAFFIC VOLUME CHANGE ON EXISTING US 71
(Percent Change in Traffic)

"Freeway-Build" Alternative	% Change in 2020 ADT Along Existing US 71 by Segment		
	North of State Line	Northern Arkansas Segment	Southern Arkansas Segment
Far West	-75.4 %	-54.8 %	-26.4 %
Near West	5.2 %	-60.4 %	-33.1 %
Existing	3.4 %	33.9%	7.1 %
East	-32.5 %	-22.3 %	-13.1 %

Vehicle Kilometers (Miles) of Travel (VK(M)T)

The introduction of a new transportation facility in an area typically results in an increase in VK(M)T. Unless a large portion of existing trips are going out of their way to use an existing facility and a new facility would shorten that trip, a new facility usually causes existing trips to have a more circuitous trip route. Despite the longer trip route, drivers still choose to use the new facility because the trip time is reduced over the existing route. From a transportation perspective, any alternative would be preferable.

As expected, all the "Freeway-Build" Alternatives, including the Existing Alternative, would result in an increase in total daily VK(M)T for the region. Exhibit II-8 shows a graphical comparison of the VK(M)T for the "No-Build" and the four "Freeway-Build" Alternatives in 2020. As shown, the Existing Alternative would have a higher daily VK(M)T because the improved facility would draw trips that are currently using shorter, but slower, routes. The East Alternative would result in minimal increases in regional VK(M)T due to the inability of the improvements to attract trips to the new facility. The majority of existing trips would continue on the existing route, which is less circuitous.

Vehicle Hours of Travel (VHT)

A new facility would impact VHT in two ways. First, the new facility would allow those who do not want to stop in Bella Vista to bypass the community. The higher travel speeds on the new facility would improve their travel times. Second, fewer vehicles would be trying to use the existing facility, thereby allowing local drivers to travel in a less congested environment.

As shown on Exhibit II-8, all four "Freeway-Build" Alternatives would result in a reduction in the daily total of time spent on the region's roadway system. In 2020, the Existing Alternative would result in the greatest benefit – VK(M)T reduction of approximately 15 percent. The Far West and Near West Alternatives would provide an 11 and 10 percent reduction, respectively. The East Alternative has the least impact on reducing travel time with less than an 8 percent decline.

Average Speed

The overall average vehicle speed within the region varies depending on the average length of trip within the region, the number of starts and stops along the average trip, and the amount of time spent in congestion. A new facility would improve the region's average speed by reducing both the time spent in congestion and the number of starts and stops experienced for both the traveler using the new facility and those staying on existing roads.

All four "Freeway-Build" Alternatives would improve the average vehicle speed in the Study Area. The Existing Alternative would result in the greatest benefit, with an average increase of 9.0 km/h (5.6 mph) over the "No-Build" Alternative in 2020. The Far West Alternative would increase the average travel speed by approximately 8.2 km/h (5.1 mph). Similarly, the Near West and East Alternatives would improve the average regional speed, but not to the same extent – 7.1 km/h (4.4 mph) and 6.1 km/h (3.8 mph) respectively. Exhibit II-8 shows the effects of the various alternatives on the region's average travel speed in 2020.

Summary

All four "Freeway-Build" Alternatives would create a more efficient roadway system than the region's current system. However, because of the East Alternative's inability to draw through trips away from the existing US 71 roadway, the study's primary goal of serving the regional through trips in an efficient manner would not be fulfilled.

In summary, the relative merits of each alternative are as follows:

- Compared to the other alternatives, the Existing Alternative would provide the best overall improvement in the flow of traffic -- creating the greatest reduction in travel time, least overall increase in travel distance, and best improvement in average vehicle speed. The Existing Alternative does little to resolve the existing conflicts between long-distance truck trips and local trips, improve access to western Bella Vista, or improve access to trip destinations on either side of existing Route 71.

- The Far West and Near West Alternatives would also provide improvements to the region's traffic conditions. The Far West Alternative would create the greatest out-of-direction travel, but is better than the Near West at reducing total travel time and improving average vehicle speed. The Far West Alternative has the added benefit of providing improved access to Route 59, as well as the cities of Noel, Sulphur Springs and Gravette.

- Due to its circuitous routing and inability to draw substantial traffic off the existing US 71 roadway, the East Alternative would not satisfy the purpose and need for the project. The East Alternative would not improve the average vehicle speed and total vehicle hours of travel as effectively as the other alternatives.

2. TRAVEL EFFICIENCIES

By investing in US 71 improvements, AHTD and MoDOT would provide benefits to the traveling public through the improved efficiency of the region's roadway system. These travel efficiency benefits of the highway improvements would be of three types -- vehicle operating cost savings,

value of travel time savings, and crash cost savings. Such benefits would be realized for both automobiles and commercial trucks.

Total travel efficiency benefits were calculated for the base year (1996), as if the improvements were already in place, and for the planning horizon (2020). In each case, the benefits of each alternative were evaluated against the "No-Build" Alternative using consumer surplus techniques. These techniques include summing the benefits for every year between 1996 and 2020 and discounting the total based on the FHWA-approved discount rate. Discounting adjusts the result to account for the economic principle that a dollar today is worth more than a dollar twenty years from now. The intermediate year benefits were interpolated from the base year and planning horizon year benefits. The FHWA-approved discount rate of seven percent, as published by the FHWA in the Federal Register, was used for discounting benefits back to the base year. Details of these techniques are provided in the technical report *Travel Efficiency Analysis* completed in March 1997.

a. Vehicle Operating Cost Savings

Each of the alternatives create improved vehicle operating conditions by eliminating stopping and starting traffic. On the other hand, fuel efficiency is reduced at higher average speeds. Therefore, the net vehicle operating cost savings involves the increased cost from higher travel speeds compared to the efficiency and cost savings from a constant flow of traffic.

Passenger vehicle and commercial truck operating cost savings were estimated using the FHWA's Technical Report, "Vehicle Operating Costs, Fuel Consumption, and Pavement Type and Conditions," updated to 1996 conditions. The vehicle operating cost changes reflect differences in vehicle kilometers (miles) of travel, travel speed changes, curvature and gradient changes, reduced number of speed change cycles, and other changes that affect vehicle operations. The estimated motor vehicle operating cost savings attributable to the alternatives are depicted on Table II-4.

TABLE II-4
ESTIMATED ANNUAL VEHICLE OPERATING COST SAVINGS
(1996 Dollars In Thousands)

"Freeway-Build" Alternatives	Savings (1996)	Savings (2020)	Discounted Total[1] 1996-2020
Far West	($387)	$1,055	$1,647
Near West	$84	$2,132	$10,240
Existing	$2,632	$6,137	$48,551
East	$1,958	$164	$16,383

[1] Discounted total is the sum of benefits between 1996 and 2020 discounted back to the present.

The results indicate that the Existing Alternative would far outperform the other three "Freeway-Build" Alternatives in terms of its ability to reduce vehicle operating costs with over $48.5 million in total savings over the next 24 years. The primary reason being that this alternative upgrades the existing facility without adding a substantial amount of new roadway length to the region's system. The other three alternatives would all result in a positive savings, but not to the extent provided by the Existing Alternative.

Contrary to what the projected traffic volumes indicate, the East Alternative would provide a relatively high vehicle operating cost savings benefit. While it is true that this alternative would result in a $16 million dollar operating cost savings over the next 24 years, these benefits would not be attributed to an overall improvement in the regional system's efficiencies. The determination of the effectiveness of an alternative should consider all performance measure considerations – operating costs, travel time savings, and crash risk. The East Alternative has the appearance of providing efficiency benefits (i.e. operating benefits) due to the majority of trips remaining on the existing roadway. The East Alternative would not draw many of the north-south through trips from the existing highway, and therefore, would not experience any of the out-of-direction trips common to the other two bypass alternatives.

b. Travel Time Savings

Each of the "Freeway-Build" Alternatives would increase the system's travel speeds, thereby reducing the daily travel times in the Study Area. These alternatives would reduce recurring travel delays by allowing vehicles to pass slower moving vehicles, by avoiding vehicles turning at major intersections, and by bypassing Bella Vista with its lower speed limits.

To include time savings in the travel efficiency evaluation it is necessary that a monetary value be placed on the time saved. The value of time varies from person to person and situation to situation. What is certain is that everyone is willing to pay something to reduce the amount of time spent in travel. For analysis purposes, the method contained in the AASHTO publication, "A Manual on User Benefit Analysis of Highway and Bus-Transit Improvements," was used. This value in 1996 dollars is equal to $12.00 for each vehicle hour saved.

Since the value of time varies from one part of the country to the other, a check was made to test the accuracy of the FHWA travel time value. The median household income from the US Department of Census was obtained for both McDonald and Benton Counties. The income figures were then weighted by population and multiplied by a factor of 50 percent to incorporate benefits. The average household income plus benefits for the US 71 Study Area is approximately $18 per hour. The final step involved weighting the estimated value of time by trip type. The theory is that different types of trips have different values. For example, a traveler would be willing to pay more for a five minute reduction in travel time on a business trip than on a recreational trip. The distribution of trip types was determined during the origin-destination study conducted in the fall of 1996. The distribution was found to be 34.1 percent of all trips are work trips, 51.1 percent of all trips are for shopping and other trips, and 14.9 percent for recreational trips. Work trips, including truck trips, were valued at the full $18 per hour, shopping and other trips were valued at half that level, and recreational trips did not receive any value of time benefits. While it is true that recreational travelers place a value on their time, from an economic perspective, time savings for recreation-oriented trips are not as valuable as work-oriented trips. As a conservative estimate, the value of recreational trips was assumed to be zero. Based on this distribution of time values, the revised value of time was found to be approximately $11 per hour saved – a one dollar reduction from the approved value. Therefore, for the purposes of this study, the value was reduced to account for the characteristics present in the US 71 Study Area.

Applying these values of time to the estimated daily hours of travel time saved by the improvements produced the travel time cost savings shown on Table II-5. The results indicate that both the Far West Alternative and the Existing Alternative would out perform the other two "Freeway-Build" Alternatives in terms of their ability to reduce daily travel times – $35 million

and $21 million in total savings over the next 24 years, respectively. The other two alternatives would result in a positive benefit, but not to the same extent reached by the Far West and Existing Alternatives.

TABLE II-5
ESTIMATED TRAVEL TIME SAVINGS
(1996 Dollars In Thousands)

"Freeway-Build" Alternatives	Savings (1996)	Savings (2020)	Discounted Total 1996-2020
Far West	$1,526	$5,032	$34,762
Near West	$ 563	$1,756	$12,374
Existing	$1,187	$2,556	$20,947
East	$ 904	$1,416	$13,575

c. Crash Cost Savings

One of the goals of the US 71 improvements is to improve roadway safety along US 71 through the Study Area. Due to the inherent safety features and advantages of different roadway types, a new freeway facility would typically have a lower crash rate than an expressway facility under similar conditions. A high percentage of crashes typically occur in areas with frequent intersections, turning traffic, and stop-and-go conditions. In the case of the US 71 Study Corridor, as traffic volumes change and adjust to the new facility, the freeway improvements would reduce the number of crashes within the region by diverting traffic from the more hazardous existing expressway or two-lane facility to the safer 4-lane freeway. In addition, throughout the region, traffic would divert to safer, less congested facilities.

To estimate the potential crash savings associated with each of the proposed alternatives, current crash rates were developed based on historical trends. Historical crash records were obtained from both AHTD and MoDOT for highways throughout the region. Crashes were identified and categorized, and rates were developed for three types of crashes – fatality, personal injury, and property damage only (PDO). Utilizing the existing (1996) and projected (2020) traffic volumes, these crash rates were converted into annual crash events. (The crash history along US 71 within the Study Area and annual crash projections for the existing system are presented in Chapter 1 - Purpose and Need for Action.) Utilizing a dollar value assigned to each type of crash, a cost savings was developed by comparing each "Freeway-Build" Alternative to the "No-Build" Alternative. A more detailed description of the methodology used in the crash analysis can be found in the technical memorandum, "Travel Efficiency Analysis" submitted to AHTD and MoDOT in March, 1997.

Crash Forecasts: "No-Build" Alternative

Table II-6 shows the existing and projected annual crash totals for each roadway segment in both 1996 and 2020 for the "No-Build" Alternative. As shown, over the next 24 years, the crash totals would include:

- A total crash increase from 674 crashes per year in 1996 to 1,612 in 2020, for a 139 percent increase;
- An additional societal cost increase from approximately $30.4 million in 1996 to almost $72.8 million in 2020, for a 139 percent increase.

TABLE II-6
EXISTING AND PROJECTED CRASHES (1996 AND 2020)
"NO-BUILD" ALTERNATIVE

Network Component	Existing Crashes [1]				2020 Crashes			
	Fatality	Injury	PDO	Total	Fatality	Injury	PDO	Total
US 71								
South of Bella Vista	0.3	8.8	19.6	28.7	0.6	20.8	46.5	67.9
Bella Vista	0.2	16.0	34.0	50.2	1.6	55.5	123.7	180.8
Missouri	1.0	14.4	27.8	43.2	1.1	35.6	79.4	116.1
State Highways	2.7	89.5	199.7	291.9	6.4	214.8	479.1	700.3
Other Highway	2.0	67.7	151.1	220.8	5.0	169.3	377.7	552.0
Total	**6.2**	**196.4**	**432.2**	**634.8**	**14.7**	**496.0**	**1106.4**	**1617.1**

[1] Five year average (1992 - 1996).

Crash Forecasts: "Freeway-Build" Alternatives

The projected system-wide annual crash totals for each "Freeway-Build" Alternative were estimated based on historical and standard crash rates combined with the forecasted traffic volumes. The differences between the annual "Freeway-Build" crash totals and the baseline crash totals represent the savings attributable to the alternative.

The crash totals for the "Freeway-Build" Alternatives would include:

- **Far West Alternative** - A total crash reduction of 256 crashes per year, including 175 property damage only, 79 injury only crashes, and 2 fatality crashes. These reductions would translate into an estimated cost savings of approximately $11.6 million per year.

- **Near West Alternative** - A total crash reduction of 231 crashes per year, including 158 property damage only, 71 injury only crashes, and 2 fatality crashes. These reductions would translate into an estimated cost savings of approximately $10.4 million per year.

- **Existing Alternative** - A total crash reduction of 226 crashes per year, including 155 property damage only, 69 injury only crashes, and 2 fatality crashes. These reductions would translate into an estimated cost savings of approximately $10.2 million per year.

- **East Alternative** - A total crash reduction of 138 crashes per year, including 95 property damage only, 42 injury only crashes, and 1 fatality crash. These reductions would translate into an estimated cost savings of approximately $6.3 million per year.

In review of the potential crash benefits for each "Freeway-Build" Alternative, as presented above, the East Alternative would clearly not provide the benefits of the other three alternatives. Of the three other alternatives -- Far West, Near West and Existing -- the projected crash savings are relatively similar. However, due to the nature of the typical Bella Vista driver, the Existing Alternative would create additional traffic hazards not potentially created by the Far West or Near West Alternatives. Bella Vista, being a large retirement area, has a substantial number of elderly drivers. Typically, elderly drivers have slower reaction times than the average driver and tend to be involved in a higher portion of crashes. In a report entitled Transportation

in an Aging Society: Improving Mobility and Safety for Older Persons, published by the Committee for the Study on Improving Mobility and Safety for Older Persons, it is stated that the "accumulated skill and judgement gained over a lifetime of driving tend to be offset by other factors (physiological and cognitive changes that accompany aging)."

The crash risks increase sharply when the elderly driver is interspersed with truck traffic, such as with the Existing Alternative. Based on statistics compiled by the Fatal Accident Reporting System (FARS), the following is documented in a report entitled, The Safety Record of Heavy Trucks and Older Drivers: An Analysis of Five Years of Large-Scale Accident Data:

> *American drivers over the age of 65 are over fifty percent more likely to be involved in a fatal heavy truck accident than younger drivers. Mile for mile, senior drivers are over three times more likely to be both involved in, and killed by, a fatal truck accident, as compared to displaying less than twice the risk per mile of a fatal encounter with other automobiles.*

For these reasons, the Far West and Near West Alternatives would provide crash risk benefits beyond those indicated by the crash forecast numbers.

Traffic Crash Summary

Due to the growth of daily trips projected within the Study Area, the total number of crashes in the US 71 Study Area will continue to rise over the next 24 years. Each "Freeway-Build" Alternative would help reduce, to a limited extent, the overall number of crashes. To aid in the comparison of each alternative, two factors have been analyzed -- the total reduction in traffic crashes and the annual crash cost savings.

All four alternatives would create a safer system than presently exists. However, the East Alternative would provide about half the reductions in traffic crashes and about half as much cost savings. The Far West Alternative would provide the greatest potential reduction in crashes per year with 256 crashes per year, respectively. The East Alternative would provide a potential reduction of 138 crashes per year.

Similarly, the Far West Alternative would provide the greatest savings in crash costs with approximately $11.6 million per year in 2020, while the East Alternative has the least overall benefit with $6.3 million per year. The discounted total crash savings for the four alternatives are shown in Table II-7.

TABLE II-7
ESTIMATED CRASH COST SAVINGS
(1996 Dollars in Thousands)

"Freeway-Build" Alternatives	Savings (1996)	Savings (2020)	Discounted Total 1996-2020
Far West	$3,160	$11,580	$77,200
Near West	$2,830	$10,420	$69,350
Existing	$3,520	$10,220	$74,000
East	$1,430	$ 6,250	$39,500

d. Travel Efficiencies Summary

Table II-8 summarizes the total travel efficiency benefits expected with each alternative and provides totals for all three benefit categories. The results indicate that the Existing Alternative would create approximately $30 million more in travel efficiency benefits than the Far West Alternative and over $74 million more than the East Alternative.

TABLE II-8
TRAVEL EFFICIENCY BENEFITS SUMMARY
(1996 Dollars In Thousands - 1996 To 2020)

"Freeway-Build" Alternative	Vehicle Operating Cost Savings	Travel Time Savings	Crash Costs Savings	Total Travel Efficiency Savings
Far West	$ 1,650	$34,760	$77,200	$113,610
Near West	$10,240	$12,370	$69,350	$ 91,960
Existing	$48,550	$20,950	$74,000	$143,500
East	$16,380	$13,580	$39,500	$ 69,460

As shown in Table II-8, the Existing Alternative would provide the greatest benefit in vehicle operating costs, yet the Far West Alternative would provide the greatest travel time savings. This occurrence is due to the interaction of the Far West Alternative with Route 59 and Route 72, both of which currently serve travel demands west of the Study Area. While the Far West Alternative would provide a longer travel distance for US 71 through traffic, it would also provide an improved route for east/west traffic currently using Route 72 and north/south traffic using Route 59. Both of these routes are narrow, winding roadways with slower travel speeds. Therefore, diverting traffic from these facilities to the new bypass would create additional travel time savings not achieved by the Existing Alternative. Conversely, due to the greater travel distances of the Far West Alternative, the vehicle operating costs are higher. In addition, because of the start-and-stop conditions of the existing US 71 roadway as defined in the "No-Build" Alternative, the Existing Alternative would do the best job of eliminating the traffic delays in the existing US 71 corridor. Consequently, it would provide the best vehicle operating savings.

3. TRAFFIC SUMMARY

Based on the traffic and travel efficiency results, the following conclusions can be drawn for each of the four "Freeway-Build" Alternatives:

The East Alternative would not provide enough travel time savings to divert long-distance trips from the existing facility. The speed limit on existing Route 71 would have to be reduced below 40 mph before traffic would begin to divert; an undesirable speed for an expressway type facility. Because of its inability to divert trips, the East Alternative would provide the lowest daily traffic volumes, the smallest reduction in trips on existing Route 71, and the smallest overall travel efficiency benefits.

The Near West Alternative would provide enough travel time savings to divert trips from the existing facility. Because of its close proximity to the existing facility, the Near West Alternative provides the largest overall reduction in trips using existing Route 71. The Near West

Alternative primarily diverts its trips away from existing Route 71 but does not provide a substantial increase in diverted trips from other area highways. The Near West Alternative provides the second lowest daily traffic volume and the second smallest overall travel efficiency benefits.

The Existing Alternative would provide the most direct route for long distance trips and, therefore, provides the largest net travel time and vehicle cost savings. The Existing Alternative would not resolve the existing conflict between long-distance truck trips and shorter local trips, which would be especially problematic in the Sugar Creek Center area. The projected number of traffic crashes and lower crash cost savings reflect this inherently unsafe driving condition. All the traffic benefits accrue to trips currently using Route 71 with little to no increase in diverted trips from other area highways.

The Far West Alternative outperforms the other three Freeway Build Alternatives from a traffic perspective. While the Existing Alternative provides more travel time and vehicle operating cost benefits, the Far West Alternative provides more crash cost savings. In addition, the Far West Alternative diverts long-distance trips from existing 71, while also providing improved access to trips currently using other area highways. Most importantly, the Far West Alternative allows existing Route 71 to convert to an urban expressway better able to serve the large numbers of local trips while at the same time allowing long-distance through trips to avoid the urban setting. Finally, the overall increase in corridor highway capacity will allow improved incident management as trips can be diverted to either parallel facility to avoid delays associated with traffic incidents.

C. "No-Build" Concept

1. GENERAL DESCRIPTION

The "No-Build" Alternative consists of maintaining and continuing the current roadway network within the Study Area plus the implementation of any committed improvement projects planned by AHTD and MoDOT. This alternative provides a basis for determining the potential impacts of the other alternatives with regard to improved transportation service.

Though one local road project is currently under construction by AHTD, no other significant projects are currently planned for the Study Area by either AHTD or MoDOT. However, based on safety concerns and traffic needs, safety improvements to US 71 would be included in the "No-Build" Alternative. These Transportation Systems Management (TSM) measures would consist of low cost, minor activities to maximize the efficiency and safety of the current roadway system. TSM improvements generally involve a relatively limited amount of new construction. For the US 71 roadway, the TSM improvements would generally consist of providing signal control at some of the existing US 71 intersections and improving most of the existing intersection roadway approaches.

The "No-Build" Alternative would consist of the following existing or committed projects:

- Dartmoor Road (New) - New east-west, two-lane roadway and bridge crossing of Little Sugar Creek on the east side of US 71 at the Sugar Creek Center to provide access to the southeastern portions of the Village. This local project is currently under construction by AHTD. This road will replace Greenwich Road.

- TSM Safety Improvements - Signalized intersection control at key locations within the US 71 Corridor with associated approach roadway improvements. Based on the limits of the "Freeway-Build" considerations, the TSM safety improvements would extend from the US 71 Bentonville bypass to immediately south of Pineville, Missouri.

2. SAFETY IMPROVEMENTS

In order to improve the ability of local motorists to cross, enter and exit the existing US 71 roadway, a series of TSM improvements would be implemented with the "No-Build" Alternative. TSM alternatives include those activities which maximize the efficiency of the present system. These improvements would consist of the possible installation of traffic signals at several major cross streets and the possible construction of auxiliary left-turn and right-turn lanes on both the northbound and southbound roadway approaches. Additionally, on side street approaches, a two-lane section featuring either a separate left-turn lane with a through-right lane or a through-left lane with a separate right-turn lane would be constructed. The determination of any necessary signal improvements and improvements to the side street configurations would be based on the signal warrant analyses and traffic demands at each specific intersection. A generalized sketch of the intersection improvements is shown on Exhibit II-9. Table II-9 shows the intersection sites where these improvements would be considered. Signal control would be evaluated at four candidate intersections – Kingsland Drive, Riordan Road, Oldham Road, and Dartmoor Road (New). All other major intersections would potentially have roadway approach improvements, depending on traffic volumes.

In addition to the intersection improvements, operational improvements would be provided along the existing US 71 roadway. The posted speed for the US 71 Corridor would be lowered to a uniform 70 km/h (45 mph). The lowering of the operational speed combined with the intersection improvements would improve the safety of the existing roadway.

TABLE II-9
TSM INTERSECTION IMPROVEMENT SITES

US 71 Intersection Missouri	US 71 Intersection Arkansas
• Route H	• Hampstead Boulevard
• Route K	• Wellington Road
• Old US 71 (North)	• Route 340 (East Terminal)
• Route 90	• Route 340 (West Terminal)
• Old US 71 (South)	• Pinion Drive
• Route OO	• Trafalgar Road
	• Kingsland Drive
	• Riordan Road
	• Oldham Road
	• Dartmoor Road (new)
	• County Road 40
	• County Road 37

The benefits which would be provided by TSM improvements would include not only increased efficiency at intersections, but also a substantial reduction in the severity of traffic crashes along US 71. Through the implementation of signal controls, the number of right angle crashes would be substantially reduced. These right angle crashes are among the most severe in terms of fatalities and injuries. However, this benefit would be slightly offset by an anticipated increase in less severe crash types such as rear end collisions (e.g. "fender benders"). While TSM

measures would substantially increase the number of vehicles that could pass through the intersections, the measures would result in increased corridor travel time delays for traffic traveling through the entire Study Area along US 71 due to the implementation of traffic signals. In fact, the travel time through the Study Area for through traffic would be expected to increase due to potential delays at the cross street signals.

3. CAPITAL COSTS

These improvements would improve the operations and safety of the present system at a relatively low cost. It is estimated that the total construction cost for the TSM measures would be $1.6 million. The increase in ongoing operations and maintenance (O&M) costs would be approximately $149,632 present value (1996). This estimate of O&M costs accounts for periodic maintenance of the electrical equipment, including the replacement of bulbs and associated signal hardware, as well as the ongoing cost of electrical service for the signal operations.

D. Non-Freeway Improvements to Existing Roadway Concept

1. GENERAL DESCRIPTION

The intent of the Improvements to Existing Roadway Alternative is to retrofit the existing US 71 roadway to the fullest (reasonably possible) extent to meet the Corridor's future traffic demands and safety concerns. This would be accomplished through a combination of roadway widening and TSM improvements. This alternative would not provide a freeway type of improvement. Because the roadway's operational speed would be adjusted to 70 km/h (45 mph), similar to the "No-Build" Alternative, this alternative would not include roadway alignment upgrades. (The existing US 71 roadway, within the Study Area, currently provides a 70 km/h (45 mph) design standard.) Though some current access points would likely be improved or consolidated, major upgrades in access control would also not be provided.

2. ROADWAY WIDENING AND SAFETY IMPROVEMENTS

The Improvements to Existing Alternative would include both capacity and safety improvements. Similar to the "No-Build" Alternative, TSM measures would be provided to improve the safety of the existing US 71 roadway. These measures would potentially include signal and roadway approach improvements at the major intersections. (See "No-Build" Alternative discussion.)

Roadway widening would consist of adding travel lanes to the existing US 71 roadway in accordance with the projected travel demands and desired level of service (LOS C). This would be accomplished through the construction of the required number of additional lanes on the outside of the current two-lane or four-lane configuration. The current access control along the roadway would be maintained.

To determine the limits of the necessary roadway widening to meet the future travel demands, the existing US 71 Corridor was divided into several segments based on the uniformity of the projected traffic volumes. Utilizing the projected 2020 traffic volumes for each of the segments, as shown on Exhibit II-3, the required number of lanes for each segment was determined to provide the target level of service (LOS C). Using this criterion, it was determined an improved

ten-lane roadway section would be required at the southern end of the US 71 Corridor. Given that a ten-lane section would not be reasonable for the existing roadway, a reduced level of service was considered (LOS D). The results of this analysis are shown in Table II-10. As shown, the recommended roadway configuration would consist of a four-lane section in Missouri, a four-lane section from the state line to the Route 340 Interchange, a six-lane roadway from Route 340 to the Sugar Creek Center, and an eight-lane roadway from the Sugar Creek Center to the US 71/US 71B Interchange.

The roadway widening along the existing US 71 roadway shown in Table II-10 combined with the TSM safety and operational improvements would provide a safer and higher capacity roadway than the "No-Build" Alternative. Future travel demands would be effectively served by widening the existing roadway and reducing the operational speed of the facility. However, the necessary reductions in operations and changes in the type of facility would result in a less efficient roadway system as compared to a freeway. Furthermore, by only widening the existing roadway and not providing complete access control, the primary goal of providing a freeway would not be accomplished. Since the Improvements to Existing Alternative would not provide a freeway facility, it would not accomplish the primary goal of the improvements and was not considered further.

TABLE II-10
US 71 ROADWAY WIDENING IMPROVEMENTS
TOTAL NUMBER OF ROADWAY LANES

US 71 Roadway Segment	Existing Number of Lanes	LOS C Number of Lanes	LOS D Number of Lanes	Selected Number of Lanes
Pineville to Route 90	2	4	4	4
Route 90 to State Line	2	4	4	4
State Line to Route 340	4	4	4	4
Route 340 to SC Center	4	8	6	6
SC Center to US 71/US 71B	4	10	8	8

E. "Freeway-Build" Concept

1. GENERAL DESCRIPTION

The "Freeway-Build" Alternatives would consist of constructing a freeway facility on new location or along the existing US 71 alignment from the existing US 71 bypass (four-lane freeway) east of Bentonville, Arkansas to the planned four-lane US 71 freeway improvements by MoDOT. The connection with the existing Bentonville bypass would demarcate the southern terminus of the freeway improvements. Based on the preliminary definition of the alternative improvement corridors (Far West, Near West, Existing, and East), the most reasonable common northern terminus point would be a connection with the planned MoDOT improvements immediately south of Pineville, Missouri. This point, defined by the crossing of Route H located southwest of Pineville, demarcates the northern terminus of the "Freeway-Build" Alternatives. In addition, depending on the details of the "Freeway-Build" Alternative, some improvements to the existing US 71 roadway would be included. For the bypass "Freeway-Build" Alternatives, improvements along the existing US 71 roadway would be required to serve the local traffic that would remain on the existing roadway.

As shown on Exhibit II-1, the four Study Corridors have been identified to minimize the potential impacts to the built environment, to minimize the length of the freeway improvements, and to provide the most direct connections to the existing US 71 bypass east of Bentonville and the planned MoDOT improvements to the north. These four corridors are defined as follows:

- **Far West Corridor** - Freeway relocation of US 71 around the western side of the built-up area of Bella Vista Village with a southern terminus at the US 71/US 71B Interchange and a northern terminus at the planned MoDOT freeway improvement southwest of Pineville at Route H.

- **Near West Corridor** - Freeway relocation of US 71 through the western area of the Bella Vista Village, in the vicinity of the Route 340/Route 279 intersection, utilizing currently undeveloped parcel areas embedded within the built-up areas of the Village. North of the Missouri/Arkansas state line, the corridor is aligned due north up to the existing US 71 Corridor. North of this point, the Near West Corridor is concurrent with the Existing Corridor, with the northern terminus being the connection with the planned MoDOT improvements southwest of Pineville. The southern terminus of the corridor would be at the US 71/US 71B Interchange.

- **Existing Corridor** - Freeway improvement along the existing US 71 alignment extending from the existing US 71/US 71B Interchange up to the connection with the planned MoDOT improvements southwest of Pineville. In some locations within Missouri, the existing two-lane US 71 roadway would remain as is to provide frontage access along the freeway or to continue service to current commercial and residential activities along the roadway. In other areas within Missouri, the existing two-lane facility would be eliminated or would provide two of the four lanes for the new freeway. Within Arkansas, the existing four-lane expressway would be upgraded to a freeway through an improved roadside standard, upgraded access control, and minor alignment adjustments.

- **East Corridor** - Freeway relocation of US 71 around the eastern side of the built-up area of Bella Vista Village with a southern terminus at the existing US 71 bypass northeast of Bentonville. North of the state line, the corridor alignment shifts towards the Existing Corridor with a connection to the existing US 71 alignment immediately south of Jane, Missouri. North of this point, the Existing Corridor and East Corridor locations are the same. The northern terminus would be the connection with the planned MoDOT improvements southwest of Pineville.

2. DESIGN CRITERIA AND STANDARDS

The primary purpose of the "Freeway-Build" Alternatives, as articulated in Chapter I, is to bring the existing US 71 Corridor up to a freeway standard. Design criteria for the definition of the freeway improvements, as well as for any other associated improvements, have been established and are presented in Appendix A. As shown, these criteria provide the design basis for five facility types – Freeway, Arterial Roadway, Collector Roadway, Local Road and Interchange Ramp. The primary design elements of these criteria for a freeway are summarized as follows:

- Level of Service - C. (See Chapter 1, Section C.6 for definition.)

- Design Speed - 110 km/h (70 mph). (As defined in *A Policy on Geometric Design of Highways and Streets* by AASHTO, design speed is the "... maximum safe speed that can be maintained over a specified section of highway when conditions are so favorable that the design features of the highway govern".)

- Horizontal Curvature (Minimum Radius) - 500 m (1,640 feet). (The minimum radius acceptable for horizontal curves along the roadway alignment.)

- Maximum Vertical Grade - 4%. (The maximum allowable rate of elevation change for the roadway measured along the center of the alignment and expressed as a percentage.)

- Vertical Curve Sight Distance (K-Value) - 80 to 151 Crest and 43-62 Sag. (Within a roadway profile, vertical curves are necessary to transition from adjacent tangent grades. Parabolic curves are utilized and the K-Value is a measure of a curve's curvature. According to AASHTO, K-Value is a measure of a roadway's vertical curvature expressed as the "... horizontal distance in meters (feet) required to effect a one percent change in gradient". In practical terms, the K-Value is then used as a coefficient by which the algebraic difference in grade may be multiplied to determine the required length of the vertical curve which will provide the minimum sight distance. Generally speaking, a crest curve is a vertical curve at the top of a hill and a sag curve is a vertical curve in a valley.)

Exhibit II-10 shows the basic design standard (i.e. typical roadway section) for the freeway improvements. The application of the roadway section depends on the alternative location. For the relocation alternatives (i.e. Far West, Near West and East) and the Existing Alternative within Missouri, the "Four-Lane Divided Freeway with Grass Median" section would be utilized. Within Arkansas, the "Four-Lane Divided Freeway with Median Barrier" section would be utilized for the Existing Alternative. Though these sections assume four lanes, the determination of the number of lanes would be based on providing LOS C for the 2020 projected traffic demands. A minimum of four lanes would be provided.

As a freeway improvement, full access control would be provided with the "Freeway-Build" Alternatives. Where needed, frontage roads would be provided for local access.

For the relocation alternatives, the existing US 71 roadway would be converted to an arterial type facility with a design speed of 70 km/h (45 mph) and capacity improvements would be required for some segments, depending on traffic volumes. Exhibit II-11 shows the basic design standards for non-freeway capacity improvements to the existing roadway. These standards include an expressway improvement in which the existing two-lane section would be two of the four lanes (Missouri application only), a five-lane urban arterial section (Missouri application only) and an outside lane widening (Arkansas application only).

3. SUFFICIENCY OF EXISTING US 71

One of the considerations of the goals and purposes of the US 71 improvements includes providing a facility in compliance with current design standards. These standards include roadway alignment issues as well as roadside hazard issues. In accordance with the typical section, the freeway improvements would comply with current roadside standards.

Based on today's freeway standard, the existing US 71 roadway within the Study Area was reviewed for both horizontal and vertical alignment compliance. Horizontal alignment is the configuration of the roadway comprised of curves and straight sections or tangents. The vertical alignment is the configuration of the roadway comprised of changes in slope or elevation. As shown in Table I-4 in Chapter I, within the Study Area, all of the existing two-lane roadway in Missouri and 72% of the four-lane facility in Arkansas currently meets a 110 km/h (70 mph) standard. All of the Study Area's existing roadway alignment meets a 70 km/h (45 mph) standard.

Table II-11 presents a summary of those segments of existing US 71 which do not meet the freeway standard and would need to be addressed by the US 71 improvements. All of the "Freeway-Build" Alternatives would address these alignment deficiencies.

TABLE II-11
EXISTING US 71 ROADWAY ALIGNMENT DEFICIENCIES
(Freeway Standard)

Roadway Segment Description	Horizontal/Vertical Deficiency	Segment Length m (ft)
Just south of Missouri/Arkansas state line	Horizontal	191 (627)
Reverse curves north of Wellington Road	Horizontal	702 (2,303)
Just north of Route 340 Interchange	Vertical	305 (1,001)
South of Route 340 Interchange	Horizontal	148 (486)
At Trafalgar Road	Horizontal	513 (1,684)
Between Trafalgar Road and Kingsland Drive	Vertical	366 (1,200)
Reverse curves at Berksdale Golf Course	Horizontal	328 (1,076)
South of Oldham Road near Sugar Creek Center	Vertical	244 (800)
Cedar Creek Drive at Lake Bella Vista.	Horizontal	200 (655)

4. PRELIMINARY STUDY CORRIDORS

For the purpose of identifying the Study Corridors for the "Freeway-Build" Alternatives which are reasonable and meet the stated purpose and need for the proposed action, a preliminary assessment, evaluation, and screening of the preliminary corridors was conducted. The goals of this screening were to eliminate from further consideration those Study Corridors with any "fatal flaws" or those that wouldn't comply with the project's stated purpose and need.

a. Screening Methodology

An overall assessment of the Study Corridors was conducted utilizing a total-project methodology. Similar alignment definition and evaluation procedures were used for both Missouri and Arkansas. An overall assessment of the Study Corridors' potential impacts was performed based on three primary considerations – Social, Environmental, and Engineering/Traffic. The overall evaluation considered tradeoffs between the various factors and incorporated comments from the public. As documented in Chapter VII, Section A.1, a Preliminary Alternatives Meeting was held on December 9, 1996 for public comment.

Engineering-related factors and traffic considerations were based on the conceptual definitions of preliminary alternative alignments located within each Study Corridor. Several preliminary alternative alignments were defined within each Corridor. Consequently, engineering factors

were presented by ranges for each of the Corridors. Traffic volumes and traffic-related factors, as defined earlier in this chapter, were based on the corridor-level definitions and would not be dependent on the alternative alignments within each Corridor. Assessment factors included length, order-of-magnitude costs, staged construction opportunities, traffic volumes and local access issues.

Similar to the engineering-related issues, the environmental and social factors also represented a range of possible impacts within each Corridor. Environmental factors considered included hazardous waste sites, cultural resource sites, wetlands, floodplains, parklands, and natural features. The range of potential impacts for each of these factors was based on known or previously recorded sites or concerns. Social issues considered included impacts to existing structures, environmental justice, noise impacts, and regional land use issues.

b. Definition of Corridors

Exhibit II-1 shows the general locations of the four Study Corridors – Far West, Near West, Existing, and East. For the preliminary definitions of the alternative alignments within each of these Corridors, 1:24,000 USGS and recent aerial photographic maps were utilized. For the purposes of the screening, the preliminary alternatives within each Corridor were defined with a uniform width of 300 meters (1,000 feet). The alignments were defined based on the surrounding topography and land use. Interchanges were assumed at the various state route crossings. Table II-12 shows the approximate length of the preliminary alternatives within each Corridor.

TABLE II-12
STUDY CORRIDOR - PRELIMINARY ALTERNATIVE LENGTHS

Study Corridor	Length km (mi)
Far West	30.7 - 32.2 (19.1 - 20.0)
Near West	30.6 - 30.7 (19.0 - 19.1)
Existing	26.4 (16.4)
East	34.6 - 36.9 (21.5 - 22.9)

c. Evaluation of Corridors

The overall assessment of the Study Corridors is presented in Appendix B. The primary purpose of the US 71 improvements is to provide a freeway facility which would improve the regional system's safety and efficiency in moving both people and goods. Freeway improvements in the East Corridor would not divert the through traffic from the existing US 71 roadway. As a result, the East Corridor would not nearly provide the travel efficiency benefits of the other corridors. Consequently, the East Corridor would not accomplish the goals of the project and was not considered further. . This determination was not based on environmental issues, but rather on the inability of the East Corridor to accomplish the stated goals of the improvements.

No "fatal flaws" were identified for the other Study Corridors. In addition, the findings of the preliminary screening were reviewed with the Corridor Advisory Council and general public at the second public meeting (see Chapter VII - Comments and Coordination). In general, the

findings were affirmed by the CAC and the public. However, a small portion of the public continue to support the East Corridor.

5. REASONABLE ALTERNATIVES

As determined by the preliminary screening, the reasonable "Freeway-Build" Alternatives were defined in more detail for the following corridors:

- Far West Corridor (Far West Alternative)
- Near West Corridor (Near West Alternative)
- Existing Corridor (Existing Alternative)

Utilizing Spring 1996 aerial mosaic maps and topographic data at a scale of 1:5,000 for the relocation alternatives and a scale of 1:2,500 for the Existing Alternative in Arkansas, reasonable alternative alignments were defined for the three corridors. Several alternative freeway alignments within each corridor were defined. These alternative alignments and the labeling nomenclature are shown on Exhibit II-12. In addition, aerial plan plates showing each of the alternatives are presented in Appendix C. In order to provide for the logical and orderly compilation of the assessment data for all alignment alternatives, a naming convention was developed. Each corridor was divided into analysis segments. Each of these segments are generally defined in Table II-13 and are presented on Exhibit II-12 and the Appendix C plan plates.

Due to the likely uncertainties of the collective abilities of AHTD and MoDOT to jointly and instantaneously construct the freeway improvements, regardless of the improvement corridor, both interim and ultimate improvements were defined for each corridor. The interim improvements would consist of short-term investments, beyond just the TSM improvements associated with the "No-Build" Alternative, to more directly address the safety and capacity concerns of US 71 until the ultimate freeway improvements in their entirety can be constructed.

a. Far West Corridor

Ultimate Improvements - Design and Operational Features

Within each segment of the Far West Corridor, several alternative alignments have been identified. In general, three alternative alignments for the freeway have been identified within the Far West Corridor in Missouri. South of the state line, the eastern most of two alternatives skirts the western edge of the Bella Vista Village. South of the Village, two alternative alignments have generally been defined. In the vicinity of Hiwasse, one alternative is located north of the community and the other is located to the south. Each of these alternative alignments connect with the existing US 71 Bypass at a common location and configuration.

Table II-14 shows the alternative labels and interchange features for the alternatives within the Far West Corridor. As shown, the total length of the Far West Corridor is 30.7 to 32.2 km (19.1 to 20.0 mi), depending on the alternative alignment. The northern terminus interchange (Route H) would provide access to the southern portions of Pineville. The Route 90 Interchange would provide access to Jane and Noel, Missouri. Access to the western portions of the Bella Vista Village would be provided with the Ferrell Road Interchange near the Highlands area of the Village. In the vicinity of Hiwasse, depending on the alternative alignment, access would be

provided by either Route 72 or Route 279. Alternative FWD1 would interchange with Route 72 in two locations, providing improved access to the areas surrounding Hiwasse and the community of Gravette. The Arthur Road Interchange would provide access to the southern areas of the Village and the US 71/US 71B Interchange would maintain current access to the existing US 71 and US 71B facilities.

TABLE II-13
"FREEWAY-BUILD" REASONABLE ALTERNATIVES
SEGMENT DEFINITIONS

Corridor Segment ID	Far West Corridor
A	Route H, southwest of Pineville, Missouri, to north of the Missouri/Arkansas state line near Mill Creek Road.
B	North of the Missouri/Arkansas state line near Mill Creek Road to the Missouri/Arkansas state line.
C	Missouri/Arkansas state line to south of Ferrell Road.
D	South of Ferrell Road to east of County Road 49 (Becket Road).
H	Same as Near West Segment H - East of County Road 49 (Becket Road) to US 71/US 71B Interchange.
Corridor Segment ID	**Near West Corridor**
A	Same as Existing Segment A - Route H, southwest of Pineville, Missouri to existing US 71 near Wolf Pen Hollow Road.
B	Same as Existing Segment B - Existing US 71 near Wolf Pen Hollow Road to existing US 71 at Miser Hollow Road.
C	Same as Existing Segment C - Miser Hollow Road, to the diversion from the Existing Corridor, north of Gordon Hollow Creek, near the Missouri/Arkansas state line.
D	The diversion of the Near West Corridor from the Existing Corridor north of the Gordon Hollow Creek to north of the Missouri/Arkansas state line.
E	Just north of the Missouri/Arkansas state line to the Missouri/Arkansas state line.
F	The Missouri/Arkansas state line to west of Chelsea Road and north of County Road 39.
G	West of Chelsea Road and north of County Road 39 to east of County Road 49 (Becket Road).
H	Same as Far West Segment H - East of County Road 49 (Becket Road) to US 71/US 71B Interchange.
Corridor Segment ID	**Existing Corridor**
A	Same as Near West Segment A - Route H, southwest of Pineville, Missouri to existing US 71 near Wolf Pen Hollow Road.
B	Same as Near West Segment B - Existing US 71 near Wolf Pen Hollow Road to existing US 71 at Miser Hollow Road.
C	Same as Near West Segment C - Miser Hollow Road to the diversion from the Existing Corridor, north of Gordon Hollow Creek, near the Missouri/Arkansas state line.
D	The diversion of the Existing Corridor from the Near West Corridor north of the Gordon Hollow Creek to the Missouri/Arkansas state line.
E	The Missouri/Arkansas state line to the US 71/US 71B Interchange.

Based on the projected traffic volumes for the Far West Corridor, as shown in Exhibit II-4, a four-lane section would be sufficient for the freeway improvements.

TABLE II-14
FAR WEST CORRIDOR - ALTERNATIVE LABELS AND FEATURES

Segment ID	Alternative Label	Alternative Length - m (ft)	Interchange Crossroad	Interchange Type
A	FWA1	8,560 (28,084)	Route H / Route 90	Folded Dia. / Conv. Dia.
	FWA2	8,675 (28,461) 8,723	Route H / Route 90	Folded Dia. / Conv. Dia.
	FWA3	(28,619)	Route H / Route 90	Folded Dia. / Conv. Dia.
B	FWB1	940 (3,084)	—	—
	FWB2	889 (2,917)	—	—
C	FWC1	4,879 (16,007)	Ferrell Road	Conv. Dia.
	FWC2	4,571 (14,997)	Ferrell Road	Conv. Dia.
D	FWD1	11,560 (37,927)	Route 72 / Route 72	Conv. Dia. / Conv. Dia.
	FWD2	10,541 (34,583)	Route 279	Conv. Dia.
H	FWH1	6,135 (20,128)	Arthur Road / US 71B	Conv. Dia. / Conv. Dia.
	FWH2	6,138 (20,138)	Arthur Road / US 71B	Conv. Dia. / Conv. Dia.

Note: Conv. Dia. = Conventional Diamond

Ultimate Improvements - Improvements to Existing US 71 Roadway

Due to the continued growth of traffic along the existing US 71 roadway, even with the ultimate freeway relocation improvements, (existing roadway) improvements would also be required. These improvements would be similar to the Improvements to Existing Alternative, but not to the same extent due to the lower traffic volumes which would remain on the existing roadway. These improvements, to be constructed in association with the ultimate improvements, would include capacity improvements for the southernmost segments of the existing US 71 roadway.

As shown on Exhibit II-4, daily traffic volumes ranging from 5,700 ADT to 46,500 ADT would remain on the existing roadway, depending on the location. As a result, in the southern areas, roadway widening would be required and would consist of adding travel lanes to the existing US 71 roadway in accordance with the projected travel demands and desired level of service (LOS C). The current access control along the roadway would be maintained.

The two-lane roadway in Missouri would be sufficient for the traffic which would remain along existing US 71. Similarly, the existing four-lane expressway in Arkansas north of Sugar Creek Center would also be sufficient to provide the desired level of service in 2020 (LOS C). However, south of Sugar Creek Center, additional lanes would be required. In order to provide LOS C, an eight-lane roadway would be required within this southernmost segment.

Widening of the existing US 71 roadway into an eight-lane roadway would be unreasonable due to the practical limits of lane widening. With the construction of a freeway bypass, the existing US 71 roadway would be converted to an urban arterial roadway, and as such, there are limits to the effectiveness of adding travel lanes. An eight-lane arterial street is not very compatible with the type of service that is warranted in this situation – local trips with considerable turning movements. This extra wide roadway section would create an unsafe condition as vehicles would be required to maneuver across multiple travel lanes for turns. The considerable number of access points and driveways along the southernmost segment of the existing US 71 roadway would exacerbate this situation. Due to the difficulties of widening the existing roadway to an eight-lane section, a reduced service level was considered. A six-lane roadway would be sufficient to provide a LOS D. Given that a LOS D is a common standard within the urban areas, the six-lane improvement along the existing roadway south of Sugar Creek Center would be provided as part of the Far West Alternative.

Interim Improvements

Due to the location of the Far West Corridor, the ultimate freeway improvement would not be effectively functional until the ultimate improvement is completed in its entirety. Until such time, which is dependent on the collective financial resources of both states, traffic would remain on the existing US 71 roadway. During this interim period, improvements would be necessary along existing US 71. These interim improvements would be investments in addition to the ultimate freeway construction.

In Missouri, the interim improvements would generally consist of providing a four-lane facility along the existing US 71 roadway with varying degrees of access control. These interim improvements would extend from the connection with the planned four-lane freeway improvement by MoDOT at Route H, southwest of Pineville, to a connection with the existing US 71 roadway at the state line. The interim improvements would transition, north to south, from a freeway type facility at the northern connection southwest of Pineville to an expressway type facility with limited access control to a five-lane urban arterial roadway with partially-limited access control located just north of the state line where it would tie into the five-lane arterial section in Arkansas. Immediately south of the US 71/Route H Interchange, the interim improvements would consist of a four-lane freeway type improvement on new location to a connection with the existing US 71 roadway south of Pineville. At this point, the interim improvements transition into an expressway type facility with limited access for driveways and cross streets. Within this expressway segment, the improvements would be located along the existing US 71 roadway and would consist of constructing two new travel lanes adjacent to the existing two roadway lanes. The existing two roadway lanes would provide two of the four travel lanes. Immediately south of Jane, the four-lane expressway section would transition to a five-lane improvement centered on the existing roadway. This five-lane section would provide a continuous left turn lane for access to the numerous driveways located between Jane and the state line. This five-lane section would then tie directly into the existing four-lane roadway section in Arkansas. With these improvements, in Missouri, traffic signals would potentially be provided at the US 71B intersection south of Pineville and at the Route 90 intersection near Jane, depending on the warrant analyses.

Due to the presence of the existing four-lane US 71 roadway within the Study Area in Arkansas, the interim improvements in Arkansas would not be as extensive as in Missouri for the Far West Alternative. Similar to the TSM improvements associated with the "No-Build" Alternative, the interim improvements in Arkansas would potentially consist of safety related upgrades at the following intersections: Kingsland Drive, Riordan Road, Oldham Road and Dartmoor Road (New). Depending on the signal warrant analyses, these improvements would potentially consist of installing traffic signals and constructing auxiliary left-turn and right-turn lanes on both the northbound and southbound roadway approaches. In addition, on the side streets, a two-lane section featuring either a separate left-turn lane with a through-right lane or a through-left lane with a separate right-turn lane would potentially be constructed. Potentially, all other major intersections would also have roadway approach improvements, depending on the traffic volumes.

Upon the completion of the interim improvements, a continuous four-lane roadway would be provided through the Study Area. The ultimate improvements would connect with the interim US 71/Route H Interchange with a northbound fly-over ramp. Upon the completion of the ultimate freeway improvements, the interim improvements would continue to provide service to the local traffic which would remain on the existing US 71 corridor.

b. Near West Corridor

Ultimate Improvements - Design and Operational Features

Within Missouri, the Near West Corridor is generally located along the existing US 71 Corridor (Segment A/B/C). At a point north of the existing Route OO/US 71 intersection, the Near West Corridor deviates from the existing US 71 Corridor in a due north/south alignment (Segment D/E). North of this point, the alternative alignment is identical to the selected alignment from the completed MoDOT EIS for US 71 (MoDOT Job Number J7P0427 - FHWA-EIS-90-02-F). South of this point, several alternative alignments have been identified. Within Bella Vista, up to five alternative alignments for the freeway have been defined within the Near West Corridor (Segment F). These five alternative alignments are defined by the five possible link combinations within the segment. On the south side of the Village, the Near West Corridor is concurrent with the Far West Corridor (Segment H).

Table II-5 shows the labels and interchange features for the alternatives within the Near West Corridor. As shown, the total length of the Near West Corridor is 30.5 to 30.7 km (19.0 to 19.1 mi.), depending on the alternative alignment. The northern terminus interchange (Route H) would provide access to the southern portions of Pineville. The Route 90 Interchange would provide access to Jane and Noel, Missouri. Access to the interior of the Bella Vista Village would be provided with the Route 340 Interchange. The Arthur Road Interchange would provide access to the southern areas of the Village and the US 71/US 71B Interchange would maintain current access to the existing US 71 and US 71B facilities.

Based on the projected traffic volumes for the Near West Corridor, as shown in Exhibit II-5, a four-lane section would be sufficient for the freeway improvements.

TABLE II-15
NEAR WEST CORRIDOR - ALTERNATIVE LABELS AND FEATURES

Seg. ID	Alternative Label	Alternative Length - m (ft.)	Interchange Crossroad	Interchange Type
A	NWA1	3,697 m (12,131 ft.)	Route H	Folded Diamond
B	NWB1	5,666 m (18,590 ft.)	Route 90	Conv. Diamond
C	NWC1	2,224 m (7,298 ft.)	—	—
D/E	NWD1/E1	2,731 m (8,960 ft.)	—	—
F	NWF1	6,655 m (21,834 ft.)	Route 340	Conv. Diamond
	NWF2	6,534 m (21,437 ft.)	Route 340	Conv. Diamond
	NWF3	6,643 m (21,794 ft.)	Route 340	Conv. Diamond
	NWF4	6,521 m (21,394 ft.)	Route 340	Conv. Diamond
	NWF5	6,631 m (21,755 ft.)	Route 340	Conv. Diamond
G	NWG1	3,611 m (11,847 ft.)	—	—
H	FWH1	6,135 m (20,128 ft.)	Arthur Road / US 71B	Conv. Dia. / Conv. Dia.
	FWH2	6,138 m (20,138 ft.)	Arthur Road / US 71B	Conv. Dia. / Conv. Dia.

Note: Conv. Diamond = Conventional Diamond
NWF1 = Links 1, 4, 8
NWF2 = Links 1, 3, 5, 6, 8
NWF3 = Links 2, 5, 6, 8
NWF4 = Links 1, 3, 5, 7
NWF5 = Links 2, 5, 7

Ultimate Improvements - Improvements to Existing US 71 Roadway

Due to the continued growth of traffic along the existing US 71 roadway, even with the freeway relocation improvements, (existing roadway) improvements would also be required. These improvements would be similar to the Improvements to Existing Alternative, but not to the same extent due to the lower traffic volumes which would remain on the existing roadway and due to the conversion of the existing roadway to a freeway within Missouri.

As shown on Exhibit II-5, daily traffic volumes ranging from 11,200 ADT to 42,300 ADT would remain on the existing roadway, depending on the location. The southern end of the existing roadway, between Sugar Creek Center and the existing US 71/US 71B Interchange, would require widening due to the high traffic volume which would remain on the existing roadway at this location (42,300 ADT). Similar to the Far West Alternative, based on a reduced level of service (LOS D), a six-lane roadway would be provided for this segment. TSM safety improvements would be provided along the existing roadway in addition to the widening of the southernmost segment.

Interim Improvements

Unlike the Far West Alternative, the ultimate improvements for the Near West Alternative are located along the existing US 71 Corridor for most of its length within Missouri. Within the area where the interim capacity improvements are needed (i.e. Missouri), the interim improvements for the most part would be compatible with the ultimate freeway improvements. Consequently, for the Near West Alternative, the interim improvements in Missouri would consist of constructing the Missouri portion of the ultimate freeway improvements except for that portion south of the divergence point from the existing US 71 roadway defined by Segment D/E. This point is located a short distance north of the state line. From this point to the state line, the interim improvements would consist of a continuation of the freeway section up to the state line with a transition and connection into the existing five-lane expressway section in Arkansas. In essence, the interim improvements for the Near West Alternative would be identical to the Missouri portion of the ultimate improvements for the Existing Alternative. These interim improvements would include an interchange with Route OO just north of the state line. (See following discussion of Existing Alternative for more details.)

The interim improvements for the Near West Alternative in Arkansas would depend on the traffic signal warrant analyses and would potentially consist of traffic signal and intersection approach improvements as defined for the Far West Alternative.

With these interim improvements, a continuous four-lane roadway would be provided through the Study Area until the ultimate freeway improvements are constructed. The ultimate improvements would connect with the interim improvements at the Segment D/E divergence point with a northbound fly-over ramp. South of this point, the interim improvements and the existing US 71 roadway would continue to provide access to local traffic.

c. Existing Corridor

Ultimate Improvement - Operational Features

The "Freeway-Build" Alternative along the Existing Corridor would consist of the conversion of the existing two-lane or four-lane roadway into a freeway. Within Missouri, the location and configuration of these improvements would be identical to the selected alternative from the completed EIS by MoDOT for US 71 (MoDOT Job Number J7P0427 - FHWA-EIS-90-02-F).

Immediately south of Pineville, the improved freeway would be on new location and the existing roadway would continue to provide access to the activities currently located along the roadway. South of Wolf Pen Hollow Road, the existing two-lane roadway would be converted to two of the four freeway lanes. South of Miser Hollow Road to the state line, the improved freeway would be on a new location and the existing roadway would continue to provide access to the activities currently located along the roadway. Within Missouri, interchange access would be provided at Route H, at Route 90, and at Route OO just north of the state line.

With the existing four-lane expressway in Arkansas and the more developed land uses adjacent to the roadway, the concept to convert US 71 to a freeway would involve four issues:

1. Upgrade the existing roadside to meet a freeway standard.

2. Improve the horizontal and vertical alignments to comply with a freeway standard.

3. Provide full access control with minimal impacts to local access and out-of-direction travel.

4. Provide improved roadway overtopping protection for Little Sugar Creek flooding.

- **Upgrade Existing Roadside** - The existing four-lane US 71 roadway section is in general compliance with roadside standards for a freeway with the exception of the median area. In accordance with AASHTO guidelines regarding clear zone widths, the existing median width would not be sufficient unless a median safety barrier is provided. The current median, consisting of a raised concrete median with curb and gutter, does have sufficient width to be converted into two inside shoulders with a concrete safety barrier. Therefore, throughout the Arkansas segment in those areas where alignment adjustments are not required, the existing raised concrete median would be converted to a safety barrier with paved inside shoulders.

- **Improve Alignments** - As described earlier, several segments of the existing four-lane roadway do not comply with current freeway design standards for either horizontal or vertical alignments. These deficiencies generally consist of horizontal curves which are too sharp or vertical curves which are too short. The deficient segments would be addressed by localized adjustments of either the line or grade of the four-lane roadway. The horizontal realignments of the roadway would entail lengthening of the deficient curves. If horizontal alignment adjustments are made in the three vertical curve locations, then the vertical curve would be adjusted as well. Otherwise, adjustments of the vertical curve deficiencies would not be provided.

- **Provide Full Access Control** - Along the existing four-lane roadway, there are currently a number of at-grade intersections or access points. (See Exhibit II-2 for locations of intersections and local landmarks.) Several of these intersections are with significant cross streets which provide access to both sides of the Village. Several other minor access roads or driveways exist which provide direct access to golf course maintenance areas, private residences or commercial establishments. With the freeway improvements and associated complete control of access, all of these direct points of access would be altered. To maintain the service to these cross streets and other major access points, a series of interchanges and frontage roads would be constructed. The following presents a list (north to south) and description of the major

access points in the village and how each would be maintained with the Existing Alternative freeway improvements:

> **State Line Road** - Access would be maintained with a new Route OO Interchange located north of the state line. An overpass would be provided for State Line Road with an intersection with Route 279, which is an extension of Route OO in Missouri.

> **Lundy Lane** - Consisting of an isolated residential development located on the west side of US 71 a short distance south of the state line, access would be maintained to this area with a western frontage road connection with the State Line Road overpass.

> **Hampstead Road** - Located on the east side of US 71 south of the state line, access would be maintained using a eastern frontage road with connections to the State Line Road overpass to the north or the Route 340 Interchange to the south.

> **Wellington Road** - Located on the east side of US 71 south of Hampstead Road, access would be maintained using a eastern frontage road with connections to the State Line Road overpass to the north or the Route 340 Interchange to the south.

> **Route 340** - The existing Route 340 Interchange would be maintained in its current configuration.

> **Pinion Drive** - Located on the east side of US 71 a short distance south of Route 340, access would be maintained with an eastern frontage road connection with Route 340.

> **Trafalgar Road** - Located on the east side of US 71 south of Pinion Drive, access would be maintained with an eastern frontage road connection with Route 340.

> **Shakespeare Drive** - Consisting of an isolated residential development located on the west side of US 71 south of Route 340, access would be maintained with a western frontage road connection to the Kingsland Drive Interchange a short distance to the south.

> **Kingsland Drive** - Located on the east side of US 71 south of Trafalgar Road, a new interchange would be provided to maintain access.

> **Riordan Road** - Located on the west side of US 71 north of Sugar Creek Center, access would be maintained with a western frontage road connection to a new interchange at Sugar Creek Center. The western frontage road would be located behind the Sugar Creek Center.

> **Oldham Drive** - Located at the northern edge of the Sugar Creek Center, Oldham Drive provides access to both sides of US 71. This access would be maintained with a new interchange at this location (Sugar Creek Center

Interchange). This interchange would combine service to both Dartmoor Road (New) and Oldham Drive.

> **Dartmoor Road (New)** - Located near the southern edge of Sugar Creek Center and currently under construction, access would be maintained with a new interchange combination with service to Oldham Drive (Sugar Creek Center Interchange). (This road is currently called Greenwich Road.)

> **Sunset Drive** - Located on the west side of US 71, access would be maintain with a western frontage road with connections to the new interchange at Sugar Creek Center to the north or to US 71B to the south.

> **Dartmoor Road (Old)** - With the completion of the new Dartmoor Road at Sugar Creek Center, this road would be closed and access would be terminated.

> **Cedar Crest Drive** - Located on the western side of US 71 south of Sunset Drive, access would be maintained with a western frontage road with connections to the Sugar Creek Center Interchange to the north and US 71B to the south.

> **County Road 40** - Located east of US 71 just north of the existing US 71/US 71B Interchange, access would be maintained with a frontage road extension of US 71B to the south.

> **County Road 37** - Located west of US 71 just north of the existing US 71/US 71B Interchange, access would be maintained with frontage road connections to the Sugar Creek Center Interchange to the north or US 71B to the south.

- **Little Sugar Creek Roadway Overtopping** - Based on the Federal Emergency Management Authority (FEMA) Flood Insurance Maps, the Little Sugar Creek 100-year flood overtops (i.e. flows over) the existing US 71 roadway in several locations within Arkansas. In accordance with the purpose and need for the US 71 improvements, the improved freeway facility would be designated as an interstate. As such, it has been decided that the freeway road elevation must be constructed at least higher than the 100-year flood. Consequently, the Existing Alternative would raise the existing US 71 roadway above the 100-year flood level of Little Sugar Creek. The floodplain operational impacts of raising the roadway would need to be accomplished in accordance with acceptable impacts defined by the FEMA rules and regulations, in addition to 23 CFR 650.101, subpart A.

  The Existing Alternative (i.e. ultimate freeway construction along existing US 71 alignment) is generally located parallel with the Little Sugar Creek floodplain from just north of the Missouri-Arkansas state line, south to the Study Area limits. At several locations, the Existing Alternative would be located within the floodplain. The Flood Insurance Study (FIS) for Benton County, Arkansas, as revised in 1996, presents a detailed study of Little Sugar Creek. In McDonald County, no detailed studies of Little Sugar Creek have been conducted by FEMA, therefore providing considerably less information concerning flood hazards along Little Sugar Creek north of the state line. Due to the more detailed FEMA information in Arkansas, the floodplain and floodway are shown on the FEMA flood hazard maps. Water surface elevations and

floodplain/floodway extents for the detailed study in Arkansas were determined with HEC-2 modeling of the stream conditions. To supplement the FIS HEC-2 model, which provides data only for the 100-year flood event, discharges for the 2-year through 50-year flood events were developed from multiple regression equations (AHTD Drainage Manual, 1982). Limited information is available for McKisic Creek. Because no detailed FEMA study was performed for Little Sugar Creek in McDonald County, Missouri, flood elevations were extrapolated from the available information south of the state line.

Utilizing the available data, analyses of the Little Sugar Creek floodplain hydraulics were performed for the existing and proposed conditions considered in this EIS (Existing Alternative):

> **Existing Floodplain Conditions** - In general, flood events of a magnitude which are expected to be equaled or exceeded once on the average during any 10, 50, 100 or 500-year period (recurrence interval) are selected as having special significance for floodplain analysis. These events, commonly termed the 10, 50, 100 or 500-year floods, have a 10, 2, 1 and 0.2 percent chance, respectively, of being equaled or exceeded during any year. Based on the discharge-frequency data for Little Sugar Creek, the floodplain/floodway analyses performed for this EIS show existing overtopping of the US 71 roadway at four locations within the Study Area, as well as at Route 340 just west of the interchange. About 2.3 km (1.4 mi.) south of the state line, the roadway is overtopped by the 5-year flood. At Route 340, the bridge is overtopped by approximately the 70-year flood event. Farther south, at the intersection with Pinion Valley Drive, the existing US 71 roadway is overtopped by approximately the 10-year flood event. As the roadway moves farther south, the US 71 bridge crossing provides protection for approximately the 80-year flood. Near the new Dartmoor Road bridge and south to Lake Bella Vista, the roadway is overtopped by events greater than the 50-year flood (an approximation, as this area is just upstream of the limits of the detailed hydraulic study). It is entirely possible that the US 71/Little Sugar Creek bridge just north of the state line is also overtopped by the 100-year flood; however, there has been no detailed study of this section of Little Sugar Creek. The proposed corridor crossing of McKisic Creek also shows roadway overtopping for the 100-year flood.

  Though the level of protection north of Route 340 is fairly low, providing only a 5-year level of protection, no anecdotal evidence has been provided by the residents of the area during the course of this study to either confirm or deny this finding.

> **Proposed Floodplain Conditions** - Raising the US 71 roadway to provide protection for the 100-year flood would most certainly extend the roadway embankment footprint farther into the Little Sugar Creek floodplain. Conditions are especially critical where the existing roadway is closest to the limits of the floodway -- just downstream (north) of the Route 340 bridge and immediately downstream from Lake Bella Vista. No construction would be permitted within the floodway limits without compensating for the lost floodway conveyance.

With the Existing Alternative, there would be three major bridge crossings of the Little Sugar Creek floodway -- US 71 north of the state line, Route 340 and US 71 south of Town Center. Any new bridge construction would have to be designed for no increase in backwater floodway flood levels at that location, as well as providing a roadway crossing above the predicted 100-year flood water surface elevation. For the most part, the additional embankment necessary to raise the existing US 71 roadway above the 100-year flood levels would be located within the floodplain of Little Sugar Creek, but not in the floodway. At the two locations where the raised roadway would cross the creek -- just north of the state line and south of Town Center -- the new bridges would be lengthened to span the floodway. Therefore, the hydraulic impacts of the improvements would be in compliance with the FEMA regulations. Based on the 100-year flood elevations, the existing roadway would need to be raised up to three meters (nine feet) in some locations.

Ultimate Improvements - Design Features

Table II-16 shows the labels and interchange features for the Existing Alternative. Unlike the Far West and Near West Corridors, due to the influence of the existing roadway and right-of-way, one single alternative alignment has been identified. As shown, the total length of the Existing Corridor is 26.4 km (16.4 mi.). The northern terminus interchange (Route H) would provide access to the southern portions of Pineville. The Route 90 Interchange would provide access to Jane and Noel, Missouri. Access to Bella Vista Village would be provided with the Route OO Interchange, Route 340 Interchange, Kingsland Road Interchange, Sugar Creek Center Interchange, and US 71/US 71B Interchange.

Based on the projected traffic volumes for the Existing Corridor, as shown in Exhibit II-6, a four-lane section would be sufficient for the freeway improvements.

TABLE II-16
EXISTING CORRIDOR - ALTERNATIVE LABELS AND FEATURES

Segment ID	Alternative Label	Alternative Length - m (ft)	Interchange Crossroad	Interchange Type
A	EX/NWA1	3,697 (12,131)	Route H	Folded Diamond
B	EX/NWB1	5,667 (18,590)	Route 90	Conv. Diamond
C	EX/NWC1	2,225 (7,298)	—	—
D	EXD1	3,599 (11,795)	Route OO	Partial Folded Diamond
E	EXE1	11,225 (36,827)	Route 340 Kingsland Road Sugar Creek Center US 71B	Partial Folded Diamond Conv. Diamond Split Conv. Diamond Conv. Diamond

Note: Conv. Diamond = Conventional Diamond

Though a single alternative alignment has been defined for the Existing Alternative due to the influence and control of the existing roadway right-of-way and adjacent land uses, several options at the interchange areas would exist. These design options would be as follows:

- **Route OO Interchange** - Eliminate the Route OO Interchange and replace with an interchange located on State Line Road. This optional interchange location would

consist of a partially-folded diamond configuration with the folded ramp in the southwest quadrant to eliminate Little Sugar Creek floodplain impacts. However, with the folded ramp in this quadrant, encroachment into the Bella Vista landfill would result. It is for this primary reason that the Route OO location was identified as the preferred option.

- **Kingsland Road Interchange** - Rather than constructing the interchange, another option would consist of extending the eastern frontage road which would serve Trafalgar Road to the south to a connection with Kingsland Road. With this option, access to Shakespeare Drive would be eliminated and the pocket of residences within the Shakespeare development would be displaced. Yet another option would consist of providing an overpass from Kingsland Road to Shakespeare Drive, but without providing the interchange ramps. This option would not displace the residences, but would still create out-of-direction travel. Due to the adverse impacts to the existing residences in the area, feasibility concerns about the continuous frontage road, and the out-of-direction travel which would result if an interchange was not provided, it was determined that the best design option would be to provide an interchange at this location.

- **Sugar Creek Center Interchange** - The elongated or split diamond configuration with connections to Oldham Road and Dartmoor Road (New) would have the option of using separate bridges for the crossings of the two cross streets. However, to reduce the adverse impacts to the adjacent commercial activities and to maintain access to the existing parking lots, a single US 71 bridge was identified as the preferred option. By spanning the entire interchange, the one-way frontage roads can be moved closer in to minimize the impacts to the shopping center amenities. Also, this design offers the possibility of providing additional parking areas under the structure.

Interim Improvements

Similar to the Near West Alternative, the ultimate improvements for the Existing Alternative are located along the existing US 71 Corridor for most of its length within Missouri. Within the area where the interim capacity improvements are needed (i.e. Missouri), the interim improvements would be compatible with the ultimate freeway improvements. Consequently, for the Existing Alternative, the interim improvements in Missouri would consist of constructing the Missouri portion of the ultimate freeway improvements.

The interim improvements for the Existing Alternative in Arkansas would depend on the traffic signal warrant analyses and would potentially consist of traffic signals and intersection approach improvements as defined for the Far West Alternative.

With these interim improvements, a continuous four-lane roadway would be provided through the Study Area until the ultimate freeway improvements are constructed in Arkansas.

6. CAPITAL COSTS

Utilizing current AHTD and MoDOT construction bid tabulations, construction cost estimates were prepared for the "Freeway-Build" Alternatives (interim and ultimate improvements). Construction quantities were developed for the following primary categories: earthwork, major drainage, surfacing, structures, and right-of-way. Miscellaneous items included lighting, signal

control, erosion control, pavement markings, signage, and maintenance of traffic. A 10% construction contingency was included. Final design and construction administration costs were not included.

In accordance with the definitions of the "Freeway-Build" Alternatives, there are three major construction cost components for the implementation of the alternatives:

- **Freeway Construction (Ultimate Improvements)** - Table II-17 shows the estimated freeway construction and right-of-way costs for each alternative within the three Study Corridors. Due to the number of alternatives within the Far West and Near West Corridors, the total construction costs for these two corridors are presented as ranges. The costs of the fly-over ramps necessary for the connection of the freeway improvements with the interim improvements are included in Segment A and Segment D/E for the Far West and Near West Alternatives, respectively.

- **Capacity and Safety Construction (Interim Improvements)** - The additional construction and right-of-way costs for the interim improvements, consisting of short-term capacity improvements in Missouri and TSM improvements in Arkansas along the existing US 71 roadway, are shown in Table II-17. For Segment A/B/C for the Near West Alternative, and for Segments A/B/C and D for the Existing Alternative, the ultimate freeway configuration would be constructed as the interim improvements.

- **Roadway Widening Improvements Along Existing US 71** - The US 71 roadway widening costs associated with the ultimate improvements in the southern most segments of the existing roadway are shown in Table II-18. As shown, the Far West and Near West Alternatives would have identical costs.

Operating and maintenance (O&M) cost estimates represent statewide averages from Missouri and Arkansas on a per lane kilometer basis. The average four-lane new facility O&M cost is approximately $9,900 per kilometer ($16,000 per mile). The O&M 1996 present value for O&M costs was determined for a 24-year horizon (projected to 2020). Table II-18 presents the capital cost for the three Study Corridors. Capital costs are represented by the total construction cost (ultimate and interim improvements) plus the present worth O&M costs for each alternative. The capital costs are presented for each state and for the total project.

TABLE II-17
CONSTRUCTION AND RIGHT-OF-WAY COST SUMMARY
"FREEWAY-BUILD" ALTERNATIVES

Ultimate/ Interim	Seg.	Alt.	Const. Cost ($ - M)	R.O.W. Cost ($ - M)	Total Cost ($ - M)	Length km (mi)	Cost per km ($M/km)	Cost per mi ($M/mi)
Far West								
Ultimate	A	FWA1	39.8	0.4	40.2	7.4(4.6)	5.45.65.4	8.7
		FWA2	40.0	0.4	40.438.9	7.2(4.5)7.2		9.0
		FWA3	38.5	0.4		(4.5)		8.6
	B/C	FWB1C1	22.8	0.3	23.1	5.8 (3.6)	4.0	6.4
		FWB2C2	22.0	0.3	22.3	5.5 (3.4)	4.1	6.6
	D	FWD1	33.8	2.0	35.8	11.3 (7.0)	3.2	5.1
		FWD2	33.4	1.7	35.1	10.5 (6.5)	3.3	5.4
	H	FWH1	29.125.4	1.4	30.5	6.5 (4.0)	4.7	7.6
		FWH2		2.3	27.7	6.1 (3.8)	4.5	7.3
Sub-Total			119.3-125.7	3.8-5.0	124.0-129.8	29.3-31.0 (18.2-19.2)		
Interim	Capacity Imp.		46.2	0.8	47.0	15.3 (9.5)	3.1	5.0
	TSM Imp.		1.4	0.0	1.4			
Sub-Total			47.6	0.8	48.4			
Total			166.9-173.3	4.6-5.8	172.4-178.2			
Near West								
Ultimate	A/B/C	NWABC	43.0	2.1	45.1	11.6 (7.2)	3.9	6.3
	D/E	NWD1E1	10.0	0.2	10.2	2.7 (1.7)	3.8	6.0
	F	NWF1	28.6	1.9	30.5	6.7 (4.1)	4.6	7.4
		NWF2	26.0	2.9	28.9	6.5 (4.1)	4.4	7.0
		NWF3	28.7	2.5	31.2	6.6 (4.1)	4.7	7.6
		NWF4	26.5	2.4	28.9	6.5 (4.1)	4.4	7.0
		NWF5	28.4	2.0	30.4	6.6 (4.1)	4.6	7.4
	G	NWG1	13.3	0.6	13.9	3.4(2.1)	4.1	6.6
	H	NWH1	29.1	1.4	30.5	6.5(4.0)	4.7	7.6
		NWH2	25.4	2.3	27.7	6.1 (3.8)	4.5	7.3
Sub-Total			117.7-124.1	6.2-8.1	125.8-130.9	30.3-30.9 (18.8-19.2)		
Interim	Capacity Imp.		18.1	2.1	20.2	3.6(2.2)	5.6	9.2
	TSM Imp.		1.2	0.0	1.2			
Sub-Total			19.3	2.1	21.4			
Total			137.0-143.4	8.3-10.2	147.2-152.3			
Existing								
Ultimate	A/B/C	EXABC	43.0	2.1	45.1	11.6 (7.2)	3.9	6.3
	D	EXD1	18.1	2.1	20.2	3.6 (2.2)	5.6	9.2
	E	EXE1	63.8	11.3	75.1	11.2 (7.0)	7.4	11.0
Sub-Total			124.9	15.5	140.4	26.4 (16.4)	5.5	8.9
Interim	Capacity Imp.		0.0	0.0	0.0	0.0	0.0	0.0
	TSM Imp.		1.2	0.0	1.2			
Sub-Total			1.2	0.0	1.2			
Total			126.1	15.5	141.6			

Note: NWF1 = Links 1, 4, 8
NWF2 = Links 1, 3, 5, 6, 8
NWF3 = Links 2, 5, 6, 8
NWF4 = Links 1, 3, 5, 7
NWF5 = Links 2, 5, 7

TABLE II-18
SUMMARY OF CAPITAL COSTS
"FREEWAY-BUILD" ALTERNATIVES

Study Corridor	"Ultimate" Length km (mi.)	"Ultimate" Construction and R.O.W Cost ($ - M)	"Interim" Construction and R.O.W. Cost ($ - M)	Existing US 71 Widening Cost ($ - M)	Operations and Maintenance Cost ($ - M)[1]	Total Capital Cost ($ - M)
Missouri						
Far West	8.1 - 8.3 (5.0 - 5.2)	42.5 - 44.1	47.4	0.0	0.9 - 0.9	90.8 - 92.4
Near West	14.3 (8.9)	55.3	20.3	0.0	1.6	77.2
Existing	15.2 (9.4)	65.3	0.1	0.0	1.7	67.1
Arkansas						
Far West	21.2 - 22.7 (13.2 - 14.1)	81.5 - 85.7	1.0	3.6	3.4 - 3.5	89.5 - 93.8
Near West	16.0 - 16.6 (9.4 - 10.3)	70.5 - 75.6	1.1	3.6	3.2 - 3.2	78.4 - 83.5
Existing	11.2 (7.0)	75.1	1.1	0.0	0.7	76.9
Total Project						
Far West	29.3 - 31.0 (18.2 - 19.2)	124.0 - 129.8	48.4	3.6	4.3 - 4.5	180.3 - 186.3
Near West	30.3 - 30.9 (18.8 - 19.2)	125.8 - 130.9	21.4	3.6	4.9 - 4.9	155.7 - 160.8
Existing	26.4 (16.4)	140.4	1.2	0.0	2.4	144.0

[1]Additional costs for O&M based on 1997-2020 project life and 7% discount rate.

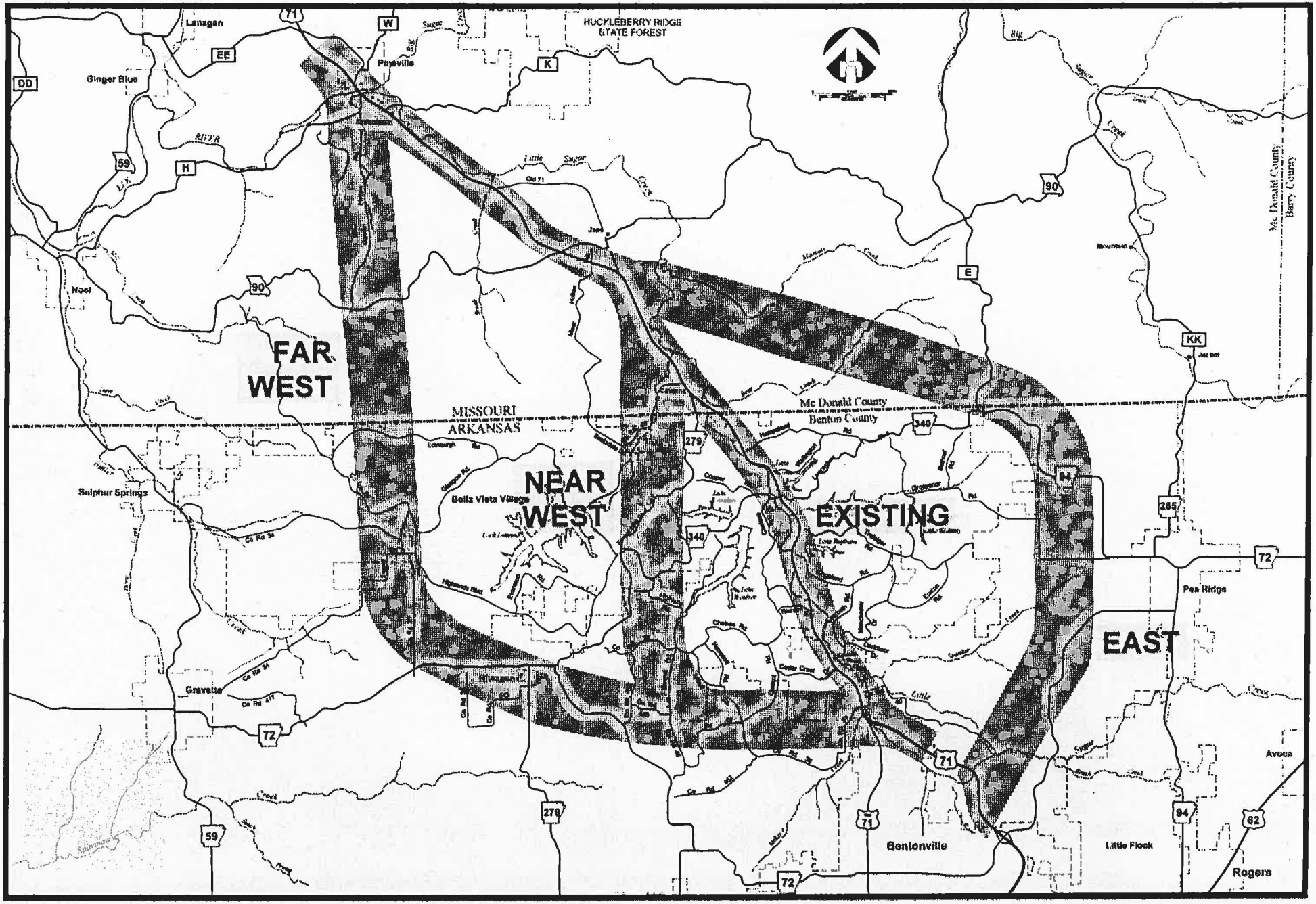


Exhibit II-1 Study Corridors

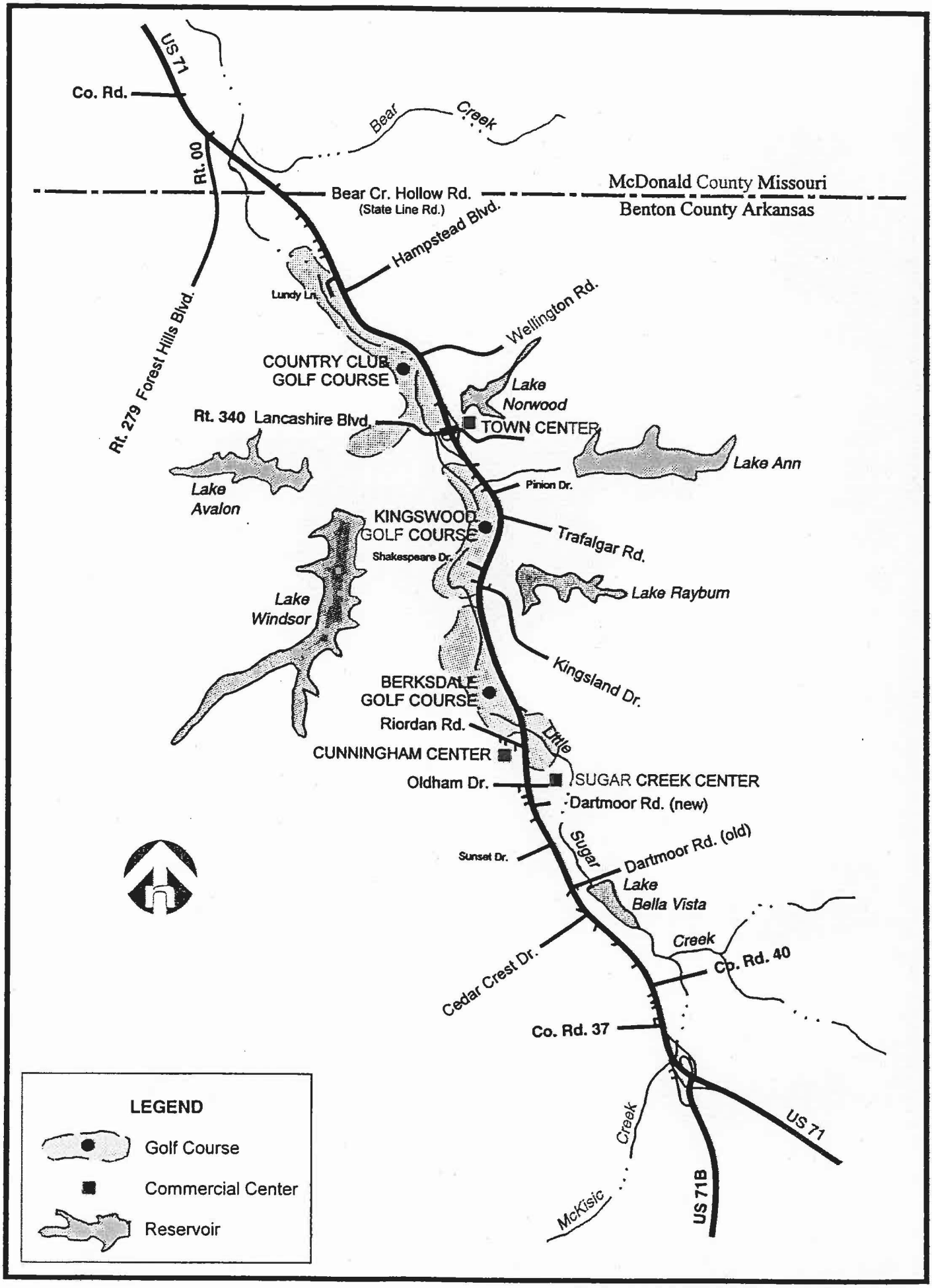


Exhibit II-2 Bella Vista Landmarks

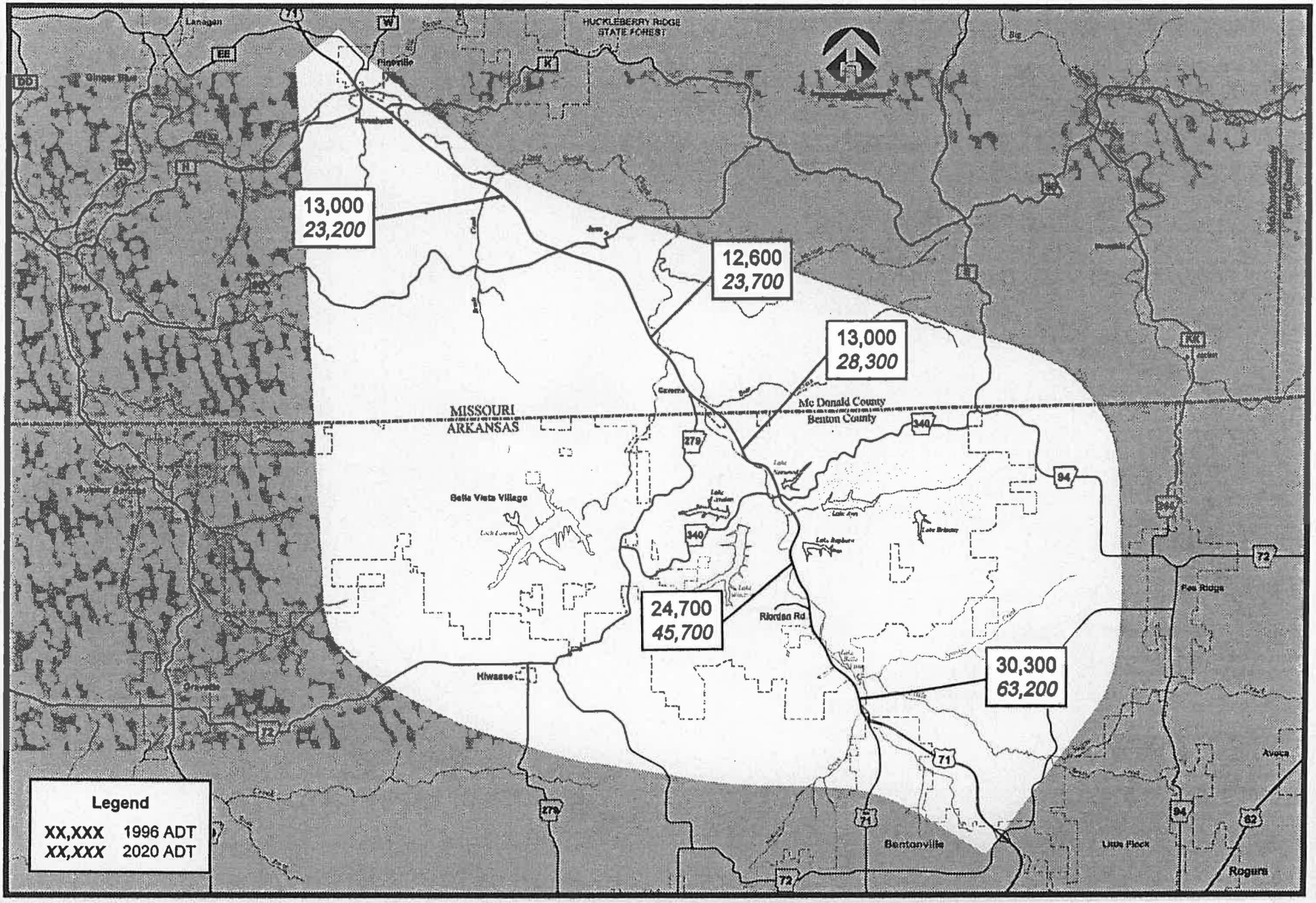


Exhibit II-3 Existing and Projected Traffic (1996 & 2020) "No-Build" Alternative

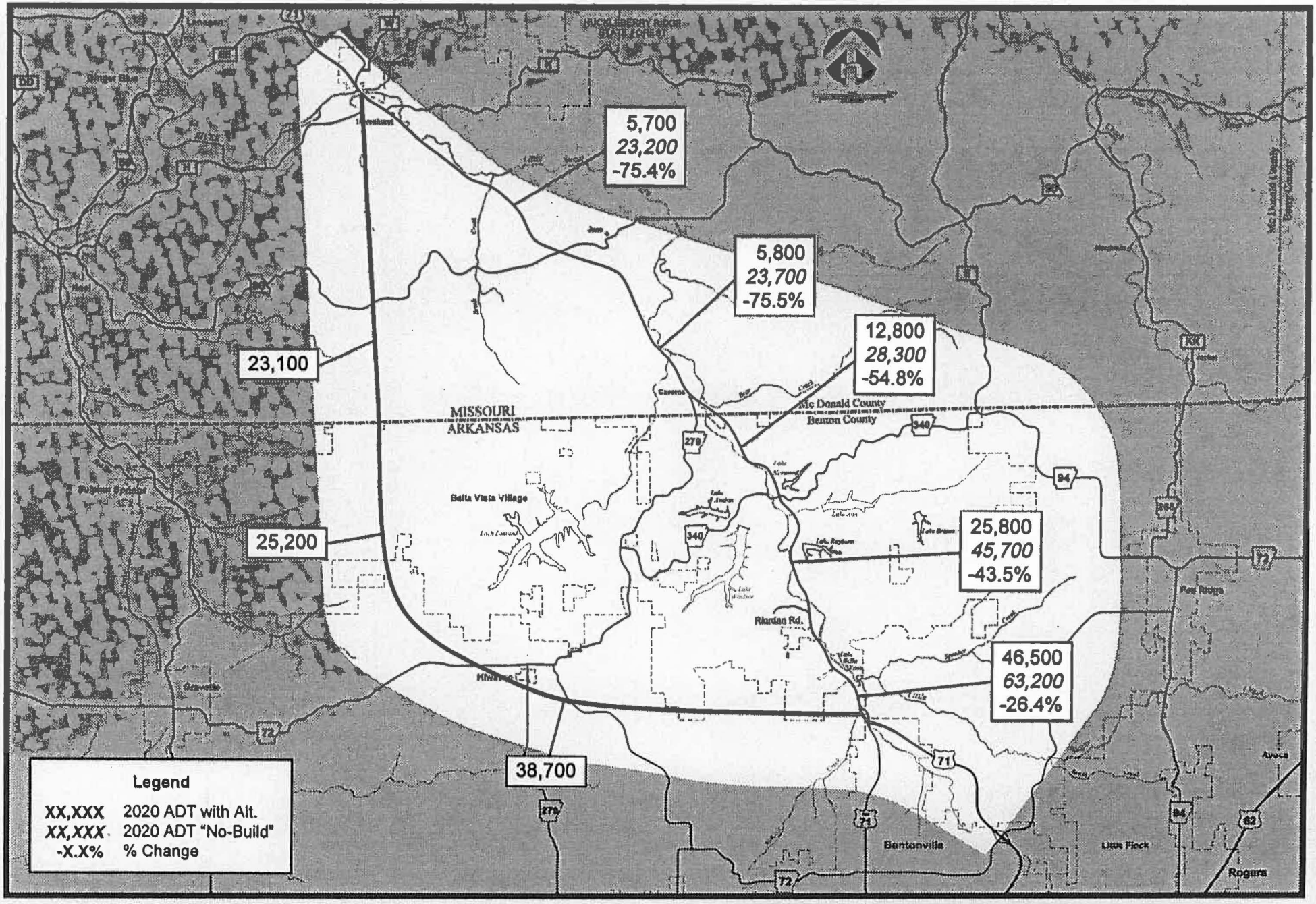


Exhibit II-4 Projected Traffic (2020) Far West Alternative

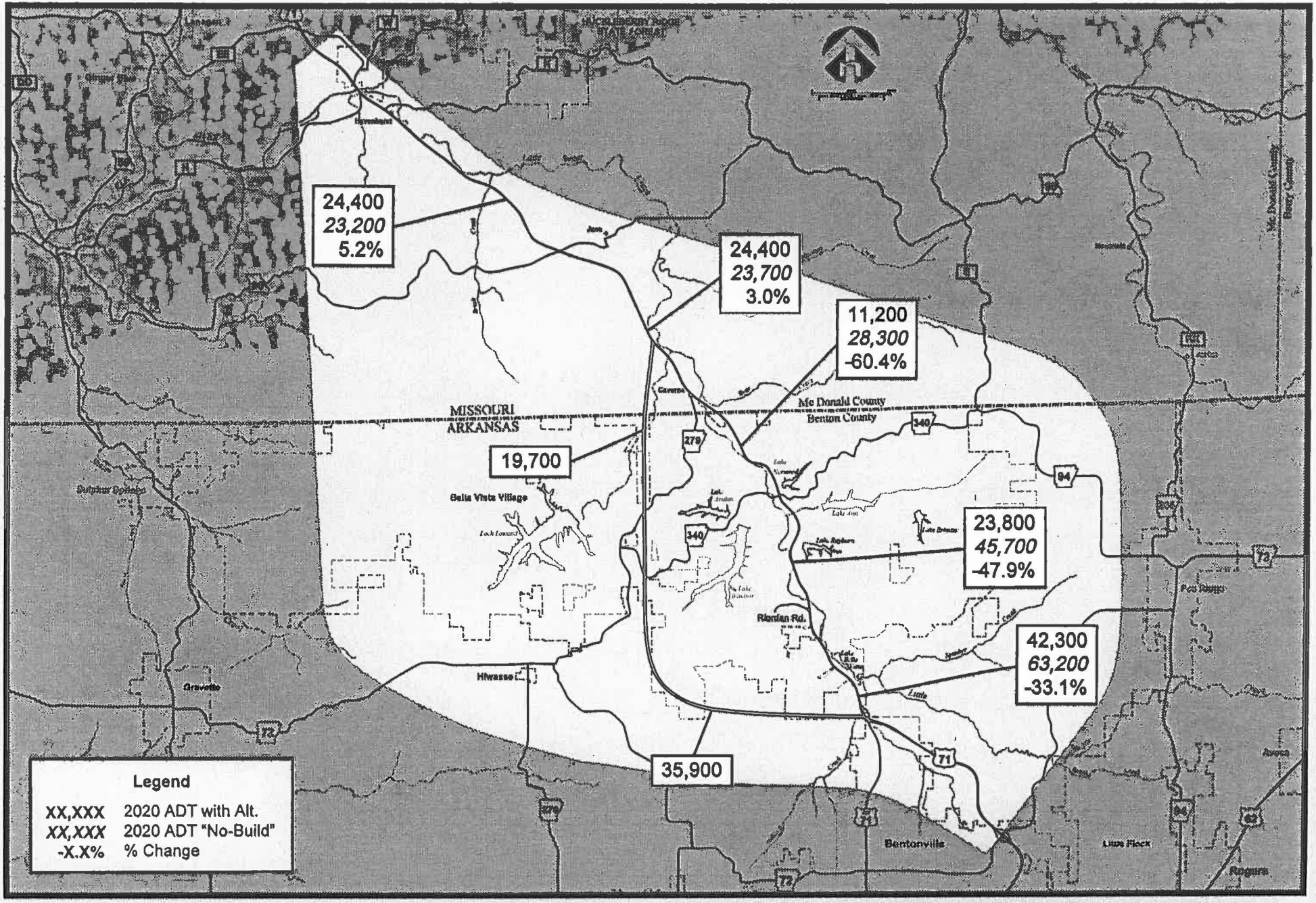


Exhibit II-5 Projected Traffic (2020) Near West Alternative

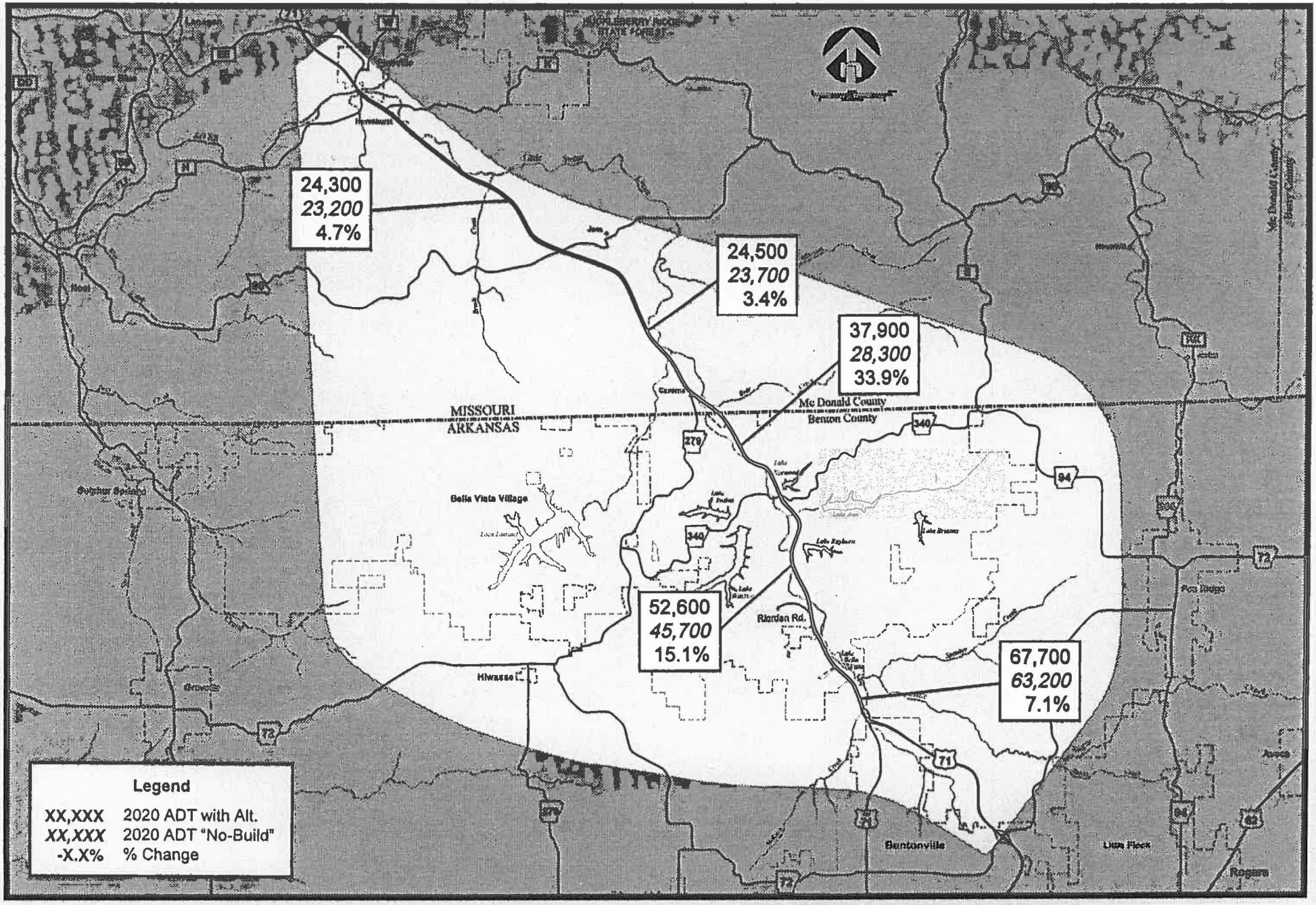


Exhibit II-6 Projected Traffic (2020) Existing Alternative

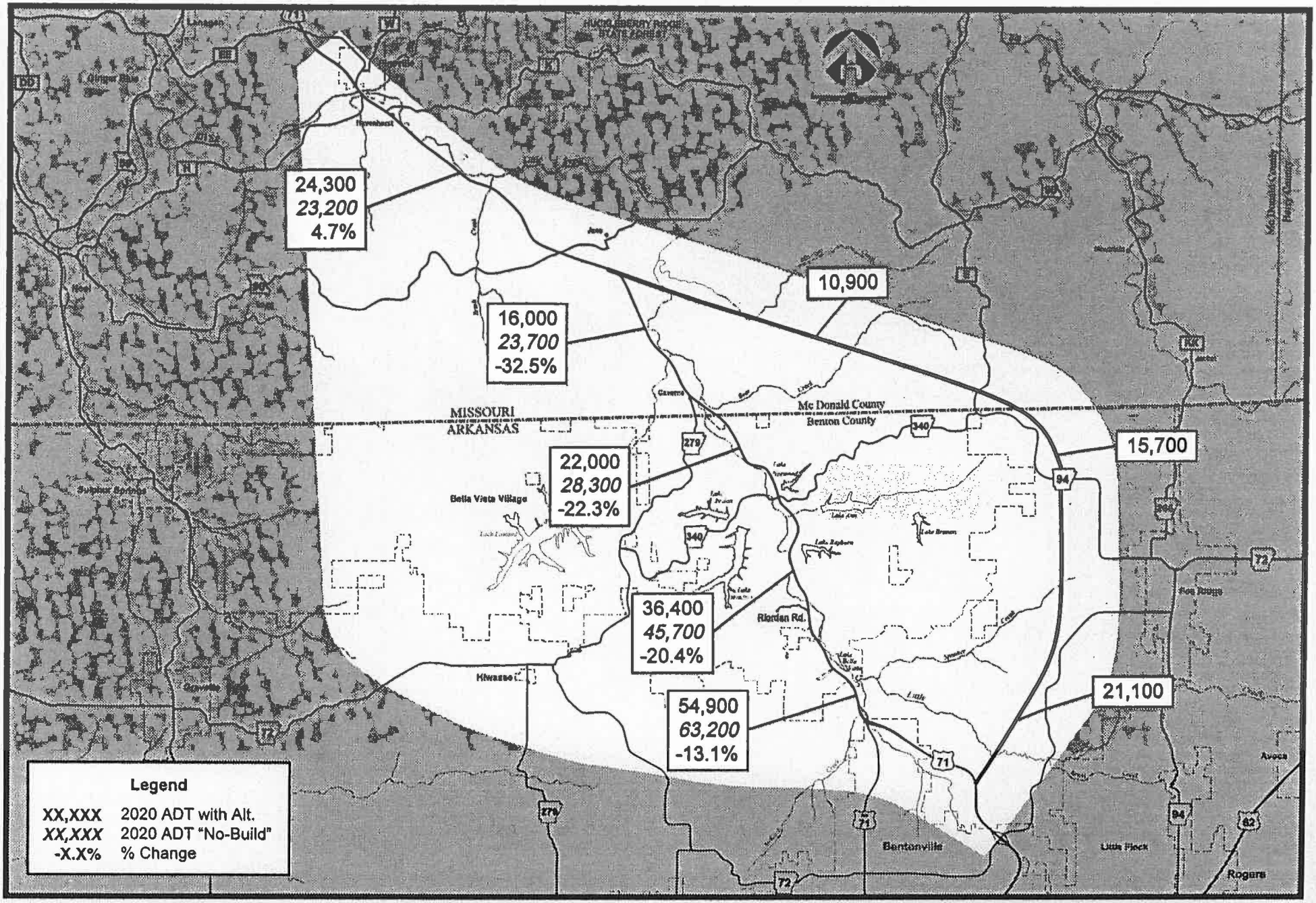
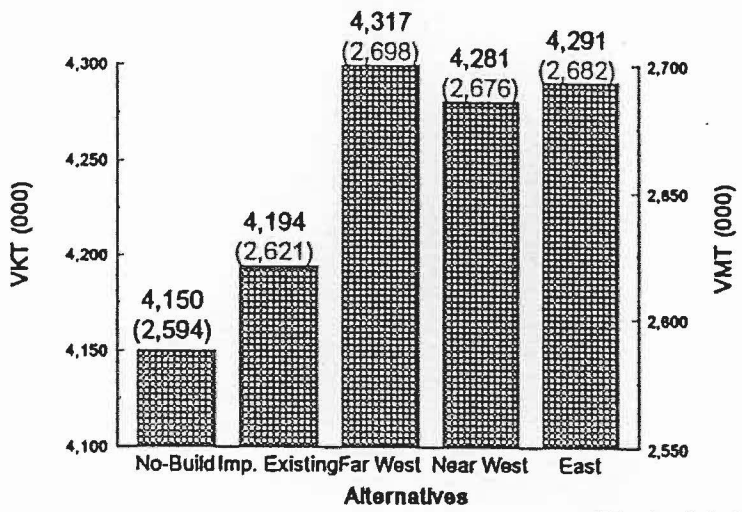


Exhibit II-7 Projected Traffic (2020) East Alternative

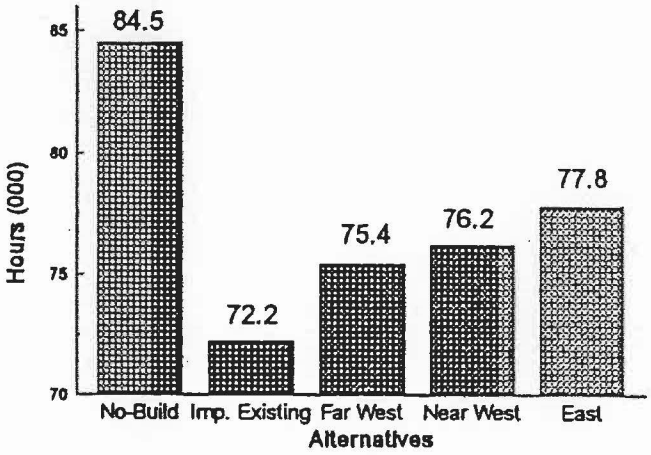
Total Vehicle Kilometers (Miles) of Travel

Year 2020



Total Vehicle Hours of Travel

Year 2020



Average Vehicle Speed

Year 2020

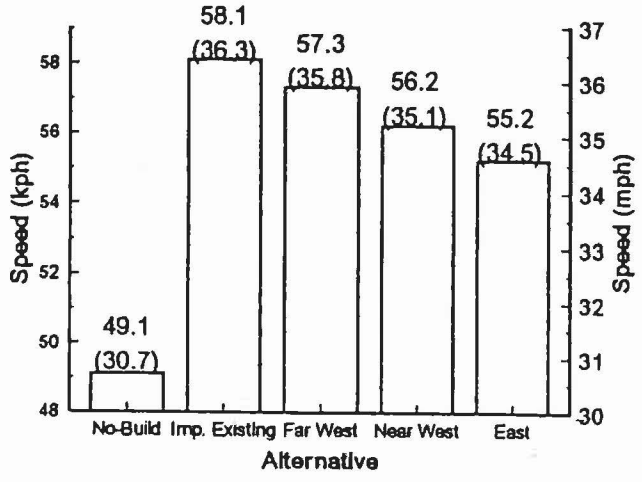


Exhibit II-8 Regional Traffic - Measures of Effectiveness

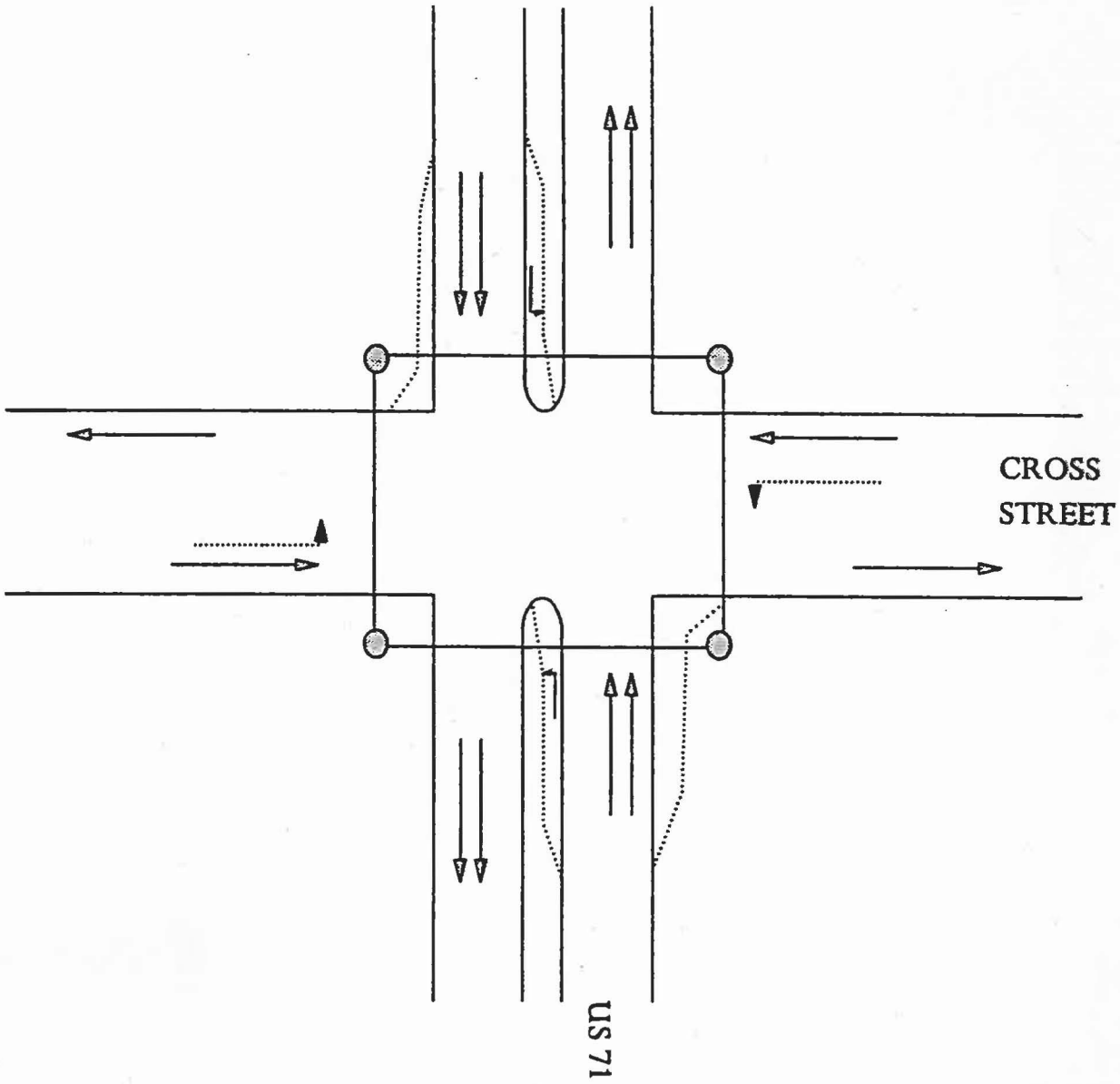
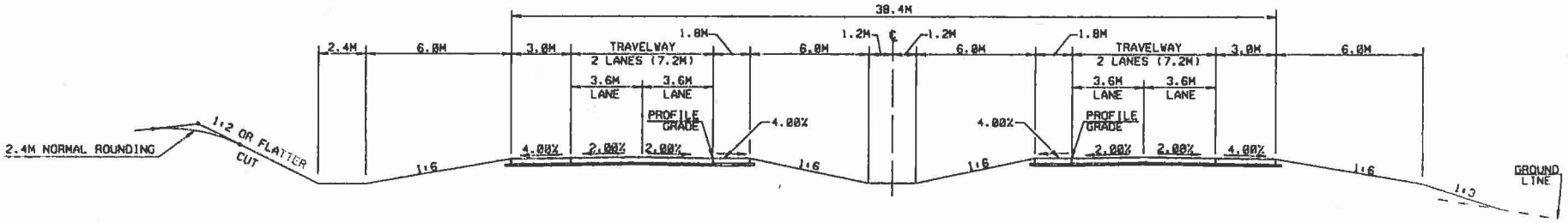
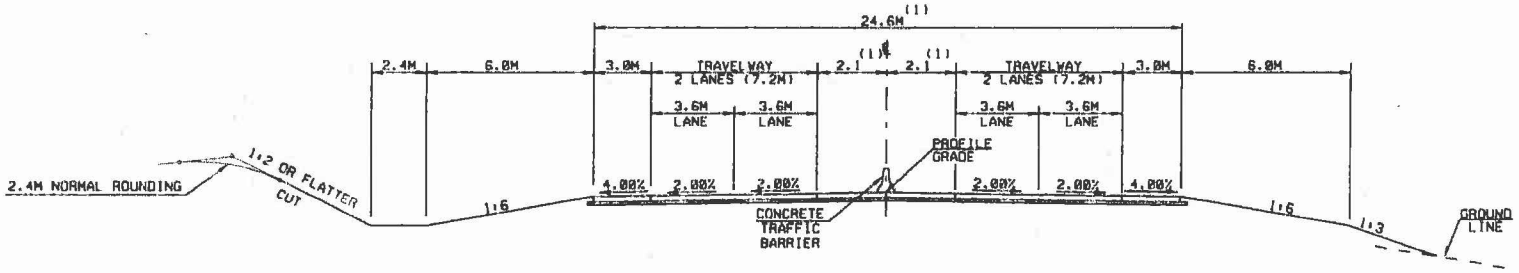


Exhibit II-9 Typical TSM Intersection Improvement



FOUR LANE DIVIDED FREEWAY
with Grass Median

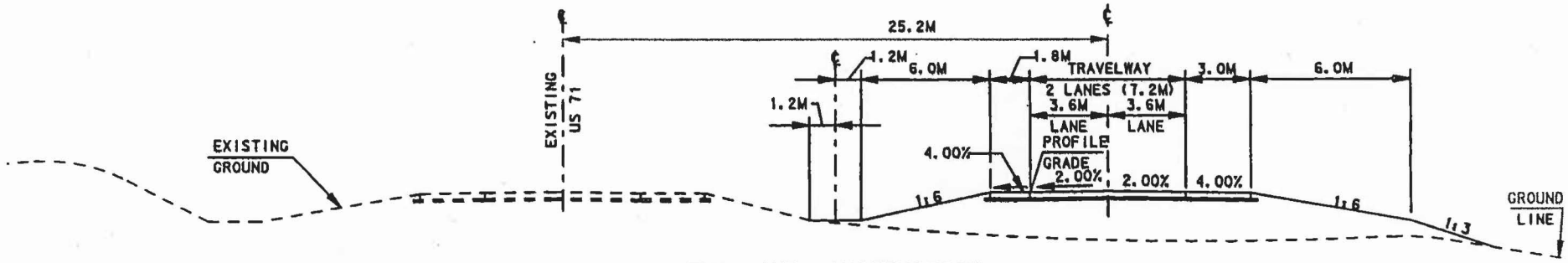


FOUR LANE DIVIDED FREEWAY
with Median Barrier

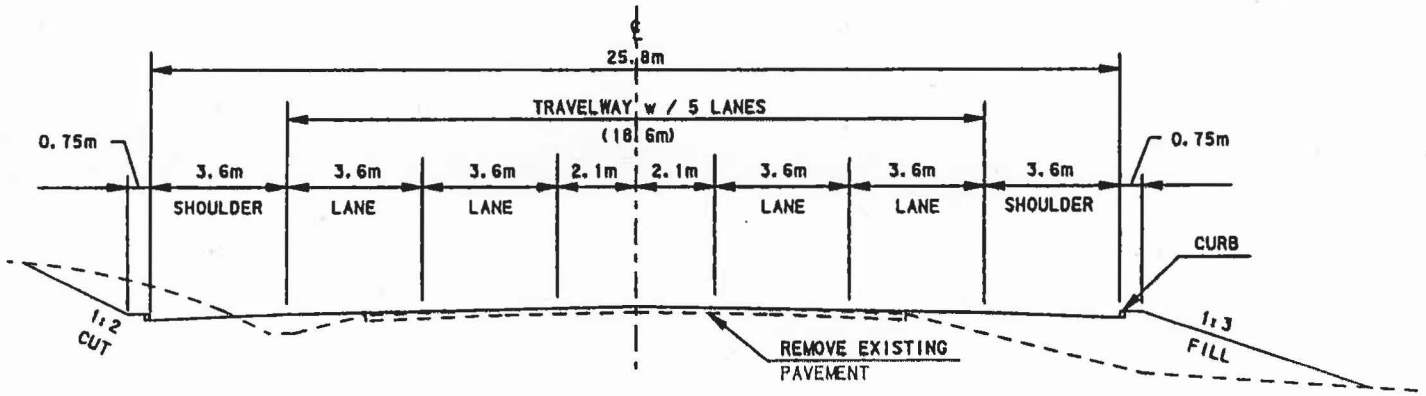
NOTE:

(1) FOR FREEWAY IMPROVEMENTS ALONG EXISTING U.S. 71 SOUTH OF THE MISSOURI/ ARKANSAS STATE LINE, THE DIMENSION FROM THE CENTERLINE TO THE INSIDE EDGE OF PAVEMENT WILL BE 3.0M. THE OVERALL ROADWAY DIMENSION WILL BE 26.4M.

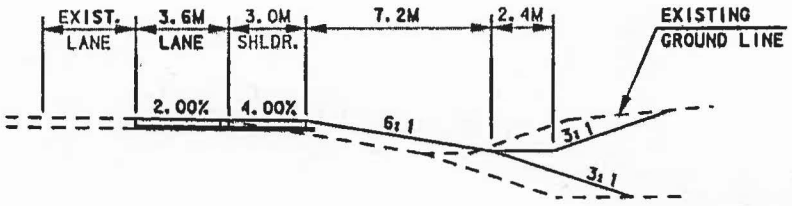
Exhibit II-10 Freeway Typical Sections



TWO-LANE CONSTRUCTION
FOUR-LANE EXPRESSWAY



FIVE-LANE URBAN ARTERIAL
WITH LEFT-TURN LANE



LANE WIDENING
ALONG OUTSIDE SHOULDER

Exhibit II-11 Non-Freeway Typical Sections

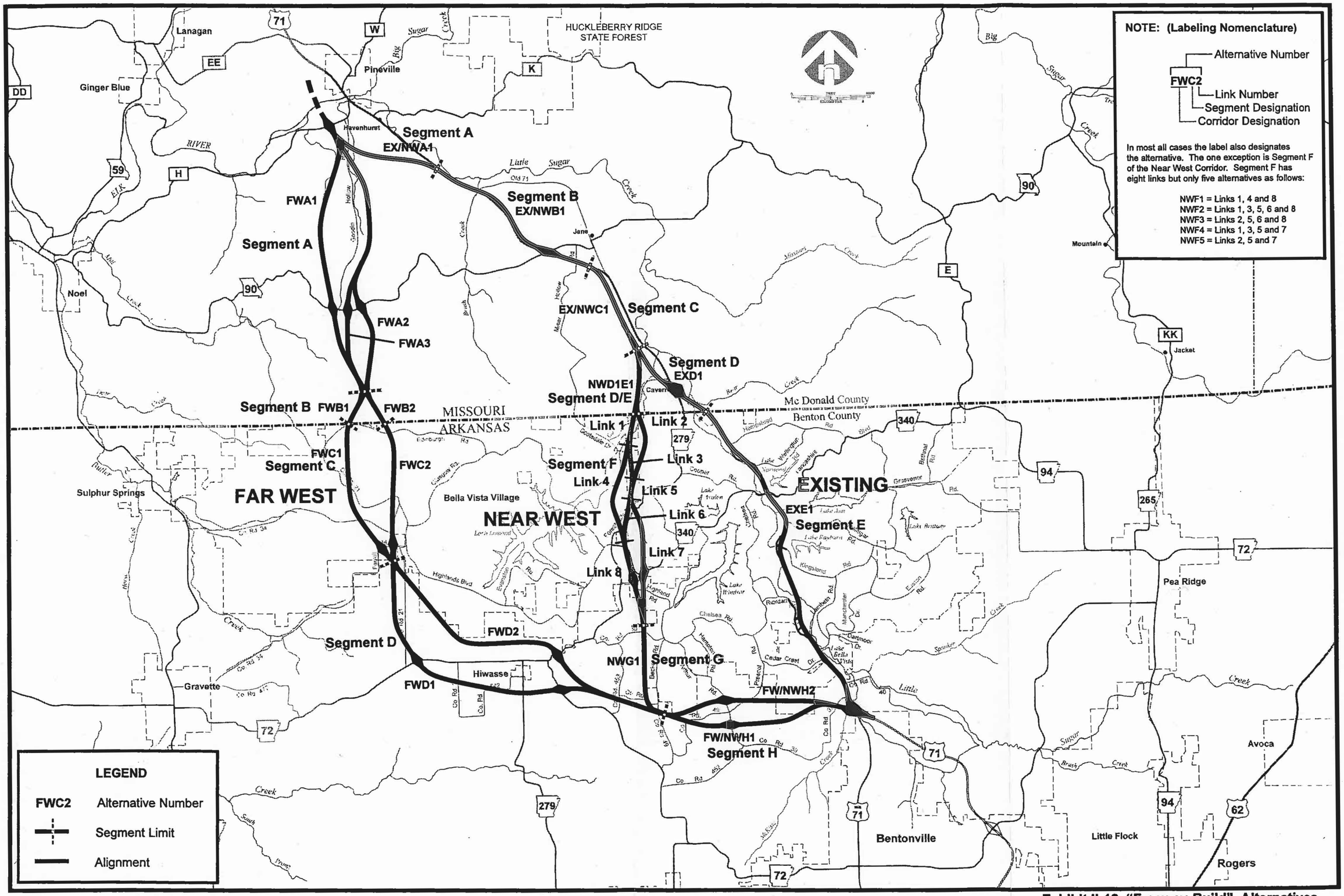


Exhibit II-12 "Freeway-Build" Alternatives

Chapter III - Affected Environment

This chapter provides a general description of the current social and economic characteristics and natural environment of the Study Area. These descriptions establish the existing baseline condition of the social and environmental settings of the Study Area and provide a basis of comparison for the determination of the impacts and environmental consequences of the proposed action, as presented in Chapter IV - Environmental Consequences.

For the purposes of assessing the potential impacts of the proposed action, the boundary of the affected environment has been defined according to the Study Area and the four Study Corridors – Far West, Near West, Existing and East. The Study Area and Study Corridors have been defined in Chapter II to represent the generalized limits of the possible locations for the US 71 improvements. Site-specific environmental issues have been collected and reviewed within the limits of the four Study Corridors. (The East Corridor was eliminated from further consideration in a preliminary screening, as described in Chapter II. The potentially affected environment for the East Corridor is described in this Chapter.) Specific environmental sites located outside of the four Study Corridor limits have not been identified. More regional issues, such as land use, social and economic characteristics, and air quality, have been identified and defined from a Study Area or regional perspective.

A. Social and Economic Characteristics

This section provides a description of the existing social and economic characteristics of the Study Area. The Study Area has been analyzed in coordination with the Chapter II traffic analyses utilizing the Traffic Analysis Zone (TAZ) level of detail and 1990 census data. Various census data totals for Benton County, Arkansas and McDonald County, Missouri have been used for analysis. Information related to land use and development was gathered through field surveys, information from development companies, interviews and interpretation of related documents.

The characteristics and activities associated with the use and development of land are primary influences over the social and economic characteristics of an area. In the region, access to airports, recreation areas, patterns of large land ownership, mountainous terrain, and other major transportation routes such as Route 340, Route 279, and Route 72 are the main determinants of land use and development patterns.

A detailed explanation and analysis of the affected environment includes discussions of existing land use characteristics and patterns, an assessment of current land use plans, and a description of the regulatory environment affecting development.

1. LAND USE

Land use in the McDonald County, Missouri portion of the Study Area is less developed and poses fewer potential conflicts than the portion of the Study Area in Benton County, Arkansas. The Arkansas portion of the Study Area least heavily populated is the area west of Loch Lomond. In general, the western extremities of the Village are not currently developed at the same level of density as the more interior areas of the community. The Arkansas portion of the Study Area

most heavily populated is centered along US 71. The area around Bella Vista Center (at the crossroads of Route 340 and Route 279) is less populated than the US 71 Corridor. (See Exhibit III-1.)

a. Existing Land Use

Using 1990 census population as an indicator, over 75% of the non-agricultural land uses in the Study Area are either within Bella Vista Village – a Cooper Communities retirement and golf resort development – or in the Bentonville area. Existing development in Bella Vista Village includes a year-round population in excess of 12,000.

Bella Vista Village

The actual number and concentration of land uses in Bella Vista Village is significantly larger than the 1990 census population indicates. Bella Vista Village's 6,944 completed residential units are in platted subdivisions with a capacity for over 37,000 homes. Therefore, these platted subdivisions are only 18.34% developed on average (see Table III -1). The retirement nature of Bella Vista Village creates this unusual land use and ownership pattern. The developer reports that numerous retirees buy their lot many years in advance of retirement and their lot will sit vacant during that time. The development has sold over 13,500 residential lots, which is double the number of lots with existing housing. Consequently, a single house can sit alone on a street which is sold out. The net effect of this ownership pattern is that the existing 12,000 residents occupy only 21% of the available platting and are spread over a large percentage of the total land (see Exhibit III -1).

TABLE III-1
BELLA VISTA VILLAGE PLATTED LOT ABSORPTION

Subdivision Absorption Rating	Total Lots in Subdivisions	Lots with Completed Housing	% Lots with Completed Housing
Full: 75% to 100%	1,180	1,099	93.14%
Near Full: 50% to 74%	2,778	1,772	63.79%
Growing: 25% to 49%	5,599	2,030	36.26%
Starting: 1% to 24%	23,796	2,043	8.56%
Platted: 0%	4,509	0	0.00%
Total	**37,862**	**6,944**	**18.34%**

(1) The subdivision absorption rating is the percent of an individual subdivision that has been sold and developed.

Incorporated Cities and Towns

The Study Area includes the north end of Bentonville, Arkansas (population 11,257). Existing land uses in this area are sparse and primarily low-density residential. The existing development of Bentonville is well outside and to the south of the Study Area.

The town of Hiwasse, Arkansas is located in the southwest portion of the Study Area. Route 279 runs north and south through the center of the town. Route 72 provides east and west access along the north city limit of Hiwasse. Land use in Hiwasse is predominantly residential with a few commercial land uses including a fire station/community center and auto repair. A single roadside service station is located just outside of Hiwasse to the east on Route 72.

Pineville, Missouri (population 580) is located immediately north of the Study Area on US 71. The town is low-density residential in nature with some retail and commercial land uses. The current alignment of US 71 goes through the southwest corner of the town.

Rural Areas

With the exception of four small towns and villages (Pineville, Caverna, Havenhurst, and Jane), the portion of the Study Area in Missouri is rural agricultural. Due to the mountainous terrain, the primary agricultural product is livestock with bottom and terraced cropland.

A very different land use pattern exists on similarly mountainous terrain on the Arkansas side on the Study Area. Rural agriculture exists only on the periphery of Bella Vista Village within the Study Area. The most dominant agricultural use is poultry farms. Poultry farms line state and county roads in three to ten confinement building clusters.

b. Land Use Planning and Regulation

Land planning and regulation has become an important part of managing the fiscal health of local municipalities. Planning and land use regulation allows municipalities to plan for and sequence expansion of facilities within the constraints of their financial resources. Within the Study Area, Bella Vista Village is guided by a general development plan. Gravette has a general plan. The project area is adjacent to the Northwest Arkansas Regional Transportation Study (NARTS) area. The Regional Planning Commission has jurisdiction over all of Benton County, Arkansas.

Bella Vista Village

Bella Vista is located in Benton County, Arkansas but is not an incorporated city and is therefore not a member of the Regional Planning Commission. Bella Vista Village has developed under a general development plan covering 14,569 hectares (36,000 acres) of contiguous land. More than two-thirds of this land has been platted and made accessible by paved roads by the developer -- Cooper Communities Inc. The unplatted portion of the development, generally west of the area known as The Highlands, is marked "Reserved for Future Development" on the master plan poster with a 1995 copyright. The Property Owners Association (POA) performs the local governmental functions. Each property owner automatically becomes a member of the POA.

A general manager is appointed by the nine member elected council of the POA membership. The general manager works in a capacity similar to a city manager. The POA collects a mandatory monthly assessment from each property owner that funds property maintenance and contracted fire/emergency services from three local fire departments. Bella Vista has 19 full time police officers managed through the Benton County Sheriff's office. The POA owns and maintains common properties and operates amenities available to members and guests.

Changes in land use from the general development master plan are rare. Commercial land uses are centered in four main nodes: Town Center, Cunningham Center, Sugar Creek Center, and Bella Vista Center. Churches, community centers, and RV storage are located near the same three centers or in a few cases near golf course club houses. Routine land use planning and regulation issues within the development are largely residential. An architectural control committee reviews all house plans for compliance with established community guidelines. Property owners may choose their own builder and architect.

Bentonville

Bentonville, Arkansas is within the Northwest Arkansas Regional Transportation Study, Metropolitan Planning Organization (MPO). The Study Area slightly overlaps the MPO's jurisdictional area. All proposed alternatives tie into the existing improvements completed on US 71 within the MPO area. Bentonville updated its General Plan in 1994. The Northern portion of Bentonville inside the Study Area is generally shown to be low-density residential on the future land use plan. A linear strip along US 71 in this area is shown as industrial and commercial.

Rural Areas

The Arkansas State Planning Enabling Legislation does not have a statute which allows counties or cities to zone in extraterritorial areas unless they are located along a navigable stream. Therefore, there is limited zoning information in the rural areas. Cities are allowed to zone one mile beyond the city limit if there is a general master plan in place, with population of 8,000 to 50,000. For cities between 50,000 and 150,000, they are allowed to zone two miles beyond the city limits and three miles for cities over 150,000.

Missouri enabling legislation for Regional Planning Commissions (RPC) (RSMo 251.160 and 251.320) supports the creation of transportation plans. An RPC may contract with federal, state, or local governments to perform comprehensive planning. McDonald County is eligible to participate in certain state and federal matching funds to perform such planning, although none has been accomplished to date.

2. DEMOGRAPHIC AND SOCIAL CHARACTERISTICS

Socio-economic data and characteristics are important to an analysis of the Study Area. Learning about the population can give insights into many unique features and sensitive population segments. The analysis allows comparisons between and among different population segments and characteristics throughout the Study Area. Data were primarily collected from the 1990 Census of Population and Housing.

Appendix D contains a detailed charting of a majority of the demographic data provided by Summary Tape File 3a of the 1990 Census. Specific appendix tables referenced by sections of this chapter are intended to supplement this text. Other tables within the appendix may give further insight into regional demographics beyond the scope of the main body of this text.

a. Demographic Data

Population

Over two-thirds of the population in the Study Area is in the Bella Vista Village and Bentonville area. Bentonville is the largest city actually in the general Study Area with 11,285 residents. Bella Vista Village had 9,083 residents reported in the 1990 census. The size of cities and towns in the region are listed in Table III-2. The Study Area population is 26.2% of the combined populations of Benton County, Arkansas (97,499) and McDonald County, MO (16,938).

Future Growth

The Northwest Arkansas Regional Planning Commission has made population projections for Benton County through 2020, using a projection of increase in dwelling units for the first five years following the 1990 census. These projections are shown in Table III-2.

TABLE III-2
1990 CENSUS POPULATION AND 2020 PROJECTIONS

City or Town	1990 Population	2020 Population Estimate
Bella Vista Village, AR	9,083	29,623
Bentonville, AR	11,285	24,509
Gravette, AR	1,412	2,037
Little Flock, AR	944	2,162
Pea Ridge, AR	1,620	2,183
Pineville, MO	590	n/a
Rogers, AR	24,692	57,971
Sulpher Springs, AR	510	n/a

Source: Northwest Arkansas Regional Planning Commission.

Gender

Each town and county in the Study Area has a slightly higher percentage of females than males. Females make up 52% to 53% of the general population, except in Pineville where the percentage rises to 55%. Similar size towns in the Arkansas portion of the Study Area have gender percentages similar to the rest of the Study Area.

Age

Fifty-six percent (56%) of the Bella Vista Community population was over age 60 at the time of the 1990 census. This compares to less than 19% in the City of Bentonville. Other cities and towns in the Study Area have percentages of population over 60 similar to Bentonville. Even smaller communities which have high out-migration of younger people have over 60 population percentages in the low 20's.

Education

The relative affluence of Bella Vista Village retirees provides it with an education advantage within the Study Area. Sample percentages of population of over age 25 with some college education is shown in Table III-3. Generally, the Study Area outside of the Village is indicative of national trends relating higher educational attainment with the size of the urban area.

TABLE III-3
PERCENTAGE OF POPULATION WITH SOME COLLEGE EDUCATION

City or Town	1990 Population	Percent with Some College
Bella Vista Village, AR	9,083	47%
Bentonville, AR	11,285	26%
Gravette, AR	1,412	19%
Little Flock, AR	916	24%
Pea Ridge, AR	1,620	15%
Pineville, MO	590	21%
Rogers, AR	24,692	28%
Sulphur Springs, AR	510	19%

Source: U.S. Census Bureau, 1990 Census.

Race

Race demographics of the Study Area can be characterized as homogenous both in rural and urban areas. Bentonville is the only city in the Study Area with an African-American population (0.16%). All other non-white persons in the Study Area are categorized as American Indian, Eskimo, Aleut, Asian, Pacific Islander, or other race (see Table III-4). The racial homogeneity extends beyond the Study Area to Benton County and McDonald et al (see Table III-5).

TABLE III-4
RACIAL DEMOGRAPHICS REGIONAL CITIES

City or Town	White	Black	Am. Indian, Eskimo	Asian, Pacific	Other Race
Bella Vista, AR	99.32%	0.00%	0.26%	0.34%	0.08%
Bentonville, AR	96.99%	0.16%	1.75%	0.55%	0.55%
Gravette, AR	98.37%	0.00%	0.64%	0.21%	0.78%
Little Flock, AR	97.49%	0.00%	0.98%	0.76%	0.76%
Pea Ridge, AR	98.89%	0.00%	0.56%	0.00%	0.56%
Pineville, MO	98.14%	0.00%	1.86%	0.00%	0.00%
Rogers, AR	97.82%	0.00%	1.30%	0.28%	0.64%
Sulpher Springs, AR	99.61%	0.00%	0.00%	0.39%	0.00%

Source: U.S. Census Bureau, 1990 Census.

TABLE III-5
RACIAL DEMOGRAPHICS STUDY AREA COUNTIES

County	White	Black	Am. Indian, Eskimo	Asian, Pacific	Other Race
Benton County, AR	97.40%	0.13%	1.47%	0.47%	0.53%
McDonald County, MO	96.31%	0.02%	3.22%	0.24%	0.20%

Source: U.S. Census Bureau, 1990 Census.

Hispanic origin is not an official race category in the 1990 census. Therefore, respondents who consider themselves to be of Hispanic origin are included within the five categories listed in Table III-5. A separate question was asked as to whether the respondent considered themselves to be of Hispanic origin, which is shown below in Table III-6.

Since the 1990 census, a growing number of Hispanic workers have been identified in Noel, Missouri. Noel is outside of the study area and any proposed improvements are not considered to impact Noel.

TABLE III-6
PERSONS CONSIDERING THEMSELVES TO BE OF HISPANIC ORIGIN

City or Town	Number	Percent of Total Population
Bella Vista, AR	21	0.23%
Bentonville, AR	131	1.16%
Gravette, AR	14	0.99%
Little Flock, AR	19	2.07%
Pea Ridge, AR	18	1.11%
Pineville, MO	2	0.34%
Rogers, AR	438	4.00%
Sulpher Springs, AR	2	4.00%

Source: U.S. Census Bureau, 1990 Census.

b. Neighborhoods and Communities

Bella Vista Village

Bella Vista Village has several neighborhood centers in conjunction with commercial and recreational areas. Town Center is located at the intersection of Route 340 with Existing US 71. Within one-half mile of the intersection are five churches (including the Cooper Chapel), a fire station, a medical clinic, the Town Center shopping center, a golf course, and nature trail. Bella Vista Center, at the intersection of Route 279 and Route 340, is the only major activity center in the development which is not located on Existing US 71. The center includes a shopping center, Cooper Communities Corporate Headquarters, six nearby churches, and the development's marina on Loch Lomond.

One and six-tenths kilometers (1 mile) south of Town Center off US 71 on Riordan Road is a smaller neighborhood center which includes Riordan Hall, the Kingsdale Golf Clubhouse, and a church. Eight-tenths of a kilometer (0.5 mile) south of the Riordan Center is Cunningham Center at the intersection of Riordan Road and US 71. Cunningham Center includes a fast food restaurant, a brokerage firm, and retail stores. One-quarter mile south on US 71 at Oldham Drive is the Sugar Creek Center. This center includes the Cooper Communities Model Home Center. Bella Vista Park provides a neighborhood recreational center near US 71 and Dartmoor Road. Golf course clubhouses such as Metfield, The Highlands, and Briarwood, provide additional neighborhood centers within Bella Vista Village outside of these other commercial centers. Subdivisions with the highest percentage of built homes compared to available lots are located adjacent to these neighborhood and community centers (see Exhibit III-1).

Neighborhood cohesion in all the identified centers of activity in Bella Vista Village depends on the resident's ability to move about and otherwise interact in a safe and convenient fashion. Some residents around Town Center, Kingsdale Clubhouse, Loch Lomond Marina, Bella Vista Center, and the Metfield area enjoy pedestrian access to community and commercial areas where there are commercial uses and/or community recreational facilities in close proximity to high and low density housing.

Rural and Small Towns

Rural agricultural communities consist of large farms without residential subdivision activity. These areas are dependent on nearby small towns and commercial centers for social and commercial activities. The Hiwasse community provides neighborhood retail and services to the immediate area of the intersection of Route 72 and Route 279 in the southwest corner of the Study Area. The Fire Station serves as a community center and gathering place for Hiwasse.

Rural residents on the Missouri side of the Study Area can find limited community and neighborhood center activities in Jane, Pineville, and Caverna, Missouri. Rural residents on the east side of the Study Area can access community services in the nearby larger towns of Bentonville, Little Flock, Rogers, and Pea Ridge, Arkansas.

c. Housing Characteristics

The majority of the housing stock in the Study Area was built before 1960 (see Table III-9). Growing areas such as Pea Ridge, Bentonville, and Bella Vista Village have notably newer housing stock. Vacant units in the Study Area vary with the age of housing stock.

Water and Sewage Disposal

Water supply and sewage disposal are very important to development in rural areas. Development relying on individual wells and/or septic tanks and cesspools is susceptible to pollution concerns. Septic tanks and cesspools can, if not designed, constructed, and maintained properly, create unsanitary environmental conditions. See Table III-7 for a listing of water and sewage services.

TABLE III-7
WATER AND SEWER SERVICES

City or Town	% of Households Using Private Wells	% of Households Using Septic Tank or Cesspool
Bella Vista Village, AR	5%	76%
Bentonville, AR	3%	10%
Gravette, AR	4%	20%
Little Flock, AR	20%	87%
Pea Ridge, AR	3%	14%
Pineville, MO	12%	24%
Sulphur Springs, AR	6%	10%

Source: U.S. Census Bureau, 1990 Census.

Households and Families

Household size by city ranges between 2.4 and 2.7 persons per household with the obvious exception of Bella Vista Village. Due to a large percentage of empty-nester households, Bella Vista Village has an average household size of 2.07 people.

Bella Vista Village also has a high percentage of people living in a family household (with a spouse). Over 80% of Bella Vista residents live in a family household. That compares with less than 75% in Bentonville, 62% in Pineville, and 67% in Gravette. Pea Ridge with 81% is the only non-retirement community with a rate comparable to Bella Vista Village.

3. ECONOMIC CHARACTERISTICS

a. Employment and Labor Force

Retail and manufacturing are the dominant employment sectors in the Study Area. Other major sectors are construction, finance, and professional services. Precision production, service, and administrative support are the primary occupations in the Study Area. Construction employment is higher in the growth communities and agriculture ranks higher in the non-urban area.

b. Income

Per Capita Income

Similar to household size and educational attainment, Bella Vista Village reports markedly different levels of per capita income than the rest of the Study Area. The gradation of per capita income reflects the size of the community and relative differences in the cost of living. Table III-8 illustrates that difference.

TABLE III-8
PER CAPITA INCOME

City or Town	Per Capita Income
Bella Vista Village, AR	$17,525
Bentonville, AR	$12,073
Gravette, AR	$10,620
Little Flock, AR	$14,267
Pea Ridge, AR	$9,960
Pineville, MO	$9,172
Rogers, AR	$12,779
Sulpher Springs, AR	$7,993

Source: U.S. Census Bureau, 1990 Census.

Fixed and Subsidized Incomes

Per capita incomes for Bella Vista Village indicate that the Bella Vista residents are less dependent on Social Security payments than the general retiree populous. Yet, in other Study Area communities, the number of people drawing Social Security and Public Assistance Income is a good indicator of the number of people living in poverty or on limited fixed incomes. (See Table III-9.)

TABLE III-9
PERCENTAGE OF PEOPLE
DRAWING SOCIAL SECURITY AND PUBLIC ASSISTANCE

City or Town	Social Security Income	Public Assistance Income
Bella Vista Village, AR	68%	3%
Bentonville, AR	29%	6%
Gravette, AR	39%	10%
Little Flock, AR	21%	6%
Pea Ridge, AR	38%	2%
Pineville, MO	42%	13%
Rogers, AR	31%	4%
Sulphur Springs, AR	31%	7%

Source: U.S. Census Bureau, 1990 Census.

Cost of Housing

Homesites in Bella Vista sold by Cooper Community Inc. have a current average cost of $13,500. Townhouses start at around $60,000 and lakefront homes range up into the $500,000's. Bella Vista residents reported a median home value of $77,500 in the 1990 census. Table III-10 illustrates the comparison of median home values and median year of housing construction.

TABLE III-10
COMPARISON OF MEDIAN HOME VALUE AND
MEDIAN YEAR BUILT OF SINGLE FAMILY HOUSING

City or Town	Median Value	Median Year Built
Bella Vista Village, AR	$77,500	1980
Bentonville, AR	$53,700	1974
Gravette, AR	$36,900	1966
Little Flock, AR	$61,200	1977
Pea Ridge, AR	$43,800	1970
Pineville, MO	$37,600	1962
Rogers, AR	$60,000	1976
Sulphur Springs, AR	$24,200	1945

Source: U.S. Census Bureau, 1990 Census.

B. Natural Environment

1. AIR QUALITY

The Federal Clean Air Act Amendments of 1970 required the adoption of ambient air quality standards. These were established in order to protect public health, safety and welfare from known or anticipated effects of sulfur dioxide (SO_2), particulates (PM-10, particles 10-microns and smaller in size), carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), and lead (Pb).

The Arkansas Department of Pollution Control and Ecology has adopted the National Ambient Air Quality Standards (NAAQS) for pollutant standards. The state of Missouri has established additional criteria for hydrogen sulfide (H_2S) and sulfuric acid (H_2SO_4). The composite Arkansas, Missouri and National Ambient Air Quality Standards (NAAQS) are listed in Table III-11.

The 1977 Clean Air Act Amendments required all states to submit to the United States Environmental Protection Agency (USEPA) a list identifying those air quality regions, or portions thereof, which meet or exceed the NAAQS or cannot be classified because of insufficient data. Portions of air quality control regions which are shown by monitored data or air quality modeling to exceed the NAAQS for any criteria pollutant are designated "nonattainment" areas for that pollutant.

The project extends from Bella Vista, Arkansas to Pineville, Missouri, and falls within the Metropolitan Fort Smith Interstate Air Quality Control Region (AQCR #17) and the Southwest Missouri Intrastate Air Quality Control Region (AQCR #139). Both of these AQCRs are in attainment of all criteria pollutants.

The Clean Air Act Amendments of 1990 established procedures for determining the compliance of State Implementation Plans with the requirements of the federal regulations. These procedures are published in 40 CFR Parts 51 and 93. Since this project is located in AQCRs that are in attainment for all criteria pollutants, the procedures do not apply.

TABLE III-11
ARKANSAS, MISSOURI AND NATIONAL AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	Concentration
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean Twenty-Four Hour(1) Three Hour(1) Secondary	0.03 ppm 0.14 ppm 0.50 ppm
Particulates (PM10)	Annual Arithmetic Mean: Primary & Secondary Twenty-Four Hour:(2) Primary & Secondary	50 $\mu g/m^3$ 150 $\mu g/m^3$
Carbon Monoxide (CO)	One Hour(1) Eight Hour(1)	35 ppm 9 ppm
Ozone (O_3)	One Hour(7)	0.12 ppm
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.053 ppm
Lead (Pb)	Calendar Quarter Arithmetic Mean	1.5 $\mu g/m^3$
Hydrogen Sulfide (H_2S)	One-half Hour(3) One-half Hour(4)	0.05 ppm(8) 0.03 ppm(8)
Sulfuric Acid (H_2SO_4)	Twenty-Four Hour(5) One Hour(6)	10 $\mu g/m^3$(8) 30 $\mu g/m^3$(8)

(1) = Not to be exceeded more than once per year.
(2) = Statistically estimated number of days with exceedances is not to be more than 1 per year.
(3) = Not to be exceeded more than twice per year.
(4) = Not to be exceeded more than twice in any five consecutive days.
(5) = Not to be exceeded more than once in any ninety consecutive days.
(6) = Not to be exceeded more than once in any two consecutive days.
(7) = Not more than one expected exceedance per year, on a three-year average.
(8) = Missouri Air Quality Standards.
ppm = Parts of pollutant per million parts of air (by volume) at 25°C.
ug/m(3) = Micrograms of pollutant per cubic meter of air.

Source: Code of Federal Regulations; Title 40 Part 50: Amended July, 1987.
Arkansas Department of Pollution Control and Ecology, Division of Air Pollution Control; Regulations of the Arkansas Plan of Implementation for Air Pollution Control: Last amended March 25, 1988.
Missouri Code of State Regulations; Title 10, Division 10, Chapter 6: Last Amended February 26, 1993.

2. WATER QUALITY

a. General

The US 71 Study Area lies almost entirely within the Elk River Basin with a minor area near Hiwasse, Arkansas, in the Spavinaw Creek Basin. The major Elk River Basin is composed of the following sub-basins: Butler Creek, Little Sugar, and Big Sugar. Nearly the entire study area lies within the drainage basin of Little Sugar Creek. These basins drain generally in a northerly direction to the Elk River. Spavinaw Creek flows in a westerly direction. All are located in the parent Arkansas River Basin.

The streams are classified by the Missouri Department of Natural Resources (MDNR) for the following uses: livestock and wildlife watering, protection of warm water aquatic life and human health fish consumption, and boating and canoeing.

The development of Bella Vista Village has included the construction of numerous dams to form recreational reservoirs. These reservoirs include Loch Lomond, Lake Avalon, Lake Windsor, Lake Norwood, Lake Ann, Lake Brittany, Lake Rayburn and Bella Vista Lake. All of these reservoirs are located in the Little Sugar Creek drainage area and are used for boating and fishing. Residences are also located along the shorelines. Water quality in general is

degraded in these basins mostly by the poultry and swine confinement facilities. They are further degraded by the land application of herbicides, pesticides and the land application of poultry litter. The basins may also be degraded by the improper installation and use of septic leaching field from the dense residential developments and the poor soil conditions.

b. Groundwater and Springs

All rock units in the Study Area are capable of yielding water. However, certain units are more productive than others and are typically used for production. Residential wells are typically constructed in the upper Springfield Plateau Aquifer. The aquifer consists of the Mississippian Boone and underlying St. Joe limestone and dolomites. These formations are usually overlain with thin soil profiles and are characteristically fractured, solutioned, and jointed. All of these features provide rapid conduit of surface water to the ground and can promote introduction of contaminants. The Springfield Aquifer is underlain by the relatively impermeable and confining unit--Chattanooga Shale. In the Study Area, this unit can be expressed as all the formations above the Chattanooga Shale or most land above 305 m (1,000 ft.) in elevation above sea level. Recharge can occur locally depending on topography but, the larger, regional recharge is thought to be outside the Study Area.

Based on a review of available records, no large springs are located in the Study Area. However, numerous smaller springs have been identified in the literature and through examination of maps. These springs are typified from locations such as Blowing Spring, Ford Spring, and Spring Cave. Statistically, most of the springs are located east of Little Sugar Creek, probably due to the slight regional dip of the bedrock to the southwest intercepted by the creek. Simplistically, the regional flow of the groundwater should be down gradient. Therefore, in the Study Area, it is thought these springs discharge water contained in the Springfield Aquifer and confined by the impermeable Chattanooga confining unit. These seeps and springs contribute to the local streams and rivers, usually providing year-round flow.

Due to this general dip to the southwest, water probably flows in that direction west of Little Sugar Creek. Otherwise the general movement of water is in close correlation to the surface drainage system and topography. No regional lineation or fracture pattern, which would facilitate the movement of water, was observed from aerial photographs.

Other municipal and high capacity water supply wells are located in the deeper Ozark Aquifer – a thick sequence of mostly carbonate rocks below the confining Chattanooga Shale. The Ozark Aquifer is typically 450 to 600 m (1,500 to 2,000 ft.) thick. The aquifer outcrops or is exposed at very limited locations in the Study Area. It is assumed the recharge of this aquifer occurs in its main outcrop area in south central Missouri.

c. Sanitary Sewer Facilities

In the Study Area only areas within the city of Bentonville and developments in Bella Vista are serviced by a sanitary sewer system. Otherwise all residential, and other small commercial entities can be expected to utilize leach-type septic field systems. Poultry operations typically land-apply the effluent they produce.

d. Municipal Water Supplies

All of the Study Area within Bentonville and Bella Vista, Arkansas is served by public water. Surface water is collected, stored and transmitted from Beaver Lake and has provided an

adequate, quality supply for the users. An additional water supply will be made available to rural and small urban areas through the "Two-Ton" or Washington - Benton County Water Commission. This project will also convey water from Beaver Reservoir to smaller urban and rural areas.

Currently, the cities of Sulphur Springs and Gravette are served with local water supplied from wells and groundwater. The wells are of modern design and construction with sufficient capacity to serve the needs of the community. Water quality is very good with little or no treatment required.

The remainder of the Study Area in Arkansas and Missouri is rural and sparsely populated. It is assumed these residences, farms, ranches, poultry and hog operations are supplied by individual wells. Likely these wells are of all types and ages of construction. Newer wells should be drilled to sufficient depth and be properly cased to prevent contamination from surface sources. Other, older wells of questionable construction are likely contaminated or likely to become contaminated from surface sources such as septic leach fields, surface water and land application of poultry waste.

3. GEOLOGY

a. General

The Study Area is located within the Salem Plateau Section of the Ozark Physiographic Province. The area is described as a highly dissected plateau, where little flat upland exists. Geologically, the area is an ancient, gently uplifted plateau where steep valleys have been eroded downward through the bedrock. Some areas adjacent to waterways have been eroded so as to expose steep rock bluffs. Local relief may be as great as 150 m (500 ft.), but more typically between 50 and 100 m (160 and 330 ft.).

The uplands are characterized by forested, long, narrow tapering ridges. Typically soil thickness is likely to be greater on the ridge tops than on the slopes due to the nature of the weathering of the parent bedrock. Only a few flat narrow, alluvium filled valleys exist in the Study Area. These valleys usually measure about 200 to 300 m (660 to 980 ft.) wide. The best example of these valleys is Little Sugar Creek.

The geology is characterized by relatively horizontal layers of sedimentary rocks of the Devonian and Mississippian Eras. These rocks were formed in a shallow marine environment, 300 to 350 million years ago. The lowest, oldest formation in the Study Area is the Upper Devonian Chattanooga Shale. The Chattanooga is exposed along the valleys particularly along Little Sugar Creek and along the existing US 71. It can be described as a dark gray to black platy shale, usually about 9 m (30 ft.) thick.

Above the Chattanooga is the Compton-Pierson or St. Joe Limestone formation. This formation forms many of the prominent bluff and overhangs noted in the Study Area and can be described as a gray, carbonate, limestone or dolomite relatively chert free. Many of the karstic features are associated with this layer of rock. Generally speaking, an elevation of 350 m (1,000 ft.) above sea level is the contact of the Chattanooga and St. Joe Formations. This elevation is important due to the relative impermeable nature of the Chattanooga Shale and the geologic and geohydrologic factors associated with this property. Surface water and

groundwater are confined or separated from the lower formations by this impermeable layer. Thus, this layer delineates the two groundwater regimes of the Study Area. The secondary influence of the impermeable layer has also probably influenced the formation of karstic features in the neat overlying limestone. The zone from the shale to about 15 m (50 ft.) above is where the majority of caves are located.

The hills and uplands are underlain by the Mississippian Reeds Springs or Boone Formation. The Reeds Springs can be described as interlayered gray dolomite and chert. The formation contains up to 50 percent chert and is noted by its banding and raveling in road cuts.

b. Caves

In some portions of the Study Area, as in much of the Ozarks, karst features typify the landscape. Carbonate rocks such as limestone and dolomite have been dissolved by natural chemical processes to form caves, springs, and sinkholes. The solution processes most likely begin and continue along joints and fractures in the rock. This process is facilitated by movement of water through thin, porous soils into the rock. Waterways which lose flow into the karstic subsurface are thus named "losing streams". Losing streams are waterways where some or much of the surface flow is lost to the subsurface only to reappear later downstream, come to the surface as a spring, locally recharge the groundwater, or reappear in a different drainage basin.

An inventory of cave resources was initiated in order to identify federally listed threatened or endangered species and state listed endangered or rare species which may occupy this habitat and to identify the caves as a natural resources themselves. For these purposes, a cave study was done as part of the geologic reconnaissance for the entire project. The study identified and located caves and related features which might have an impact on the "Highway Build" Alternative route selection.

The first phase of the cave study involved a literature search and interpretation of aerial photographs. Cave locations were retrieved from the Missouri Department of Natural Resources cave files in Rolla, Missouri and the Arkansas Association of Cave Studies from the Arkansas Geological Commission in Little Rock, Arkansas. The second phase included field identification of those caves identified in the literature.

Based on the information retrieved from the Missouri and Arkansas files, 39 known caves are located within the Study Area. Fifteen of the caves were located and documented during the field surveys, while the other 24 were located based on documentation from the descriptions. The following is a list of these previously recorded caves:

Benton County, Arkansas

- **Marshall Cave** - Unverified - No description in literature.
- **Old Pendergrass Cave** - Field verified - Located in Boone Formation, opening 2 m (6 ft.) wide by 1 m (3 ft.) high. Extends at least 25 m on clean flat limestone floor, but becomes filled with gravel at length.
- **Smiley Cave** - Field verified - Opening 7 to 8 m (23 to 26 ft.) wide by 2 m (7 ft.) high and narrows. Running water audible but not seen.
- **Unnamed Cave** - Unverified - No description in literature.
- **Unnamed Cave** - Unverified - No description in literature.
- **Peacock Cave** - Unverified - No description in literature.

- **Blowing Springs Cave** - Field verified - Small cave with moderate amount of water running from entrance. Boone Formation.
- **Bassakwards** - Field verified - Located high on slope above US 71 at contact of Boone and Chattanooga. Small amount of flowing water, reported to be 30 meters (98 ft.) in length.
- **Big Springs** - Unverified - No description in literature.
- **Dam Cave** - Unverified - No description in literature.
- **Devil's Hole Cave** - Unverified - No description in literature.
- **Hidden Cave** - Unverified - No description in literature.
- **Shelter Cave** - Filed Verified -Small cave with constructed shelter containing pump formerly used as water supply.
- **Wonderland Cave** - Field Verified - Closed commercial cave with buildings constructed over entrance.
- **Tanyard Hollow Cave** - Field Verified - Large entrance, short length, no water present.
- **Rumored Cave** - Field Verified - Apparent opening 15 m (50 ft.) above roadway
- **Bagby Cave** - Unverified - No description in literature.
- **Hunt Cave** - Unverified - No description in literature.
- **Bear Hollow Cave** - Field Verified - Opening protected with steel bars, large amount of water in cave, viewed cave crayfish.
- **Spring Cave** - Field Verified - Cave not apparently accessible, large amount of water flowing from opening. USGS monitoring equipment located in opening.
- **Sugar Creek No. 1 & 2 Caves** - Unverified - No description in literature.
- **Milk Cave** - Field Verified - Opening 1 m (3 ft.) by 3 m (10 ft.) approximately 3 m (10 ft.) above roadway. Located in Reeds Springs Formation.

McDonald County, Missouri

- **Goatman Cave** - Unverified - Entrance high in bluff just above Chattanooga Shale, entrance walled with masonry.
- **Creek Bluff Cave** - Unverified - No description in literature.
- **Highway Cave** - Field Verified - Opening 7 m (23 ft.) above US 71, 6 m (20 ft.) by 3 m (10 ft.) high, extends 60 m (299 ft.), small amount of water flowing.
- **Unnamed Cave** - Unverified - No description in literature
- **Cave Hollow Cave** - Unverified - Entrance 2 m (7 ft.) by 2 m (7 ft.), flowing water, extends several hundred meters (approximately 700 ft.).
- **Hidden Pit Cave** - Unverified - Entrance 1 m (3 ft.) by 1 m (3 ft.), descend 2 m (7 ft.) into room.
- **Open Dome Cave** - Unverified - Entrance 5 m (16 ft.) by 2 m (7 ft.) high at back of overhanging shelter 15 m (50 ft.) wide by 3 m (10 ft.) high. Unknown length.
- **Skelton Cave** - Unverified - Entrance 8 m (26 ft.) by 3 m (10 ft.) high, single room 17 m (56 ft.) long tapering to a narrow crawlway.
- **Henson Cave** - Field Verified - Located adjacent to US 71, appears grading during construction attempted to cover entrance, contains small amount of water, explored length of 365 m (1,200 ft.).
- **Wind Cave** - Field Verified - Adjacent to US 71. Entrance several meters (approximately six feet) above US 71. Some masonry work accomplished about entrance, timber shoring and lumber found inside, and no water. Former attempt to commercialize. Unknown length.

Many of the caves were unverified in the field due to factors such as; location on private land with no permission to enter, unreliable or vague location descriptions, and located in very remote areas. Data sheets with location, descriptions and photographs were obtained. This cave study was limited to known locations from the literature.

Interpretation and review of aerial photographs was also undertaken for the Study Area. The purpose of this activity was to determine the location and extent of karstic features such as sinkholes and interrupted drainage patterns. A field check was conducted in suspected areas, however, none were found.

Many areas in the study region are favorable environments for development of karstic features. Nearly all these features are associated with the St. Joe or Pierson Compton Formations. These formations are mostly exposed on steep slopes. The Chattanooga Shale is free of caves and the cherty Reeds Springs or Boone only infrequently contain caves.

c. Soils

Classification of Soils

Surface soils of the area are classified as residual, colluvial and alluvial. Residual soils are formed by weathering of the parent bedrock and are typically red brown, low to highly plastic clays which may contain an extensive amount of chert gravel. The chert gravel is the undissolvable, more resistant remnant of the parent carbonate rock. The residual soils are typically thicker and located on the hilltops and ridges of the Study Area. Depth to rock in the residual soils is highly variable with a range of 1.5 to 15 m (5 to 50 ft.). Weathering also has developed widened, clay filled joints which may render a pinnacled rock surface. Development of residual and colluvial soils on the moderate to steep slopes is very limited. Depth to rock in these locations is usually 3.0 m (10 ft.) or less and can typically be only about 0.6 to 1.0 m (2 or 3 ft.) Alluvial soils are not very extensive in the Study Area and typically consist of sandy gravels in the narrow stream valleys. Depth of these deposits would rarely exceed 7.6 m (25 ft.) and would typically be about 3.0 m (10 ft.) thick.

For engineering purposes, the soils of the area can be classified by the Unified Soil Classification System as follows: CL, CH, and GC for the residual and colluvial soils, GM, GW, for the alluvial soils.

Farmland Soils

Most of the farmland within the Study Area occurs in cleared lands on the broad uplands and in the major stream valleys. These areas are used for improved pasture and forage crops for livestock, with hay production being especially important on the flood plains. Livestock production is the major source of farm income. Beef cattle production is dominant, and dairy farming is important, but not as prevalent. The area is also within a major poultry-producing region, the main segment being that of raising broiler chickens.

McDonald County, Missouri - Currently the soil survey information for McDonald County, Missouri has not been completed. Field work by the Natural Resources Conservation Service is still in progress and is not yet at a point where complete coverage maps of specific soil types can be provided. However, partial coverage maps and a map of general soil classifications were available along with the descriptions of those classifications. The soil classifications that have the potential for containing prime farmland soils and statewide important farmland soils are as follows:

- Ashton-Secesh Association - Nearly level, silty soils on floodplains. This association is mostly prime farmland or statewide important land. The water-riverwash complex will be hydric and hydric inclusions will occur in the somewhat poorly drained floodplains and terraces.

- Goss-Clarksville Association - Gently sloping to steep, silty soils on uplands. The only areas with prime farmland or statewide important land will be where the corridor crosses floodplains. Hydric soil areas will only be very small areas of seeps or springs.

- Mano-Gobbler Association - Very gently sloping to strongly sloping, silty soils on uplands. This association will have areas of statewide important land in the gently and moderately sloping areas and has many seeps and springs.

Benton County, Arkansas - The soil survey for Benton County, Arkansas was available and the NRCS provided the information necessary to inventory and locate the following three classifications of farmland soils: Prime Farmland, Prime Farmland if Drained and Farmland of Statewide Importance.

- ***Prime Farmland*** - Within the US 71 study corridors in Benton County, there are seven soil types classified as *Prime Farmland,* which is considered the highest quality cropland in the county. These *Prime Farmland* soils are:

  ◊ Captina Silt Loam (CnB) - 1 to 3 percent slopes.
  ◊ Fatima Silt Loam (Ft) - Occasionally flooded.
  ◊ Healing Silt Loam (He).
  ◊ Healing Silt Loam (Hf) - Occasionally flooded.
  ◊ Mayes Silty Clay Loam (Me).
  ◊ Peridge Silt Loam (PeB) - 1 to 3 percent slopes.
  ◊ Secesh Gravelly Silt Loam (Se) - Occasionally flooded.

- ***Prime Farmland if Drained*** - Soils which are classified as Prime Farmland if Drained are normally found on nearly level bottom-lands along rivers and streams and are moderately to poorly drained. Naturally wet soils generally have been adequately drained because of the application of drainage measures or because of incidental drainage resulting from farming, road building or other kinds of land development. Some areas are purposely left undrained and managed to provide habitat for wildlife. Onsite investigation is sometimes required to determine whether or not a specific area of the soil is adequately drained. There are two soil types in the Study Corridors within Benton County that are classified as Prime Farmland if Drained:

  ◊ Cherokee Silt Loam (Cs)
  ◊ Johnsburg Silt Loam (Jo)

- ***Farmland of Statewide Importance*** - Soils which are classified as Farmland of Statewide Importance are those that flood frequently or more often than once in two years during the growing season. There are three soil types found in the study corridors within Benton County that are classified as Farmland of Statewide Importance:

  ◊ Britwater Gravelly Silt Loam (BtC) - 3 to 8 percent slopes

- ◊ Peridge Silt Loam (PeC) - 3 to 8 percent slopes
- ◊ Tonti Cherty Silt Loam (TsC) - 3 to 8 percent slopes

Exhibit III-2 shows the distribution and location of the soils classifications in Benton County.

Hydric Soils

Hydric soils are soils under the influence of a wetland hydrology. That is, these soils are inundated or saturated during the growing season at a frequency and duration adequate to produce anaerobic conditions in the upper part. This has a direct influence on the physical and biological properties of these soils and the vegetation supported by these soils.

For the purpose of gathering hydric soil information for the Study Area the following two categories of hydric soil were taken into consideration: Level 1 - listed on the National, State and County Hydric Soils List and Level 2 - listed on the National, State and County Hydric Soils List based on inclusions of Level 1 Hydric Soils.

Information concerning location mapping of specific soil types was not available in McDonald County, Missouri, therefore an inventory of hydric soils was not possible for this county. However, the potential for hydric soil occurrences was explained in the previous soil classification descriptions. Areas containing hydric soils will occur in seeps or springs, and in the water-riverwash complex of the Ashton-Secesh Association. This association will also contain hydric inclusions in the somewhat poorly drained floodplains and terraces.

In Benton County, Arkansas it was found that Level 1 hydric soils did not exist within the Study Corridors, however, there are some occurrences, although very few, of Cherokee Silt Loam (Cs) which is a Level 2 hydric soil, the hydric portion of which is Carytown Silt Loam. Carytown Silt Loam can be found in slight depressions on broad uplands with slopes of less than one percent. This soil type carries a hydric criteria of 2B3. Such soils have a water table that frequently occurs at less than 0.5 m (1.5 ft.) from the surface for a significant period (usually 14 consecutive days or more) during the growing season if permeability is less than 15 cm/hav (6.0 inches/hour) in any layer within 50 cm (20 inches). The Carytown Silt Loam soil type is considered to be hydric due to saturation.

The hydric soils list of Benton County also contains several other soil types designated as hydric soil based on inclusions. These inclusions are all described as "Miscellaneous Wet Areas" in depressions, and would therefore be minimal and unnecessary to map because the location of the wet areas would most likely be found during more detailed wetlands investigations.

4. WATER BODIES

a. Lakes, Rivers and Streams

Being located within the Springfield Plateau Subdivision of the Ozark Mountain Natural Division of Arkansas and the Elk River Section of the Ozark Natural Division in Missouri, the drainage patterns of the Study Area are generally to the north and to the west. The streams and rivers are within the Elk River watershed area. US 71 parallels Little Sugar Creek, crossing it several times prior to the creek's confluence with the Elk River, south of Pineville, Missouri. The Study Area is within the Arkansas River System and just east of the White River System (Robinson and Buchanan 1988).

The Little Rock District, U.S. Army Corps of Engineers (USACE) maintains jurisdiction over the water resources in the Study Area. Several streams are classified as 0.1 cubic meters per second (cms) (5 cubic feet per second) by the USACE for the Section 404 Regulatory Program. This classification is used by the Regulatory Branch of the USACE in determining the applicability of specific types of Section 404 Nationwide Permits. Big Sugar Creek, Butler Creek, Gordon Hollow, McKisic Creek, Little Sugar Creek and the Elk River are all classified as 0.1 cms streams by the Little Rock District COE. Other streams in the Study Area include Spanker Creek, Bear Creek, Deer Creek, Mill Creek, Missouri Creek, Gordon Hollow, Goodin Hollow and Brush Creek. There are numerous additional streams and creeks which are not named and these may be intermittent in stream flow. Many of the streams and creeks show evidence of gravel mining activities, some quite recent. Water quality is variable and often related to runoff from adjacent areas.

While no natural lakes are present, the USACE and private developers have made significant progress in providing both flood protection and water based recreational opportunities by constructing reservoirs. Beaver Lake is located southeast of the project area. The developers of Bella Vista Village in Arkansas have constructed eight reservoirs, which are located throughout the Village. The largest of these reservoirs is Loch Lomond which has a surface area of approximately 202 ha (500 ac) at a water surface elevation of approximately 341m (1,120 feet) above mean sea level. These are private lakes and are not open to public use.

Exhibit III-3 shows the major water bodies within the Study Area.

b. Wetlands

The discharge of dredged or fill material into wetlands and other "waters of the U.S." for the project is subject to regulation under the Clean Water Act. Wetlands are defined in the USACE Wetlands Delineation Manual (Final Report 1987) as being, "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. Wetlands generally include swamps, bogs, and similar areas." (EPA, 40 CFR 230.3 and CE, 33 CFR 328.3).

This definition recognizes that three characteristics must be present for wetlands -- presence of hydric soils, hydrophytic vegetation and wetland hydrology. Wetlands and other "waters of the U.S." have been classified by the US Department of the Interior (USDI) Fish and Wildlife Service (USFWS) as well as the US Department of Agriculture Natural Resources Conservation Service using a system referred to as the Cowardin System, after its principal author (Cowardin et. al. 1979). It was determined from reviewing the USFWS National Wetland Inventory Maps (NWI) and subsequent field review that three of the Cowardin classification systems are present within the study area. These systems include the Palustrine, the Riverine, and the Lacustrine systems. This classification is based on the ecosystem being studied but does not necessarily translate directly to wetlands which are subject to the Section 404 permit process of the Clean Water Act. The wetlands which are subject to the provisions of Section 404 are referred to as Jurisdictional Wetlands. Typically, jurisdictional wetlands are not found everywhere that the National Wetlands Inventory Maps indicate a wetland system exists.

The wetlands resource study used aerial photographs, NWI mapping and USGS base maps as the primary resources for the initial wetlands resource inventory. Field review was performed wherever possible. Ownership was determined from existing property tax information at the McDonald County Assessors office and Benton County Assessors Office. Each water resource

was assigned a discrete identifier and the owner was determined from property tax information, telephone directories and directory assistance.

NWI mapped systems were found to be along the rivers, streams and creeks; the lakes and impoundments; and scattered throughout the area in the form of stock ponds, settling basins and sewage lagoons. Field review eliminated many of the types of NWI systems from further wetland consideration as they did not meet the USACE criteria of jurisdictional wetlands, although some are considered "waters of the United States".

The NWI palustrine systems are associated with most of the streams, creeks and ponds within the Study Area, palustrine forested being very common along the streams and creeks, with the occasional scrub shrub classification being present. Palustrine open water is typically associated with the ponds. Field observations noted that the ponds exhibit highly variable water quality and vegetation, both in and along the ponds' margin. These range from the decorative ponds in the golf courses in Bella Vista along US 71 to the farm and/or stock ponds scattered throughout most of the Study Area. Generally, artificial ponds created by excavating and/ or diking dry land to collect and retain water for watering stock or for decorative purposes are not considered to be "waters of the United States" by the US Army Corps of Engineers, therefore they are not subject to regulation. Those ponds having a stream flowing in or out, or seeps/ springs that flow into a "waters of the U.S.", or impounded seeps/ springs are regulated by the USACE. The numerous springs and seeps of the entire region often provide sufficient flow to saturate the soil and alter the vegetation present on the adjacent hillside or depression. This occurrence can result in a wetland, or special aquatic site, where one would not normally exist. These seep areas may be very small and may not persist under low flow conditions.

The NWI riverine systems, especially those classed as intermittent and upper perennial, are present along Little Sugar Creek, the Elk River, and other larger streams. There are some lower perennial Riverine systems below the reservoirs within Bella Vista Village and along Little Sugar Creek. Palustrine systems can be found scattered within the Riverine systems. The streams, creeks, and rivers in the study area do not meet the USACE criteria for jurisdictional wetlands, but are considered "waters of the U.S.". The USACE jurisdictional limits extend only to the ordinary high water mark of these waters.

The NWI lacustrine systems are associated with the reservoirs in Bella Vista. No other Lacustrine systems exist within the Study Area. (The larger man-made ponds retain the Palustrine classification.)

Existing water resources located within the Study Corridors that are designated on the NWI maps are shown on Exhibit III-4. For location of USACE regulated "waters of the U.S." including ponds, wetlands, and streams, see Exhibit E-2 in Appendix E and the aerial photo plan plates in Appendix C.

c. Floodplains

As part of the National Flood Insurance Program (NFIP), the communities of McDonald County, Missouri and Benton County, Arkansas have performed Flood Insurance Studies (FIS) to identify flood hazards for floodplain management and flood insurance purposes. The administration of the NFIP, performed by the Federal Emergency Management Agency (FEMA), entails detailed studies of flood prone streams and rivers for the determination of flood boundaries and flood hazards. The level of detail for the studies varies depending on the severity of the flooding hazards and other factors. In the case of McDonald County, less detailed data are available in the form of Flood Hazard Boundary Maps. In Benton County, a

detailed FIS has been performed. The following NFIP data were collected and reviewed within the Study Area:

- McDonald County, Missouri (Unincorporated Areas) - Flood Hazard Boundary Maps, November 2, 1983.
- Benton County, Arkansas and Incorporated Areas - Flood Insurance Study, November 20, 1996.

For those streams and rivers studied as part of the NFIP, the rules and regulations of the NFIP apply. Streams located in the Study Area which participate in the NFIP include the following:

- McDonald County, Missouri (Flood Hazard Boundary Maps)
  - ◊ Elk River
  - ◊ Little Sugar Creek (Tributary of Elk River)
  - ◊ Goodin Hollow (Left-bank Tributary of Little Sugar Creek)
  - ◊ Brush Creek (Left-bank Tributary of Little Sugar Creek)
  - ◊ Miser Hollow Creek (Left-bank Tributary of Little Sugar Creek)
  - ◊ Gordon Hollow Creek (Left-bank Tributary of Little Sugar Creek)
  - ◊ Missouri Creek (Right-bank Tributary of Little Sugar Creek)
  - ◊ Bear Creek (Right-bank Tributary of Little Sugar Creek)
  - ◊ Mill Creek (Left-bank Tributary of Elk River)

- Benton County, Arkansas (Flood Insurance Study and Rate Maps)
  - ◊ Little Sugar Creek
  - ◊ Gordon Hollow Creek (Left-bank Tributary of Little Sugar Creek)
  - ◊ Tanyard Creek (Left-bank Tributary of Little Sugar Creek)
  - ◊ McKisic Creek (Left-bank Tributary of Little Sugar Creek)
  - ◊ Pinion Hollow Creek (Right-bank Tributary of Little Sugar Creek)
  - ◊ Spanker Creek (Right-bank Tributary of Little Sugar Creek)

Little Sugar Creek is a regulatory stream that has a drainage area of nearly 30,000 ha (114.5 square miles) at the Missouri-Arkansas line and more than 46,000 ha (175 sq. mi.) as it combines with Big Sugar Creek and Goodin Hollow Creek to form the Elk River, just north of the Study Area limits. The floodplain for this creek dominates the Study Area. The channel width is 30 to 45 m (100 to 150 ft), and the width of its floodplain varies from 460 to 610 m (1,500 to 2,000 ft) in the north to 150 to 215 m (500 to 700 ft) in the southern part of the Study Area. Existing US 71 parallels Little Sugar Creek for approximately 18.9 km (11.7 mi.) of the 25.7 km (16 mi.) within the Study Area. For much of this distance, the highway embankment encroaches into the floodplain area described by the predicted limits of the 100-year flood event, especially through the Bella Vista community.

Along Existing US 71 and Little Sugar Creek, for about 6 km (nearly 4 miles), the community of Bella Vista has areas of commercial and residential development, and several golf courses. The golf courses along the highway generally lie within the floodplain of Little Sugar Creek. US 71 crosses Little Sugar Creek at two locations within the Study Area.

Several of the major tributaries of Little Sugar Creek within the Study Area are also regulatory streams: Goodin Hollow, Brush, Miser Hollow, Missouri, and Bear Creeks in Missouri; Gordon Hollow Creek in Missouri and Arkansas; and Tanyard, Pinion Hollow, Spanker, and McKisic

Creeks in Arkansas. The only other regulatory streams are Mill Creek and two of its tributaries, Oak Hollow and Rattlesnake Hollow Creeks---all in the Far West Corridor.

Due to the topography of the area, most of these floodplains are relatively narrow, even though they generally encompass the entirety of the valley floors. Channel widths for the smaller streams range from 3 to 8 m (10 to 25 ft.) and their floodplains are from 90 to 180 m (300 to 600 ft) wide.

Six man-made reservoirs are within the Study Area: Loch Lomond on Gordon Hollow Creek, Lake Windsor on Tanyard Creek and Lake Avalon on Tanyard Creek tributaries, Lake Ann on Pinion Hollow Creek, Lake Norwood and Lake Rayburn on unnamed tributary of Little Sugar Creek and Lake Bella Vista on Little Sugar Creek. These reservoirs most likely serve to attenuate peak flows from the many streams and hollows contributing to the flow in Little Sugar Creek.

Exhibit III-3 shows the locations of these regulatory streams and their floodplains. The reservoirs are also shown on the exhibit.

5. NATURAL COMMUNITIES

a. General

The southern portion of the US 71 Study Area in Benton County, Arkansas is located in what is referred to as the Ozark Highland. The northern portion of the Study Area in McDonald County, Missouri is located within the Elk River Section of the Ozark Natural Division of Missouri as defined in *The Terrestrial Natural Communities of Missouri* (Nelson, 1987). This classification system defines terrestrial natural communities as "interrelated assemblage(s) of plants and animals found in a given area." The criteria used to compile natural community classifications are based on the known or derived "presettlement" character of each community.

The most dominant vegetative natural communities occurring in the Study Area include the dry to mesic upland forests, the parent material of which can vary among loess, limestone/dolomite, and chert. The upland forests include Dry-mesic, Mesic, Dry-mesic Limestone/Dolomite, Chert, and Dry-mesic Chert forests. Typical forest tree types are oak-hickory-maple, oak-hickory, oak-pine, and overlapping types within these communities. Other less typical upland forest types include the Flatwoods containing predominantly oaks. There are also Savanna communities including Mesic, Wet-mesic, Limestone/Dolomite, and Chert savannas containing native grasses and herbs with scattered oak, oak-hickory, oak-red cedar, oak-pine and mixed hardwood trees. The Ozark upland forests provide the essential food and cover needed for wildlife survival, including habitat for neotropical forest interior birds. However, many of the forested areas have been subjected to disturbance and alteration through development, logging, grazing, and agricultural practices.

There are also smaller areas of riparian forest adjacent to some of the streams, including the stream banks and part of the adjoining floodplain. They include Dry-mesic, Mesic, Wet-mesic, and Wet bottomland forests with mixed hardwoods of mostly oak, maple, hickory, elm and walnut. The benefits and value of riparian forests are numerous. They maintain water quality by filtering silt, chemicals and other pollutants from surface runoff before it enters the stream. Riparian forests stabilize the soil, inhibit erosion, slow flood waters and provide protected

migration corridors and food for many forms of wildlife. These corridors are particularly valuable in the pasture and grassland areas where they are narrow, but are the only remnants of a previously forested area. Riparian forests also enhance fish habitat by providing shade that helps maintain cooler water temperatures which, in turn, increases oxygen levels critical to the survival of many fish species. Woody debris that falls into the streams also provides cover and protection for fish. Riparian forests can also benefit society by providing aesthetic landscapes and hunting or recreational opportunities.

There is also the potential for occurrences of small occasional areas of prairies or glades in the Study Area. However, there were no notable examples discovered from field investigations other than those listed by the Missouri Department of Conservation (MDC).

Perhaps the most dramatic influences on the characteristics and composition of the natural landscape are man's activities. Although the vast majority of the Study Area was once forested, several areas have been cleared and now exist as pasture and grassland used primarily for agricultural purposes. Although they are frequently used for grazing or are cut for hay, they still can serve as habitats for seasonal wildlife residents and as areas of courtship for various species.

b. Natural Features

Historic land clearing, agricultural practices, grazing, logging and other development have encroached upon, degraded or eradicated parts of many natural communities in this region. However, small, contiguous units still exist and exhibit the defining characteristics of that natural community. These residual units are important to the natural heritage of the region, not only because of their own uniqueness, but also because they may provide habitat for rare or endangered species. These natural features (vegetative features, geologic features, and unique features), as part of the Missouri Natural Features Inventory of McDonald County, Missouri, have been located, mapped and compiled by the Missouri Department of Conservation (MDC). The natural features inventory rates the sites and habitats and recommends preservation of the most outstanding examples.

Information was also obtained from the Arkansas Natural Heritage Commission (ANHC), an agency of the Department of Arkansas Heritage. The ANHC provided descriptions and locations of elements of special concern which includes the occurrence of rare plants, animals and outstanding natural communities in the Benton County, Arkansas portions of the Study Area. In addition, reports, personal communications, and field investigations were conducted, and listed sites were located and mapped to provide the framework for the environmental constraints analysis. It is the intent of this analysis to avoid significant and important natural sites.

McDonald County, Missouri

The natural features that occur within the northern portion of the Study Area that lies in McDonald County are listed in Table III-12. This table includes site numbers that correspond to the site numbers of MDC's Natural Features Inventory, general location, status and a description of the site. Refer to Exhibit III-5 for graphic locations of the sites within the Study Area.

Benton County, Arkansas

Preliminary inventory work by the Arkansas Natural Heritage Commission has identified several potential glades of interest. However, they are in an area west of and outside of the Study Area. The ANHC's list of elements of special concern contained no other special natural communities/natural features located within the Study Area.

TABLE III-12
NATURAL FEATURES INVENTORY
MCDONALD COUNTY, MISSOURI

Site No.	Site Name and Location	Status	Feature and Comments
62	—— T21N, R32W, NW Sec. 2 Jane Quad	E	Great Blue Heron Rookery- Unique Feature 20 individuals, 20 nests in 1986.
63	—— T21N, R32W, SE Sec. 34, Noel Quad	N	Limestone Glade Grade B, 0.3 ha (0.75 ac).
71	Henson Cave T21N, R31W, SW SW SW NE Sec. 18 Jane Quad	E	Network Cave (limestone) - Geologic feature. 1,200 m (3,900 ft.) long.
89	Slate Gap T21N, R31W, SE Sec. 15, SW Sec. 14 Jane Quad	E	Shale Talus Slope: Shale-covered slopes below limestone outcrops, 2 ha (5 ac). Few plants are present, area is grazed.
90	—— T21N, R31W, SE Sec. 23 Jane Quad	N	Limestone Glade: Grade C-B, 0.6 ha (1.5 ac). Light grazing, diversity moderate, weedy invasion moderate. (Rare plant site also)
96	—— T21N, R30W, N ½ Sec. 31 Powell Quad	N	Limestone Glade: Grade B-C, 0.3 (0.75 ac). Heavy woody invasion. Diversity moderate to high.
126	Elk River T22-21N, R34-33W Tiff City, Southwest City & Noel Quads	E	Small River (Ozark-Neosho): Lower 60 river kilometers (37 river miles). Many of the animal species that are unique to the Neosho Division are absent from this river community. This is not from disturbance, but is a natural feature of the river.

Note: State Status Symbols
S = Significant; N = Notable; E = Exceptional
Source: MDC's *Final Report on the Missouri Natural Features Inventory of Jasper, Lawrence, McDonald and Newton Counties*, 1988; Nina Bicknese

c. Threatened or Endangered Species

There are several species of endangered, threatened or rare plants and wildlife for which suitable habitat is available in the US 71 Study Area. Although the specific sighting locations of some species are not directly within the Study Area, they are included on the lists because of their proximity and the possibility of transient visits to the area or because of known suitable habitat in the locale.

McDonald County, Missouri

The MDC's Missouri Natural Features Inventory of Jasper, Lawrence, McDonald and Newton Counties (1988) was consulted for primary baseline information on listed or candidate species that have a historical record of occurrence within the Study Area in McDonald County, Missouri. The MDC also provided a site-specific Heritage Database search to determine if current records

include either federal or state-listed species with site locations within the Study Area. The search found three species that were already included in the Natural Features Inventory, and one species (the Gray Bat - *Myotis grisescens*), whose habitat site was located outside the map area. The Missouri Natural Features Inventory listed Henson Cave (Site #71) as a habitat cave for the Gray Bat (*Myotis grisescens*). Although it is an interesting cave and extensive, a 1996 field investigation by project ecologists found that no Gray Bats were present.

The United States Fish and Wildlife Service (USFWS) and the Environmental Protection Agency (EPA) were also consulted. The USFWS stated that the Neosho Mucket, a state-listed rare mussel, had been reported from the Elk River downstream of Pineville. EPA documents provided a list of threatened and endangered species of McDonald County which is included in the table below.

One of the plant species that is designated on the watch list in Missouri is the Royal/Catchfly (*Silene regia*). Field investigation by project ecologists discovered a site containing three individual plants that was not listed in the Natural Features Inventory.

The federal and state-listed animal and plant species located in and around McDonald County, Missouri are listed below in Table III-13. This table includes site numbers that correspond to the site numbers of the MDC's Natural Features Inventory, general location, state and federal status, and a description of the species. Refer to Exhibit III-5 for graphic locations of the species that are located within the Study Area.

TABLE III-13
THREATENED, ENDANGERED AND RARE SPECIES
MCDONALD COUNTY, MISSOURI

Site No.	Site Name & Location	State Status	Federal Status	Species and Comments
59	— T22N, R32W, Sec. 34 Noel Quad	 U U U	 — — —	Rare Plant Site: *Castania ozarkensis* (R). 1938 record. *Orbanche ludoviciana* (E). 1939 record. *Carex laxiculmis* (WL). 1957 record.
71	Henson Cave T21N, R31W, SW SW SW NE Sec. 18 Jane Quad	U	E	Endangered Animal Site *Myotis grisescens*, Gray Bat (E). 1981 record, large population. Habitat is riparian areas close to summer roost sites and caves. 1996 site investigation by project ecologists found that no bats were present.
90	— T21N, R31W, SE Sec. 23 Jane Quad	E	—	Rare Plant Site: *Cheilanthes alabamensis* (R). 1988 record. 7 plants on the vertical rock face below the glade.
91	— T21N, R31W, SW Sec. 22 Jane Quad	E U	— —	Rare Plant Site: *Valerianaella ozarkana* (SU). 1988 record. 50+ plants. *Nemastylis geminiflora* (WL). 1955 record, not found in 1988.
92	— T21N, R31W, Secs. 34 & 35 Jane Quad	E	—	Rare Plant Site: *Potamogeton pusillus* - Baby Pondweed (SU). 1956 record. In slow waters of streams, sloughs and ponds.
141	— T21N, R32W, CW ½ Sec. 24 Jane Quad	E	—	Rare Animal Site: *Eurycea tynerensis*, Ozark Salamander. (R) 1984 record, 2 individuals observed. Lives under rocks, in gravel or aquatic vegetation in cool streams and springs.

Site No.	Site Name & Location	State Status	Federal Status	Species and Comments
142	— T21N, R32W, SE NW Sec. 25 Jane Quad	E	—	Rare Animal Site: *Eurycea tynerensis*, Ozark Salamander. (R) 1984 record, 2 individuals observed. Lives under rocks, in gravel or aquatic vegetation in cool streams and springs.
145	— T21N, R32W, C SE Sec. 28 Noel Quad	E	—	Rare Animal Site: *Eurycea tynerensis*, Ozark Salamander. (R) 1984 record, 2 individuals observed. Lives under rocks, in gravel or aquatic vegetation in cool streams and springs.
146	Rare Animal Site: T21N, R32W, NW NW Sec. 3 Noel Quad	E	—	*Eurycea tynerensis*, Ozark Salamander. (R) 1984 record, 2 individuals observed. Lives under rocks, in gravel or aquatic vegetation in cool streams and springs.
149	Rare Animal Site: T21N, R30W, S W ½ Sec.30 Powell Quad	E	—	*Eurycea tynerensis*, Ozark Salamander. (R) 1984 record, 2 individuals observed. Lives under rocks, in gravel or aquatic vegetation in cool streams and springs.
154	Rare Animal Site: T21N, R31W, E ½ Sec. 23 Powell Quad	E	—	*Eurycea tynerensis*, Ozark Salamander. (R) 1984 record, 2 individuals observed. Lives under rocks, in gravel or aquatic vegetation in cool streams and springs.
178	Rare Animal Site: T22N, R32W, SE Sec. 33 Noel Quad	U	—	*Ichthyomyzon gagei*, Southern Brook Lamprey (R). 1964 record. Adults located in clear, permanent-flowing streams; the larvae in debris in slack water.
A	Rare Plant Site: T21N, R31W, NE SW SW Sec. 22 Jane Quad	WL	—	*Silene regia*, Royal Catchfly. 3 individuals found and located by Consultant Team ecologists. 1996.
–	— No sites in Study Area	WL	—	*Cambarus setosus*, Bristly Cave Crayfish Found in cave streams.
–	— No sites in Study Area	–	E	*Haliaeetus leucocephalus*, Bald Eagle. Found by rivers, marshes and large impoundments in mature trees within one half mile of water.
–	— No sites in Study Area	R	—	*Lampsilis rafinesqueana*, Neosho Mucket. This mussel lives in moderately flowing shallow water in fine to medium gravel. According to the USFWS it has been reported in the Elk River downstream of Pineville.
–	— No sites in Study Area	E	—	*Myotis sodalis*, Indiana Bat. Found in riparian areas with close proximity to summer roost sites and caves.
–	— No sites in Study Area	WL	—	*Stygobromus ozarkensis*, Ozark Cave Amphipod. Prefers unpolluted, cool clear waters. Habitat is often very restricted.
–	— No sites in Study Area	WL	—	*Toxolasma lividus glans*, Purple Lilliput. This mussel has no specific information available.
–	— No sites in Study Area	U	—	*Scleria ciliata michx. var ciliata*, Hairy Nut-Rush. Damp sandy soil, pine barrens and rocky open woods, prairies and meadows.
–	— No sites in Study Area	R	—	*Sisyrinchium atlanticum bickn.*, Blue-eyed Grass. Wet prairies, fields, open woods, edges of salt marshes, sinkhole pond borders.
–	— No sites in Study Area	R	—	*Urtica chamaedryoides pursh*, Weak Nettle. Flood plains, moist woods near streams.

Federal and State Status Legend: E = Endangered; R = Rare; U = Undetermined; WL = Watch List

Sources: MDC's *Missouri Natural Features Inventory*, Final Report; Phelps, Pulaski and Laclede Counties, 1992. Ryan, Joe.
United States Fish and Wildlife Service
Environmental Protection Agency

Benton County, Arkansas

The Arkansas Game and Fish Commission and the Arkansas Natural Heritage Commission were consulted for primary baseline information concerning listed and candidate plant and animal species that have a historical record of occurrence within the Study Area in Benton County, Arkansas. The Arkansas Game and Fish Commission provided a list of four animal species that were known to occur in the Benton County area. Three of these, the Cave Crayfish (*Cambarus aculabram*), the Gray Bat (*Myotis grisescens*), and the Ozark Cavefish (*Amblyopsis rosae*) have habitat locations that occur in the Study Area. The Indiana Bat (*Myotis sodalis*) occurs in Benton County but there are no known habitat locations in the Study Area.

The Arkansas Natural Heritage Commission provided a list of twelve occurrences of sensitive species in the general area. Of these twelve, four species have recorded locations within the Study Area: The Oklahoma Salamander (*Eurycea tynerensis*), the Cave Crayfish (*Cambarus aculabrum*), the Gray Bat (*Myotis grisescens*) and the Royal Catchfly (*Silene regia*).

The federal and state-listed animal and plant species located in and around the Benton County, Arkansas Study Area are listed below in Table III-14. This table includes site numbers that correspond to the site numbers on the list provided by the ANHC, general location, state rank, federal and state status, and a description of the species. Refer to Exhibit III-5 for graphic locations of the species that fall within the Study Area.

TABLE III-14
THREATENED, ENDANGERED AND RARE SPECIES
BENTON COUNTY, ARKANSAS

Site No.	Site Name & Location	State Rank	State Status	Fed. Status	Species and Comments
1	—— T21N, R30W, Sec 36 Pea Ridge Quad	S3	INV	–	*Ammodramus savannarum*, Grasshopper Sparrow. Outside Study Area.
2	—— T20W, R31W, Sec 12 Bentonville N. Quad	S2	INV	3c	*Eurycea tynerensis*, Oklahoma Salamander 7 specimens collected from a small, extremely cold spring flowing east in a small hollow.
3	Bear Hollow Cave T21N, R30W, NW ¼ NW ¼ Sec 18 Bentonville N. Quad	S?	INV	LE	*Cambarus aculabrum*, a cave crayfish. As many as 9 crayfish have been counted during a single survey. 7 paratypes have been collected from the cave.
4	Crystal Cave T21N, R31W, NW ¼ NW ¼ Sec 34 Hiwasse Quad	S2	INV	LE	*Myotis grisescens*, Gray Bat. Bats have been observed every year in this cave since 1978 except for the following field seasons: 1980-81, 1984-85, 1990-91.
5	Civil War cave T20N, R31W, NE ¼ SW ¼ Sec 27 Hiwasse Quad	S1	INV	LT	*Amblyopsis rosae*, Ozark Cavefish. Two fish were counted in 1990-91 study. 5 were counted in 1985-87 study and 4 in 1980-83. Outside Study Area.
6	—— T20N, R32W, Sec 12 Hiwasse Quad	S2	ST	3c	*Silene regia*, Royal Catchfly. Found in rocky open woods.
7	Spanish Treasure Cave T20N, R33W, Sec 1 Gravette Quad	S1?	INV	—	*Caecidotea steevesi*, an isopod. 3 females collected. Outside Study Area.

Site No.	Site Name & Location	State Rank	State Status	Fed. Status	Species and Comments
8	— T21N, R33W, Sec 36 Gravette Quad	S1?	INV	—	*Sonora semiannulata*, Ground Snake. Habitat is cedar glades. Outside Study Area.
9	— T21N, R33W, SE ¼ SE ¼ Sec 24 Gravette Quad	S3	—	—	*Valerianella ozarkana*, a corn-salad. Greater than 100 plants on extensive sandstone glade atop bluffline. Outside Study Area.
10	— T21N, R32W, Sec 18 Gravette Quad	S1?	INV	—	*Euneces obsoletus*, Great Plains Skink. 1 specimen collected. Outside Study Area.
11	— T21N, R32W, Sec 24 Gravette Quad	S3S4	INV	—	*Castanea pumila var ozarkensis*, Ozark Chinquapin. 6-8 found. Outside Study Area
12	— T20N, R32W, SE ¼ NW ¼ Sec 20 Gravette Quad	S2	INV	3c	*Eurycea tynerensis*, Oklahoma salamander. One salamander was collected. Outside Study Area.
B	— T20N, R30W, NW ¼ SW ¼ SE ¼ Sec 16 Gravette Quad	S2	ST	3c	*Silene regia*, Royal Catchfly. Over 25 individuals found by project ecologists in 1996.
C	— T21N, R32W, W ½ NE ¼ Sec 16 Gravette Quad	S3S4	INV	—	*Castanea pumila var ozarkensis*, Ozark Chinquapin. Individuals found by project ecologists in 1996.
D	— T21N, R32W, W ½ NE ¼ Sec 16 Gravette Quad	S3S4	INV	—	*Castanea pumila var ozarkensis*, Ozark Chinquapin. Individuals found by project ecologist in 1996.

State Rank: S1 =Extremely rare; S2 =Very rare; S3 =Rare to uncommon; S4 =Common; S? and S1? =Undetermined
State Status: INV = Currently being inventoried (undetermined); ST = State threatened
Federal Status: 3c = No special designation warranted; LE = Listed endangered; LT = Listed threatened

Sources: Arkansas Natural Heritage Commission
Arkansas Game and Fish Commission

6. CULTURAL RESOURCES

a. Survey Methods

A background search including a literature review and records check was conducted for the Study Corridors. These reviews were completed prior to field investigations. Lists of properties in the National Register of Historic Places (NRHP) were reviewed and files of the Archeological Survey of Missouri at the University of Missouri and the Arkansas Archeological Survey were consulted (Appendix I). The Missouri Department of Natural Resources Historic Preservation Program and the Arkansas Historic Preservation Program were visited to review existing USGS maps, early Government Land Office plats, county atlases, property owner plats, reports and files for previous archaeological, architectural, and historic surveys conducted in the Study Corridors. The Missouri Historic Sites Catalogue (Caldwell 1963: 99-100) was consulted for listings located within the Study Corridors. No sites from this document are located within any of the Study Corridors. Other sources reviewed include the Benton County Historical Society, the Benton County Preservation Project, and the Bella Vista Historical Society and Museum. The McDonald County Clerk was also consulted concerning historic properties. Local histories, maps, and articles were also reviewed.

Exhibit III-6 shows the locations of the previously recorded cultural resources located within the Study Corridors.

b. Resources Listed in the National Register of Historic Places

As of early 1997, no McDonald County resources have been listed in the NRHP. There are over 123 historic properties listed in the NRHP for Benton County. Benton County has the third highest number of NRHP listings by county of the seventy-five (75) Arkansas counties and represents nearly 8% of all listings in the state. This number is due to the relatively early date of settlement for northwest Arkansas and the work performed by the University of Arkansas, School of Architecture. Mr. Cyrus Sutherland, a well known architect, former UA architecture professor, and native of Benton County, organized a project for architecture students in 1983-1985 for the architectural survey of Benton County. As a result of the Benton County Multiple Resource Area (MRA) survey, 100 historic properties were added to the NRHP. The majority of properties were nominated in 1987 with listing on 28 January 1988. NRHP listings are located in the vicinity of Bella Vista and the surrounding environs such as Pea Ridge, Bentonville, Rogers and Hiwasse. (See Table III-15.)

TABLE III-15
NATIONAL REGISTER RESOURCES IN STUDY AREA

Name (Benton County MRA listings)	Location	Vicinity	Date Listed	NRHP Criteria	NRHP Listing
Banks House	AR 72, W of Hiwasse	Hiwasse vicinity	1/28/88	C	87002365
Bella Vista Water Tank	Jct. of Suits Us Dr. and Pumpkin Hollow Rd.	Bella Vista vicinity	8/14/92	A, C	92000985
Blackwell–Paisley Cabin	Suits Us Dr.	Bella Vista	1/28/88	A, C	87002351
Bogan Cabin	Cedarcrest Mountain	Bella Vista	1/28/88	A, C	87002352
Braithwaite House	Old Bella Vista Hwy.	Bentonville	1/28/88	C	87002314
Breedlove House and Water Tower	Rt. 4	Bentonville vicinity	1/28/88	A, C	87002326
Deaton Cabin	Suits Us Rd.	Bella Vista	1/28/88	A, C	87002348
Hagler-Cole Cabin	Mt. Pisqua Dr.	Bella Vista	1/28/88	A, C	87002342
Hiwasse Bank Building	Main St., AR 279	Hiwasse	1/28/88	C	87002366
Lamberton Cabin	8 North Mountain	Bella Vista	1/28/88	A, C	87002343
New Home School and Church	S of Bella Vista on McKisic Creek Rd.	Bella Vista vicinity	1/28/88	C, a, d	87002357
Pharr Cabin	2 North Mountain	Bella Vista	1/28/88	A, C	87002346
Princedom Cabin	Lookout Dr.	Bella Vista	1/28/88	A, C	87002347
Sunset Hotel	W of US 71	Bella Vista	8/14/92	A	92000986
Sutherlin Cabin	4 North Mountain	Bella Vista	1/28/88	A, C	87002344
Wonderland Cave	Dartmoor Rd.	Bella Vista	1/28/88	A	87002313

National Register Criteria - A- significant event; B- significant person; C- distinctive type or method of construction; D- have yielded, or may yield, information important to prehistory or history; a- a religious property that is architecturally or historically significant; b- a building or structure of significance that has been removed from its original location; c- a birthplace or grave of a historical figure; d- a cemetery; e- a reconstructed building; f- a commemorative property; g- a property achieving significance within last fifty years.

c. Resources Listed in the Missouri Historic Sites Catalogue

No comprehensive survey of architectural resources has been conducted in McDonald County, Missouri. Three (3) resources are included in the Missouri Historic Sites Catalogue, none of which are located within the Study Area. (See Table III-16.)

TABLE III-16
MISSOURI HISTORIC SITES CATALOGUE RESOURCES
IN MCDONALD COUNTY

Name	Date	Location	Vicinity
James N. Langley Home	1867	six miles west of Anderson on SH76, 3 miles south on River Road	Anderson vicinity
McDonald County Courthouse	1870-1871	Courthouse Square	Pineville
Tri-State Marker	no date	1 mile southwest of Southwest City on SH90	Southwest City vicinity

d. Archaeological Resources

The Study Area is located in the Arkansas Study Unit and Elk Watershed Study Unit in southwest Missouri and in Benton County in northwest Arkansas. A Request for Information from the Archaeological Survey of Missouri (ASM) identified 69 archaeological sites in McDonald County, Missouri within the 6 townships that include the study area (Appendix I). Twelve (12) of these archaeological sites were identified to be within the Study Corridors in Missouri. A review of records at the Arkansas Archeological Survey (AAS) identified 618 archaeological sites in Benton County, Arkansas. Nineteen (19) of these archaeological sites were identified to be within the Study Corridors in Arkansas.

All recorded archaeological sites within the Study Corridors were plotted on USGS quadrangle maps to determine which sites were located in each corridor. Table III-17 presents those recorded archaeological sites located within the Study Corridors.

TABLE III-17
ARCHAEOLOGICAL RESOURCES IN CORRIDORS

Site Number	Township/Range/Section	Date Recorded	Recorder	Corridor	Other notes
23MD46	T22N R32W Sec 34	11-1974	Richard Marshall	FW, NW, Ex, E	Pineville Mound; MHTD Route 71 Corridor William W. Martin 1992, NRHP-eligible
23MD82	T21N R32W Sec 3	10-1991	Bill Martin	FW, NW, Ex, E	MHTD Route 71 Corridor William W. Martin 1992
23MD75	T21N R32W Sec 3	10-1991	Bill Martin	FW, NW, Ex. E	MHTD Route 71 Corridor William W. Martin 1992
23MD93	T21N R32W Sec 3	11-1991	Martin & Austin	FW, NW, Ex. E	MHTD Route 71 Corridor William W. Martin 1992
23MD87	T21N R31W Sec 21	1-1992	Bill Martin	NW, Ex	MHTD Route 71 Corridor William W. Martin 1992
23MD29	T21N R31W Sec 28	6-1957	L. Hopper	NW, Ex	MHTD Route 71 Corridor William W. Martin 1992, abundant material when visited in 1992
23MD32	T21N R31W Sec 28	6-1957	L. Hopper	NW, Ex	Tater Knob with reported burials; MHTD Route 71 Corridor William W. Martin 1992
23MD90	T21N R31W Sec 28	1-1992	Martin & Austin	NW, Ex	MHTD Route 71 Corridor William W. Martin 1992
23MD91	T21N R31W Sec 28	1-1992	Martin & Austin	NW, Ex	MHTD Route 71 Corridor William W. Martin 1992

Site Number	Township/Range/Section	Date Recorded	Recorder	Corridor	Other notes
23MD88	T21N R31W Sec 27	1-1992	Martin & Austin	NW, Ex	MHTD Route 71 Corridor William W. Martin 1992
23MD89	T21N R31W Sec 27	1-1992	Martin & Austin	NW, Ex	MHTD Route 71 Corridor William W. Martin 1992
23MD83 /3BE54 6	T21N R31W Sec 34	1-1992	Martin & Austin	Ex	MHTD Route 71 Corridor William W. Martin 1992
3BE204	T21N R31W Sec 23	9-1965	Leon Allen	Ex	"A report of the Hay Bluff Site, Bella Vista, Arkansas 1970" by R. L. Coddy, Article and photo in *Benton County Daily Democrat* March 1, 1982
3BE211	T21N R31W Sec 26	3-1966	C.R. McGimsey III	Ex	
3BE237	T20N R31W Sec 13	3-1967	Dr. Storla student	FW, NW, Ex	AHTD Job No. 9579 & 1445 Highway 71 Relocation McClurken 1981, 1982; Bentonville Wastewater Jack Stewart 1992
3BE242	T20N R30W Sec 7	5-1972	Ray Medlock	Ex	AHTD Job No. 9579 Highway 71, Clell Bond 1973; AHTD Job No. 1445 Highway 71 Relocation McClurken 1981, 1982
3BE250	T21N R31W Sec 35	8-1973	C. L. Bond	Ex	AHTD Job No. 9579 Highway 71, Clell Bond 1973
3BE251	T21N R31W Sec 35	8-1973	C. L. Bond	Ex	AHTD Job No. 9579 Highway 71, Clell Bond 1973
3BE252	T20N R31W Sec 1	8-1973	C. L. Bond	Ex	AHTD Job No. 9579 Highway 71, Clell Bond 1973
3BE268	T20N R30W Sec 18	6-1977	Mary Fay & Jack Terry	FW, NW, Ex	AHTD Job No. 1445 Highway 71 Relocation McClurken 1981, 1982; Two Ton Water Project Waddell 1993
3BE269	T20N R30W Sec 20	6-1977	Mary Fay	E	AHTD Job No. 1445 Highway 71 Relocation McClurken 1981, 1982
3BE364	T20N T30W Sec 3	6-1984	James Farley	E	Pea Ridge to Bella Vista 69KV Line, Farley 1984
3BE365	T20N R30W Sec 3	6-1984	James Farley	E	Pea Ridge to Bella Vista 69KV Line, Farley 1984
3BE546	T21N R31W Sec 15	1-1992	Bill Martin	Ex	MHTD Route 71 Corridor William W. Martin 1992
3BE549	T20N R31W Sec 13	8-1992	Jack Stewart	FW, NW, Ex	Bentonville Wastewater Stewart 1992
3BE550	T20N R31W Sec 13	7-1992	Jack Stewart	FW, NW, Ex	Bentonville Wastewater Stewart 1992
3BE572	T20N R30W Sec 15	5-1993	David Waddell	E	Two Ton Water Project 1993
3BE573	T20N R30W Sec 16	5-1993	David Waddell	E	Two Ton Water Project 1993
3BE574	T20N R30W Sec 16	5-1993	David Waddell	E	Two Ton Water Project 1993
3BE576	T20N R31W Sec 13	5-1993	David Waddell	FW, NW, Ex	Two Ton Water Project 1993

Prehistoric Archaeological Site Probability Factors

Experience has shown that prehistoric habitation sites and temporary campsites tend to be restricted to areas adjacent to water that were not frequently flooded. Resource availability in several areas was also an important factor in site location. High probability areas are located near perennial water sources because prehistoric inhabitants required water for survival and are almost never located in areas susceptible to frequent flooding. Medium probability areas are

often located near intermittent water sources and are likely to contain temporary hunting-foraging or resource extractive sites. Low probability areas are located far from water sources.

Historic Archaeological Site Probability Factors

Historic sites often have different criteria for their location. Close proximity to water was often desirable but not as imperative as it was to prehistoric populations. The first settlers in this area often chose open, prairie/forest edge sites for their homesteads. Historic sites are often located close to early or present-day roads. Other aspects of historic archaeological site location may include the slope and elevation of the terrain. Sites such as historic grist mills, sawmills, mines, schools, stores, and churches may be located near historic population concentrations or water sources and may not be determined by soil quality or altitude.

e. Architectural Resources

Standing architecture in the proposed Study Area has been identified through intensive records review. All recorded architectural resources within the Study Corridors were plotted on USGS quadrangle maps. Recorded architectural resources include forty-three (43) mapped as a result of MoDOT's work in connection with their completed US 71 corridor study (MoDOT Job Number J7P0427-FHWA-EIS-90-02-F) and forty-eight (48) mapped as part of an on-going Benton County-wide survey that began in 1983 (MRA, National Park Service 1994). Ninety-one (91) total resources have been mapped within the Study Corridors (see Table III-18).

TABLE III-18
ARCHITECTURAL RESOURCES IN CORRIDORS

Number	Corridor	Comments	Other notes
MoDOT 98	FW, NW, Ex, E	outside MHTD APE	MHTD Route 71 Corridor William W. Martin 1992
MoDOT 97	FW, NW, Ex, E		MHTD Route 71 Corridor William W. Martin 1992
MoDOT 99	FW, NW, Ex, E		MHTD Route 71 Corridor William W. Martin 1992
MoDOT 100	FW, NW, Ex, E		MHTD Route 71 Corridor William W. Martin 1992
MoDOT 101	FW		MHTD Route 71 Corridor William W. Martin 1992
MoDOT 102	FW		MHTD Route 71 Corridor William W. Martin 1992
MoDOT 103	NW, Ex, E		MHTD Route 71 Corridor William W. Martin 1992
MoDOT 104	NW, Ex, E		MHTD Route 71 Corridor William W. Martin 1992
MoDOT 105	NW, Ex, E	eclectic early 20th century	MHTD Route 71 Corridor William W. Martin 1992
MoDOT 106	NW, Ex, E	vernacular early-mid 20th C	MHTD Route 71 Corridor William W. Martin 1992
MoDOT 107	NW, Ex, E		MHTD Route 71 Corridor William W. Martin 1992
MoDOT 108	NW, Ex, E		MHTD Route 71 Corridor William W. Martin 1992
MoDOT 109	NW, Ex, E		MHTD Route 71 Corridor William W. Martin 1992
MoDOT 110	NW, Ex, E		MHTD Route 71 Corridor William W. Martin 1992
MoDOT 111	NW, Ex, E		MHTD Route 71 Corridor William W. Martin 1992
MoDOT 112	NW, Ex, E	vernacular early 20th C	MHTD Route 71 Corridor William W. Martin 1992
MoDOT 162	NW, Ex, E		MHTD Route 71 Corridor William W. Martin 1992
MoDOT 113	NW, Ex, E		MHTD Route 71 Corridor William W. Martin 1992
MoDOT 114	NW, Ex, E		MHTD Route 71 Corridor William W. Martin 1992
MoDOT 115	NW, Ex, E		MHTD Route 71 Corridor William W. Martin 1992
MoDOT 116	NW, Ex, E		MHTD Route 71 Corridor William W. Martin 1992
MoDOT 117	NW, Ex, E		MHTD Route 71 Corridor William W. Martin 1992
MoDOT 118	NW, Ex, E		MHTD Route 71 Corridor William W. Martin 1992
MoDOT 119	NW, Ex, E		MHTD Route 71 Corridor William W. Martin 1992
MoDOT 120	NW, Ex, E		MHTD Route 71 Corridor William W. Martin 1992
MoDOT 121	NW, Ex, E		MHTD Route 71 Corridor William W. Martin 1992
MoDOT 122	NW, Ex, E		MHTD Route 71 Corridor William W. Martin 1992
MoDOT 123	NW, Ex, E		MHTD Route 71 Corridor William W. Martin 1992
MoDOT 124	NW, Ex, E	commercial early-mid 20th	MHTD Route 71 Corridor William W. Martin 1992
MoDOT 125	NW, Ex, E		MHTD Route 71 Corridor William W. Martin 1992
MoDOT 126	NW, Ex, E		MHTD Route 71 Corridor William W. Martin 1992

MoDOT 127	NW, Ex, E		MHTD Route 71 Corridor William W. Martin 1992
MoDOT 128	NW, Ex, E		MHTD Route 71 Corridor William W. Martin 1992
MoDOT 129	NW, Ex		MHTD Route 71 Corridor William W. Martin 1992
MoDOT 130	NW, Ex		MHTD Route 71 Corridor William W. Martin 1992
MoDOT 131	NW, Ex		MHTD Route 71 Corridor William W. Martin 1992
MoDOT 132	NW, Ex	vernacular early-mid 20th C	MHTD Route 71 Corridor William W. Martin 1992
MoDOT 136	NW, Ex		MHTD Route 71 Corridor William W. Martin 1992
MoDOT 137	NW, Ex		MHTD Route 71 Corridor William W. Martin 1992
MoDOT 139	NW, Ex		MHTD Route 71 Corridor William W. Martin 1992
MoDOT 138	NW, Ex		MHTD Route 71 Corridor William W. Martin 1992
MoDOT 141	EX		MHTD Route 71 Corridor William W. Martin 1992
MoDOT 142	Ex		MHTD Route 71 Corridor William W. Martin 1992
BE 0638	FW	NW of Hiwasse area	Benton Co. Survey 1983 -
BE 0640	FW	NW of Hiwasse area	Benton Co. Survey 1983 -
BE 0657	FW	NW of Hiwasse area	Benton Co. Survey 1983 -
BE 0652	FW	NW of Hiwasse area	Benton Co. Survey 1983 -
BE 0662	FW	NW of Hiwasse area	NRHP, Benton Co. Survey 1983 -
BE 0697	FW	NW of Hiwasse area	Benton Co. Survey 1983 -
BE 0743	FW	Hiwasse area	Benton Co. Survey 1983 -
BE 0694	FW	Hiwasse area	Benton Co. Survey 1983 -
BE 0695	FW	Hiwasse area	Benton Co. Survey 1983 -
BE 0696	FW	Hiwasse area	Benton Co. Survey 1983 -
BE 0721	FW	Hiwasse area	Benton Co. Survey 1983 -
BE 0722	FW	Hiwasse area	Benton Co. Survey 1983 -
BE 0719	FW	Hiwasse area	Benton Co. Survey 1983 -
BE 0713	FW	Hiwasse area	Benton Co. Survey 1983 -
BE 0715	FW	Hiwasse area	Benton Co. Survey 1983 -
BE 0714	FW	Hiwasse area	Benton Co. Survey 1983 -
BE 0716	FW	Hiwasse area	Benton Co. Survey 1983 -
BE 0717	FW	Hiwasse area	Benton Co. Survey 1983 -
BE 0718	FW	Hiwasse area	Benton Co. Survey 1983 -
BE 0663	FW	Hiwasse area	Benton Co. Survey 1983 -
BE 0726	FW	E of Hiwasse area	Benton Co. Survey 1983 -
BE 0727	FW	E of Hiwasse area	Benton Co. Survey 1983 -
BE 0698	FW	E of Hiwasse area	Benton Co. Survey 1983 -
BE 0699	FW	E of Hiwasse area	Benton Co. Survey 1983 -
BE 0700	FW	E of Hiwasse area	Benton Co. Survey 1983 -
BE 0654	NW	NE of Hiwasse area	Benton Co. Survey 1983 -
BE 0658	NW	NE of Hiwasse area	Benton Co. Survey 1983 -
BE 0657	FW, NW	W of Hiwasse area	Benton Co. Survey 1983 -
BE 0656	FW, NW	W of Hiwasse area	Benton Co. Survey 1983 -
BE 2177	FW, NW	S of Bella Vista area	NRHP, Benton Co. Survey 1983 -
BE 1725	FW, NW, Ex	S of Bella Vista area	Benton Co. Survey 1983 -
BE 1726	FW, NW, Ex	S of Bella Vista area	Benton Co. Survey 1983 -
BE 3040	FW, NW, Ex	S of Bella Vista area	Benton Co. Survey 1983 -
BE 1745	Ex	Bella Vista area	Benton Co. Survey 1983 -
BE 1744	Ex	Bella Vista area	Benton Co. Survey 1983 -
BE 1743	Ex	Bella Vista area	Benton Co. Survey 1983 -
BE 1739	Ex	Bella Vista area	Benton Co. Survey 1983 -
BE 1736	Ex	Bella Vista area	Benton Co. Survey 1983 -
BE 1702	Ex	Bella Vista area	Benton Co. Survey 1983 -
BE 1701	Ex	Bella Vista area	Benton Co. Survey 1983 -
BE 1703	Ex	Bella Vista area	Benton Co. Survey 1983 -
BE 1727A	Ex	Bella Vista area	Benton Co. Survey 1983 -
BE 1699	Ex	W of Bella Vista area	Benton Co. Survey 1983 -
BE 2166	E	W of Bella Vista area	Benton Co. Survey 1983 -
BE 2165	E	W of Bella Vista area	Benton Co. Survey 1983 -
BE 1735	E	W of Bella Vista area	Benton Co. Survey 1983 -
BE 1411	E	W of Bella Vista area	Benton Co. Survey 1983 -
BE 1416	E	W of Bella Vista area	Benton Co. Survey 1983 -

Four architectural resources (MoDOT 113, BE 1743, BE 3040 and BE 0661have been destroyed during recent development and are not included in Table III-17.

f. Historical Bridge Resources

Eight bridge structure (A-1777, A-1586, A-1778, A-1587, H-970R, H-971R, J-76 and N-144) are currently recorded within the Study Corridors [MoDOT; McDonald County Bridge Map (3-95), McDonald county Culvert Map (3-95), 1995 Service Ratings for Bridges and Missouri Historic Bridge Inventory: Draft Inventory Report, Project No. BR-NBIH(6) Volume III]. H-970 and H-971-R were documented as a result of work on J7P0427-FHWA-EIS-90-02-F. These two bridge structures (H-970R and H971R) have conflicting dates of construction, the Service Rating indicates dates of 1930, but MoDOT Bridge Inventory Forms and the appearance of the structures indicate 1966. No bridges in the Study Corridors in Arkansas are listed in the Arkansas Historic Bridge Inventory Review and Evaluation (McClurken 1987). This information is presented in Table III-19.

TABLE III-19
HISTORICAL BRIDGE RESOURCES

Bridge Number	Road	Log Mile	Type	Year Built	Bridge Map	Culvert Map	Service Rating	BR-NBIH(6)	MoDOT Survey
A-1777	MO 71	15	Stringer	1966	no	yes	yes	no	no
A-1586	MO 71	16	Stringer	1966	yes	no	yes	no	no
A-1778	MO 71	16.3	Box Culvert	1966	no	yes	yes	no	no
A-1578	MO 71	18.8	Box Culvert	1966	no	yes	yes	no	no
H-970R	MO 71	21	Stringer	1930	yes	no	yes	excluded	yes
H-971R	MO 71	22.1	Stringer	1930	yes	no	yes	excluded	yes
J-76	SR 71	19.7	Slab	1930	yes	no	yes	excluded	no
N-144	MO 90	17.3	Box Culvert	1956	no	yes	yes	no	no

g. Historical Resources

There are no identified historical resources located within the Study Corridor. Extensive Civil War activity, however, occurred at Pea Ridge, located 10 km (6 mi.) to the east, with frequent troop movement, camps, foraging, and skirmishes occurring within the Study Area. Other historic events, such as the Trail of Tears, occurred in or near the Study Area. Sites relating to these and other occurrences will be monitored throughout the archaeological and architectural reviews.

h. Summary

The general results of the Draft EIS cultural resource review efforts are the following:

- Twelve (12) prehistoric archaeological sites are recorded within the limits of the Study Corridors in McDonald County, Missouri (23MD83 also recorded as 3BE546).
- Nineteen (19) prehistoric archaeological sites are recorded within the limits of the Study Corridors in Benton County, Arkansas (3BE546 also recorded as 23MD83).
- No historic archaeological sites are recorded within the limits of the Study Corridors in McDonald County, Missouri.

- No historic archaeological sites are recorded within the limits of the Study Corridors in Benton County, Arkansas.
- Forty-three (43) architectural resources are recorded within the limits of the Study Corridors in McDonald County, Missouri.
- Forty-eight (48) architectural resources are recorded within the limits of the Study Corridors in Benton County, Arkansas.
- No resources listed in the National Register of Historic Places are located within the limits of the Study Corridors in McDonald County, Missouri.
- Two (2) resources listed in the National Register of Historic Places (BE 0662 and BE 2177) are located within the limits of the Study Corridors in Benton County, Arkansas.
- No historic bridges are located within the limits of the Study Corridors in McDonald County, Missouri.
- No historic bridges are located within the limits of the Study Corridors in Benton County, Arkansas.

7. HAZARDOUS WASTE SITES

a. Survey Methodology

The identification of potential hazardous waste site locations within the four Study Corridors was accomplished through review of environmental regulatory records, visual survey from publicly accessible rights-of-way, and interviews with local officials. Environmental records were obtained from the Arkansas Department of Pollution control & Ecology (ADPC&E), the Missouri Department of Natural Resources (MDNR), and the United States Environmental Protection Agency (USEPA). In addition, a report from a database search company was obtained.

A summary table from Technical Memorandum No. 2, *Hazardous Materials Screening Report*, is included in Appendix F of this EIS. The site numbers listed in the summary table correspond with the locations identified on Exhibit III-7.

b. Potential Hazardous Waste Sites

Forty-two sites were identified as being located within or potentially impacted by at least one of the four Study Corridors. These sites were rated as High, Moderate, or Low based on the risk of the site to public health and on the magnitude of the potential impact of the site if located near an improvement alternative.

Many of the sites can be characterized as one of two types - - storage tanks or miscellaneous dumps. Petroleum storage tank sites were predominant along the existing US 71 Corridor. All of these sites were ranked as having moderate risk potential. Several residences with drums, junk cars, or appliances located in a collection area were also documented. A complete list of documented sites with a brief description of each is provided in Appendix F.

c. Assessment of High Risk Potential Sites

Current sites located within the Study Corridors and identified as having high risk potential include the following:

- **Bella Vista Landfill (B-25)** - This site is located just south of the Arkansas-Missouri state line and west of US 71. It is listed on the CERCLIS. No Further Remedial Action Planned (NFRAP) list, and the Arkansas Permit Data Systems (PDS) list. The CERCLIS database indicated it was assessed in 1980 and then placed on the NFRAP list. The Bella Vista Public Works Director indicated the site was a sanitary landfill but is no longer used for that purpose. He did indicate that it might be the site of a proposed solid waste transfer station. A visit to the site revealed storage of hundreds of tires, two large steel tanks, and concrete pipe, and the burning of clearing debris. The potential exists for hazardous waste to be contained in the landfill.

- **Logging Mill (M-18)** - This site is located just south of Jane, Missouri along US 71. The site contains a logging operation and is home to many junk cars, old drums, and a small-elevated tank. No environmental documentation was available for this site. The potential exists for hazardous waste to be present.

- **Residence (M-20)** - This site is located adjacent to Miser Hollow Creek near the intersection of Old 71 and existing US 71 near Jane, Missouri. In back of the residence are hundreds of rusted and/or burned drums and several junk cars. The potential exists for soil and water contamination from the contents of those drums.

- **Auto Garage/Salvage Yard (M-46)** - This site is located along Route E just north of the state line in McDonald County, Missouri. The site covers an area of approximately 16.2 ha (40 ac) and is strewn with pockets of junk vehicles, drums, tanks, and tires. No environmental documentation was available for this site. The potential for hazardous waste exists.
- **Tire Dump (M-50)** - This site was discovered through field reconnaissance. Approximately 2,000 used tires, some in bails and most loosely scattered, were observed. Due to the nature of the site, the potential may exist for hazardous wastes at this site.

8. VISUAL QUALITY

a. Regional Visual Environment

The northern portion of the US 71 Study Area in McDonald County, Missouri is located within the Elk River section of the Ozark Natural Division in the southwest corner of Missouri. The southern portion of the Study Area in Benton County, Arkansas is located in what is referred to as the Ozark Highland. Much of the Study Area is characterized by forested, hilly topography dissected by streams, and narrow winding ridges with v-shaped valleys, the side slopes of which are very steep. There are also some flatter, broader upland areas in the southwest and east portions of the Study Area, most of which have been cleared for agricultural purposes. Exhibit III-8 shows the variety of visual environments within the Study Area.

The Study Area also includes several creek valleys are composed of rocks, water, trees and, in some of the larger floodplain areas, agricultural land, and even golf courses along existing US 71. In contrast to the low-lying valleys, the ridges at the higher elevations provide potential opportunities for distant views and vistas of the surrounding environment.

The majority of the built environment is concentrated along existing US 71 and throughout Bella Vista Village. The visual environment along US 71 is characterized by rock outcroppings, forested hills and commercial/business development. The residential development in the Study Area is that of clustered residential development in Bella Vista Village, and farmstead homes in the outlying areas. The majority of residential development in Bella Vista Village is retirement homes. The remainder of the man-made environment outside the city limits consists of poultry or cattle farmsteads, and agricultural pastureland.

b. Visual Quality

The visual impacts of a project may be quite varied in different areas of a project corridor because the areas themselves can be visually distinct and can exhibit unique and consistent visual characteristics. The Study Area can be divided into separate sub-areas within which there are consistent visual characteristics and a uniform visual experience. These sub-areas have direct relationships to physiography, topography, vegetation and land use, and can be thought of as "outdoor rooms". The boundaries of these visual environments occur where there is a change in visual character. The relative existing visual quality of the visual environments within the corridor is presented in Table III-20.

TABLE III-20
VISUAL QUALITY RATING

Visual Environment	Visual Quality Rating
Forested Areas	High
Creeks and Creek Valleys	High
Lakes	High
Golf Courses	High
Agricultural/Open Land	Moderate
Residential Development	Moderate to High
Commercial/Business Development	Low

c. Visual Resources

Within the Study Area, the areas that are scenically significant and that contribute to the visual identity of the environment are the forested hills, the Ozark streams and creek valleys, the glade remnants, and the lakes. All the lakes lie within Bella Vista Village and include Loch Lomond, Lake Avalon, Lake Windsor, Lake Ann, Lake Rayburn, Lake Brittany, and Bella Vista Lake.

d. Viewers

Visual impact is determined by change in the visual environment as related to viewer response. For the purpose of assessment, there are two distinct categories of viewer response to be considered: viewers who are users of the project facility (views from the road), and people who can observe the facility from an adjacent vantage point (views of the road).

The scenic beauty of the region is a composition of wooded rolling hills, rugged cliffs, small lakes, Ozark streams, and open valleys and clearings. The best potential for the most vivid landscape views from the road occurs on the high point ridge tops (for distant views) and at stream and valley crossings where bridges or elevated fill areas provide opportunities for

panoramic views of the forested hills and of riparian environments. The quality of views from the road, as analyzed for each general visual environment encountered within the Study Area, is presented in Table III-21.

Individuals who have the potential for undesirable views of the road are referred as "sensitive visual receptors." This includes residents and recreationists at the lakes and on the golf courses. The relative concentration of sensitive visual receptors is high in the residential areas and at the lakes and golf courses, moderate in the agricultural areas, and low in the remainder of the Study Area. This information is also presented in Table III-21.

TABLE III-21
VIEWS AND VISUAL RECEPTORS

Visual Environment	Quality of Views from the Road	Relative Concentration of Sensitive Visual Receptors
Forested Areas	High	Low
Creeks and Creek Valleys	High	Low
Lakes	High	High
Golf Courses	High	High
Agricultural Land	Moderate	Moderate
Residential Development	Low	High
Commercial/Industrial Dev.	Low	Low

9. NOISE QUALITY

a. Noise Terminology

Noise is a form of vibration that causes pressure variations in elastic media such as air and water. The ear is sensitive to this pressure variation and perceives it as sound. The intensity of these pressure variations causes the ear to discern different levels of loudness. These pressure differences are most commonly measured in decibels.

The decibel (dB) is the unit of measurement for noise. The decibel scale audible to humans spans from zero to approximately 140 dB. A level of zero decibels corresponds to the lower limit of audibility, while 140 decibels produces a sensation more akin to pain than sound. The decibel scale is a logarithmic representation of the actual sound pressure variations. Therefore, a 26 percent change in the energy level only changes the sound level one dB. The human ear would not detect this change except in an acoustical laboratory. A doubling of the energy level would result in a three dB increase, which would be barely perceptible in the natural environment. A tripling in energy level would result in a clearly noticeable change of five dB in the sound level. A change of ten times the energy level would result in a ten dB change in the sound level. This would be perceived as a doubling (or halving) of the apparent loudness.

The human ear has a non-linear sensitivity to noise. To account for this in noise measurements, electronic weighting scales are used to define the relative loudness of different frequencies. The "A" weighting scale is widely used in environmental work because it closely resembles the non-linearity of human hearing. The unit of A-weighted noise is dBA.

Time-varying characteristics of environmental noise are analyzed statistically to determine the duration and intensity of noise exposure. In an urban environment, noise is made up of two distinct parts. One is ambient or background noise. Wind noise and distant traffic noise make up

the acoustical environment surrounding the project. These sounds are not readily recognized, but combine to produce a non-irritating ambient sound level. This background sound level varies throughout the day, being lowest at night and highest during the day. The other component of urban noise is intermittent, higher in pitch, and louder than the background noise. Transportation noise and local industrial noise are examples of this type of noise. Sounds of this nature can be very disturbing; brief and intense noises can interrupt, annoy or startle. It is for these reasons that environmental noise is analyzed statistically.

The L_{eq} is the equivalent steady-state sound having the same A-weighted sound energy as that contained in the time-varying sound over a specific period of time. The time period for traffic noise is one hour. The abbreviation then becomes $L_{eq}(h)$. The $L_{eq}(h)$ correlates reasonably well the effects of noise on people. All traffic noise levels in this analysis will be expressed in dBA $L_{eq}(h)$.

b. Methodology

Ambient noise levels in the Study Corridors are a function of traffic volume and daily activities of the general populace. Along the existing US 71 roadway, where the primary source of noise is the traffic on US 71, ambient noise levels were modeled with the FHWA highway traffic noise prediction computer program, STAMINA 2.0/OPTIMA. The following parameters are used in this model to calculate an hourly $L_{eq}(h)$ at a specific distance.

- Distance between roadway and receiver.
- Hourly traffic volumes in light-duty (two axles, four tires), medium-duty (two axles, six tires), and heavy duty (three or more axles) vehicles.
- Vehicle speed.
- Noise source height of the vehicles; light-duty 0 m (0 ft.), medium-duty 0.7 m (2.3 ft.), and heavy-duty 24 m (8.0 ft.).

The Near West and Far West Corridors, where traffic activity ranges from very low to non-existent and land use ranges from scattered residential to undeveloped, ambient noise levels were estimated based on recent noise measurement studies with similar traffic activities and land use performed in Arkansas and Missouri.

c. Current Noise Levels

The current aural environments of the Study Area vary considerably depending on location and proximity to the existing roadway system. Since existing US 71 is the predominant roadway within the Study Area with the highest traffic volumes and truck percentages, those areas adjacent to existing US 71 and the associated commercial activity centers have the highest ambient noise levels. Based on AHTD and MoDOT interpretations of the FHWA Noise Abatement Criteria (NAC) for noise sensitive receptors (Activity Group B of the FHWA Criteria) such as residences, churches, schools, libraries, hospitals, nursing homes, apartment buildings, condominiums, and others, the number of receptors located along US 71 with current noise levels in excess of the NAC was estimated. An hourly Leq NAC noise level of 67 dBA was used for the analysis. (A more detailed description of the AHTD and MoDOT noise impact criteria is presented in Chapter IV, Section J.)

Approximately 186 noise receptors located along the existing US 71 roadway within the Study Area currently experience noise levels in excess of the NAC. These receptors include the Country Club, Kingswood, and Berksdale Golf Courses which are located adjacent to US 71 within Bella Vista Village.

Areas farther away from existing US 71 have lower ambient noise levels. It is estimated that areas within the Village have a generalized noise level of approximately 50 dBA. More remote areas outside of the Village would likely have an ambient noise level near 40 dBA. Locations within the areas closer to local roads would likely have ambient noise levels between 5 and 10 decibels higher than the surrounding areas.

10. PUBLIC LANDS

Public lands are typically identified and mapped as environmental constraints. Publicly owned recreation areas and facilities, such as parks, are important control points for compliance with the provisions of Section 4(f) of the Federal Aid Highway Act of 1968. Recreational resources which have been determined by FHWA to be eligible will require analysis that demonstrates there is no feasible and prudent alternative to the taking of these public recreation areas for a transportation project. Private recreation facilities are not eligible for inclusion in this analysis.

There are no public lands or recreational facilities presently located within the Study Area. The Huckleberry Ridge State Forest, located approximately one mile east of Pineville, is managed by the Missouri Department of Conservation. This is the closest publicly owned multiple-use area that does include recreation as a component of its overall management plan. Public lands which are managed as multiple use areas can have areas which, through development or designation of, can be considered Section 4(f) resources, although the rest of the multiple use facility is not eligible for Section 4(f) evaluation.

The project commences south of the Pineville city limits and therefore would not affect any of the city-owned parks or recreational resources.

There are no public recreation areas within the limits of Bella Vista; the parks, open space, reservoirs, and golf courses, which are visible from US 71, are privately owned and operated for the residents and/or property owners and their respective guests. These privately owned facilities are not eligible for Section 4(f) evaluation since they are not publicly owned and open to all members of the public.

The communities of Jane, Missouri, and Hiwasse, Arkansas, do not have any designated public parks or recreational resources.

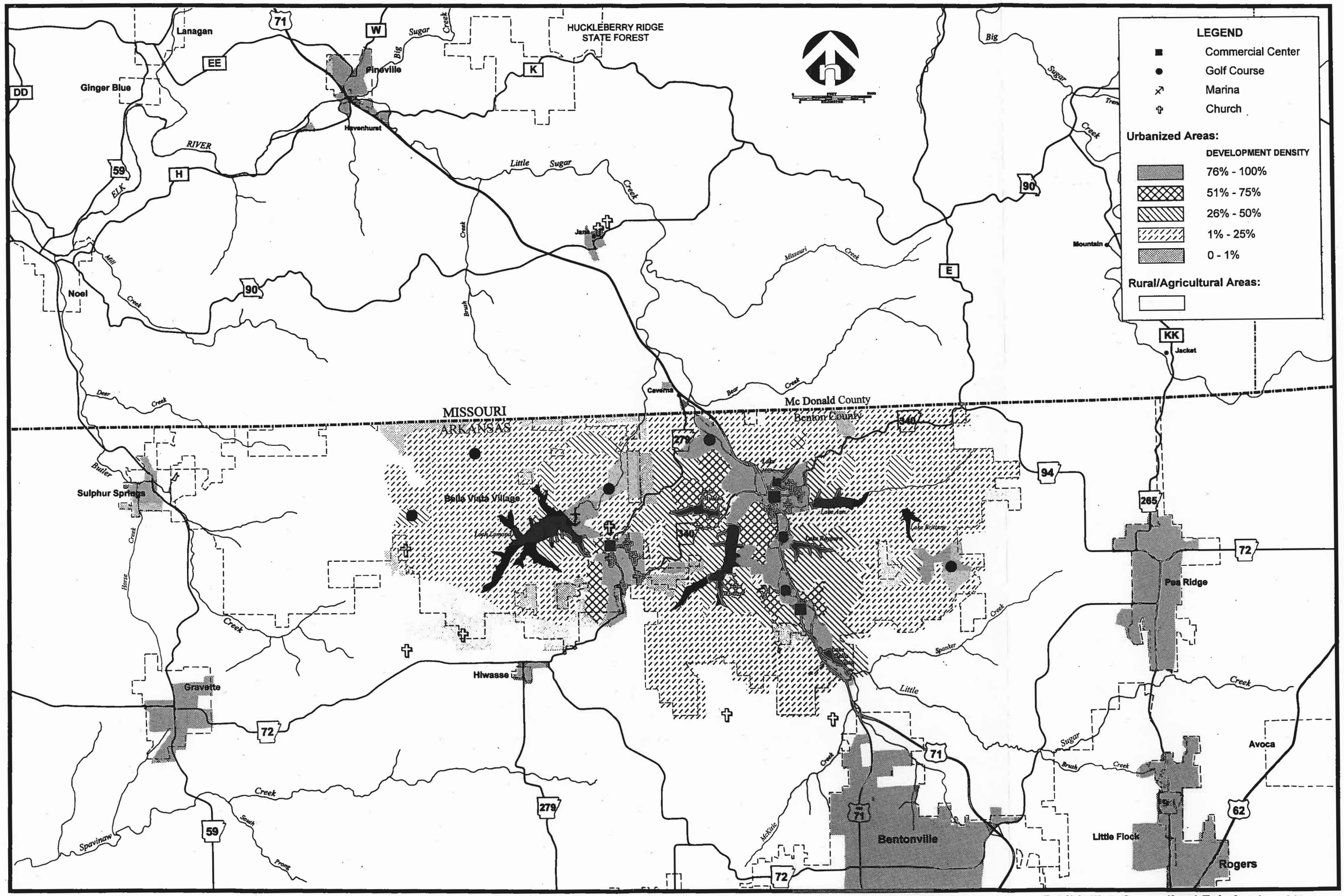


Exhibit III-1 Generalized Existing Land Use

LEGEND - McDonald County, Missouri

Soil associations containing Prime Farmland or Farmland of Statewide Importance

Soil association containing Farmland of Statewide Importance

LEGEND - Benton County, Arkansas

Prime Farmland

Pd — Prime Farmland if Drained

Farmland of Statewide Importance

HUCKLEBERRY RIDGE STATE FOREST

MISSOURI
ARKANSAS

Mc Donald County
Benton County

Lanagan
Pineville
Ginger Blue
Noel
Jane
Sulphur Springs
Bella Vista Village
Gravette
Bentonville
Pea Ridge
Avoca
Little Flock
Rogers
Jacket

Big Sugar Creek
Little Sugar Creek
Elk River
Mill Creek
Dear Creek
Butler Creek
Horse Creek
Sparrinaw Creek
South Prong
Missouri Creek
Spanker Creek
McKissic Creek
Sugar Brush Creek

Lake Avalon
Loch Lomond
Lake Windsor
Lake Norwood
Lake Ann
Lake Brittany
Lake Raybourn

Pd

71 W EE DD K 59 H 90 E KK 279 340 265 72 94 62

Exhibit III-2 Prime Farmland

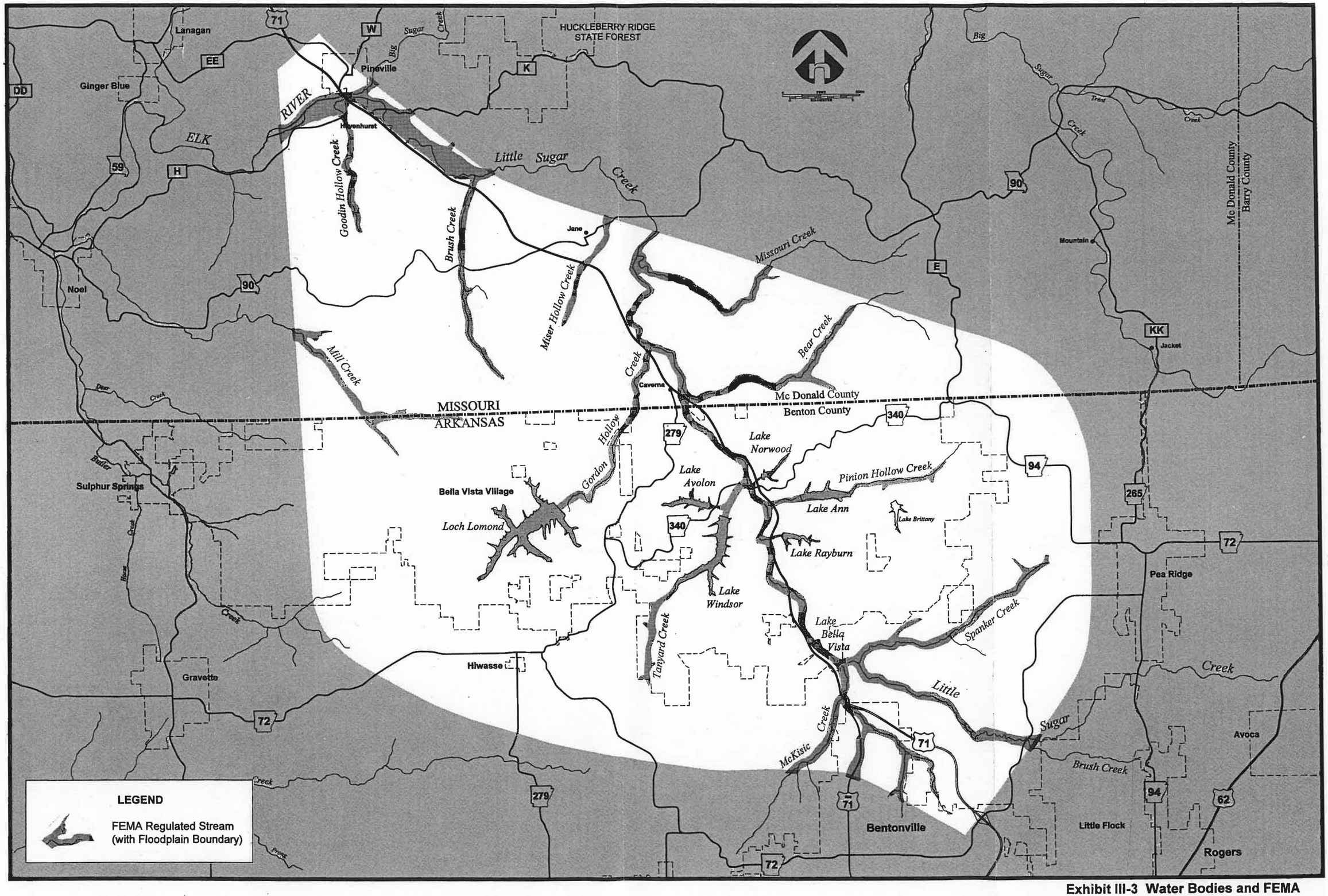


Exhibit III-3 Water Bodies and FEMA Regulated Streams

LEGEND

- 5 cfs Stream
- NWI Designated Streams
- Ponds / Lakes
- R2 Riverine Lower Perennial
- R4 Riverine Intermittent
- PFO Palustrine Forested
- PSS Palustrine Srub-shrub
- PEM Palustrine Emergent

Note: The water resources shown on this map were derived from National Wetlands Inventory maps, aerial photos and field observations. They do not necessarily meet the Corps of Engineers' criteria for jurisdictional wetlands or Waters of the U.S. Those that do meet the criteria, and are therefore regulated, are shown on Exhibit E-2 in Appendix E.

Exhibit III-4 Waters of the U.S.

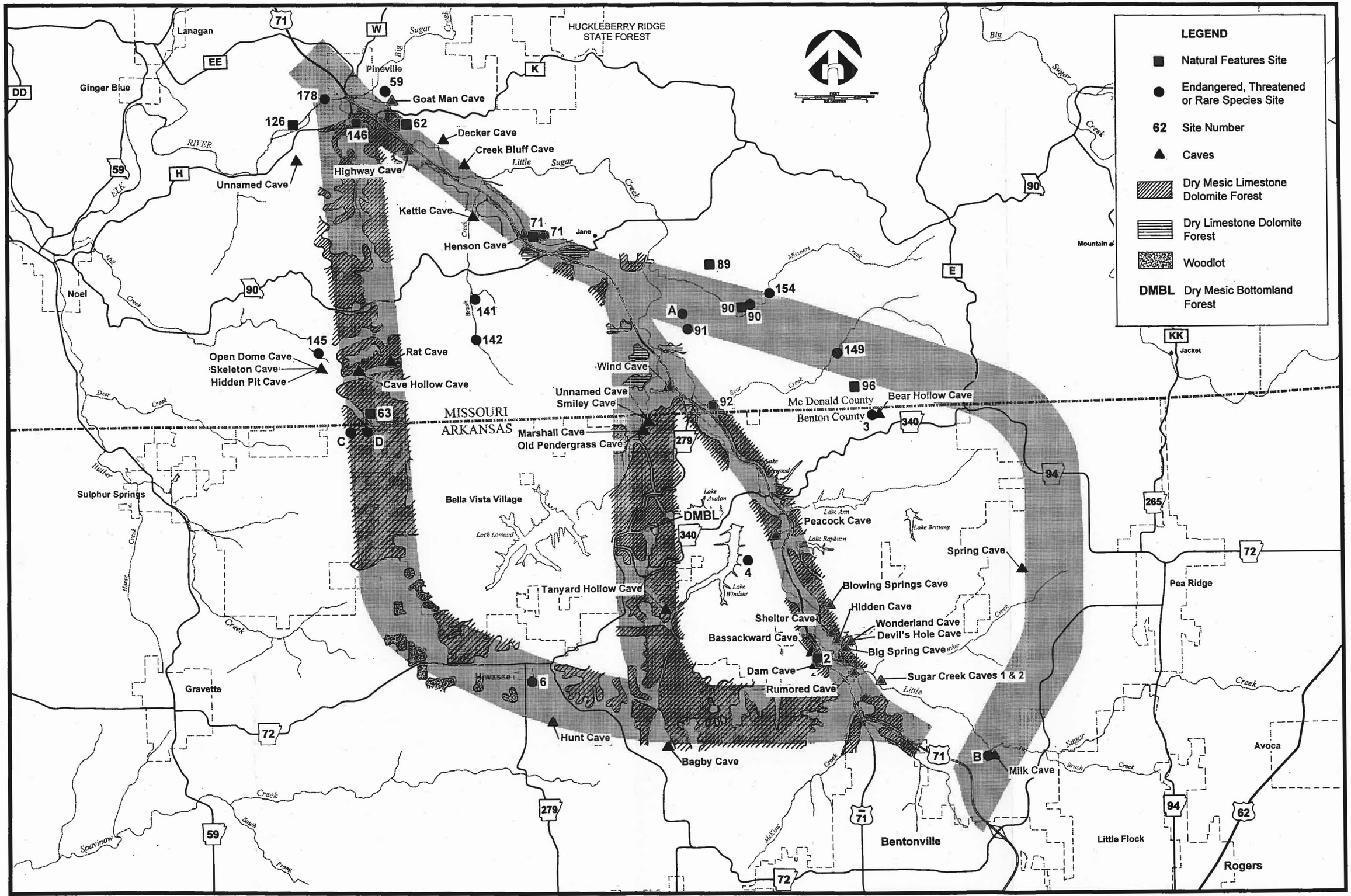


Exhibit III-5 Natural Environmental Constraints

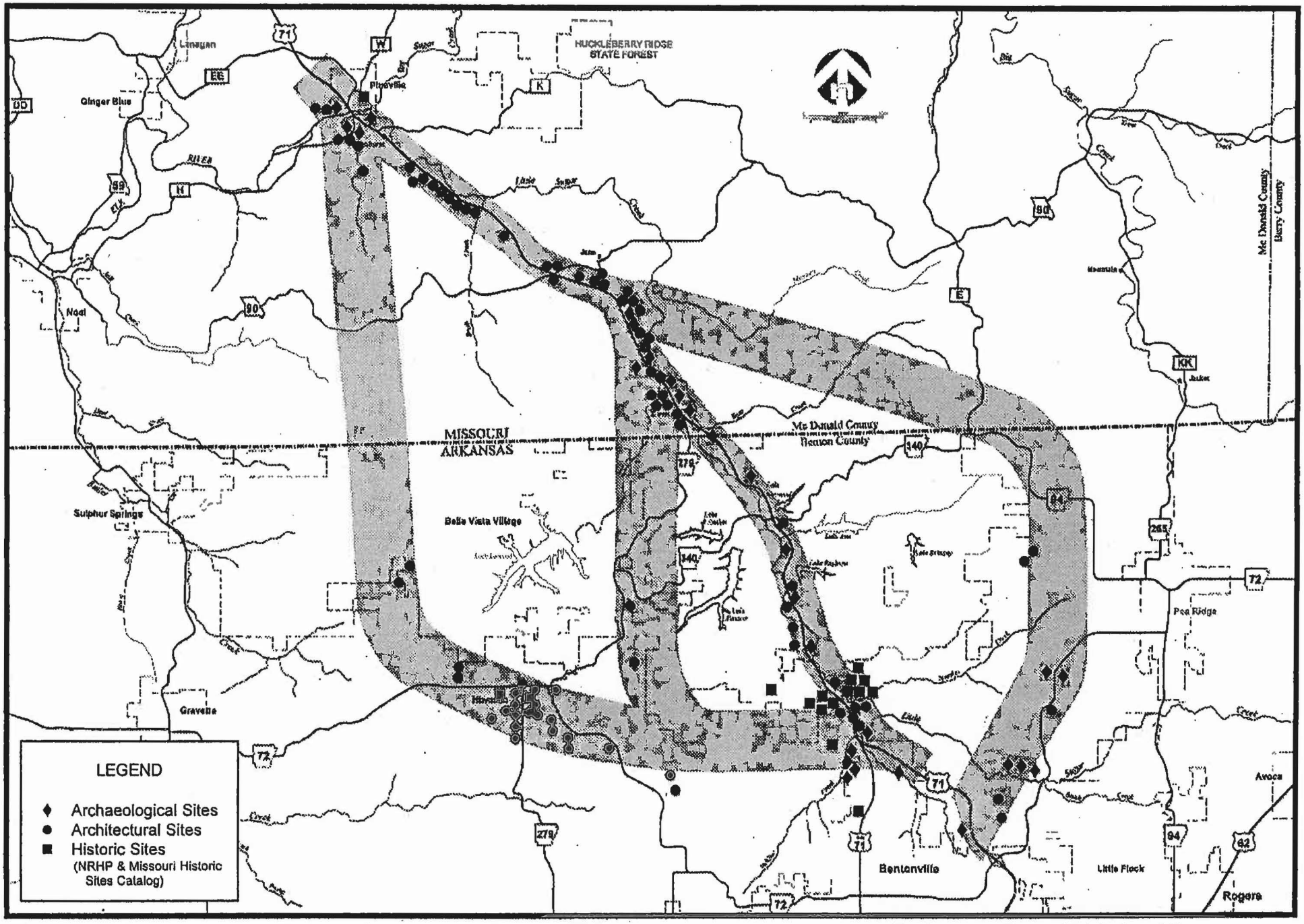


Exhibit III-6 Recorded Cultural Resources

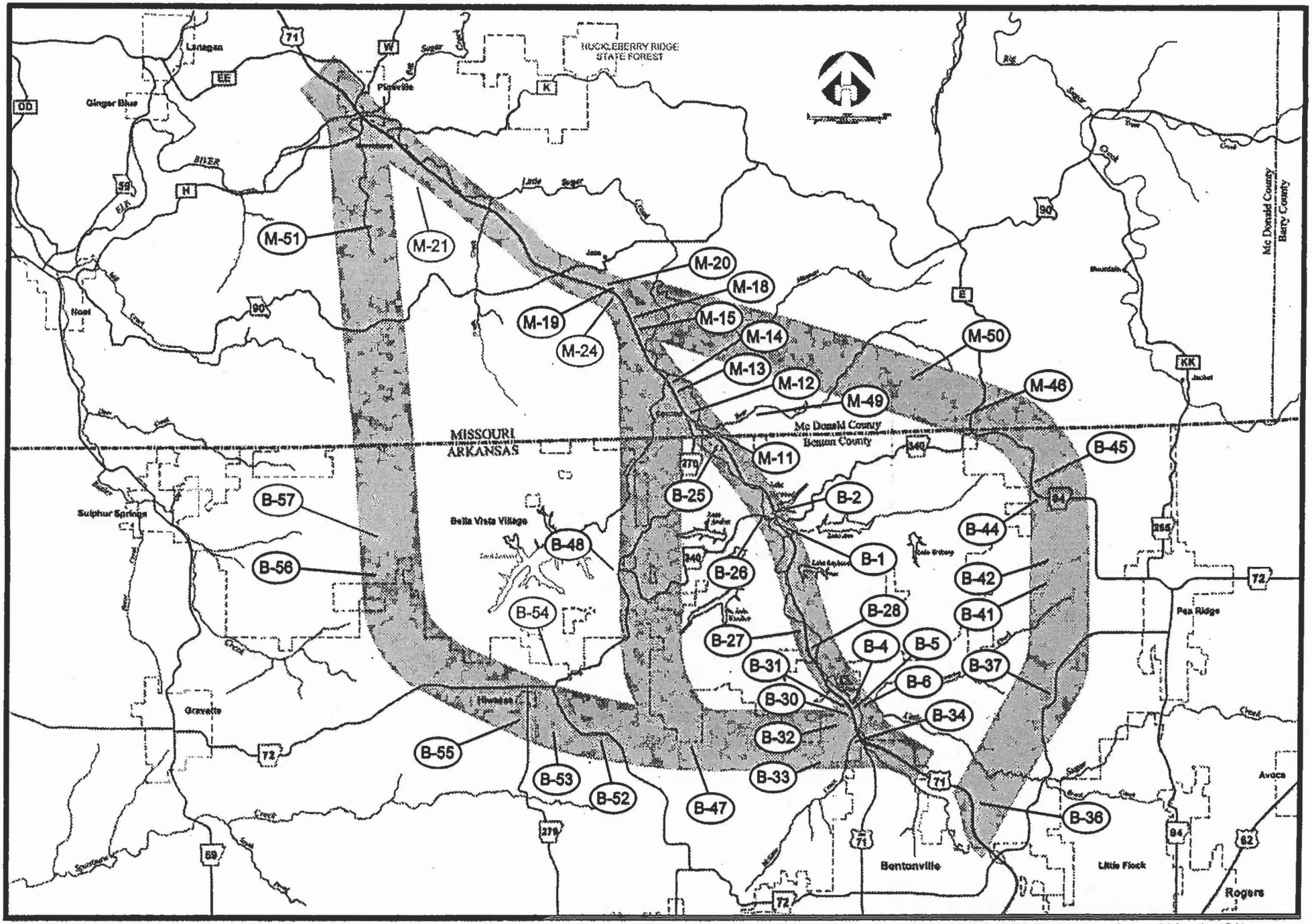
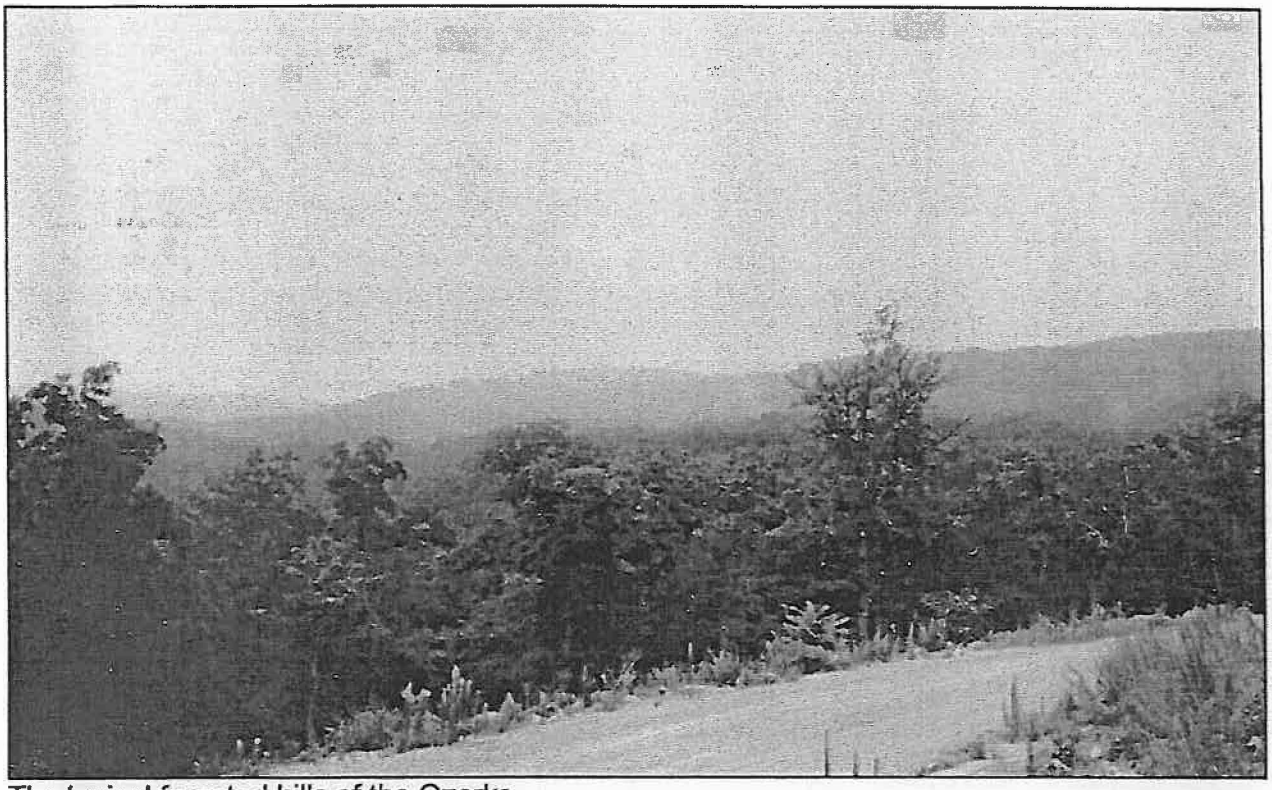


Exhibit III-7 Hazardous Waste Sites



The typical forested hills of the Ozarks.

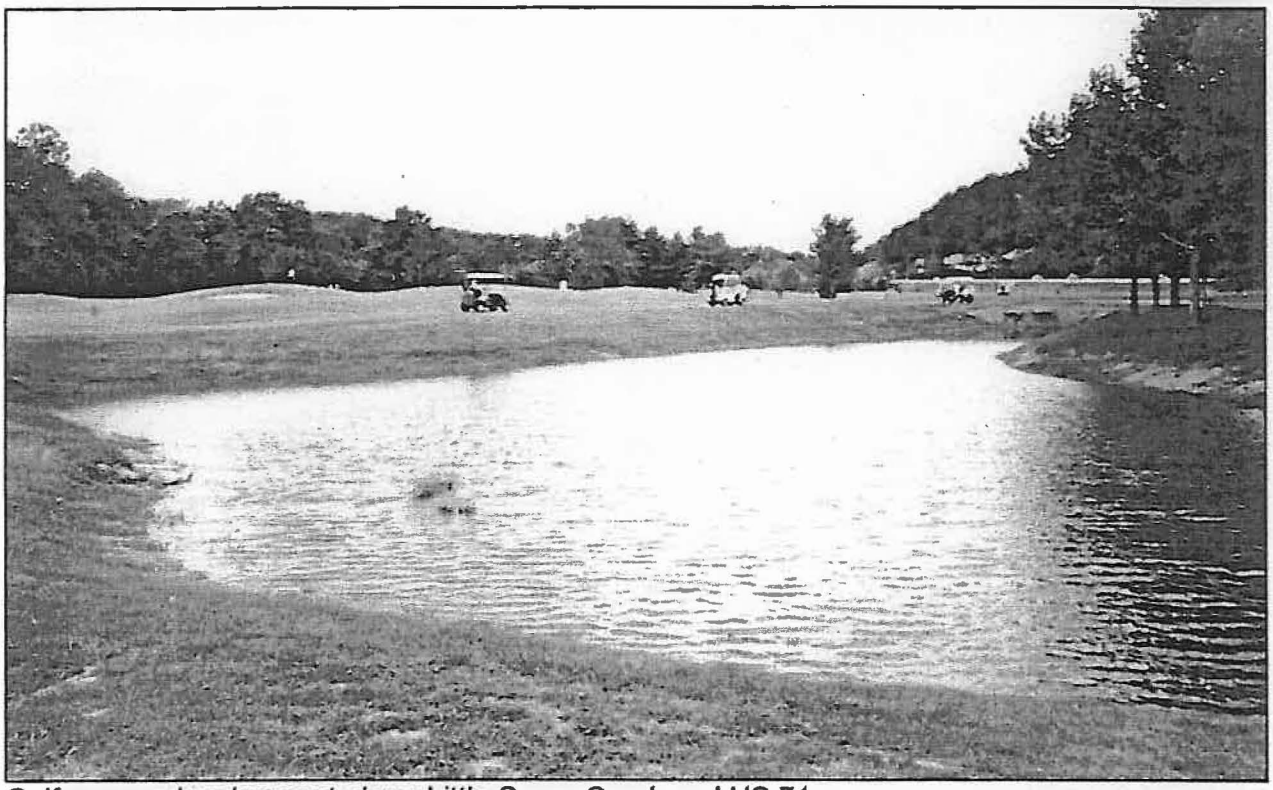


Cleared land among the Ozark hills.

Exhibit III-8 Regional Visual Environment - *Topographic Relief* (Sheet 1 of 5)

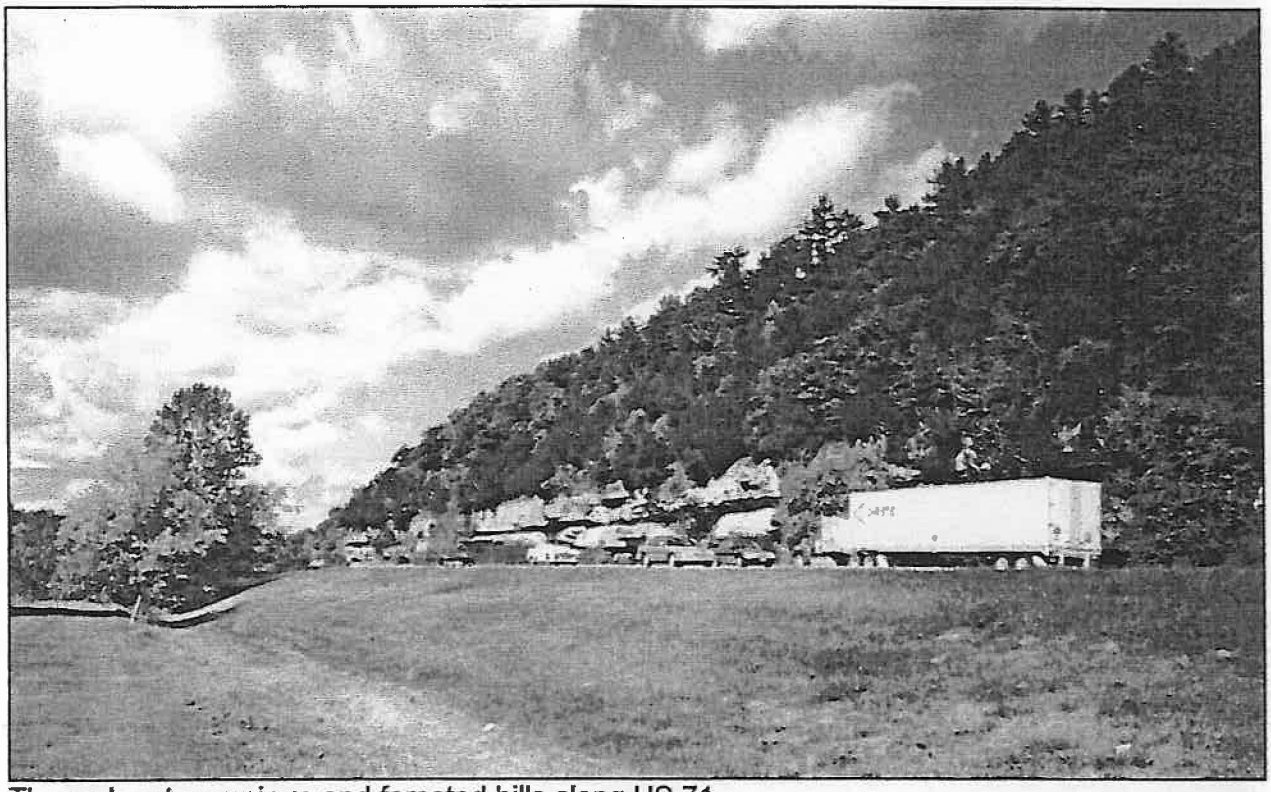


A typical Ozark stream - Little Sugar Creek.

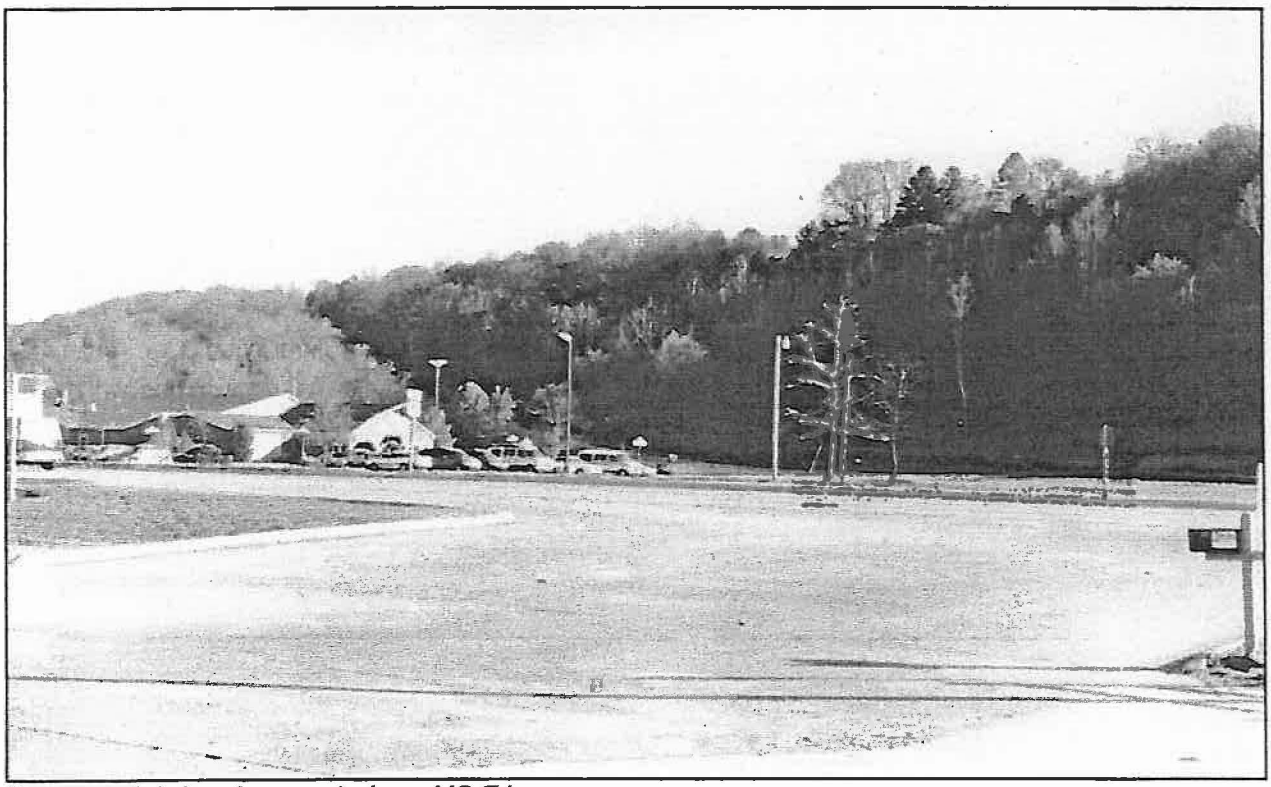


Golf course development along Little Sugar Creek and US 71.

Exhibit III-8 Regional Visual Environment - *The Valleys* **(Sheet 2 of 5)**

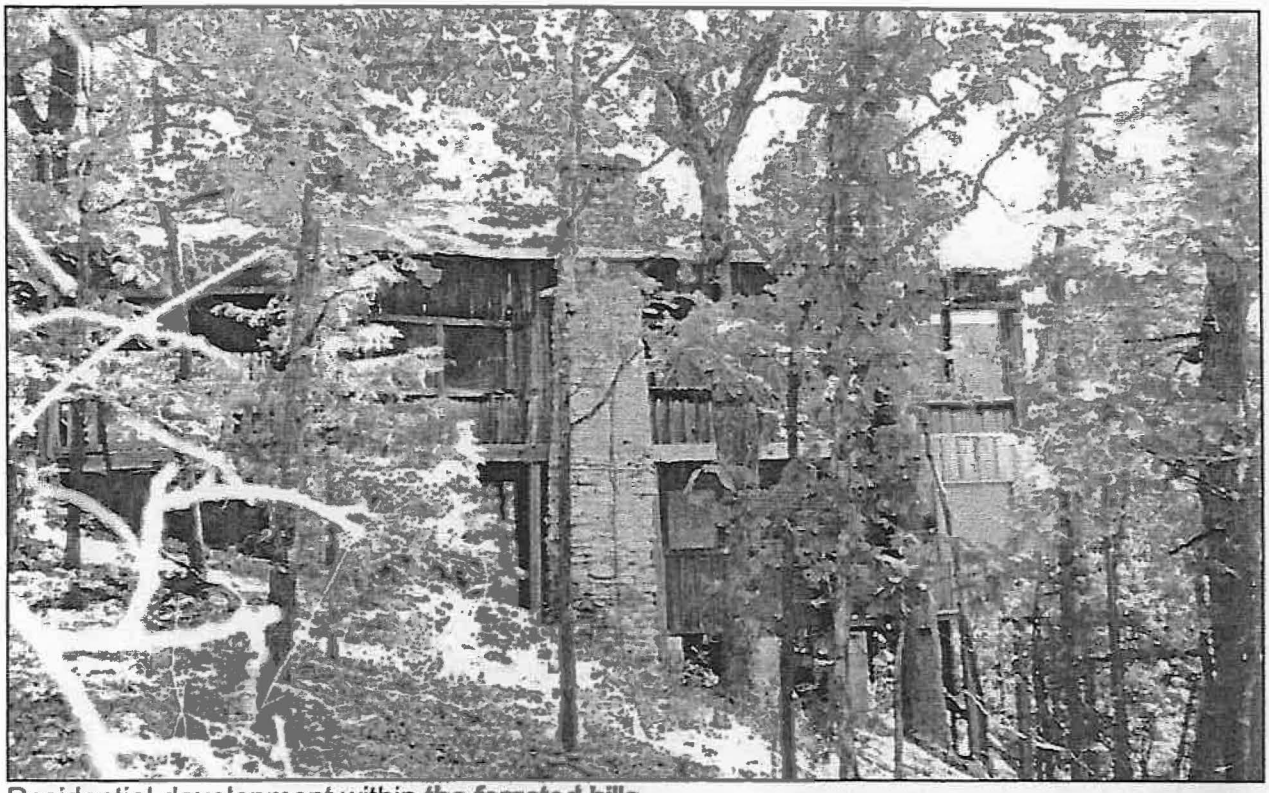


The rock out-croppings and forested hills along US 71.

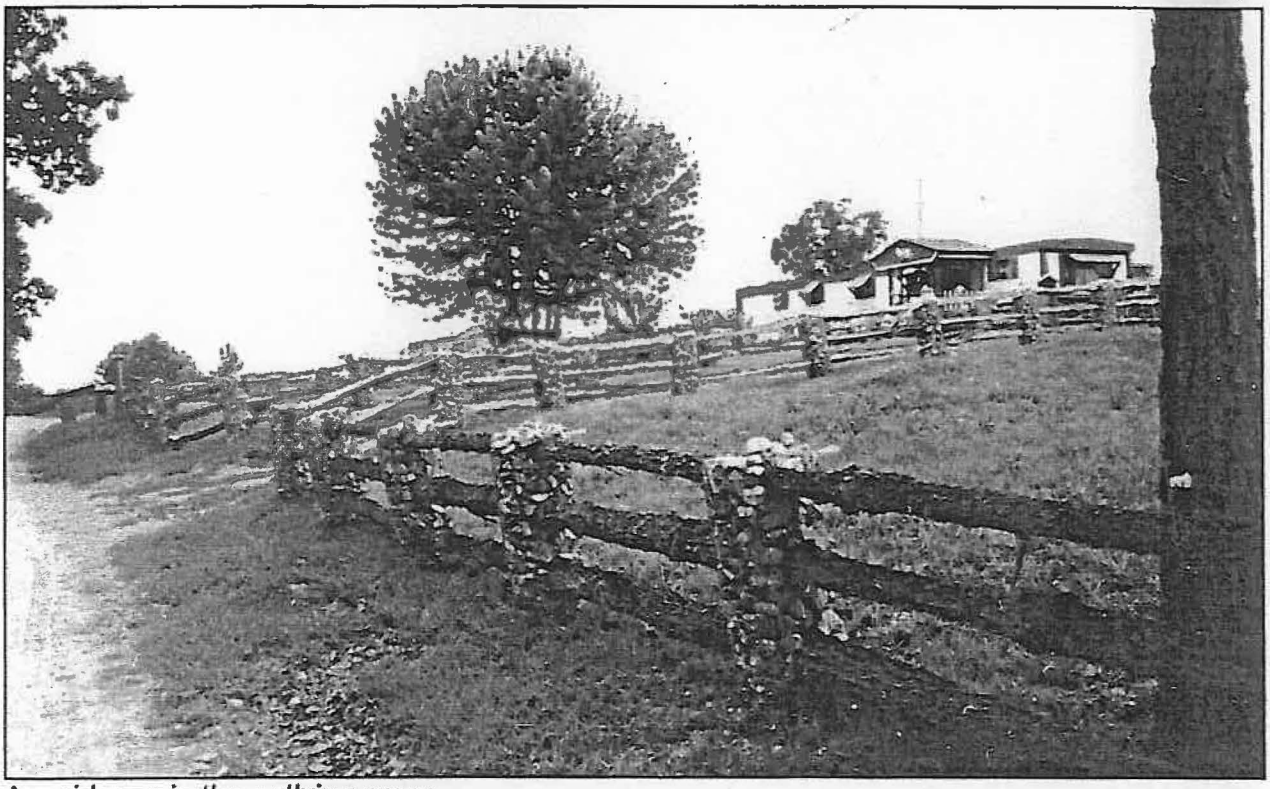


Commercial development along US 71.

Exhibit III-8 Regional Visual Environment - *Existing US 71 Highway* **(Sheet 3 of 5)**



Residential development within the forested hills.



A residence in the outlying areas.

Exhibit III-8 Regional Visual Environment - *Residential Areas* **(Sheet 4 of 5)**



Poultry barns in the agricultural areas.



Cleared pastureland among the hills.

Exhibit III-8 Regional Visual Environment - *Agricultural Areas* (Sheet 5 of 5)

Chapter IV - Environmental Consequences

This chapter describes the potential environmental consequences of the reasonable improvement alternatives discussed in Chapter II - Alternatives. The basis of the evaluation of the potential social, economic and environmental impacts was established and defined as the existing baseline conditions in Chapter III - Affected Environment. Those alternatives that are assessed for their impacts within this chapter include the following:

- **"No-Build" Alternative** - Continuance of the existing roadway system with minor safety improvements (i.e. Transportation Systems Management (TSM) measures) consisting primarily of intersection upgrades along US 71.
- **"Freeway-Build" Alternative** - Freeway construction alternatives in any of the three Study Corridors (Far West, Near West and Existing). Since a number of alternative alignments have been defined within the Study Corridors, the total impacts for each corridor are presented as a range.

For the purposes of evaluating the impacts of the competing alternatives and for clarity of discussion, the impacts for some of the issues have been presented according to the alignment segmentation and link definitions of the various alternatives within each Study Corridor. For the more regional and less site-specific issues, such as Land Use, Social Impacts, Economic Impacts and Air Quality, the impacts of the alternatives have been evaluated on a corridor basis. Aerial mosaic plan plates, as shown in Appendix C at a scale of 1:6,000 or 1:12,000, provided the basis for the quantification of impacts for each alternative. Site verification and appropriate field reconnaissance activities were also conducted.

Since the selection of the Preferred Alternative (i.e., Far West Alternative), more detailed investigations for several environmental issues have been performed to more discretely define the impacts of the Preferred Alternative. These issues include Wetlands and Cultural Resources. Consequently, summaries of the Preferred Alternative impacts are presented for each of these issues in Section M and Q, respectively.

A. Land Use Impacts

Improvements to US 71 could directly or indirectly impact local land uses and trends of development in three ways: primarily, secondarily, and cumulatively.

Primary impacts to land use are the direct effects resulting from an action and could occur either temporarily during construction or permanently as a result of the action. An example of a primary impact would be the displacement of a use, activity or structure. Other examples of primary impacts include the significant disruption of an activity or use, such as through the elimination of access or parking. Primary impacts can be easily assessed and calculated. The number of displacements, costs associated with relocation and a measure of the area's ability to absorb relocated residents and businesses are means of quantifying primary impacts.

Secondary impact result from induced development that would not have likely occurred without an action. Secondary impacts are those "caused by an action and are later in time or farther

removed in distance but are still reasonably foreseeable" (40 CFR 1508.8 CEQ Regulations). For example, a secondary impact could be the attraction of a new industry to locate in the area because of improved access. Secondary impacts are assessed by anticipating future trends.

Cumulative impacts result from incremental consequences of an action when added to other past and reasonably foreseeable future actions (Federal Register, 40 CFR 1508.7 CEQ). Reasonably foreseeable future actions include ongoing and anticipated trends of development.

There are no well-defined techniques to quantifying either the cumulative or secondary consequences of an action, as a region's growth is determined by many factors. Transportation is an important factor influencing location, magnitude, and timing of future development. Other elements that also play important roles, include the market for real estate, tourism trends, land availability and costs, quality and extent of infrastructure, character of topography and nature of soils.

Alternatives described in detail in Chapter II have been assessed and evaluated based on one generalized factor -- Compatibility with Current Land Use. This factor recognizes that the existing land use patterns have evolved around and in association with the current roadway network, of which the principal element is US 71. The factor further recognizes that the primary land uses are associated with retirement living and that in this particular community, lower density development is desirable. Commercial activities and other transportation-oriented uses have developed along or in orientation with the current US 71 facility. The Compatibility with Current Land Use is a subjective rating of how well the alternative interfaces with the Study Area's current land use and master plan, and promotes the continued evolution of the current development trends. The rating scale included five possibilities -- Excellent, Good, Fair, Marginally Poor, and Poor. The rating of poor indicates that the proposed alignment would produce displacements, prevent a logical extension of land use patterns, and/or cause physical barriers between residents and amenities. Table IV-1 shows the ratings of the competing alternatives for the land use factor.

TABLE IV-1
LAND USE IMPACT RATINGS

Land Use Impact Factor	"No-Build" Alternative	Far West Corridor	Near West Corridor	Existing Corridor
Compatibility with Current Land Use/Master Plan	Fair	Good	Poor	Good

1. "NO-BUILD" ALTERNATIVE

The land use impacts of the "No-Build" Alternative would focus on the urban areas, most specifically, Bella Vista and Pineville. Exhibit IV-I shows the projected 2020 land use for the "No-Build" Alternative.

a. Primary Impacts

The "No-Build" Alternative would offer some relief to the current impacts on land use in the developed areas surrounding the existing corridor, namely the city of Pineville and the Bella Vista community, resulting from the current level of traffic. Existing inconvenience and safety considerations experienced when crossing or entering the highway traffic to make local trips

inhibit the overall development in the region, including commerce and subarea connectivity. Though the TSM improvements would eliminate some of the safety concerns, increased travel delays and travel inefficiencies would still exist.

As shown in Table IV-1, a "Fair" rating was given to the "No-Build" Alternative for the "Compatibility with Current Land Use" evaluation factor. Due to the fact that the Study Area land use and development trends have evolved around the US 71 Corridor, and that with the TSM improvements the safety concerns would be mitigated, a "Fair" rating was given to the "No-Build" Alternative.

b. Secondary and Cumulative Impacts

Because no new access would be provided with the "No-Build" Alternative, no secondary impacts would be realized. The "No-Build" Alternative would impact existing development trends and committed development once a severe level of traffic congestion along US 71 is reached. In the future, as US 71 becomes excessively congested, activities in congested segments would become increasingly difficult to access. Limitation of access to existing or future development could be required to maintain the capacity and safety of the roadway. As a result, access points to US 71 could be further restricted, thus increasing congestion at those limited points of access. However, the TSM improvements would somewhat mitigate the current secondary/cumulative impacts on land use in Bella Vista resulting from the current traffic congestion. The inconvenience and safety considerations experienced when crossing the highway traffic to make local trips would be lessened by TSM measures.

2. "FREEWAY-BUILD" ALTERNATIVES

Exhibits IV-2 through IV-4 show the projected 2020 land use for the Far West, Near West and Existing Alternatives, respectively.

a. Primary Impacts

The "Freeway-Build" alternatives would affect land use in the urbanized areas of Pineville and Bella Vista by allowing local traffic to better access neighboring areas without direct contact with highway traffic. Primary impacts to land use would be greatest within Bella Vista where the past trends for new development are most clearly defined and can be reasonably expected to continue. In the rural areas, new highway facilities would have minimal effects on current land use due to the non-defined nature of the rural/agricultural land use areas. Some rural land uses would be displaced with some of the "Freeway-Build" Alternatives. In addition, in some areas, the "Freeway-Build" Alternatives would likely induce land development in areas where development would not currently be reasonably expected.

Far West Corridor

As shown in Table IV-1, the Compatibility with Current Land Use factor was rated as "Good" for the Far West Corridor Based on the compatibility of the alternative with the master plan for the village. The Far West alternative would provide new access to the western Bella Vista areas that would sustain the low-density type of development which is very characteristic for the community. However, the location of this corridor is the most non-urban of all the "Freeway-Build" Alternatives.

A highway facility located through current rural/agricultural and forested areas would have the effect of disturbing the continuity of the farming operations of those areas contiguous to the

route location. The continuity of the forested areas adjacent to the route would also be impacted.

Due to the proximity of the corridor to the towns of Gravette, Arkansas, and more directly Hiwasse, Arkansas, the Far West Corridor would have positive impacts to the accessibility of those communities, particularly to outside employment opportunities. Marginal effects due to a loss of commerce from through traffic would be felt along US 71 near the communities of Jane and Caverna, Missouri, as well as Bella Vista Village. This issue of economic impacts due to the diversion of current trip patterns is discussed in greater detail in Section F of this chapter. The issue of business displacement impacts is discussed in greater detail in Section E of this chapter.

Near West Corridor

The Compatibility with Current Land Use was rated as "Poor" for the Near West Corridor due to the nature and degree of the direct impacts on the developed areas within the Bella Vista Village which have evolved as predominately residential uses. Of the three corridors, the Near West Corridor would create the greatest conflict with existing land use. Despite being located in the center of residential areas, because of the sparse pattern of the existing residential development that is characteristic of the Village, the number of displacements would be relatively low.

The disturbance to the Bella Vista area near the crossroads of Routes 340 and 279 would be costly to this area's ability to serve the central portion of Bella Vista with social and commercial land uses. This area contains the largest amount of land reserved for future development in the entire development. The alternative alignments within the Near West Corridor would impact this area's ability to serve as a community center.

Due to the diversion of trips away from the existing US 71 roadway through the Bella Vista area, marginal negative effects due to a loss of commerce from through traffic would likely be felt along US 71 from near the state line to the US 71/US 71B Interchange. This issue of economic impacts due to the diversion of current trip patterns is discussed in greater detail in Section F of this chapter.

Existing Corridor

For the Existing Corridor, the Compatibility with Current Land Use factor was considered "Good" due to the current patterns of development and land use trends surrounding the existing US 71 Corridor. The Study Area has developed in accordance with the accessibility offered by the existing US 71 facility. Land uses compatible with and complementing the US 71 facility have developed in the areas adjacent to the corridor. Since freeway improvements would improve the accessibility, safety, and efficiency of US 71 and growth opportunities would remain along the existing roadway, it is reasonable to conclude that the current development and land use trends would continue with the Existing Alternative. Changes in the physical character of the roadway (i.e. conversion from an expressway to a freeway) would be conceptually consistent from a land use and development perspective with the type of current development in the urban area of Bella Vista. Currently, the intensity of development in Bella Vista is greatest within the US 71 Corridor.

b. Secondary and Cumulative Impacts

Construction of any of the "Freeway-Build" Alternatives would increase the regional access of

the entire Study Area. The attractiveness for new development in the proximity of the improvements would increase for all of the "Freeway-Build" Alternatives. In some cases, this new development would reflect a continuation of current development trends. Where new access is provided with the freeway construction, development would likely occur on a somewhat accelerated schedule as compared to the "No-Build" Alternative.

As necessary, frontage roads would be provided with each "Freeway-Build" Alternative to maintain access to adjacent properties. Frontage road requirements have been identified for each alternative and are shown in the Plan Plates (Appendix C). The impacts of the frontage roads were included in the assessment of the alternatives, including their secondary and cumulative impacts.

Far West Corridor

Nearly one-tenth of Bella Vista Village is unplatted and lies generally west of the Far West Corridor. This land is noted as reserved for future development on Bella Vista's general development plan. The residentially developed area immediately to the east of the Far West Corridor is known as the Highlands. With the exception of two subdivisions near the Highlands Golf Course Clubhouse, all subdivisions in the area are considerably less than 25% developed. Other areas near the Far West Corridor outside of the Village are rural/agricultural or forested. As indicated by the density of the current development around the corridor's route, the route is located well outside of the synergistic center of current development within the Study Area.

Based on these current development synergies, it is anticipated that any secondary impacts created by the Far West Alternative would be focused in Benton County. Though the chance of induced development in McDonald County would exist, it is likely that the secondary and cumulative impacts for McDonald County would be minimal. There is currently very little development initiative in western McDonald County and it is not anticipated that the Far West Alternative would change this trend. Any induced development would likely occur near interchanges, and there would only be one in McDonald County -- Route 90. (The Route H Interchange would be constructed as part of the MoDOT improvements to the north.) Because convenience commercial facilities are already present at Route H and US 71, there may be little incentive for similar types of development at Route 90. Furthermore, the topography in the vicinity of the interchange of Route 90 and the Far West Alternative is not conducive to large-scale development. Due to the controlled access nature of a freeway, new development and secondary impacts would likely focus on the interchange areas. It is likely that with the new access points near Hiwasse and the Highlands area, the existing development trends of the area would be altered. Near Hiwasse, the current rural, farming land uses would likely be disrupted with land uses connected with the new US 71 facility. Similarly, the new and improved regional access that would be afforded by the Far West Corridor would likely reorient the development trends of Bella Vista Village. It is reasonable to assume that unless other influences were evoked, the western sections of the Village would begin to develop in a residential pattern similar to the other areas of the Village where development has been initiated. Commercial, community and social land use development would likely spring up along the Far West Corridor similar to the existing US 71 Corridor but in a more nodal pattern focused on the interchange access points.

Due to the current sparse development patterns of the Village and the considerable growth and development capacity currently available in those areas where development within the Village has already been initiated, the Far West Corridor would have a marginally poor influence on economic development and long-term land use assuming current levels of development. The

existing land patterns along this alternative are mostly undeveloped. Considering the general development plan of Bella Vista, constructing this alternative would provide the opportunity to open the western portion of the Bella Vista development.

Past trends in Bella Vista have shown that a small percentage of residents have chosen to live away from the centers of activity. Opening up the western portion of the Bella Vista for new platting before the existing areas mature more fully, and assuming current levels of development, would have the net effect of spreading public and private investments over a much greater area. This would have the potential to generate a higher level of development in the area as a whole.

Even with the potential for increased growth in development, the location of this corridor is still the most non-urban of all the "Freeway-Build" Alternatives. The effects of this new access on secondary impacts would be mitigated by three primary factors. First, US 71 would be a freeway with only one access point west of Bella Vista, so the scope of any induced development would be fairly limited due to the controlled access limitations and the constraints of the topography. Secondly, the undeveloped areas west of the Far West Alternative do not have the infrastructure necessary to support land development while the existing Bella Vista development has the infrastructure and considerable capacity for additional residential and commercial development. Finally, since this alternative is the most non-urban alternative, it is concluded that secondary impacts to floodplains and other potentially sensitive environmental issues would be minimal because of the lack of development intensity and density. A prerequisite for systematic impacts to floodplains and water quality is intense and dense development – neither of which would be reasonably anticipated as secondary impacts for the Far West Alternative.

Near West Corridor

The Near West Corridor is located at the western edge of the most populated area of Bella Vista Village. It can be expected that a shift in the synergy of where people currently elect to build residences would likely move from its current location centered along the existing US 71 Corridor to a location oriented around the new corridor alignment. Retail and services to serve the shifted population would be expected to follow. Similar to the Far West Corridor, the induced impacts of the freeway improvements would be focused on the access points. For the Near West Corridor, these points would be located near the existing intersection of Route 340 and Route 279 and at the new interchange on the south side of the Village.

Due to the location of this corridor along the existing US 71 alignment within Missouri, secondary impacts to land use within Missouri would be minimal.

Since both public and private infrastructure have been provided in the areas of Bella Vista, capacity is available for new development and growth in the areas surrounding the freeway route, this corridor would favorably impact the area's economic growth potential.

Existing Corridor

Freeway improvements along the Existing Corridor would serve to reinforce the current patterns of development within the Study Area and would provide better service to the more populated segments of the Study Area. Within Bella Vista, the percentage of built-upon residential lots in subdivisions with proximity to US 71 suggests that a majority of current residents prefer to have more direct access to the roadway system. Under this alternative, land in direct proximity to the Existing Corridor can be expected to continue to develop faster than other areas of Bella Vista

and the freeway improvements could speed up the rate of current development. However, the current patterns of development would remain unaffected.

Commercial activities already located along existing US 71 can be expected to stay in their current locations under this alternative. Improved access, due to grade-separated crossings of the freeway, would allow some local patrons of commercial activities along US 71 to make their trips without interfacing with through traffic.

Implementation of this alternative would reinforce the current development patterns of the Study Area. A review of the development plan for Bella Vista reveals that tracts of land reserved for future development exist at all three major commercial centers along the existing alignment. This planned flexibility would allow Town Center, Sugar Creek, and Cunningham Centers to grow to meet increased needs for retail and services in the Existing Corridor. However, there would be a limit to the growth capacity of the corridor and growth could potentially cause congestion at access points.

B. Farmland Impacts

The soils information developed previously and presented in Chapter III was used to assess the potential impacts of the various alternatives on the agricultural resource base in the Study Area. The soil survey information for McDonald County, Missouri is currently incomplete. The NRCS was contacted to determine the status of the McDonald County soil survey. Both the Springfield and Neosho NRCS offices verified that the soil survey has been completed for the southern portions of McDonald County – those areas relevant to this study. Soil series mapping and calculations of farmland impacts were completed based on these data.

1. "NO-BUILD" ALTERNATIVE

The "No-Build" Alternative would have no primary impacts on existing prime farmland resources within the Study Area. The TSM measures would most likely not require additional right-of-way and would therefore have no impacts on the existing prime farmland resource base.

2. "FREEWAY-BUILD" ALTERNATIVES

For the purposes of the impact analysis, hectareage (acreage) impacts were based on a 107 meter (350 feet) wide corridor for the "Freeway-Build" Alternatives. The only exception was in the Existing Alternative in Benton County where the corridor width varies and much of the alternative utilizes existing AHTD right-of-way. Quantified impacts to farmlands include only those areas that would be located within an alternative's right-of-way consisting of farmland soils that are on undeveloped land or out of the existing AHTD right-of-way. Soil series mapping and a calculation of farmland impacts were completed for the "Freeway-Build" Alternatives.

a. Primary Impacts

There are several segments and optional alignments within each Study Corridor. Therefore, total farmland impacts for the "Freeway-Build" Alternatives are presented as a range of impacts in hectares (acres) for each segment. Table IV-2 presents the impacts of each alternative according to the three types of farmlands – Prime Farmland, Prime Farmland if Drained, and Farmland of Statewide Importance.

TABLE IV-2
IMPACTS TO FARMLAND SOILS
hectares (acres)

"Freeway-Build" Alternatives	Prime Farmland	Prime Farmland If Drained	Farmland of Statewide Importance
Far West			
Interim			
EX/NWA1	1.2 (3.0)*	0*	3.2 (7.8)*
EX/NWB1	0.0*	0*	1.3(3.3)*
EX/NWC1	0.4 (1.0)*	0*	0.8 (2.0)*
EXD1	0.0*	0*	0.4 (1.0)*
Total: Interim	1.6 (4.0)	0	5.7 (14.1)
Ultimate (Not including interim quantities)			
FWA1	0.0*	0*	1.4 (3.4)*
FWA2	1.4 (3.5)*	0*	7.9 (19.6)*
FWA3	1.4 (3.5)*	0*	8.6 (21.2)*
FWB1/C1	0.0*	0*	10.4 (25.6)*
FWB2/C2	0.0*	0*	7.92 (19.58)*
FWD1	15.08 (37.26)	0	33.10 (81.79)
FWD2	2.23 (5.51)	0	3.48 (8.60)
FW/NWH1	3.25 (8.03)	0	0.34 (0.84)
FW/NWH2	3.25 (8.03)	0	0.34 (0.84)
Total: Ultimate (Range)	6.88 to 19.73 (17.04 to 48.79)	0	13.14 to 52.44 (32.42 to 129.43)
Total: Interim + Ultimate (Range)	8.48 to 21.33 (21.04 to 52.79)	0	18.84 to 58.14 (46.52 to 143.53)
Total: Interim + Ultimate (Alt. FWA3-B2/C2-D1-H1)	21.36 (52.79)	0	55.65 (137.51)
Near West			
Interim			
EXD1	4.45 (11.0)*	0*	8.90 (22.0)*
Ultimate (Not including interim quantities)			
EX/NWA1,B1,C1	3.64 (9.0)*	0*	7.28 (18.0)*
NWD1/E1	0.40 (1.0)*	0*	4.85 (12.0)*
NWF1	4.03 (9.96)	0	10.07 (24.88)
NWF2	2.66 (6.57)	0	10.07 (24.88)
NWF3	1.90 (4.69)	0	5.17 (12.77)
NWF4	2.66 (6.57)	0	8.14 (20.11)
NWF5	1.90 (4.69)	0	3.24 (8.0)
NWG1	0.00	0	0.00
FW/NWH1	3.25 (8.03)	0	0.34 (0.84)
FW/NWH2	3.25 (8.03)	0	0.34 (0.84)
Total: Ultimate (Range)	9.19 to 11.33 (22.72 to 27.99)	0	15.72 to 22.55 (38.84 to 55.72)
Total: Interim + Ultimate (Range)	13.64 to 15.78 (33.72 to 38.99)	0	24.62 to 31.45 (60.84 to 77.72)
Total: Interim + Ultimate (Alt. EX/NWA1,B1,C1, NWD1/E1,F2,G1,FW/NWH1)	14.40 (35.60)	0	31.44 (77.72)
Existing Alternative			
Ultimate			
EX/NWA1,B1,C1	3.64 (9.0)*	0*	7.28 (18.0)*
EXD1	4.45 (11.0)*	0*	8.90 (22.0)*
EXE1	1.65 (4.08)	0	1.44 (3.56)
Total: Ultimate (Alt. EX/NWA1,B1,C1,EXD1,E1)	9.74 (24.08)	0	17.63 (43.56)

* Estimated quantities based on preliminary information provided by McDonald County NRCS.

b. Secondary and Cumulative Impacts

The "Freeway-Build" Alternatives would likely result in some secondary impacts to farmland due to the conversion of farmland to non-agricultural uses. New development would likely occur at access points located along the freeway. Farmers affected by the conversion of all or part of their land to the development of a roadway may choose to no longer farm or cultivate their land. As a result, more farmland soils could be taken out of production if farmers choose to sell their land. If the farmland is sold, it may be subdivided and converted to commercial or residential land use. New development may be delayed as utilities are gradually brought into the properties near the new facility. New commercial development would depend on the location, and such development would be expected to occur in areas already near the main population center. On this basis, it is reasonable to conclude that the Far West Corridor would have the most secondary and cumulative impacts to farmlands.

c. NRCS Form SCS-CPA-106

Impacts to the farmland resource base have been analyzed and compared through a process developed by the Natural Resources Conservation Service (NRCS) called the *Farmland Conversion Impact Rating for Corridor Type Projects*. Form SCS-CPA-106, which is the documentation for this rating, is found in Appendix H. On this form, the Total Points scored for the recommended alternatives within each corridor did not exceed the 160-point threshold established for consideration of farmland protection measures. An explanation of the corridor assessment criteria used to determine the score of each alternative on the form can also be found in Appendix H.

C. Social Impacts

The analysis of social impacts involves the assessment of a variety of factors that act collectively to create or reinforce a sense of community or place. Community is typically formed through associations between residents and key elements such as neighborhoods, places of commerce, schools, public facilities and gathering places such as worship centers and civic clubs. The degree to which alternatives would influence or impact these patterns of social interaction and community is summarized below and detailed in the following text.

Important to social institutions are critical mass and size of the service area. Critical mass is the amount of population needed for a particular social institution, activity, or service, to be provided. Without the sufficient critical mass of people within a geographic area, residents need to travel outside the area to obtain services or to gain access to institutions. When the service area of the institution increases due to low density of population, people delay or forego the social activities and services due to additional travel costs, convenience and time.

1. "NO-BUILD" ALTERNATIVE

The only potential impacts to the current social environment for the "No-Build" Alternative would relate to the effects of the traffic conditions along the US 71 Corridor. Communities in the Study Area currently experiencing population growth would have increased traffic congestion on both US 71 and local road crossings, especially in Bella Vista. The ability to cross US 71 would become an increasing social barrier to local residents. This would be mitigated somewhat by the TSM improvements which would have an overall positive effect on allowing for the safe social interaction of the Study Area residents, especially in Pineville and Bella Vista where the highway facility crosses local traffic within the urbanized areas.

2. "FREEWAY-BUILD" ALTERNATIVES

The three "Freeway-Build" Alternatives would provide varying degrees of safe and reasonable accessibility for residents of Bella Vista and Pineville to social interaction venues, neighborhoods, and places of commerce.

a. Far West Alternative

The Far West Alternative poses the least negative effect to the social structure of the Study Area's communities and neighborhoods. With the exception of a few isolated homesteads, this alternative would not have the effect of physically barring current social interaction patterns. Due to the general lack of population near the alternative, there would be little notable positive impact to the current social structure of the areas near the alternative. However, due to the improved safety and operational conditions of the existing US 71 roadway, current established community interaction patterns would not be inhibited and would be improved.

This improvement in existing social interaction patterns would be due primarily to the removal of current impediments relating to traffic congestion and safety problems along existing US 71. With the Far West Alternative, these impediments would be removed through the diversion of through trips to the bypass facility and the improved operations of the existing US 71 roadway. These improved operational conditions would result from lower overall traffic volumes, fewer trucks, and traffic signals at major intersections for better traffic control. With the separation of through trips and local trips, some of which having socially-related trip purposes, considerable driver frustration would be eliminated and the system's overall safety would be improved. Because a driver's expectations regarding travel speed and delays are different depending on the nature of the trip -- through trip versus local trip -- the separation of these trips would provide an overall safer transportation system. The importance of this issue is of even greater significance when the average age and resulting driving ability of the local Bella Vista resident is considered. Because the Far West Alternative separates local traffic from through traffic, it would improve and enhance the opportunities for Bella Vista residents to socially interact with one another.

One key indicator of social interaction and structure is the existence of a place of worship. With the exception of Hiwasse area including the whole southern segment of the bypass, there are no places of worship within two miles of the Far West Alternative. It is believed that this alternative would facilitate the platting of the western portion of Cooper Community's holdings and would also increase the amount of home building west of Loch Lomond. Further, this future population base distributed over a greater area potentially undermines the existing social institution's ability to provide community services.

b. Near West Alternative

The Near West Alternative poses the greatest negative effect on the social structure of the Study Area's communities and neighborhoods. Namely, numerous residences within the Village would be physically severed from the surrounding community near Bella Vista Center. Physical disruption to this area would cause irreparable harm to the social structure. This alternative would impact six churches, the Arts and Crafts Center, Bella Vista Memorial Gardens, and the Bella Vista Community Center. These impacts would include direct impacts such as displacement of the facility, or proximal impacts such as increased noise, poor air quality, visual effects, and decreased water quality. One positive social benefit for this alternative would be increased access to privately owned recreational facilities in the western

portion of the development such as the Loch Lomond Yacht Club and the Scottsdale Golf Course.

Similar to the Far West Alternative, the Near West Alternative would provide some separation of through trips and local trips. Local trips would be able to use the existing US 71 roadway without the same degree of traffic congestion, accident risk, driver frustration, and incompatibility with other trips purposes and driver expectations as would result with the "No-Build" Alternative. However, due to the location of the bypass facility within the social setting of the Bella Vista community, the negative impacts of the Alternative would likely offset any improvements in social interaction created by improved traffic operations or accessibility. Social impacts not specifically relating to travel access and ease would move from the existing US 71 roadway area to the areas surrounding the Near West Alternative location.

c. Existing Alternative

From a location standpoint, the Existing Alternative would encourage the continuance of the existing US 71 Corridor as the primary development spine of the area, and consequently, the existing social institutions serving this area would be expected to continue to mature and flourish at a rate similar to or slightly better than the "No-Build" Alternative. Should the capacity of these institutions be reached, the Existing Alternative would provide little opportunity through improved transportation access for the expansion of new social interactions in other areas of the community. The Existing Alternative would reinforce the existing patterns of social interaction within the community. The US 71 Corridor is contiguous to six of the eight privately owned recreational lakes, four of the eight privately owned golf courses, and seven of the sixteen places of worship.

The Existing Alternative would provide some positive impacts to the social interaction of the Bella Vista community by removing the current unsafe and inconvenient barriers for some of the social interaction patterns of the community. Currently, traffic congestion and accident risks along existing US 71 inhibit the ability or willingness of the area's residents to socially interact. This problem is magnified by the high volume of trips which pass through the community on US 71 with driver expectations incompatible with the expectations of the local drivers. This problem is further exacerbated by the decreased ability of the typical local driver due to the elderly status of the community's residents. The Existing Alternative would separate those local trips that cross but do not use US 71. These social interaction patterns or trips would benefit from the Existing Alternative, but patterns that directly utilize US 71 would not realize an equivalent measure of benefit. Some local trips would still need to utilize the US 71 roadway, and its nature as a freeway facility would be a deterrent to the interaction of the Bella Vista residents for these trips. This problem is magnified due to the higher travel speeds and driver expectations of the freeway through trips and those of the local drivers. Though some of the incompatibilities of the abilities of local drivers, due to their age, and the typical freeway through trip may be mitigated through auxiliary lanes or changes in travel routes, the issue of unsafe travel conditions for local trips would exist none the less.

D. Environmental Justice

1. METHODOLOGY/REGULATIONS

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* was the result of a recognition that some Federal

Actions were having a disproportional adverse effect on certain designated population segments. Executive Order 12898 was signed February 11, 1994. Since then, federal agencies have developed interim guidelines and policy guidance to assist in the evaluation of federal actions for conformance with the spirit and the intent of Executive Order 12898.

The FHWA has issued technical guidance and developed policy papers on the implementation of the National Environmental Policy Act (NEPA) and its associated regulations as well as various Executive Orders. AHTD and MoDOT have adhered to these guidelines, regulations and policies in the preparation of the Draft EIS. This Draft EIS does review the proposed action and its alternatives in light of the interim policy and guidance of implementing Executive Order 12898.

To briefly summarize the intent of Executive Order 12898, the proposed action is to be reviewed for effects on minority populations and low-income populations. This is accomplished through the development of demographic baseline conditions within the affected environment and through the consideration of social impacts. The baseline demographic analysis is discussed in Chapter III, Section A. This analysis show that minority populations, as well as low-income individuals and families, are virtually absent from the Study Area. Social impacts are discussed in Chapter IV, Section C.

When a project does have a minority or low-income population who would be affected by the proposed federal action and its alternatives, the EIS should evaluate the specific characteristics of populations which would be affected. This could include impacts to traditional cultural properties as in the case of Native Americans; impacts to ecosystems that the minority or low-income populations are dependent on; impacts to the availability of replacement housing in minority or low-income population areas; and impacts to the business sector, both for business owners and employees in minority or low-income populations.

During the initial screening of alternatives, existing land use patterns, housing characteristics, cultural resources and potential environmental constraints within the Study Corridors were identified. As the alternatives were refined, additional field studies were undertaken and the key indicators were again documented and evaluated. This systematic interdisciplinary approach to the corridor and alternative evaluations is well documented within this Draft EIS.

Executive Order 12898 also addresses the importance of providing the opportunity for the affected population to be informed of the proposed action and its alternatives. It is likewise important to provide the affected population the opportunity to provide comments throughout the corridor location and route selection process. The US 71 Corridor Location and Environmental Study included an extensive public involvement process.

Plans to involve the public in the study of US 71 commenced at the project kick-off meetings and have continued throughout the study. The public involvement program for US 71 was structured to maximize effectiveness in communicating with the public and to make record of and respond to the key issues and concerns of the various publics involved. This included the following activities: information gathering meetings, public meetings, presentations to area groups and organizations, corridor advisory council, public officials communications, press briefings; press releases; newsletters; local project office address, toll free phone hotline; project database; meeting notices; project logo; and map displays at local sites.

For a more detailed description of the public and agency involvement process, see Chapter VII of this Draft EIS.

2. ASSESSMENT

The heart of the environmental justice review consists of demonstrating that an identifiable low income population or minority population would not experience adverse disproportionate impacts by the proposed action. Although there have been substantial increases in minority populations in recent years, it does not show up in the 1990 Census.

The minority population that is present has moved into the area, drawn by jobs in the poultry business, only within the last several years. The Kansas City Star newspaper, September 28, 1997, had an article on this entitled, Blending Two Cultures, and focused on Noel, Missouri. This city is outside the Study Area, located both north and west of the project's location. The land use or environmental survey work noted areas where it appeared that both low income and minority populations resided or worked. It was found that neighborhoods or areas where the low income or minority population reside or are employed are not present within the Study Area, the corridors, or the alternative alignments, that are presently being studied.

During field work, it was noted that there were some minority residents within the East Corridor, but this corridor was eliminated early on for a variety of reasons including a lack of traffic diversion from US 71. Reducing traffic on US 71 was an important consideration in assessing the effects of the proposed corridors.

Since the areas where low income and minority populations reside are not affected by the project, the next consideration is the location of the low income and minority populations' employment centers. The question to be asked is are the employment centers being impacted, or would the corridors be severing the residents from their commercial or employment base. From observations and community contacts at public meetings and corridor advisory meetings, it was noted that there are relatively few minority or low income persons working within the Study Area.

At the present, only one minority operated business has been identified, the El Toro Mexican Restaurant. It is one of three commercial establishments taken by the Far West Alternative and one of the six businesses impacted by the Near West Alternative. It is not affected by the Existing Alternative. Improvement to the US 71 / US 71B Interchange is the project component which affects the El Toro Restaurant.

In terms of environmental justice review, there are no adverse disproportional impacts to the low income or minority population for any of the proposed alternatives. In as much as the business displacements are relatively few in numbers; three for the Far West and six for the Near West, even a single business which is minority operated, such as the El Toro Restaurant, becomes more apparent than in a project which has numerous business displacements. Although there has not been a business displacement survey which clearly identifies the characteristics of the businesses in question, it is unlikely that there are other minority owned or operated businesses within the Study Area. Based on this observation of many of the businesses and those attending the public information meetings, it is likely that the El Toro Restaurant would be the only minority operated business within the Study Area.

E. Relocation Impacts

Among all the impacts of the construction of a highway or other major transportation improvement project, the acquisition of real property, including residences and businesses, is

the action that engenders the most discussion among those directly affected. In an effort to make the property acquisition process as equitable as possible, regulations have been developed to ensure adequate consideration and compensation for the persons whose property is required for the project. Regardless of the impact, it is often traumatic to be uprooted from one's home, business or the land that has been in the family for generations. While many long-time residents have willingly participated in the recent real estate boom, others have not. It is likely that both long-time residents and recently arrived persons may be affected by the acquisition of their property.

1. REGULATIONS

Property that is required for the construction of US 71 improvements would be subject to the provisions of Public Law 91-646, as amended by Public Law 100-17. Public Law 91-646 is the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 and is generally referred to as the Uniform Act. This is a federal law. Public Law 100-17 is the Surface Transportation Act of 1987 that amended certain provisions of P.L. 91-646. It also is a federal law.

Provisions of the current Intermodal Surface Transportation Efficiency Act (ISTEA) H.R. 2950 have also included all references to the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, and these provisions require compliance with Title VI of the Civil Rights Act of 1964 (H.R. 2950-34, Section 1017 Acquisition of Rights-of-Way).

a. Benton County, Arkansas

It is AHTD's policy that adequate replacement housing be available, built if necessary, before any person would be required to move from their dwelling. All replacement housing must be fair and offered to all affected persons regardless of race, color, religion, sex, or national origin. Construction of the project would not begin until decent, safe, and sanitary replacement housing is in place and offered to all affected persons. As contained in 49 CFR 23.203 (c), "No lawful occupant shall be required to move unless he or she has received at least 90 days advance written notice of the earliest date by which he or she may be required to move".

There are two basic types of relocation payments available: (1) Replacement Housing payments, and (2) Moving expense payments. Replacement Housing payments are made to qualified owners and tenants. An owner may receive a payment of up to $22,500 above and beyond the appraisal of the existing dwelling for the increased cost of a comparable replacement dwelling. The amount of this payment is determined by a study of the housing market. If the replacement dwelling chosen by the displaced contains a larger size home site than the displaced site, the cost of the additional property would be deducted from the replacement housing payment. Owners may also be eligible for payment to compensate them for the increased interest cost of a new mortgage and the incidental expenses incurred in connection with the purchase of a replacement dwelling.

A qualified tenant may receive a payment of up to $5,250. Tenants may elect to receive a down payment rather than a rental subsidy to enable them to purchase a replacement dwelling.

These replacement-housing payments are made in addition to moving expense payments. All displaced persons are eligible for reimbursement for actual reasonable moving costs.

If the displacee is not satisfied with the amounts offered as relocation payments. They would be provided a form to assist in filing a formal appeal. A hearing would be arranged at a time

and place convenient for the displacee, and the facts of the case would be promptly and carefully reviewed.

Relocation services would be provided until all persons are satisfactorily relocated. The Relocation Office would have listings of available replacement housing and commercial properties. Information is also maintained concerning other federal and state programs offering assistance to displaced persons.

Similar to the relocation procedures for residences, AHTD would utilize all possible sources of funding or other sources that may be available to businesses. All displaced businesses would be eligible for reimbursement for actual reasonable moving costs. This type of payment would not be less than $1,000 or more than $20,000. Businesses are also eligible for displaced business payments, which are intended to assist operators should they terminate operations.

b. McDonald County, Missouri

MoDOT makes available two booklets -- *When a Highway Comes Your Way* and *The Relocation Assistance and Payment Program*. These booklets explain the process, benefits and rights under the law. As is expressed by these booklets, it is the policy of MoDOT that no person would move from their dwelling until at least one comparable replacement dwelling has been made available to that person(s). A comparable replacement dwelling is safe, decent and sanitary, functionally similar, and within the financial means of the relocatee. Should these criteria not be met, last resort housing will be made available. The replacement housing must also be open to persons regardless of race, color, religion, sex or national origin (Title VIII, 1968 Civil Rights Acts).

Under most circumstances, persons residing in a mobile home would be eligible for the same relocation payments as relocatees who live in conventional dwellings. Advisory services would be provided on a reasonable basis commensurate with the relocatees' needs. Relocatees would be eligible to receive referrals of available replacement properties, assistance in filing claims and other reasonable assistance necessary to assure successful relocation. Comparability would be based primarily on functional rather than physical similarity. The relocation coordination office maintains liaison activities with other agencies rendering services to persons who must relocate. Occupants of residences and businesses would be entitled to receive reasonable and necessary moving costs and related expenses in relocating their personal property, provided that the established policies of MoDOT are followed.

2. HOUSING AVAILABILITY

a. Residential (Owner-Occupied)

A review of housing availability in the Study Area was conducted during May and June 1997. (These data in general were confirmed in the Fall of 1999 through additional discussions with area realtors.) A Realtor located in Bella Vista provided an active listing of residences listed within the Bella Vista development. The asking price of the Bella Vista area residences varied from $17,900 to $445,000 with a mean asking price of $123,258 and a median price of $107,500. The distribution of prices for Bella Vista residences is shown in Table IV-3. The Realtor also provided an active listing of residences and farm listings in northern Benton County, Arkansas. The asking price of the Benton County residences and farms varied from $5,700 to $1,250,000, with a mean asking price of $125,415 and a median price of $84,900. Realtors located in Anderson, Missouri indicated that there were 71 residences and farms listed

with them for the area in southern McDonald County. The Realtors were not members of the Multiple Listing Service (MLS) which compiles listed property for sale in a selected area. The Realtors also indicated that they did not know of a Realtor in this area that is a member of the MLS. The asking price of the McDonald County residences and farms varied form $19,500 to $459,000 with a mean asking price of $95,138 and a median price of $59,950. The distribution of prices for the McDonald County and Benton County residences and farms is shown in Table IV-3.

TABLE IV-3
NUMBER OF AVAILABLE RESIDENTIAL UNITS FOR SALE
NEAR THE STUDY AREA BY PRICE RANGE

Price Range	Number of Residential Units		
	Bella Vista	Benton County[1]	McDonald County[1]
$0 - $24,999	2	19	2
$25,000 - $49,999	13	18	23
$50,000 - $74,999	78	25	17
$75,000 - $99,999	90	42	3
$100,000 and over	218	61	26
Total	401	165	71

[1] Includes residences and farms.

b. Residential (Rental)

A review of the 1990 US Census shows the percentage of renter-occupied housing ranges from 15 percent to 30 percent within the Study Area. A Realtor located in Bella Vista provided an active listing of rental property listed within the Bella Vista development. The monthly lease price of the Bella Vista area residences varied from $600 to $1,300 with a mean monthly lease price of $738 and a median lease price of $663. The Realtor also provided an active listing of residence and farm listings in Benton County and McDonald County near the Study Area. The lease price of the Benton County residences and farms varied from $310 to $800 with a mean lease price of $543 and a median lease price of $550. The lease price of the McDonald County residences and farms varied from $200 to $550 with a mean lease price of $339 and a median lease price of $300. A price distribution of available rental housing units in Bella Vista, Benton County and McDonald County is shown in Table IV-4. As shown in the table, there is a number of rental housing units available at a wide lease price range within the Study Area.

TABLE IV-4
NUMBER OF AVAILABLE RESIDENTIAL RENTAL UNITS
NEAR THE STUDY AREA BY PRICE RANGE

Monthly Rental Fees	Number of Residential Units		
	Bella Vista	Benton County[1]	McDonald County[1]
$200 - $300	0	0	2
$300 - $400	0	4	6
$400 - $500	0	8	2
$500 - $600	0	5	1
$600 - $700	7	6	0
$700 - $800	1	4	0
$800 - $900	1	1	0
$900 - $1,000	0	0	0
>$1,000	1	0	0
Total	**10**	**28**	**11**

[1] Includes residences and farms.

c. Quality of Available Residential Dwellings

The units contained in the housing inventory are located in Southwest Missouri and Northwest Arkansas near the Study Area. These numbers and condition of dwellings are comparable and adequate to provide replacement housing for the types of families to be displaced for all of the "Freeway-Build" Alternatives. Housing in the area is considered plentiful and the housing market should not be detrimentally affected. There should be no problems with insufficient housing at the time of project construction. In the event housing cannot be found or can be found but not within the displacees economic means at the time of displacement, Section 206 of Public Law 91-646 (Housing of Last Resort) would be utilized to its fullest and practical extent.

The dwellings contained in the inventory have been determined to be comparable and decent, safe and sanitary, in an area not less desirable in regard to public utilities and public and commercial facilities. The dwellings are reasonably accessible to the displacees' place of employment, adequate to accommodate the displacees, and in a neighborhood that is not subject to unreasonable adverse environmental factors. It has been determined that the available housing is within the financial means of the displacees and is fair housing, open to all persons regardless of race, color, sex, religion or national origin and consistent with the requirements of Title VIII of the Civil Rights of 1968.

d. Commercial

A commercial property inventory conducted at the same time as the residential inventory indicates there are 10 buildings available for sale, 25 buildings available for lease, and 45 lots available for development near the Study Area (see Table IV-5). There were no commercial buildings available for sale in Bella Vista. The commercial buildings available for sale in Benton County ranged in size from 144 square meters (1,550 square feet) to 3,654 square meters (39,326 square feet) and in cost from $56.10 per square meter ($5.21 per square foot) to $1,560.33 per square meter ($144.96 per square foot). The commercial buildings available for sale in McDonald County ranged in size from 112 square meters (1,200 square feet) to 279 square meters (3,000 square feet) and in cost from $175.80 per square meter ($16.33 per square foot) to $269.10 per square meter ($25.00 per square foot). There was a general trend for the larger buildings to be cheaper on an area basis.

TABLE IV-5
COMMERCIAL BUILDINGS AVAILABLE FOR SALE NEAR THE STUDY AREA

Price				
$ per Square Meter	$ per Square Foot	Bella Vista	Benton County	McDonald County
$0 - $269	$0 - $25	0	1	2
$269 - $538	$25 - $50	0	3	0
$538 - $807	$50 - $75	0	1	0
$807 - $1,076	$75 - $100	0	1	0
$1,076 - $1,346	$100 - $125	0	0	0
$1,346 - $1,615	$125 - $150	0	2	0
	TOTALS:	0	8	2

The commercial buildings available for lease in Bella Vista were located in the Highland Center and Sugar Creek Center and ranged in area from 93 square meters (1,000 square feet) to 139 square meters (1,500 square feet) and cost $9.80 per square meter ($0.91 per square foot).

There was only one commercial building available for lease in Benton County. It was a 557 square meters (6,000 square foot) restaurant available in Rogers for $7,900 per month which is $14.20 per square meter ($1.32 per square foot). There was also only one commercial building available for lease in McDonald County. It was a 190 square meter (2,040 square foot) building available in rural McDonald County for $850 per month which is $4.50 per meter square ($0.42 per square foot) (see Table IV-6).

TABLE IV-6
COMMERCIAL BUILDINGS AVAILABLE FOR LEASE NEAR THE STUDY AREA

Price		Bella Vista	Benton County	McDonald County
$ per Square Meter per Month	$ per Square Foot per Month			
$4.30 - $5.40	$0.40 - $0.50	0	0	1
$5.40 - $6.50	$0.50 - $0.60	0	0	0
$6.50 - $7.50	$0.60 - $0.70	0	0	0
$7.50 - $8.60	$0.70 - $0.80	0	0	0
$8.60 - $9.70	$0.80 - $0.90	0	0	0
$9.70 - $10.80	$0.90 - $1.00	23	0	0
$10.80 - $11.80	$1.00 - $1.10	0	0	0
$11.80 - $12.90	$1.10 - $1.20	0	0	0
$12.90 - $14.00	$1.20 - $1.30	0	0	0
$14.00 - $15.10	$1.30 - $1.40	0	1	0
	TOTALS:	23	1	1

There were 35 lots available for development at 11 different locations within Bella Vista. They ranged in size from 0.8 hectares (1.9 acres) to 4.9 hectares (12.1 acres) and cost from $376,834 per hectare ($152,500 per acre) to $969,134 per hectare ($392,196 per acre). The lots available in Benton County ranged in size from 0.2 hectares (0.5 acres) to 4.8 hectares (11.9 acres) and cost from $22,190 per hectare ($8,980 per acre) and $860,685 per hectare ($348,308 per acre) (see Table IV-7). There was a general trend for the larger lots to be cheaper on an area basis.

TABLE IV-7
LOTS AVAILABLE FOR DEVELOPMENT NEAR THE STUDY AREA

Price		Bella Vista	Benton County	McDonald County
$ per Hectare	$ per Acre			
$0 - $123,552	$0 - $50,000	0	1	1
$123,552 - $247,104	$50,000 - $100,000	0	2	0
$247,104 - $370,656	$100,000 - $150,000	0	4	0
$370,656 - $494,209	$150,000 - $200,000	9	0	0
$494,209 - $617,761	$200,000 - $250,000	24	1	0
$617,761 - $741,313	$250,000 - $300,000	2	0	0
$741,313 - $864,865	$300,000 - $350,000	0	0	0
$864,865 - $988,418	$350,000 - $400,000	0	1	0
	TOTALS:	35	9	1

3. "NO-BUILD" ALTERNATIVE

No residential or business displacements would result from the "No-Build" Alternative, which includes TSM enhancements.

4. "FREEWAY-BUILD" ALTERNATIVES

a. Methodology

An inventory of the existing residential and business structures located within the alignments of the "Freeway-Build" Alternatives was conducted. This inventory was prepared utilizing the project's aerial mosaic maps at a scale of 1:5,000 for the Far West, Near West and Existing Alternative in Missouri and a scale of 1:2,500 for the Existing Alternative in Arkansas. Field verification was performed along the various alignments to distinguish between business, residential and storage/out buildings. Field verification was also used to verify the status of poultry houses in the Study Corridors. Along the Existing Alternative, existing businesses were noted if they would potentially be displaced or if impacts would be limited to encroachments on existing parking lots. Cost estimates for right-of-way acquisition and displacements are presented in Chapter II for each "Freeway-Build" Alternative. The additional impacts of partial acquisitions of property were not considered, particularly regarding issues relating to uneconomical remnants. At this stage of the study, the impact assessment is based on the methodologies described above. As more details are developed for the improvements, whether as part of this study or in subsequent design development stages, more detailed information regarding the characteristics of the displacements will be collected and made available.

b. Commercial Building Impacts

Descriptions and locations of the existing business and public use structures that would be impacted by the "Freeway-Build" Alternatives are shown in Table IV-8.

c. Assessment of Commercial Building Impacts

The majority of commercial properties listed in the previous tables would make satisfactory replacements for the potentially impacted businesses with the exception of Don's Stateline Store, Jug Store Liquors, Village Ship and Shore, Jones Golf Cars and the Highland Christian Church. Currently, there are no available commercial sites near the State Line in McDonald County to relocate Don's Stateline Store and Jug Store Liquors. Property would need to be purchased and replacement structures constructed. Village Ship and Shore, Jones Golf Cars and the Highlands Christian Church, which is under construction, currently have no available replacements because of their building size and/or land area needs. Property would need to be purchased and replacement structures constructed.

As shown in Tables IV-5 and IV-6, opportunities for commercial relocation in McDonald County for those businesses located north of the state line are limited. There are currently only two commercial buildings for sale and one for lease in McDonald County. Two of the four businesses potentially impacted need to remain in McDonald County near the state line due to the nature of their business. A significant portion of their customer base comes from Arkansas.

The relocation issue for businesses being displaced in Bella Vista is less complex, in part due to the available commercial space for lease in two shopping centers. Although there is no commercial space for sale in Bella Vista, there are eight buildings for sale in Benton County. These buildings are located outside the immediate area of the commercial displacement.

Commercial building lots are also available within Bella Vista and Benton County. Only one commercial building lot is available in McDonald County. The McDonald County commercial buildings which that be displaced would have minimal infrastructure requirements and would not

depend on being near other commercial establishments, such as in a shopping center. These likely would not require a fully developed commercial lot.

Impacts to the privately owned public golf courses would be limited to encroachments into the existing courses' properties. No impacts to existing golf course buildings would occur. These encroachments onto golf courses were not listed as displacement impacts, and any impacts to the properties would be adequately mitigated and the courses would remain fully functional.

TABLE IV-8
POTENTIAL DISPLACEMENT LISTING OF
BUSINESSES AND PUBLIC USE FACILITIES

	Description of Existing Business/Public Use Structure	Alternative/Location	Type
	Far West Corridor		
1	El Toro Mexican Restaurant	H1, H2	Business
2	Jones Golf Cars	H1, H2	Business
3	Two Poultry Houses	H2	Business
	Near West Corridor		
1	Arts & Crafts Office & Rest Rooms	F1, F2, F3	Business
2	A & J Propane - Self Storage	F1, F2, F3	Business
3	Large Propane Storage Distribution Tank	F4, F5	Business
4	Two Poultry Houses	H2	Business
5	El Toro Mexican Restaurant	H1, H2	Business
6	Jones Golf Cars	H1, H2	Business
7	Highland Christian Church	F2, F3	Public
	Existing Corridor		
1	Jug Store Liquors	D1	Business
2	Bob Forde Construction	D1	Business
3	Stateline Antiques	D1	Business
4	Don's Stateline Store	D1	Business
5	Southwestern Bell Telephone	E1	Business
6	Big Tree Realty	E1	Business
7	Seba Architectural Build	E1	Business
8	Scott Comsky Shelter Insurance	E1	Business
9	Teddy Bear Hair Designs	E1	Business
10	Systems Specialists	E1	Business
11	Kozy Heat	E1	Business
12	Smitty's Custom Golf	E1	Business
13	Allstate-George Harwood	E1	Business
14	Antiques - Art and Jewelry	E1	Business
15	Village Ship & Shore	E1	Business
16	American Legion Post 341	E1	Public
17	Bella Vista Museum	E1	Public
18	AHTD Rest Area	E1	Public

d. Residential Dwelling Impacts

Table IV-9 shows the potential residential, business and public use facility displacements for each of the "Freeway-Build" Alternatives.

TABLE IV-9
POTENTIAL DISPLACEMENTS FOR THE "FREEWAY-BUILD" ALTERNATIVES

"Freeway-Build" Alternatives	Conventional Residence	Mobile Residence	General Business	Poultry Business	Public Facility
Far West Corridor					
EX/NWA1,B1,C1,EXD1 (Interim)	2	1	0	0	0
FWA1	0	0	0	0	0
FWA2	0	0	0	0	0
FWA3	1	0	0	0	0
FWB1	0	0	0	0	0
FWB2	0	0	0	0	0
Total Missouri	2-3	1	0	0	0
FWC1	0	0	0	0	0
FWC2	0	0	0	0	0
FWD1	10	1	0	0	0
FWD2	7	11	0	0	0
FWH1	2	2	2	0	0
FWH2	6	1	2	1	0
Total Arkansas	9-16	2-13	2	0-1	0
Total Project	11-19	3-14	2	0-1	0
Near West Corridor					
EXD1 (Interim)	3	1	4	0	0
EX/NWA1,B1,C1	3	2	0	0	0
NWD1/E1	0	0	0	0	0
Total Missouri	6	3	4	0	0
"Freeway-Build" Alternatives	**Conventional Residence**	**Mobile Residence**	**General Business**	**Poultry Business**	**Public Facility**
NWF1 (Links 1, 4, and 8)	6	0	2	0	0
NWF2 (Links 1, 3, 5, 6 and 8)	15	1	2	0	1
NWF3 (Links 2, 5, 6 and 8)	14	2	0	0	1
NWF4 (Links 1, 3, 5 and 7)	10	1	1	0	0
NWF5 (Links 2, 5 and 7)	9	2	1	0	0
NWG1	3	1	0	0	0
FW/NWH1	2	2	2	0	0
FW/NWH2	6	1	2	1	0
Total Arkansas	11-24	2-5	2-4	0-1	0-1
Total Project	17-30	5-8	6-8	0-1	0-1
Existing Corridor					
EX/NWA1,B1,C1	3	2	0	0	0
EXD1	3	1	4	0	0
Total Missouri	6	3	4	0	0
EXE1	6	0	11	0	3
Total Arkansas	6	0	11	0	3
Total Project	12	3	15	0	3

Far West Corridor

Depending on the alternative within the Far West Corridor, this corridor would displace between 11 to 19 occupied single-family residences and 3 to 14 mobile home residences. Of these, up to 9 may be renter-occupied residences. In addition, 2 occupied businesses and up to 1 poultry farm could be displaced. No public use facilities would be impacted.

Near West Corridor

Alternatives within the Near West Corridor would displace between 17 to 30 occupied single-family residences and 5 to 8 mobile home residences, depending on the alternative. Of these, up to 11 may be renter-occupied residences. In addition, 6 to 8 occupied businesses, up to 1 poultry farm, and up to 1 public use facility could be displaced.

Existing Corridor

The Existing Alternative would displace approximately 12 occupied single-family residences and 3 mobile home residences. Of these, up to 5 may be renter-occupied residences. In addition, 15 occupied businesses and 3 public use facilities could be displaced.

Assessment of Residential Dwelling Impacts

A "windshield survey" (i.e. cursory, drive-by review of the dwellings conducted from a vehicle from nearby public right-of-way) of potential residential displacements was performed to determine the quality and characteristics of the housing that would potentially be impacted. The quality of the residences fell into one of three categories: "good", "fair", or "poor"; with the study focusing on the "poor" category. These classifications were subjective. However, they were done by the same individual to minimize observational differences. Generally the "fair" condition residences were those which needed only minor amounts of home maintenance activities to bring them up to the "good" category. The "poor" condition residences were those which would need major repairs. These deficiencies included windows being completely absent, porch supports or underpinnings in need of immediate replacement, shingles missing, and an overall appearance of general disrepair. In two cases, it was uncertain if the residences were occupied. The majority of the residences were considered good or fair. Four residences were assigned to the "poor" category.

There is one "poor" residence in the Far West Corridor, Segment D2 on the northwest side of Hiwasse. This structure is also listed as a high-risk hazardous waste site. There is one "poor" residence in the Near West Corridor, Segment D1. This structure is a mobile home and it is not known if it is inhabited. The mobile home has miscellaneous debris located on the north side of the trailer including an abandoned automobile. There is one "poor" residence in the Far West/Near West Corridor, Segment H2. This residence is a recreational vehicle. There is miscellaneous debris located at the north end of the trailer. There is one "poor" residence in the Existing Corridor, Segment E1. This structure appears to be an abandoned house.

One of the goals of this EIS was to develop a total-project methodology to define and assess the improvement alternatives without the influence of the state line. However, in the case of relocation impacts, the state line does become an issue. Within each state, there are different tax rates, valuations, laws, and policies that may affect a property owner's decision on where to relocate should he or she be impacted. For this study, it is assumed that all of the displaced residential property owners would elect to stay in the state of their current residence. There were no interviews conducted with residents who may be displaced by the project; specific information about the resident(s) such as age, ethnicity, tenure, etc. is therefore not available. A summary of residential displacements by state and corridor is described in the following paragraphs.

The residential displacements in the Far West and Near West Corridors are primarily south of the Arkansas state line. As shown in Table IV-9, of the 14 to 33 residential displacements shown for the Far West Corridor, two to three would occur in Missouri. The selected alternative alignment in this Corridor (Alternative A3-B2-C2-D1-H1) would impact four residences in McDonald County and fifteen residences in Benton County, of which four are mobile homes. Similarly for the Near West Corridor, nine of the displacements are in Missouri and 13 to 29 are in Arkansas. The selected alternative alignment in this Corridor (Alternative A/B/C/D/E-F2-H1) would displace nine residences in McDonald County, three of which are mobile homes, and 24 residences in Benton County, of which four are mobile homes. The Existing Corridor would have more residential displacements in Missouri than in Arkansas -- 9 of the 15 are in McDonald County. Of these nine displacements, three are mobile homes. Of the remaining six in Benton County, none are mobile homes.

According to the 1990 Census, residential tenure by county in both states is comparable -- approximately three-fourths of the residences are owner occupied (75.6 percent for McDonald County and 73.1 percent for Benton County). If displacee tenure follows a similar pattern in Benton County, the Far West Corridor would require 8 to 23 replacement residences for owners and 3 to 7 for renters. The one residential displacement in McDonald County is assumed to be a owner occupied residence. For the Near West Corridor, approximately four replacement residences for owners and one for a renter would be required in McDonald County. For Benton County the distribution is estimated to be 13 to 22 replacement residences for owners and 4 to 7 dwellings for renters. In the Existing Corridor, the improvements would impact nine residences in McDonald County, seven of which would be owner occupied and two would be rental dwellings. In Benton County, the six impacted residential displacements would likely consist of five owner occupied dwellings and one rental dwelling.

As shown in Table IV-3, the 165 available residential units for sale in Benton County are well distributed throughout the price ranges -- 37 less than $50,000 and 61 more than $100,000 -- and provide more than sufficient stock for the replacement of any residential impacts. Within Bella Vista, while having more homes for sale especially in the higher brackets ($100,000 and over), just over 20 percent of its homes are priced at less than $75,000. Similar to the residential units, as shown in Table IV-4, available rental units in both McDonald County and Benton County are sufficient for the range of anticipated impacts to rental dwellings. Available units in Benton County currently total 28, just over half of which are $600 per month or less, and Bella Vista has 10 units for rent, concentrated in the $600 to $700 per month range.

There are currently 71 residences for sale and 11 for rent in McDonald County -- far exceeding the one to eight residences that would be displaced in Missouri by the improvements. Residences for sale in McDonald County range in price from less than $25,000 (two) to $100,000 and over (26) with over one half for sale at less than $75,000. Of the 11 residences for rent in McDonald County, none are over $600 per month and over half are $300 to $400 per month.

In rural areas, it has been found that some residents who find their homes being taken by the proposed action may choose to have their existing residence moved to another location on their property.

Assessment of Small Farm Operations Impacts

A related impact to direct residential displacements is those residences associated with farming operations that would be indirectly impacted by the alternatives. For the severance impacts to

be measurable, the farm operations would need to be of a relatively small scale. Based on a cursory property ownership review from assessor maps, it is apparent that some existing farms would be bisected by the "Freeway-Build" Alternatives. It should be noted that this review was based primarily on the ownership boundaries shown on the maps and not on operations among adjacent landowners, subcontractor operators or family based operations.

In the establishment of the alignments for the alternatives, existing property lines were followed to the fullest extent practical so as to reduce the number of severed or bisected properties. Due to the ongoing transition of parts of the Study Area from agricultural uses to low density residential, a concern would be the availability of replacement property for small scale farming operations. If a smaller agriculture tract would be impacted by a "Freeway-Build" Alternative such that the operation would need to be relocated, sufficient vacant ground may not be available in the general area of the affected tract for relocation purposes. The Arkansas portion of the Study Area appears to be developing at a faster pace than the Missouri side, and consequently replacement farmsteads would likely be in shorter supply in Arkansas.

Of the three "Freeway-Build" Alternatives, the Far West Alternative, by virtue of its location within the agricultural portions (southwestern areas) of the Study Area, would be the only alternative with potential impacts regarding small-scale farm operations. In Missouri, the Far West Alternative would affect one small-scale farm along Goodin Hollow Creek, taking about one half of the farms' bottom land. This bottomland is currently used for pasture. Two other smaller properties, both entirely wooded, would also be bisected in Missouri. (As discussed in Section N, efforts to avoid or minimize impacts to forested areas were intrinsic to the development of the "Freeway-Build" Alternatives' alignments. Further measures to avoid and minimize adverse impacts would be part of any subsequent design development activities.) Other existing properties would also be severed or bisected, but not to such an extent that it appears that there may be measurably reduced opportunities for continuing an equivalent level of agricultural operations. In Arkansas, the Far West Alternative would bisect at least six farms where it appears that continued agriculture activities could be problematical. For instance, poultry barns may be avoided but much of the undeveloped property of the farm is taken. This type of situation could make continued operations for these properties difficult.

To assess the availability of replacement properties for impacts to small scale farming operations, local real estate agents were contacted. These agents indicated that many of the larger farms have been subdivided into tracts ranging from 8.1 ha. (20 acres) to 32.4 ha. (80 acres) and that this trend will likely continue as property values continue to rise in the future. They also predict that parcel splitting and resale will continue. It appears that, at least in the near future, farm operations that would be displaced or significantly impacted by the "Freeway-Build" Alternatives can be relocated within the general vicinity of the previous operation.

It should be noted that many of the property owners contacted during field surveys expressed general pessimism about the future of agriculture operations in the Study Area. Some indicated a desire to retire, to subdivide and sell their land, or to have others operate the farm. Development pressures are being felt by some property owners and consequently, they are not sure how much longer they will continue to farm. In any case, efforts would be made as part of subsequent design development to make the roadway alignment refinements to minimize direct impacts to farming operations including property severance and impacts to contiguous landforms such as wooded areas or agricultural fields.

F. Economic Impacts

Highways are essentially "tools" used in transporting goods and people from one place to another. Investments in highways contribute to economic development in that they lower transportation and logistics costs. Such changes may be realized in numerous ways, including improved safety, decreased fuel and vehicle operating costs, and improved awareness of the ability to travel to the corridor, as well as revised logistics patterns. These benefits from the highway improvements would accrue to persons or businesses whose vehicles use the area's roadway system. Lower transportation costs would be passed on to consumers in the form of lower prices for consumer goods; to workers in the form of higher wages; or to owners of businesses in the form of higher profits. As a result, persons could benefit from a transportation investment without actually traveling on the highway.

1. DEFINITION OF ECONOMIC DEVELOPMENT

Transportation improvements and the resulting associated travel efficiencies would cause a number of events to occur, most of which would be beneficial to the local economies. These events are categorized into three types:

- **Economic Impacts Resulting from Highway Construction** - The act of spending large sums of construction money in the area is of economic value to an area since contractors and construction workers are hired, gravel is purchased, etc.

- **Impact on the Region's Competitive Position** - It is typically the goal of any region to expand existing businesses, to attract new businesses and to diversify the area's economic base. To attract new business, the region must be competitive with other regions. Major economic trends that are taking place nationally suggest that unique opportunities will exist in the future for less-productive and dynamic regions to become more economically active since past centers of economic activity will not necessarily continue to dominate. By reducing the cost of doing business, a state or region strengthens its business climate. Facilitating faster, safer travel throughout an economic region provides a logical means of increasing the competitive advantage of the area.

- **Economic Impacts of Bypassing Communities** - There is a strong perception among business owners that their business is tied to "drive-by" traffic; traffic driving through the community and stopping at their business only because they saw the establishment from the road. Typically, constructing a highway bypass diverts "drive-by" traffic from the existing facility and thereby reduces the amount of business exposure and activity in the area.

2. ECONOMIC IMPACTS OF HIGHWAY CONSTRUCTION

The economic benefits associated with highway construction are a function of the construction costs for each alternative. The more money spent in the region for construction, results in more services rendered and more raw materials needed. These direct effects of the construction activities would result in both a direct economic benefit to the community, as well as an indirect benefit as the benefits cycle through the economy.

With the order-of-magnitude similarities in the construction costs of the "Freeway-Build" Alternatives, the three corridors (Far West, Near West and Existing) would have similar

economic benefits due to construction. The "No-Build" Alternative would provide no construction-related economic benefits.

3. IMPACT ON REGION'S COMPETITIVE POSITION

The overall impact on an area's competitive position depends on the ability of each alternative to reduce transportation costs. The greater the transportation cost savings, the better the area's competitive position. Table IV-10 summarizes the transportation cost savings for each of the "Freeway-Build" Alternatives. As shown, the Existing Alternative would provide the largest overall savings, with the Far West Alternative and Near West Alternatives finishing second and third, respectively. The "No-Build" Alternative provides the basis for the determination of the travel efficiency benefits.

TABLE IV-10
TRAVEL EFFICIENCY BENEFITS
(1996 DOLLARS IN THOUSANDS)

Alternative	Vehicle Operating Cost Savings[1]	Travel Time Savings	Accident Savings	Total Savings
Far West	$ 1,647	$34,762	$73,888	$110,297
Near West	$10,240	$12,374	$70,141	$ 92,755
Existing	$48,551	$20,947	$82,271	$151,715

(1) Vehicle Operating Cost = Cost of operating a vehicle including fuel and vehicle depreciation.

Based on the travel efficiency comparisons of the alternatives, it can be concluded that the Existing Alternative would provide the best improvements to the region's economic competitive position. This is because the existing alternative provides an acceptable level of service and avoids out-of-distance travel associated with the by-pass alternatives. A detailed description of the travel efficiency benefits is provided in the technical memorandum *Travel Efficiency Analysis* completed in March 1997.

4. ECONOMIC IMPACTS OF BYPASSING COMMUNITIES

To aid in assessing the economic implications associated with bypassing the existing commercial activities along the US 71 Corridor with a freeway relocation, a series of economic surveys were conducted in 1996. In addition to the surveys, a comprehensive literature search was undertaken to determine the empirical effects bypasses have on communities. A summary of the surveys and investigations was provided in the US *71 Corridor Study: Economic Survey Analysis* completed in May of 1997.

From both the empirical studies and the results of the surveys, the following conclusions were drawn for each of the highway improvement options:

- **Near West and Far West Alternatives** - Highway-oriented businesses would experience a short-term decline in activity ranging from five to fifteen percent. A survey revealed that between five and fifteen percent of the people currently stopping to do business in Bella Vista would no longer stop if a by-pass was constructed. However, over the long-term, the projected growth would more than offset the temporary decline. Other businesses would not be affected by the reduction in drive-by traffic and could see benefits from reduced transportation costs. In addition, area trucking firms could benefit from moving through trips to a new facility, thereby reducing both safety concerns and transportation-related costs.

- **Existing Alternative** - Highway-oriented businesses would see an increase in drive-by traffic as more trips are diverted to the improved facility. In addition, area-trucking firms would benefit from the elimination of side street conflicts and overall improved traffic operations through Bella Vista.

As evidenced from the public involvement program, there were not any comments from the community that indicated long-term concern for existing businesses in the Bella Vista area. Discussions with several local business owners during the public meetings led the study team to conclude that the business leaders understand that existing businesses receive the vast majority of their profits from the local citizenry and a bypass would have negligible impacts on their businesses.

G. Joint Development

Among the potential benefits of a transportation investment are opportunities to jointly enhance and/or preserve social, economic, environmental, cultural, or visual values of an area. The National Environmental Policy Act of 1969 (NEPA) declared that it is the "continuous responsibility" of the Federal Government to "use all practical means" to "assure for all Americans, a safe, healthful, productive and aesthetically and culturally pleasing surrounding". It is from this policy that the authority is granted to transportation agencies to utilize traditional improvement projects as means to provide for non-transportation benefits. The Intermodal Surface Transportation Efficiency Act (ISTEA) encourages the following joint development uses: bicycle and pedestrian facilities, acquisition of scenic easements, historic sites, beautification, historic preservation and archeological planning and research.

1. THE "NO-BUILD" ALTERNATIVE

With the "No-Build" Alternative, existing US 71 would be left in place and only committed traffic and safety improvements would be made. Since these improvements would be quite localized and would address certain specific commitments to motorist safety, it is unlikely that the opportunity would exist for the inclusion of non-transportation project benefits. To the extent that TSM improvements would result in new construction, the new construction could be reviewed for the opportunity to include joint development considerations. Improvements such as turn lanes could include bicycle and pedestrian provisions on an isolated basis. However, TSM improvements would not be to the extent that the improvements would provide opportunities for separate, completely functional joint development facilities.

2. THE "FREEWAY-BUILD" ALTERNATIVES

Implementation of any of the three "Freeway-Build" Alternatives would offer the opportunity for joint development of scenic overlook facilities, cultural resource interpretive facilities or environmental interpretive facilities, or pedestrian an bicycle facilities. As discussed in Chapter IV, Section H, separate pedestrian and bicycle facility development along existing US 71 or the frontage roads could be a joint development candidate at some time in the future if there is a perceived need and a sponsor.

The Far West Corridor would likely provide the best scenic vistas and views, due primarily to the lack of development in the surrounding areas rather than any unique or distinctive scenic qualities. None of the alternatives would provide outstanding views of the lakes located within Bella Vista. Land adjacent to the Near West Corridor would consist of a combination of rural

land use and suburban type development that would offer a visual contrast through its length. The Existing Corridor, being located along Little Sugar Creek for much of its length, is quite scenic. However, there would be considerably less opportunity to develop scenic overlook facilities within this corridor without additional impacts to the surrounding areas.

With either of the relocation alternatives (Far West or Near West), the topography of the Study Area would provide broad views and vistas of the surrounding areas as well as the foreshortened views of the woodlands – similar to a green curtain during certain times of the year. Where such a variety of views are possible, rest areas, interpretive overlooks or scenic vistas and pull-offs could be considered.

Though these joint development opportunities have been conceptually identified for application with the various "Freeway-Build" Alternatives, due to the limited extent and viability of these opportunities, no commitments have been made by the AHTD, MoDOT and FHWA. The Final EIS completed by MoDOT for US 71 in Jasper, Newton and McDonald Counties (MoDOT Job Number J7P0427 - FHWA-EIS-90-02-F) did not include commitments concerning joint development facilities. Furthermore, no known commitments regarding public civil improvements have been identified in the vicinity of the Study Area which could be jointly developed or implemented with this proposed action (i.e. US 71 improvements).

H. Pedestrian and Bicyclist Considerations

Based on a review of the Study Area, there are currently no known or planned uses of US 71 by pedestrians or bicyclists within Missouri. Similarly, within Arkansas, no known present uses of the US 71 roadway have been identified. However, current plans for future pedestrian/bicycle facility improvements within Arkansas have been identified which would interact with US 71. The Bentonville/Bella Vista Trailblazers Association, Inc., is instrumental in the planning of a pedestrian/bicycle trail that would connect the two communities of Bentonville and Bella Vista. The proposed trail would operate in conjunction with Bentonville's parks master plan. The proposed trail would have a trailhead at Lake Bella Vista, near the southern end of the Study Area, and one in downtown Bentonville. There are currently four alternative routes under consideration for the trail, none of which include US 71 as part of the route. All of the trail alternatives would cross under US 71 at one of two locations -- at Ford Spring Road, which is outside of the Study Area, or at McKisic Creek.

1. "NO-BUILD" ALTERNATIVE

With the "No-Build" Alternative, existing US 71 would remain as it presently exists, with paved shoulders that are suitable for pedestrians and bicyclists who choose these modes of transportation. It would not, however, address any concerns pertaining to the planned Bentonville/Bella Vista pedestrian/bicycle trail which would cross under US 71. It is possible that the TSM enhancements, by providing improvements to maximize the efficiency of US 71 (i.e. signalization and turn lanes), would improve the safety of the existing roadway, thereby improving the suitability of the roadway for pedestrian and bicycle use.

2. "FREEWAY-BUILD" ALTERNATIVES

As stipulated in the completed Final EIS for US 71 in Jasper, Newton and McDonald Counties (MoDOT Job Number J7P0427 - FHWA-EIS-90-02-F), the new US 71, in Missouri, would consist of a freeway, interstate standard which would have restrictions pertaining to pedestrians, bicyclists and other slow-moving vehicles.

This EIS has also stipulated that part of the purpose and need for the US 71 improvements is to provide a freeway facility built to interstate standards. In the case of Arkansas, it is the policy of the AHTD that bicycles be prohibited from freeways. Furthermore, signage prohibiting pedestrians and bicyclists from using the US 71 travel lanes and shoulders would need to be provided with the freeway improvements.

In addition to the freeway-related prohibitions, the existing roads that would lead to the new US 71 roadway or improved existing roadway are either unpaved or are paved residential streets without shoulders or designated bike lanes. To date, the residential development in the Bella Vista area has not included pedestrian/bicycle facilities, most likely because of the steep topography. US 71 is located in a valley, but most of the residential communities are in the hills. The collector roads are on the higher ridges and the arterial streets are on the lesser ridges. A relatively easy walk or bike ride going downhill results in a difficult return trip. Therefore, the current conditions on the side roads, and the relatively steep topography, create an unsuitable environment for the pedestrian or bicyclist. Therefore, it is difficult and unsafe for residents to walk or bicycle from their homes to US 71. Because of this lack of pedestrian/bicycle connections to US 71 and within the communities themselves, a pedestrian/bicycle trail along US 71 would most likely require trailhead facilities with bike rental shops and automobile parking.

It could be possible that, at some time in the future, a separate pedestrian/bicycle trail along US 71 or the frontage roads could connect Pineville, Jane, Bella Vista and Bentonville. However, it should be kept in mind that a trail adjacent to a four-lane freeway would not provide the peace and quiet that is most likely a desirable aspect of recreational retirement activities. If a trail becomes more of a transportation necessity than a recreational activity, then the traffic noise may be of a lesser consideration.

With the planned Bentonville/Bella Vista pedestrian/bicycle trail, one of the alternative locations for the crossing of US 71 is the existing McKisic Creek bridge. Depending on the "Freeway-Build" Alternative, the US 71 improvements would potentially interact with the planned trail improvements differently. For either the Far West or Near West Alternatives, freeway improvements would not be provided at the McKisic Creek Bridge location. However, lane widening of the existing US 71 roadway, including the McKisic Creek Bridge, would be required. This widening could include provisions for the trail, but would not be as beneficial as it would if the bridge were replaced with a new, longer structure. Due to the realignment of the US 71 roadway for geometric reasons, the Existing Alternative would require the reconstruction of the existing McKisic Creek Bridge.

The Far West and Near West Alternatives would potentially interact with three of the alternate trail routes to the west of existing US 71. One of the trail routes would parallel County Road 37, one would parallel US 71B at the interchange with US 71, and one would parallel McKisic Creek located between County Road 37 and US 71B. The Far West and Near West Alternatives would cross over all three of these locations with planned bridge structures. It is possible that a new roadway could accommodate a trail underpass by utilizing a longer bridge structure if one of these trail routes is selected.

I. Air Quality Impacts

1. METHODOLOGY

The air quality analysis analyzed both total pollutants (macro-scale) and localized carbon monoxide (CO) concentrations (micro-scale). The macro-scale analysis projects the total

pollutant burden per day for hydrocarbons (HC), carbon monoxide (CO), and nitrogen oxides (NOx). This analysis considers the daily vehicle kilometers traveled (VKT) and the emission rates for the average vehicle operations within the region.

The micro-scale CO air quality analysis examined three areas within the Study Area -- properties adjacent to the US 71/Route 340 Interchange and lands adjacent to the highest-volume segments along the Far West and Near West Alternatives. The criterion for the determination of any adverse impacts was the exceedance of the 1- or 8-hour National Ambient Air Quality Standards (NAAQS) for CO. The Arkansas and Missouri Ambient Air Quality Standards for CO are the same as the NAAQS.

Two Environmental Protection Agency (EPA) approved computer models were used to analyze the emission and dispersion of CO from the US 71 improvements – MOBILE5a and CAL3QHC. MOBILE5a is the latest EPA computer program for calculating average vehicle emission rates (EPA, 1994). Variables used in MOBILE 5a for this analysis included:

- Average Vehicle Speeds:
  90 km/h (55 mph) for existing US 71
  110 km/h (70 mph) for improved US 71
  50 km/h (30 mph) for Route 340
  50 km/h (30 mph) for US 71 off-ramps
  60 km/h (35 mph) for on-ramps
- Vehicle Operating Modes:
  52.1% stabilized, 20.6% cold starts and 27.3% hot starts (FTP)
- Vehicle Mix and Registration: (AHTD)
- Vehicle Mileage Accumulation: National averages (program default values)
- Ambient Temperature: 4°C (40°F)

CAL3QHC (EPA, 1995) is a computer program designed to predict concentrations of CO from motor vehicles operating under free flow conditions and idling in queues. It is based on and retains the same line source dispersion model as CALTRANS CALINE3. Variables used in CAL3QHC include:

- CO emission factors from MOBILE5a
- Projected peak 1-hour traffic volumes for 1996 and 2020
- Wind speed: 1 meter/second (2.2 mph), worst case
- Wind direction: Worst case for each receptor, determined to the nearest 10 degrees
- Atmospheric stability class: Pasquill class "F", worst case
- Surface roughness: 127 cm
- 1-hour ambient background CO concentration: 1.5 parts per million (ppm)
  (Data obtained from the Air Quality Division of Southeastern Arkansas)
- Mixing height: 1,000 m (3,280 ft)
  The modeling locations for the US 71/Route 340 Interchange were located as follows: Site A (Northeast Quadrant) - Building closest to the interchange.
- Site B (Southeast Quadrant) - Right-of-way 20 m (66 ft) south of Route 340 and 18 m (59 ft) east of northbound off-ramp.
- Site C (Southwest Quadrant) - Edge of parking lot located 5.5 m (18 ft) south of Route 340 and 8.5 m (28 ft) west of US 71.
- Site D (Northwest Quadrant) - Right-of-way north of Route 340 and east of US 71.

The Far West and Near West Alternative modeling locations were located 26 m (85 feet) from the centerline of the freeway along the southern east-west segment of the study corridor (Segment H).

2. AIR POLLUTION EMISSION LEVELS

a. Macro-scale Analysis

The average daily pollutant burdens for each "Freeway-Build" Alternative are compared to the 2020 "No-build" Alternative in Table IV-11. As shown, the Far West, Near West, and Existing Alternatives would all create less pollutants than the "No-Build" Alternative in 2020. The Existing Alternative would provide the greatest reduction in pollutant emissions.

TABLE IV-11
2020 TOTAL POLLUTANT BURDEN ANALYSIS (kg/Day)

Alternative	Daily HC / Change in HC (kg/day)	Daily CO / Change in CO (kg/day)	Daily Nox / Change in Nox (kg/day)
"No-Build"	6,060 / 0	66,686 / 0	6,060 / 0
Far West	5,639 / -421	59,724 / -6,962	5,639 / -421
Near West	5,691 / -369	60,570 / -6,116	5,691 / -369
Existing	5,468 / -592	57,784 / -8,902	5,468 / -592

b. Micro-scale Analysis

As a basis of comparison for the determination of the impacts of the US 71 improvement alternatives, the CO concentrations for the existing roadway system were estimated at four locations within the vicinity of the US 71/Route 340 Interchange. As shown in Table IV-7, the highest current 1-hour CO concentration estimated at the four spot locations is 4.3 ppm. This maximum CO concentration occurred in the southwest quadrant of the US 71/Route 340 Interchange (Site C). The CO concentrations at the remaining three receivers currently range between 3.3 ppm and 3.6 ppm.

"No-Build" Alternative

In accordance with the definition of the "No-Build" Alternative, which includes safety and operational improvements along existing US 71, this alternative would provide lower operational speeds on US 71. Though the slower operational speed would improve the severity of the accidents along the existing roadway, it would also cause CO concentrations to increase. The maximum CO concentration would occur in the same location as currently (Site C), but the 1-hour value in 2020 would be 5.3 ppm – a 1.0 ppm increase over existing conditions. CO concentrations in the other quadrants of the interchange would range from 3.8 to 3.9 ppm.

"Freeway-Build" Alternatives

Based on the projected 2020 traffic volumes, as presented in Chapter II, and in accordance with the methodologies described above, the CO concentrations at the four test locations near the US 71/Route 340 Interchange were estimated for each of the "Freeway-Build" Alternatives. In addition, a generalized micro-scale analysis for each of the relocation alternatives was conducted for the segments with the highest volumes. For both the Far West and Near West

Alternatives, Segment H, located on the south side of the Bella Vista community, would have the highest traffic volumes.

- **Far West Alternative** - The Far West Alternative would create a maximum 1-hour CO concentration at the US 71/Route 340 Interchange of 3.7 ppm in 2020. This concentration would occur at two locations at the interchange – Site B and Site C. Projected CO concentrations in the remaining two quadrants would range from 3.4 ppm to 3.6 ppm.

  The maximum CO concentration for the Far West Alternative would occur along Segment H. In 2020, this 1-hour concentration would be 5.3 ppm.

- **Near West Alternative** - The maximum projected 1-hour CO concentration in the US 71/Route 340 Interchange area would be 3.6 ppm. This 1-hour concentration would occur in the southwest quadrant of the interchange (Site C). The CO concentrations in the other three quadrants would range from 3.3 ppm to 3.5 ppm.

  The free-flow traffic along Segment H would create the maximum 1-hour CO concentrations for this alternative. The modeled maximum would be 5.0 ppm in 2020.

- **Existing** - The maximum projected 1-hour CO concentration in the US 71/Route 340 Interchange area would be 7.0 ppm. The location of the maximum concentration is the same as the other alternatives – Site C (southwest quadrant). CO concentrations in the other quadrants of the interchange would range from 4.3. to 5.2 ppm.

TABLE IV-12
MAXIMUM 1 HOUR CARBON MONOXIDE CONCENTRATIONS (PPM)
(CAL3QHC RESULTS)

Location	Maximum CO Concentrations, ppm				
	1996	2020			
	Current Conditions	"No-Build" Alternative	Far West Alternative	Near West Alternative	Existing Alternative
US 71/Route 340 Interchange	4.3	5.3	3.7	3.6	7.0
Segment H	NA	NA	5.3	5.0	NA

Note: The Arkansas, Missouri and National Ambient Air Quality Standards for CO are 35 ppm for a one hour average, and 9 ppm for an eight hour average. Concentrations include ambient background levels of 1.5 ppm (1 hour).

As shown in Table IV-12, none of the projected maximum 1-hour CO concentrations for the "Freeway-Build" alternatives exceed the 8-hour CO standard of 9 ppm. Therefore, a separate analysis using lower average 8-hour traffic volumes is not necessary.

Based upon the preceding analysis, the 2020 CO levels for the improvement alternatives are projected to be below the NAAQS. Implementation of this project would not result in an adverse impact upon air quality in the project area, and would not cause or contribute to any violation of the NAAQS.

3. CONSTRUCTION

During construction of any of the "Freeway-Build" Alternatives, all materials resulting from the clearing, grubbing, demolition or other operations would be removed from the project, burned or otherwise disposed of by the contractor. Any burning would be performed in accordance with applicable local laws and ordinances and state regulations. Care would be taken to insure that burning activities would be done at the greatest distance practicable from existing dwellings and other air quality sensitive receptors. In addition, burning activities would not be performed when atmospheric conditions are such as to create a hazard to the public. Burning would be performed under constant surveillance. Contract requirements would also place prohibitions on burning activities in accordance with MoDOT and AHTD procedures. In addition to clearing activities, measures would also be taken to control the dust generated by construction when the control of dust is necessary for the protection and comfort of motorists or area residents. If needed, abatement of particulate emissions would be provided.

4. IMPACTS

The proposed US 71 project is located in Benton County, Arkansas and McDonald County, Missouri which have been determined to be in compliance with the National Ambient Air Quality Standards. Therefore, 40 CFR Part 51 and 93 is not applicable. This project is not anticipated to cause a violation of the NAAQS.

J. Noise Impacts

1. METHODOLOGY

FHWA's Noise Abatement Criteria (NAC) and the respective interpretations of the NAC by AHTD and MoDOT were used in the analysis of the acoustic impact of the US 71 improvements. This analysis was conducted according to the guidelines as presented in the Code of Regulations, Title 23 Part 772, which provides procedures whereby the acoustic impact of the proposed action can be assessed and the needs for abatement measures can be determined when the noise levels approach or exceed the FHWA NAC for various land uses as presented in Table IV-13. The noise level descriptor is the equivalent sound level, $L_{eq}(h)$, defined as the steady state sound level which, in stated time period (usually one hour), contains the same sound energy as the actual time-varying sound.

Noise abatement measures for traffic noise impacts are considered when the predicted noise levels "approach" or exceed those values shown for the appropriate activity category of the FHWA NAC (Table IV-13), or when the predicted traffic noise levels "substantially" exceed the existing noise levels.

For each of the "Freeway Build" Alternatives, interim and ultimate improvements have been defined. For the Far West and Near West Alternatives, the interim improvements represent some additional construction. Any noise impacts of the interim improvements would be temporary until the completion of the freeway improvements. For the Existing Alternative, the interim improvements would consist of the staging of the ultimate freeway improvements.

TABLE IV-13
NOISE ABATEMENT CRITERIA
HOURLY A-WEIGHTED SOUND LEVEL-DECIBELS (dBA)

Activity Category	$L_{eq}(h)$ (1 Hr)	Description of Activity Category / Land Uses for Receptors
A	57 dBA (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 lands are to continue to serve their intended purpose.
B	67 dBA (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, golf courses, parks, residences, motels, hotels, schools, churches, libraries and hospitals.
C	72 dBA (Exterior)	Developed lands, properties or activities not included in Categories A or B above.
D	—	Undeveloped lands.
E	52 dBA (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals and auditoriums.

Source: Code of Federal Regulations, Title 23 Part 772, Revised August 1982.

a. AHTD Noise Abatement Criteria (NAC)

AHTD has defined "approach" as being one dBA less than the noise levels shown in Table IV-13 with an increase of 10 dBA or more over the existing noise levels as being "substantial". The department also defined feasible noise mitigation as the ability to achieve for at least one residence a 10 dBA reduction in the peak hour $L_{eq}(h)$ noise level. Reasonableness is a more subjective criterion than feasibility. Therefore, the AHTD has established seven factors that are reviewed prior to determination of reasonability. Each factor is rated from a "High Yes" to a "High No". The factors are summarized as follows:

- **Mitigation Cost per Residence** - Cost per residence should be no more than $20,000 with a minimum decrease of 5 dBA. Rating Scale: Less than $15,000/residence - "High Yes" to greater than $25,000/residence - "High No".

- **Opinion of Residents** - Rating Scale: Greater than 80% of residents want noise abatement - "High Yes" to Less than 40% - "High No".

- **Date of Residence** - Rating Scale: Greater than 80% of housing development predated initial highway construction - "High Yes" to less than 30% - "High No".

- **Age of Structures** - Rating Scale: Greater than 80% of impacted developments have existed for at least 10 years - "High Yes" to less than 30% - "High No".

- **Activity Category** - Rating Scale:
  - Activity Category "A" $L_{eq}(h)$ noise level greater than 62 dBA - "High Yes" to less than 52 dBA - "High No".
  - Activity Category "B" $L_{eq}(h)$ noise level greater than 72 dBA - "High Yes" to less than 62 dBA - "High No".
  - Activity Category "C" $L_{eq}(h)$ noise level greater than 78 dBA - "High Yes" to less than 68 dBA - "High No".

- **Magnitude of Noise Increase over Existing** - Rating Scale: Future "build" noise levels greater than existing noise levels by 15 dBA $L_{eq}(h)$ - "High Yes" to less than 5 dBA $L_{eq}(h)$ - "High No".

- **Magnitude of Noise Increase over "No-Build"** - Future "build" noise levels greater than "no-build" noise levels by 10 dBA $L_{eq}(h)$ - "High Yes" to less than 4 dBA $L_{eq}(h)$ - "High No".

b. MoDOT Noise Abatement Criteria (NAC)

MoDOT has defined the NAC "approach" or exceed criteria for Activity Category "B" as being equal to or greater than 66 dBA $L_{eq}(h)$ for noise sensitive receptors such as residences, churches, schools, libraries, hospitals, nursing homes, apartment buildings, condominiums, etc. The criteria for commercial establishments is 72 dBA $L_{eq}(h)$. MoDOT has defined an increase of 10 decibels or more over the existing noise levels as being "substantial".

When the 66 dBA $L_{eq}(h)$ criteria is exceeded, noise abatement procedures are to be reviewed for effectiveness and feasibility according to the following criteria:

- Noise wall must provide noise reduction of at least 5 dBA for all primary receptors. Primary receptors are those which are closest to the highway.
- Noise wall must provide attenuation for more than one receptor.
- Noise wall must be 5.5 m (18 feet) or less in height above normal grade.
- Noise wall must not interfere with normal access to the property.
- Noise wall must not pose a traffic safety hazard.
- Noise wall must not exceed a cost of $30,000 per benefited receptor. A benefited receptor is defined as a receptor which receives a noise reduction to a level of 66 dBA or less or a reduction in noise level of 5 dBA or more.
- The majority of the affected residents (primary and benefited receptors) must concur that a noise wall is desired.

The noise wall would become part of the improvement project unless one of the above criteria cannot be satisfied. Traditionally, noise abatement is not provided for commercial establishments since these establishments require a high level of visibility which cannot be provided with contemporary noise abatement measures (Noise Abatement, Chapter 2, Preliminary Design, Section 2-04, Highway Traffic Noise Impacts and Abatement, Paragraph 2-04.1 (1), Missouri Highway and Transportation Department, September 27, 1994).

c. Noise Analysis Methods

The FHWA highway traffic noise prediction computer program STAMINA 2.0/OPTIMA was used to project future design-hour traffic noise levels for 2020 within the Study Area. The following parameters were used in the model to calculate an hourly $L_{eq}(h)$ at a specified receiver location:

- Distance between roadway and receiver.
- Hourly traffic volumes in light-duty (two axles, four tires), medium-duty (two axles, six tires), and heavy-duty (three or more axles) vehicles.
- Vehicle speed.
- Noise source height of the vehicles; light-duty 0 meters (0 feet), medium-duty 0.7 meters (2.3 feet), and heavy-duty 2.4 meters (8.0 feet).

The number of noise receptors were estimated by using the 66 dBA $L_{eq}(h)$ contour. Aerial maps at a 1:5,000 and 1:2,500 scale were used to count the receptors within the contours. Windshield surveys were used to establish the number of businesses adjacent to one another along a strip mall. No effort was made to separate residential receptors from commercial receptors. Also, structures that may benefit from shielding by other structures, earth berms, or earth cuts were counted as noise receptors.

2. PREDICTED NOISE LEVELS

Each of the reasonable alternatives for the US 71 improvements ("No-Build" Alternative and "Freeway-Build" Alternatives) were analyzed for increased noise levels. For each alternative, the study corridor was divided into analysis segments based upon changes in the projected design-hour traffic volumes. This analysis used the existing roadway section for the analysis of the "No-Build" Alternative. For the "Freeway-Build" Alternatives, depending on the application, the analysis utilized the two typical cross sections identified in Chapter II for the freeway improvements. For the Existing Alternative, the urban-type cross section consisting of four lanes with a safety barrier in the median was used within Arkansas. For the freeway relocation segments of the Far West Alternative, Near West Alternative and Missouri portions of the Existing Alternative, the four-lane divided freeway section with a grass median was utilized. In addition to the freeway-generated noise, noise generation from the frontage roads was also considered. Design-hour traffic for 2020 was the basis for the analysis.

For each of the analysis segments, typical noise contour widths were estimated based on the design-hour traffic volumes and the features of the roadway. To determine the predicted noise contour widths, artificial receivers extending 240 m (787 ft.) at 15 m (50 ft.) intervals from the roadway centerline were simulated utilizing the noise prediction program. The distances to the 66 dBA $L_{eq}(h)$ noise level were then interpolated from the 15 receivers to develop the NAC contour widths. This same methodology was used to determine the distance to the "substantial" increase contour. This procedure, which does not account for natural barriers such as cuts or fills, provides a conservative estimate of the future design-hour noise levels.

a. "No-Build" Alternative

As previously mentioned in the methodology section, a noise receptor was counted for each residence, business, church, public use area, and so forth. All receptors that were located within the NAC distance of the alternative alignment were counted as NAC receptors. All receptors which were located within the maximum distance from a alternative alignment which caused an increase of 10 dBA or more over the existing noise levels were counted as a "substantial" increase if they were not previously counted as NAC receptors.

The number of noise receptors in 1996 along the existing US 71 alignment that exceed the NAC was estimated at 182. If the traffic volumes are allowed to grow without significant improvements to the existing alignment, the number of noise receptors in 2020 is estimated at 295 -- an increase of 113 over the existing condition. These receptors include both existing and known planned receptors. The largest increase is along the existing US 71 between Route 340 and Dartmoor Road (see Table IV-14).

TABLE IV-14
NUMBER OF NOISE RECEPTORS 1996 AND 2020 "NO-BUILD" ALTERNATIVE

Alternative	1996 66 dBA Leq(h) NAC	2020 "No-Build" 66 dBA Leq(h) NAC	Increase of NAC Receptors
EX/NWA1	20	25	5
EX/NWB1	9	14	5
EX/NWC1	20	24	4
EXD1	17	21	3
EXE1 (State Line to St. Rt. 340)	7	26	19
EXE1 (St. Rt. 340 to Dartmoor)	71	127	56
EXE1 (Dartmoor to 71/71B)	38	58	20
Total:	**182**	**295**	**113**

b. "Freeway-Build" Alternatives

Far West Alternative

The number of NAC noise receptors near the Far West Alternative is estimated between 10 and 21 depending on which alignment is selected. The number of noise receptors that would hear a "substantial" increase is estimated between 54 and 79 (see Table IV-15). As before, these receptors include both existing and known planned receptors.

The Far West Alternative would reduce the volume of traffic on existing US 71, therefore there would be a beneficiary reduction in the number of NAC noise receptors near the existing US 71 alignment. It is estimated that there would be 149 fewer receptors than with the 2020 "No-Build" Alternative (see Table IV-16).

Near West Alternative

The number of NAC noise receptors along the Near West Alternative is estimated between 38 and 64, depending on which alignment is selected. The number of noise receptors that would hear a "substantial" increase is estimated between 60 and 83 (see Table IV-17). Once again, only those receptors that are in existence today were counted for the future.

As with the Far West Alternative, the Near West Alternative would reduce the volume of traffic on US 71. Therefore, there would be beneficiary reduction in the number of NAC noise receptors near the existing US 71 alignment. It is estimated that there would be 185 fewer receptors than with the 2020 "No-Build" Alternative (see Table IV-18).

Existing Alternative

The number of additional NAC noise receptors in 2020 along the Existing Alternative is estimated at 122 (see Table IV-19). The additional NAC receptors are those receptors that currently do not meet or exceed the NAC levels, but would with the Existing Alternative. In Missouri, the conversion of the existing roadway into a frontage road combined with the displacements caused by the freeway construction would cause the current number of NAC receptors to be reduced. (See Segment EA1, EB1, EC1 and ED1 in Table IV-20.) There would be an increase in NAC receptors along the Arkansas portion of the Existing Alternative (see Table IV-20). This alternative would also cause the least number of "substantial" increase receptors (15) since the alignment predominantly follows the existing US 71 route. These receptors include both existing and known planned receptors.

TABLE IV-15
NUMBER OF NOISE RECEPTORS
FAR WEST ALTERNATIVE - 2020

Alternative	Number of Noise Receptors	
	66 dBA Leq(h) NAC	"Substantial" Increase
FWA1	1	3
FWA2	0	7
FWA3	0	6
FWB1/C1	0	5
FWB2/C2	1	6
FWD1	10	34
FWD2	15	48
FW/NWH1	0	12
FW/NWH2	4	18
Total:	**10-21**	**54-79**

TABLE IV-16
2020 - FAR WEST ALTERNATIVE
NUMBER OF NOISE RECEPTORS ALONG EXISTING US 71

Alternative	Number of Noise Receptors		
	"No-Build" 66 dBA Leq(h) NAC	Far West 66 dBA Leq(h) NAC	Reduction in NAC Noise Receptors
EX/NWA1	25	15	10
EX/NWB1	14	7	7
EX/NWC1	24	14	10
EXD1	21	11	10
EXE1 (State Line to St. Rt. 340)	26	1	25
EXE1 (St. Rt. 340 to Dartmoor)	127	65	62
EXE1 (Dartmoor to 71/71B)	58	33	25
Total:	**295**	**146**	**149**

TABLE IV-17
NUMBER OF NOISE RECEPTORS
NEAR WEST ALTERNATIVE - 2020

Alternative	Number of Noise Receptors	
	66 dBA Leq(h) NAC	"Substantial" Increase
EX/NWA1	6	0
EX/NWB1	7	0
EX/NWC1	10	0
NWD1/E1	4	6
NWF1	10	41
NWF2	16	58
NWF3	18	57
NWF4	31	57
NWF5	32	57
NWG1	1	1
FW/NWH1	0	12
FW/NWH2	4	18
Total:	**38-64**	**60-83**

TABLE IV-18
2020 - NEAR WEST ALTERNATIVE
NUMBER OF NOISE RECEPTORS ALONG EXISTING US 71

Alternative	Number of Noise Receptors		
	"No-Build" 66 dBA Leq(h) NAC	Near West 66 dBA Leq(h) NAC	Reduction in NAC Noise Receptors
EX/NWA1,B1,C1	63	7	56
EXD1	21	16	5
EXE1 (State Line to St. Rt. 340)	26	0	26
EXE1 (St. Rt. 340 to Dartmoor)	127	56	71
EXE1 (Dartmoor to 71/71B)	58	31	27
Total:	**295**	**110**	**185**

TABLE IV-19
NUMBER OF ADDITIONAL NOISE RECEPTORS
EXISTING ALTERNATIVE - 2020

Alternative	Number of Noise Receptors	
	66 dBA Leq(h) NAC	"Substantial" Increase
EX/NWA1	4	15
EX/NWB1	0	0
EX/NWC1	12	0
EXD1	5	0
EXE1 (State Line to St. Rt. 340)	31	0
EXE1 (St. Rt. 340 to Dartmoor)	45	0
EXE1 (Dartmoor to 71/71B)	25	0
Total:	**122**	**15**

TABLE IV-20
2020 - EXISTING ALTERNATIVE
NUMBER OF NOISE RECEPTORS ALONG EXISTING US 71

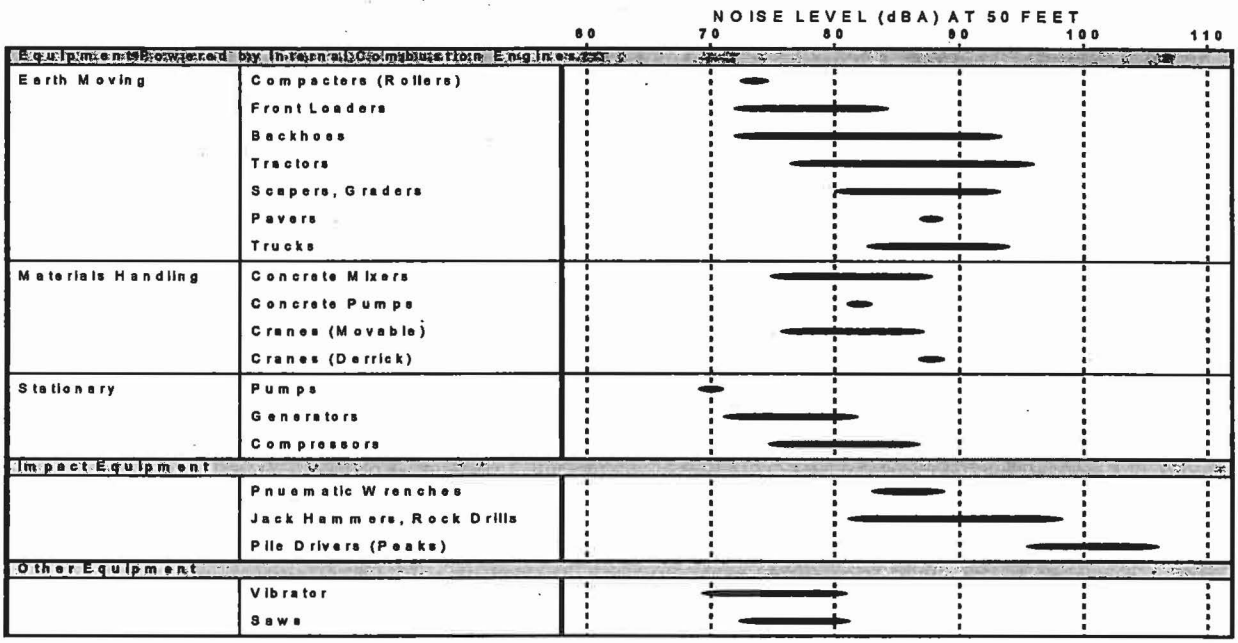
Alternative	Number of Noise Receptors	
	"No-Build" 66 dBA Leq(h) NAC	Existing Alt. 66 dBA Leq(h) NAC
EX/NWA1	25	0
EX/NWB1	14	7
EX/NWC1	24	0
EXD1	21	0
EXE1 (State Line to St. Rt. 340)	26	57
EXE1 (St. Rt. 340 to Dartmoor)	127	172
EXE1 (Dartmoor to 71/71B)	58	83
Total:	**295**	**319**

3. CONSTRUCTION NOISE

The major construction elements of this project are expected to consist of land clearing, earth moving, hauling, grading, paving, and bridge construction. General construction noise impacts for passby traffic and those individuals living or working near the project, can be expected

particularly from clearing, earth moving and paving operations. Table IV-21 lists some typical peak operating noise levels at a distance of 15.2 meters (50 feet), grouping construction equipment according to mobility and operating characteristics. Considering the relatively short-term nature of construction noise, impacts are not expected to be substantial. The transmission loss characteristic of nearby structures is believed to be sufficient to moderate the effects of intrusive construction noise.

TABLE IV-21
CONSTRUCTION EQUIPMENT SOUND LEVELS



SOURCE: U.S. Report to the President and Congress on Noise, February, 1972.

4. MITIGATION SUMMARY

Various methods of mitigation were reviewed to minimize the potential noise impact of the proposed improvements. Among these were reduction of speed limits, restriction of truck traffic to specific times of the day, and a total prohibition of truck. Also, alteration of horizontal and vertical alignments, property acquisition for construction of noise barriers or berms, acquisition of property to create buffer zones to prevent development that could be adversely impacted, noise insulation of public use or nonprofit institutional structures, the use of berms, and the use of sound barriers were considered.

Restriction or prohibition of trucks is adverse to the project purpose. Reduction of speed limits, although acoustically beneficial, is seldom practical due to the resulting reduction of the system's operational efficiency. Design criteria and recommended termini for the proposed project prevent substantial horizontal and vertical alignment shifts that would produce significant changes in the projected acoustical environment, particularly along the Existing Alternative. The desire to purchase a limited amount of right-of-way prohibits the acquisition of buffer zones or the construction of earth berms. Noise insulation is not necessary since no public use or nonprofit institutional structures were identified as being affected by the project. Therefore, only the construction of noise barriers was considered for noise mitigation.

Traffic noise analysis would be conducted for developed lands and undeveloped lands, and for development that is planned, designed and programmed. Noise mitigation would be implemented on a highway project if found to be reasonable and feasible with respect to engineering considerations. The evaluation of the need for mitigation is an assessment of the cost of a noise barrier per residence effected. AHTD will consider constructing a noise barrier if the cost is less than $20,000 per residence affected. MoDOT's policy is up to $30,000 per affected residence.

For all three areas where noise impacts would be most notable, noise abatement (i.e. barriers) would have to be constructed between the road and the receiver in order to effectively abate the noise being produced by the traffic. Each of these three areas are located in two of the more dense residential developments in the study corridor and each was reviewed using the available mapping to determine the reasonableness and feasibility of noise mitigation. Both of the developments abut US 71 in Arkansas.

A residential development east of US 71 at Shakespeare Drive would require a 210 m long barrier 5 m tall to provide a 10 decibel reduction. This barrier would benefit approximately 8 residences at an estimated cost of $24,000 per unit.

The second residential development is east of US 71 and north of Kingsland Drive. A barrier ranging in height from 4 to 5 m would need to be 320 m long to provide a 10 decibel reduction in the design hour Leq(h) noise level. The estimated cost for this barrier would be $263,520. Thirteen residences would benefit from this barrier resulting a $20,270 cost per unit.

The last area considered is the Lundy Lane development west of US 71 near the state line. A noise barrier would not be reasonable at this location as too few residences are effected by noise as set by the National Noise Abatement Criteria.

AHTD's policy of "reasonableness" and "feasibility" were applied to the two residential areas studied. (Since the areas in question are both located in Arkansas, MoDOT's policies regarding noise mitigation would not apply.) Both developments ranked the same on the seven criteria to determine reasonableness. Three criteria ranked "Yes"; probable resident's desire, age of residences, exceedance of the NAC. Four of the criteria ranked "No"; cost per residence, residences constructed after US 71, increase in the $L_{eq}(h)$ over existing and increase in the $L_{eq}(h)$ over No-build noise levels. Therefore, mitigation of noise impacts along the proposed improvements appears to not be reasonable. If it subsequently develops during final design that these conditions have substantially changed, noise abatement measures will be reviewed.

As part of cultural resources investigation for the US 71 improvements, it has been determined that the New Home Church (an NRHP – eligible site) would not be impacted by the US 71 improvements (i.e., Far West and Near West Alternatives). To augment the SHPO's determination of no effect for this site, AHTD has committed to the continued consideration of noise impact mitigation as part of the design phase activities.

A meeting with the New Home Church members was held in August, 1999 to discuss noise abatement issues related to the proposed US 71 Highway relocation located adjacent to their historic church. Abatement measures discussed included increasing the distance of the highway from the Church, using a typical noise barrier, using a small berm and/or rock wall, and using architecture soundproofing such as storm windows. These measures and various combinations were discussed to determine a preference among the church members in

attendance. Moving the highway a sufficient distance to allow acceptable noise levels at the church was the group's first preference with the combination of a rock wall/berm combination used with some soundproofing as their second choice. The group did not support the use a typical noise barrier which would reduce noise levels but would also result in creating an unacceptable visual barrier.

In the detailed design phase of this project, the Department will move the highway final alignment as far as possible, but still within the existing engineering and environmental constraints of this interchange area near McKisic Creek. If this design alignment change is not sufficient to reduce the noise levels below the Federal Highway Administration criteria; then a small berm/rock wall combination with appropriate vegetation cover will be designed and coordinated with the church. Soundproofing options may be included if the berm/wall combination is not sufficient to achieve acceptable noise levels (FHWA criteria).

K. Water Quality, Geology and Cave Impacts

1. WATER QUALITY IMPACTS

Generally, all forms of freeway construction and maintenance contribute to pollutant loading in stormwater runoff. Operation and maintenance creates runoff that contains various pollutants such as oils, coolants, and wear pollutants from tires, brakes, etc. Motor vehicle accidents can also contribute pollutants that could be flushed into the drainage systems. De-icing materials may also contribute to the pollutant load. All of these pollutants can accumulate over a period of time. Pollutant load on receiving waters usually display an initial flushing action during a precipitation event typified by an initial spike of loading followed by a marked decline. Ninety percent of the pollutant loading occurs during the first 1.27 cm (½ inch) of rainfall. The order of magnitude of loading is usually controlled by the time in between storms that pollutants are given to accumulate. Other variables that may impact the magnitude of water quality include traffic composition and volume, maintenance activities, adjacent land use, climate, types of roadside vegetation and characteristics of the local and regional drainage area.

Water quality impacts during roadway construction are primarily due to the erosion of cleared areas, operations of heavy earth-moving equipment, and storage of construction materials and supplies.

a. "No-Build" Alternative

The "No-Build" Alternative would have no significant impact on the water quality of the streams and groundwater in the US 71 Study Area. If no construction occurs, storm water runoff at the current traffic volume (under 30,000 vehicles per day) puts forth minimal to no impact on the aquatic environments of receiving waters as stated by the Federal Highway Administration: *Effects of Highway Runoff on Receiving Waters;* Reports No. FHWA/rd-84/062-066, June 1987. However, traffic volumes are expected to continue to grow surpassing the 30,000 vpd threshold. Therefore, it is likely that the adjacent water quality would continue to degrade.

TSM enhancements would have little to no significant impact on the water quality of streams and groundwater in the US 71 Study Area. Minor construction would consist of intersection modifications and not be a significant contributor to erosion runoff.

b. "Freeway-Build" Alternatives

Based on the existing and predicted traffic volumes of under 30,000 vehicles per day on some segments of the "Freeway-Build" Alternatives, accepted practice by FHWA indicates insignificant impacts to receiving waters as a whole when compared to the load of the entire basin (FHWA-PD-96-032). For those roadway segments with predicted traffic volumes over 30,000 vehicles per day, during preliminary roadway design, studies would be undertaken by MoDOT and AHTD to assess the need for collection and treatment of roadway runoff. Should these studies indicate that measures are warranted for the collection and treatment of roadway stormwater runoff, MoDOT and AHTD would be committed to their implementation. These systems typically consist of roadside drainage ditches connected to passive retention treatment ponds. Systems of this type can typically use wetlands vegetation and hydrology to filter the runoff prior to release.

Construction activities can impact water quality both directly and indirectly. Standard erosion protection plans should be enforced with proper inspection and maintenance. The Missouri Department of Natural Resources (MDNR) has noted that nutrients can leach from the project areas which have been seeded, fertilized and mulched.

Temporary impacts to streams in the US 71 Study Area can be minimized if practices such as using stream channel modification guidelines when modifying channels or relocating streams; grading and seeding disturbed areas as soon as possible, minimizing disturbance to stream channels between March 1 and June 15 to the extent practical; and undertaking all necessary precautions to prevent petroleum products from entering streams. Care should be taken to provide proper slope design to prohibit or induce erosion. Agency guidelines developed to control water pollution during construction by preventing sedimentation should also be followed.

Impacts to groundwater are similar to impacts to surface water. Karstic features, such as sinkholes, which can be simple ground depressions, or losing streams, where all or part of the streams flow is diverted into the subsurface, are numerous in the Study Area. These karstic features, which are formed by water dissolving the bedrock, allow the flow of surface water to easily enter the subsurface. No specific karstic features were identified during the literature search and field reconnaissance. Impacts, if any would likely occur in the upper, unconfined Springfield Plateau Aquifer, not greatly affecting the value of the resource from its present state. Small, individual or poorly constructed wells located in the Springfield Aquifer may be impacted during construction and/or operation of all alternatives. The lower Ozark Aquifer is protected against recharge in the Study Area by the Ozark (Chattanooga Shale) confining unit. Deeper municipal and industrial wells and wells of sufficient construction located in the Ozark Aquifer should not be impacted.

"Best Management Practices" or BMP's, should be followed during preliminary design, final design and construction. BMP's utilizing structural and non-structural systems can effectively minimize the impacts to water quality. Structural BMP's such as detention ponds, filters, infiltration basins, grassed swales and constructed wetlands utilize mechanical means to remove pollutants. Other non-structural BMP's such as street sweeping, debris and litter removal, and control of fertilizer, pesticide, and herbicide use can control sources of pollutants. Use and control of de-icing materials and methods to best practice can also reduce pollutant load.

The impacts to public drinking water would be negligible for the Near West and Existing Alternatives. Nearly the entire area is served by water obtained from Beaver Reservoir. A

slightly greater risk to private water supplies for the Far West Alternative would occur due to the possible effect of highway construction and runoff to privately constructed wells. The cities of Gravette and Sulphur Springs to the west of all of the alternatives, obtain their public water supplies from deeply constructed wells. These wells draw from deep aquifers recharged outside the Study Area and are not expected to be impacted by the US 71 improvements. During the design and construction process impacted wells will be identified and monitored. If wells or water quality is impacted, they will be repaired, reconstructed, or replaced to modern standards and regulations.

Far West Alternative

This alternative would consist of freeway construction on new right-of-way. The Far West Alternative would cross and impact one major stream (McKisic Creek), seven intermittent streams and their tributaries, and two lake drainage basins. The drainage areas potentially affected include Goodin Hollow and Elk River; Mill Creek and Elk River; Gordon Hollow, Loch Lomond and Little Sugar Creek; small tributaries of Spavinaw Creek; Tanyard Creek, Lake Windsor and Little Sugar Creek; Pumpkin Hollow and McKisic Creek; and McKisic Creek.
Cumulative/secondary impacts to water quality would occur due to the induced development at the new interchanges and possibly along the new right-of-way. These predicted developments would possibly add to the degradation of water quality due to the conversion of land uses to commercial/residential. However, a prerequisite for systematic impacts to water quality is intense and dense development – neither of which would be reasonably anticipated as secondary impacts for the relocation alternatives. Any light development west of or within Bella Vista, whether resulting from the US 71 improvements or otherwise, would likely result in additional septic sewage disposal systems in the area. However, the type and intensity of the development, and the existing regulations governing residential sewage disposal, would effectively mitigate any indirect water quality impacts.

Near West Alternative

The Near West Alternative consists of freeway construction on new right-of-way, including improvements along the existing US 71 roadway alignment within Missouri. The Near West Alternative would cross and impact one major stream (McKisic Creek), nine intermittent streams, several small tributaries to Little Sugar Creek, and two lakes. The drainage areas potentially affected include Goodin Hollow and Elk River; Wolf Pen Hollow and Little Sugar Creek; Brush Creek and Little Sugar Creek; Tanner Branch and Little Sugar Creek; Miser Hollow and Little Sugar Creek; Gordon Hollow and Little Sugar Creek; Lake Avalon and Little Sugar Creek; Tanyard Creek, Lake Windsor and Little Sugar Creek; Pumpkin Hollow and McKisic Creek; McKisic Creek; and several small tributaries of Little Sugar Creek.

Brush Creek is listed as a losing stream. However the crossing location for the Near West Alternative is adjacent to the mouth of the creek.

Cumulative/secondary impacts to water quality would occur due to the induced development at the new interchanges and possibly along the new right-of-way. These predicted developments would possibly add to the degradation of water quality due to the conversion of land uses to commercial/residential. However, a prerequisite for systematic impacts to water quality is intense and dense development – neither of which would be reasonably anticipated as secondary impacts for the relocation alternatives. Any light development within Bella Vista, whether resulting from the US 71 improvements or otherwise, would likely result in additional septic sewage disposal systems in the area. However, the type and intensity of the

development, and the existing regulations governing residential sewage disposal, would effectively mitigate any indirect water quality impacts.

Existing Alternative

In general, the Existing Alternative would consist of freeway construction within or adjacent to the present US 71 right-of-way. Long-term impacts to receiving waters would be very similar to the "No-Build" Alternative. The Existing Alternative would cross and impact six intermittent and one major (Little Sugar Creek) drainage. The drainage areas potentially affected include Goodin Hollow-Elk, Wolf Pen Hollow-Little Sugar, Brush Creek-Little Sugar, Tanner Branch-Little Sugar, Miser Hollow-Little Sugar, Gordon Hollow-Little Sugar, and Little Sugar Creek. The most impacted drainage would be Little Sugar Creek which is located immediately adjacent to much of the alternative where little dilution would occur before runoff enters the stream.

Commitments have been made by MoDOT and AHTD to assess, as part of preliminary design, the need for runoff collection and treatment measures for the "Freeway-Build" Alternatives. For the Existing Alternative in the areas adjacent to Little Sugar Creek, changes to the existing roadway stormwater runoff characteristics (i.e., flowrate, points of discharge and pollutant burden) would be minimal. In this area, extending generally from the state line to the US 71/US 71B Interchange, changes to the impervious surfaces would be limited to isolated interchange construction and some new frontage roads. The location and extent of the US 71-roadway surface, where the traffic volumes would exceed 30,000 vpd, would not change from what currently exists. Regardless, best management practices would be employed in the design and construction of the "Freeway-Build" Alternative.

The operation and maintenance of the Existing Alternative, and to a lesser extent the Near West Alternative (large use of existing facility), would have less impact on the water resources from their present state. Development has already taken place along existing US 71 where little other secondary development would likely take place. Waterways have already been altered and relocated from past activities.

Construction, operation and maintenance of especially the Far West Alternative and to a lesser extent the Near West Alternative would have a greater impact on the water resources due to highway pollutant loading.

2. GEOLOGY AND CAVE IMPACTS

Many areas in the Study Area are favorable environments for the development of karstic features. Nearly all these features are associated with the St. Joe or Pierson Compton Formations. These formations are mostly exposed on steep slopes. The Chattanooga Shale is free of caves and the cherty Reeds Springs or Boone Formation infrequently contains caves.

a. "No-Build" Alternative

The "No-Build" Alternative, including the TSM measures, would have no significant impact on caves or the environment within the caves within the US 71 Study Area.

b. "Freeway-Build" Alternatives

For the "Freeway-Build" Alternatives, the roadway alignments have been defined to avoid, to the fullest extent possible, any known caves. For each alternative, known caves that would be impacted by the improvements have been identified.

Far West Alternative

Located in Missouri just north of the state line along Segment A, Cave Hollow would be affected by FWA2. Though the roadway alignment would not pass directly over the cave opening, the cave system appears to be extensive and does contain running water. Any construction activities in the vicinity of the cave, or changes in the storm water runoff within the cave's recharge area would affect the cave environment and the associated cliff shelters in the area. Consequently, FWA3, which would avoid Cave Hollow, was selected as the best alignment in Segment A for the Far West Corridor. This ensures that Cave Hollow would not be impacted by the US 71 improvements.

Henson Cave would be impacted by the interim improvements. See the Near West Alternative for a description of this cave. Wind Cave and other known caves would be avoided by freeway improvements for the Far West Alternative.

Near West Alternative

Henson Cave is located adjacent to existing US 71 north of Route 90. EX/NWB1 would impact Henson Cave. The existing cave entrance, located just east of the existing two-lane roadway, would need to be backfilled and capped. Due to the location of the cave's entrance, impacts to the cave cannot be reasonably avoided by four-lane widening improvements along the existing US 71 roadway. These impacts would entail backfilling and capping the cave's entrance, and placing pavement and embankment over the entrance for the roadway. Henson Cave is identified as Site #71 in the Missouri Natural Features Inventory and is listed as a habitat cave for the Gray Bat (*Myotis grisescens*). As stated in Section P.3, a field investigation of Henson Cave was conducted in the summer of 1996 for the purpose of determining its status as a maternity site for the gray bat. From this field review, it was the conclusion of the MoDOT biologist that the cave is unsuitable as maternity habitat or as a hibernaculum due to the high level of human disturbance. This conclusion was reported to the various agencies at the EIS scoping meeting held on July 30, 1996 and in the Draft EIS. Prior to the investigation completed in 1996, the issue of impacts to Henson Cave was addressed by MoDOT's EIS for US 71 (I-44 to State Line). Coordination with the USDOI was completed as part of this earlier EIS, including issues relating to caves, water quality, and threatened and endangered species impacts. USDOI offered no comments regarding Henson Cave in its review of the earlier EIS. A Record of Decision for the US-71 improvements (I-44 to State Line) was executed on September 14, 1992, thus authorizing MoDOT to proceed with design development. Henson Cave was not considered an outstanding issue or an issue requiring measures to minimize harm. This ROD would govern the interim improvements for the Far West Alternative. Since the 1996 field review, additional coordination with the US Fish and Wildlife Service was conducted to verify the significance of the impacts to the cave. It was confirmed that the cave, for the reasons identified by the MoDOT biologist as described above, was not viewed as a significant resource and was not an issue requiring consultation or special design considerations. This correspondence is included in Appendix J.

Within Segment F located just south of the state line, NWF2 would likely impact Marshall Cave. Existing documentation indicates that Marshall Cave exists within the area of NWF2. However, several attempts by the study team to field locate this cave were unsuccessful. Construction activities within the vicinity of the cave, or changes in the storm water runoff within the cave's recharge area would affect the cave environment. If NWF2 is identified as the best alignment, it is recommended that an extensive study of the cave environment and the adjacent cave designated as Smiley Cave be performed.

No other documented caves would be affected by any other alternatives within the Near West Corridor.

Existing Alternative

Similar to the Near West Alternative, the Existing Alternative would impact Henson Cave.

Wind Cave, located along Segment D, would be affected by this alternative. Though the alternative would not pass directly over the cave opening, the cave system appears to be extensive and does contain running water. Any construction activities within the vicinity of the cave, or changes in the storm water runoff within the cave's recharge area could affect the cave environment. It is recommended that an extensive study of the cave environment be performed prior to beginning construction. However, since the Far West Alternative was recommended as the preferred alternative, Wind Cave would be avoided by the freeway improvements. In addition to the freeway improvements, the Far West Alternative would include interim improvements along the existing US 71 roadway in Missouri in the vicinity of Wind Cave. However, all construction would be contained within the existing MoDOT right-of-way in the vicinity of Wind Cave. The existing MoDOT right-of-way is located downstream of the cave. Therefore, Wind Cave would not be adversely affected by the Far West Alternative's interim improvements.

No other documented caves would be affected by this alternative.

Construction of "Freeway-Build" Alternatives

In the construction of the "Freeway-Build" Alternatives, it is generally best to avoid known cave locations. However, during mass excavations in the St. Joe Formation for the construction of the improvements, it is likely that other caves of unknown magnitude would be found. If during final design or construction additional caves are located, the following should be implemented:

- Adjustments to alignment be made to route around the sites.
- Avoid areas of water discharge to known areas of cave recharge. If necessary, construct diversions or lined ditches.
- Contact the Missouri Speleological Survey (MSS) or Arkansas Association of Cave Studies (ASCS) to sufficiently document the discovery. (MoDOT or AHTD may also desire to document or map the cave(s).)

When caves are encountered during the construction process, the following measures should be taken after consultation with the MSS or ASCS:

- If caves are encountered in the backslope cuts, the opening should either be sealed with masonry or fitted with bars to prevent ingress of the public.
- If caves are encountered in fill, pavement subgrade or other excavations, they should be fitted with passageways to allow passage of water and wildlife if deemed necessary. The excavations should be backfilled with pervious rock material to allow further water flow and capped with impervious material such as plastic clay to prohibit inflow of water.

L. Permits

1. "NO-BUILD" ALTERNATIVE

Permits would not be required for the "No-Build" Alternative.

2. "FREEWAY-BUILD" ALTERNATIVES

Permits applicable to the "Freeway-Build" Alternatives may be categorized into two groups: regulatory permits and construction permits. Regulatory permits assist government agencies in the administration and implementation of federal, state or local statutes or initiatives. These permit programs are processed through planning and design phases of proposed actions. Construction permits serve as regulators of construction activities to protect the adjacent environs. Roadway construction permit programs are typically operated by state or local government agencies.

The various freeway alternatives would have essentially equivalent permitting requirements and as such, may be addressed collectively.

a. Regulatory Permits

Section 10 of the Rivers and Harbors Act (U.S. Army Corps of Engineers)

This permit regulates the obstruction or alteration of navigable water of the United States. None of the freeway alternatives cross a navigable stream and consequently would not be regulated by this act.

Section 404 of the Clean Water Act (U.S. Army Corps of Engineers)

This act prohibits the discharge of dredged or fill material into "Waters of the U.S." unless exempted or authorized by the US Army Corps of Engineers (USACE). Section 404 is the primary Federal statute that implements federal regulatory policies concerning the protection of wetlands as specified in various orders and regulations. Based on preliminary investigations performed for the USACE, it has been determined that Waters of the U.S., including wetlands, are present in the Study Area. These waters have been identified as stream areas, ponds, and wetlands.

Pursuant to the regulations of the Clean Water Act (CWA) as administered by the US Army Corps of Engineers, detailed assessments and impact quantity estimations for wetland impacts were performed after the public hearing for the Far West Alternative (i.e., preferred alternative). Separate reports summarizing the potential impacts were prepared and submitted for the ultimate improvements in Benton County, Arkansas and McDonald County, Missouri. (Section 404 Permit coordination for the interim improvements in Missouri will be performed by MoDOT in accordance with the previously completed EIS and Record of Decision for US 71 – MoDOT Job Number J7P0427-FHWA-EIS-90-02-F.) Based on the findings of the detailed investigations, as documented in the summary reports, the US Army Corps of Engineers has authorized the construction of the Far West Alternative pursuant to the requirements of the Department of the Army Nationwide Permit No. 14 (Nationwide Permit No. 13862) for McDonald County and Department of the Army General Permit GB (General Permit No. 13862) for Benton County. Copies of these permits are included in Appendix E. Subsequent design development and construction activities for the Far West Alternative ultimate improvements will need to be performed in accordance with these permits.

For the interim improvements in Missouri (i.e. improvements along the existing US 71 Corridor in Missouri), the Section 404 permit prepared in association with the Final EIS (FHWA-EIS-90-02-F) by MoDOT will govern the compliance of Section 404.

Section 9 of the Rivers and Harbors Act (U.S. Coast Guard)

This act regulates construction of bridges and causeways on navigable waterways of the United States. Similar to Section 10, this project would not be regulated by this act.

b. Construction Permits

National Pollutant Discharge Elimination System (NPDES) Permit Requirements

The Federal Water Pollution Control Act declares the discharge of any pollutants to the Waters of the United States from any point source is unlawful, except under the terms and conditions of a permit issued under the NPDES.

Any construction disturbing an area of 2 hectares (5 acres) or more in Arkansas is required to obtain an NPDES permit from Arkansas Department of Environmental Quality (ADEQ) for storm water discharge. For the "Freeway-Build" Alternatives, the AHTD would prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) in accordance with the requirements of the permit. Before construction begins, AHTD would file the requisite Notice of Intent with ADEQ.

MoDOT, in coordination with the MDNR, has developed a construction water pollution control program to protect the adjacent environment from sedimentation and construction material pollutants discharged from construction activities. These procedures and specifications would be utilized for the highway construction in Missouri. MoDOT is committed to assuring the best management practices by the highway contractor. This agreement satisfies the requirements for a NPDES permit, Section 402 of the federal Clean Water Act and the Missouri Clean Water Act. Other construction-related permits include temporary batch plant permits issued by MDNR. Mitigation plans would be developed to comply with the specific permit requirements.

Additional construction permits may be required from local governments.

M. Wetlands

Waters of the U.S., which include potential wetlands, were evaluated using existing data in the form of the National Wetlands Inventory (NWI) Maps, recent aerial photographs, and soils information where available. Field verification was performed by staff ecologists trained in wetlands delineation using the 1987 US Army Corps of Engineers (USACE) Wetlands Delineation Manual.

Waters of the U.S. resources were noted when they were found on the aerial photograph but not on the NWI mapping. These resources were classified using the USFWS Cowardin Classification System for Wetlands. This included designations of Ecological System (i.e. Lacustrine, Riverine and Palustrine Ecological Subsystem); Class; Subclass; and Modifying Terms for water regime and special modifiers.

Field documentation included photographs of the water resource, vegetative component, adjacent land use, approximate size in square meters (acres), and generalized assessment of the wetlands function and value. The resources inventoried ranged from stock ponds to spring fed ponds. With regard to Waters of the U.S. resources present, the stream crossings were

highly variable due in part to the adjacent land use and the presence of gravel removal or stream alteration.

In some cases, it was not possible to obtain landowner permission for the wetlands survey work. For those resources, aerial photographs and views from adjacent property or public rights-of-way were used to estimate the extent of the resource. The Waters of the U.S. and potential wetlands resources which were remotely viewed are indicated as such in the tabular information presented in Appendix E.

Streams were identified as perennial or intermittent based on data received from the USACE, Little Rock District, regarding streams with discharges greater than 0.14 m^3 per second (5 cubic feet per second (cfs). These data were augmented with USGS and NWI mapping designations. These sources were used in the classification of the water resource impacts with regard to streams.

In addition, USACE representatives were consulted at public information meetings held in Bella Vista. Those individuals, along with study team members, also looked at several key areas of concern, especially at Little Sugar Creek. A wetlands field trip was held November 5th and 6th of 1997 in which representatives from MoDOT, AHTD, the US Army Corps of Engineers, and study team members reviewed several sites in the study area. These included ponds with streams flowing in or out, upland stock ponds, impounded and excavated seeps/springs, and intermittent and perennial streams. For this project, it was concluded by the USACE representative on site that ponds located in the uplands, without a stream flowing in or flowing out, are not Waters of the U.S. and therefore not regulated. Only those ponds having a stream flowing in or out that are dammed rather than excavated, or seeps/springs that flow into a Waters of the U.S., resource, and or impounded seeps/springs would be regulated. In regard to streams, vegetation that is on the stream banks below the ordinary high water mark and is maintained by the fluctuations of the stream is riparian habitat, but is not classified as wetlands.

The projected impacts to Waters of the U.S. resources for the "Freeway-Build" Alternatives, presented as the surface area of direct impact by the roadway improvements, represent a worst-case scenario. As it has been demonstrated on other projects, as the wetlands resource impacts, which are based on potential jurisdictional wetlands, receive more formal evaluation and delineation using the 1987 USACE Wetlands Delineation Manual, there is typically a significant reduction in the magnitude of the wetland impacts due to the refinement of the roadway design and the greater degree of detail. However, for screening and evaluation purposes, the use of the Waters of the U.S. resources or potential jurisdictional wetlands classifications have proved to be adequate for comparative purposes as each water resource receives the same level of study.

This EIS documents the selection of the most appropriate location for the proposed action. It does not address all the potential design decisions that have yet to be made, which could also affect the final number and type of impacts to Waters of the U.S. resources including potential wetlands resources. Although the project is not water dependent, considering the purpose and need for the action as discussed in Chapter I, there is no practical alternative that would result in no impacts to Waters of the U.S. However, in the initial review of the individual links, adjustments were made to avoid wetlands resources and minimize impacts. In the case of streams and creeks, it is usually not possible to completely avoid crossing the stream at some point in its length. Different alternatives however may or may not cross the stream. A similar situation developed with regard to ponds. In the Far West Corridor, the alternatives identified for further study avoided 52 ponds that resulted in no impacts to wetlands resources in this

alternative. Similar results were seen in the Near West Corridor and the Existing Corridor with 27 ponds and 18 ponds avoided, respectively, with only minimal impacts to wetlands resources.

1. "NO-BUILD" ALTERNATIVE

The "No-Build" Alternative would have little direct impact on Waters of the U.S. resources, as there would be minimal construction activities. The TSM enhancements, which do include minor highway improvements, would consist of signalized intersections, adjusted speed limits, construction of auxiliary left-turn and right-turn lanes, and committed improvement projects including the new Dartmoor Road and bridge over Little Sugar Creek. This stream crossing (EXE1-17) impacts 0.29 hectares (0.72 acres) of Waters of the U.S. on the Arkansas side. No additional right-of-way that would impact Waters of the U.S. resources is anticipated to be acquired under this alternative.

Impacts to Waters of the U.S. resources would remain constant with regard to transportation improvement impacts. These resources would, however, be subject to the same development pressures as they are now. Residential construction, land clearing, livestock operations, agricultural production, and resource extractive uses, such as gravel mining, would all continue to impact Waters of the U.S. resources, which include both ponds and streams at present levels.

2. "FREEWAY-BUILD" ALTERNATIVES

As discussed in Chapter II, the "Freeway-Build" Alternative corridors were divided into lettered segments for analysis purposes. Each segment includes between one and five separate highway alignments called links. Each link has a distinct label. Each water of the U.S. and potential wetland resource has been located with a discrete number that included the corridor designation, segment identification and location number. Impacts to Waters of the U.S. and potential wetlands resources at the screening level have been aggregated to the segment level.

A wetlands technical memorandum with detailed potential impact quantity estimates is included in Appendix E and summarized in Tables IV-22, IV-23 and IV-24 of this section. The tables in the appendix list the resource number of each site and the sites are also shown on the plates in Appendix C. At the request of the US Army Corps of Engineers, the tables are also compiled to show separate potential impacts for Missouri and Arkansas. The Waters of the U.S. are broken down into four categories: (1) Special Aquatic Sites which include impounded springs and emergent (herbaceous) wetlands, (2) Regulated Ponds which have a stream flowing in or out and are predominantly emergent (herbaceous) wetlands, (3) Stream Crossings which would be culverted - - Waters of the U.S. to the ordinary high water mark, and (4) Stream Crossings which would be bridged -- Waters of the U.S. to the ordinary high water mark.

a. Far West Alternative

The Far West Corridor contains four segments (A, B, C, and D) of US 71 interim improvements and five additional segments of the ultimate improvements: Segments A, B, C, D and H. These segments in turn contain two or three alternative alignments within each segment.

TABLE IV-22
SUMMARY OF POTENTIAL IMPACTS TO WATERS OF THE U.S.
McDONALD COUNTY, MISSOURI

ALTERNATIVE	NUMBER & SIZE in hectares (acres)							
	SPECIAL AQUATIC SITES (emergent)		REGULATED PONDS (emergent)		STREAM CROSSING (CULVERT) (Waters of the U.S.)		STREAM CROSSING (BRIDGE) (Waters of the U.S.)	
No-Build Alternative (Missouri)								
	0	0	0	0	0	0	0	0
Far West Corridor (Missouri)								
Interim								
EX/NWA1	0	0	0	0	0	0	1	0.08 (0.21)
EX/NWB1	0	0	0	0	0	0	1	0.06 (0.15)
EX/NWC1	0	0	0	0	1	0.05 (0.12)	0	0
EXD1	0	0	0	0	0	0	2	0.20 (0.51)
Subtotal: Interim	0	0	0	0	1	0.05 (0.12)	4	0.34 (0.87)
Ultimate (Not including interim quantities)								
FWA1	0	0	1	0.07 (0.17)	2	0.14 (0.35)	0	0
FWA2	1	0.02 (0.05)	0	0	1	0.07 (0.18)	1	0.18 (0.45)
FWA3	0	0	0	0	2	0.18 (0.46)	1	0.18 (0.45)
FWB1/C1	0	0	0	0	1	0.10 (0.24)	0	0
FWB2/C2	0	0	0	0	0	0	1	0.07 (0.18)
Subtotal: Ultimate (Range)	0-1	0 - 0.02 (0 - 0.05)	0-1	0 - 0.07 (0 - 0.17)	2-3	0.07 - 0.28 (0.18 - 0.70)	0-1	0 - 0.25 (0 - 0.63)
Total: Interim + Ultimate (Range)	0-1	0 - 0.02 (0 - 0.05)	0-1	0 - 0.07 (0 - 0.17)	3-4	0.12 - 0.33 (0.30 - 0.82)	4-5	0.34 - 0.59 (0.87 - 1.50)
Total: Interim + Ultimate (Alt. FWA2, FWB2)	**0**	**0**	**0**	**0**	**3**	**0.23 (0.58)**	**5 ***	**0.59 (1.50)**
Near West Corridor (Missouri)								
Interim								
EXD1	0	0	0	0	0	0	2	0.43 (1.06)
Ultimate (Not including interim quantities)								
EX/NWA1,B1,C1	0	0	0	0	1	0.08 (0.20)	2	0.18 (0.44)
NWD1/E1	1	0.004 (0.01)	2	0.17 (0.43)	1	0.07 (0.18)	0	0
Subtotal: Ultimate	1	0.004 (0.01)	2	0.17 (0.43)	2	0.15 (0.38)	2	0.18 (0.44)
Total: Interim + Ultimate (Alt. EX/NWA1,B1, C1,NWD1/E1)	**1**	**0.004 (0.01)**	**2**	**0.17 (0.43)**	**2**	**0.15 (0.38)**	**4**	**0.61 (1.50)**
Existing Corridor (Missouri)								
Ultimate								
EX/NWA1,B1,C1	0	0	0	0	1	0.08 (0.20)	2	0.18 (0.44)
EXD1	1	0.004 (0.01)	2	0.17 (0.43)	1	0.03 (0.07)	3	0.47 (1.18)
Total: Ultimate (Alt. EX/NWA1,B1, C1,EXD1)	**1**	**0.004 (0.01)**	**2**	**0.17 (0.43)**	**2**	**0.11 (0.27)**	**5**	**0.65 (1.62)**

* In the total quantities, bridge crossings on the state line were counted only once (not in both states). In the Far West Alternative, the state line stream crossing is included on the Arkansas side. In the Improvement to Existing Alternative, the state line stream crossing is included on the Missouri side.

TABLE IV-23
SUMMARY OF POTENTIAL IMPACTS TO WATERS OF THE U.S.
BENTON COUNTY, ARKANSAS

ALTERNATIVE	NUMBER & SIZE in hectares (acres)							
	SPECIAL AQUATIC SITES (emergent)		REGULATED PONDS (emergent)		STREAM CROSSING (CULVERT) (Waters of the U.S.)		STREAM CROSSING (BRIDGE) (Waters of the U.S.)	
No-Build Alternative (Arkansas)								
Dartmoor Road	0	0	0	0	0	0	1	0.29 (0.72)
Far West Corridor (Arkansas)								
Ultimate								
FWB1/C1	0	0	0	0	0	0	0	0
FWB2/C2	0	0	0	0	0	0	2	0.14 (0.36)
FWD1	0	0	0	0	0	0	0	0
FWD2	0	0	1	0.09 (0.22)	0	0	0	0
FW/NWH1	0	0	0	0	1	0.11 (0.27)	1	0.22 (0.54)
FW/NWH2	0	0	0	0	1	0.11 (0.27)	1	0.22 (0.54)
Total: Ultimate (Range)	0	0	0-1	0 - 0.09 (0 - 0.22)	1	0.11 (0.27)	1-3	0.22 - 0.36 (0.54 - 0.90)
Total: Ultimate (Alt. FWC2,D1, FW/NWH1)	**0**	**0**	**0**	**0**	**1**	**0.11 (0.27)**	**3**	**0.36 (0.90)**
Near West Corridor (Arkansas)								
Ultimate								
NWF1	0	0	0	0	3	0.23 (0.58)	0	0
NWF2	0	0	0	0	2	0.11 (0.27)	0	0
NWF3	0	0	0	0	2	0.12 (0.30)	0	0
NWF4	1	0.02 (0.04)	0	0	2	0.11 (0.27)	0	0
NWF5	1	0.02 (0.04)	0	0	2	0.12 (0.30)	0	0
NWG1	0	0	0	0	0	0	0	0
FW/NWH1	0	0	0	0	1	0.11 (0.27)	1	0.22 (0.54)
FW/NWH2	0	0	0	0	1	0.11 (0.27)	1	0.22 (0.54)
Total: Ultimate (Range)	0-1	0 - 0.02 (0 - 0.04)	0	0	3-4	0.22 - 0.34 (0.54 - 0.85)	1	0.22 (0.54)
Total: Ultimate (Alt. NWF2,G1, FW/NWH1)	**0**	**0**	**0**	**0**	**3**	**0.22 (0.54)**	**1**	**0.22 (0.54)**
Existing Corridor (Arkansas)								
Ultimate								
Total: Ultimate (Alt. E)	**0**	**0**	**0**	**0**	**3**	**0.22 (0.54)**	**3***	**0.33 (0.81)**

*In the total quantities, bridge crossings on the state line were counted only once (not in both states). In the Far West Alternative, the state line stream crossing is included on the Arkansas side. In the Improvement to Existing Alternative, the state line stream crossing is included on the Missouri side.

TABLE IV-24
SUMMARY OF POTENTIAL IMPACTS TO WATERS OF THE U.S.
PROJECT TOTALS
(McDonald & Benton Counties)

PROJECT TOTALS McDonald And Benton Counties	NUMBER & SIZE in hectares (acres)							
	SPECIAL AQUATIC SITES (emergent)		REGULATED PONDS (emergent)		STREAM CROSSING (CULVERT) (Waters of the U.S.)		STREAM CROSSING (BRIDGE) (Waters of the U.S.)	
No-Build Alternative								
Total	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0.29 (0.72)**
Far West Corridor								
Total: Interim + Ultimate (Range)	0-1	0 - 0.02 (0 - 0.05)	0-2	0 - 0.16 (0 - 0.39)	4-5	0.23 - 0.44 (0.57 - 1.09)	5-8	0.56 - 0.95 (1.41 - 2.40)
Total: Interim + Ultimate (Alt. FWA3,B2/C2, D1, FW/NWH1)	**0**	**0**	**0**	**0**	**4**	**0.34 (0.85)**	**8***	**0.95 (2.40)**
Near West Corridor								
Total: Interim + Ultimate (Range)	0-2	0 - 0.024 (0 - 0.05)	2	0.17 (0.43)	5-6	0.37 - 0.49 (0.92 - 1.23)	5	0.79 (1.96)
Total: Interim + Ultimate (Alt. EX/NWA1,B1, C1, NWD1/E1,F2, G1, FW/NWH1)	**1**	**0.004 (0.01)**	**2**	**0.17 (0.43)**	**5**	**0.37 (0.92)**	**5**	**0.83 (2.04)**
Existing Corridor								
Total: Ultimate (Alt. EX/NWA1,B1, C1, EXD1)	**1**	**0.004 (0.01)**	**2**	**0.17 (0.43)**	**5**	**0.33 (0.81)**	**8***	**0.98 (2.43)**

*In the total quantities, bridge crossings on the state line were counted only once (not in both states). In the Far West Alternative, the state line stream crossing is included on the Arkansas side. In the Improvement to Existing Alternative, the state line stream crossing is included on the Missouri side.

Interim Improvements

- **Segment A (EX/NWA1)** - includes the area from Route H southwest of Pineville, Missouri to the point where it meets existing US 71 just south of Wolf Pen Hollow. It would have no impacts to regulated ponds or special aquatic sites. No intermittent streams and one perennial stream cross this segment. Stream crossing impacts are estimated to be 0.08 hectares (0.21 acres) for the perennial stream. The stream crossed is Goodin Hollow Creek and this stream would be bridged.

- **Segment B (EX/NWB1)** - includes the area along existing US 71 from just south of Wolf Pen Hollow to Miser Hollow Creek. It would have no impacts to regulated ponds or special aquatic sites. No perennial streams and one intermittent stream crosses this segment. Stream crossing impacts are estimated to be 0.06 hectares (0.15 acres) for the intermittent stream. The stream crossed is Brush Creek, which would be bridged.

- **Segment C (EX/NWC1)** - includes the area along existing US 71 from Miser Hollow Creek to a point approximately 2,195 meters (7,200 feet) to the south on US 71. It would impact no regulated ponds, no special aquatic sites and no perennial streams.

One intermittent stream crosses this segment and would impact approximately 0.05 hectares (0.12 acres). The stream crossed is in Miser Hollow Creek and it would be culverted.

- **Segment D (EXD1)** - includes the area from the south end of Segment C to the Missouri/Arkansas state line. It would impact no regulated ponds, no special aquatic sites and no intermittent streams. Two perennial streams cross this segment and would impact approximately 0.20 hectares (0.51 acres). The streams impacted include crossings at Little Sugar Creek and Gordon Hollow Creek, both of which are below the headwaters and would be bridged. In addition, Little Sugar Creek comes very close to this segment just northwest of Gordon Hollow. A retaining wall would be constructed to stabilize the stream bank and prevent erosion of the roadway embankment.

Ultimate Improvements

- **Segment A (FWA)** - includes the area from Route H, southwest of Pineville, Missouri to north of the Missouri/Arkansas state line, near Mill Creek Road and includes three alternative alignments.

  FWA1 would directly impact one regulated pond totaling approximately 0.07 hectares (0.17 acres) of emergent wetland. No perennial streams and two intermittent streams cross this segment. Stream crossing impacts are estimated to be 0.14 hectares (0.35 acres) for the intermittent streams. The streams crossed are an unnamed tributary of Goodin Hollow and Cave Hollow Creek, both of which would be culverted.

  FWA2 would directly impact one special aquatic site, an impounded spring, totaling 0.02 hectares (0.05 acres) of emergent wetland. No perennial streams and two intermittent streams cross this segment. Stream crossing impacts are estimated to be 0.18 hectares (0.45 acres) for Goodin Hollow Creek, which would be bridged, and 0.07 hectares (0.18 acres) for an unnamed tributary of Goodin Hollow Creek, which would be culverted. In addition, a portion of Goodin Hollow Creek comes close to the edge of the corridor (FWA2A3-9), but it is anticipated that no impacts would occur. If, in the design phase, it is found that impacts could occur at this location, the alignment would be adjusted to avoid impacts, or MoDOT would reapply for a permit.

  FWA3 would have the same impacts to Goodin Hollow Creek and the tributary of Goodin Hollow Creek as those of FWA2. It would also cross Cave Hollow Creek, an intermittent stream. Impacts would total 0.11 hectares (0.28 acres) and the stream would be culverted.

- **Segment B/C (FWB/C)** - includes the area from north of the Missouri/Arkansas state line near Mill Creek Road to south of Ferrel Road and includes two alternative alignments.

  FWB1/C1 would cross only one intermittent stream. Stream crossing impact is estimated to be 0.01 hectares (0.24 acres). The stream crossed is Mill Creek, which would be culverted.

  FWB2/C2 would cross two intermittent streams in this segment. The Rattlesnake

Hollow crossing, which would be bridged, would impact 0.07 hectares (0.18 acres) on the Missouri side, and 0.10 hectares (0.24 acres) on the Arkansas side for a total impact of 0.17 hectares (0.42 acres). The other crossing is at Mill Creek, which would be bridged, having impacts totaling 0.05 hectares (0.12 acres).

- **Segment D (FWD)** - includes the area from south of Ferrel Road to east of County Road 49 (Becket Road) and includes two alternative alignments.

  FWD1 would have no impacts to any Waters of the U.S. In this link, a wetland area (FWD1-5) is located adjacent to the proposed right-of-way north of what would be an interchange with Route 72. It would be just out of the proposed corridor and it is anticipated that no impacts would occur. If necessary, a slight alignment adjustment could be made in the design phase to ensure avoidance. If avoidance cannot be accomplished, AHTD will reapply for a permit.

  FWD2 would impact one regulated pond totaling 0.09 hectares (0.22 acres) of emergent wetland. No other impacts to Waters of the U.S. would occur.

- **Segment H (FW/NWH)** - includes the area from east of County Road 49 (Becket Road) to the US 71/US 71B Interchange. This segment has two alternative alignments. This segment is used for both the Far West Corridor and the Near West Corridor.

  FW/NWH1 would cross two perennial streams that are McKisic Creek and an unnamed tributary of McKisic Creek. McKisic Creek is below the headwaters and would be bridged, the impact of which would be 0.22 hectares (0.54 acres). The tributary of McKisic Creek would be culverted with impacts totaling 0.11 hectares (0.27 acres).

  FW/NWH2 would have the same impacts as those described in FW/NWH1.

Existing US 71 Roadway

As presented in Chapter II, in addition to the freeway relocation, the Far West Alternative would include roadway widening, one-lane in each direction, along existing US 71 from the US 71/US 71B Interchange to the Sugar Creek Center area. As part of the roadway widening, bridge widening would occur at McKisic Creek. The creek has been relocated previously and now flows along the toe of the existing roadway embankment slope. The widened bridge would require a relocation of the creek farther west, moving the creek away from the toe of slope. This would provide the opportunity to reconfigure the alignment of the creek to approach a more natural curvature, and reestablish a stream bottom including development of riffle pool complexes.

b. Near West Alternative

Interim Improvements

- **Segment D (EXD1)** - EXD1 would cross two perennial streams. The streams crossed are Gordon Hollow Creek and Little Sugar Creek, both of which are below the headwaters, and both of which would be bridged. Impacts are estimated to be 0.18 hectares (0.44 acres) for Gordon Hollow Creek, and 0.25 hectares (0.62 acres) for Little Sugar Creek. No other impacts to Waters of the U.S. would occur.

Ultimate Improvements

The Near West Corridor contains seven segments: Segments A, B, Segment C, D/E, F, G and H. Within Segments A, B and C, the Existing and Near West Alternatives are concurrent and the roadway alignment follows the location previously included in the MoDOT US 71 EIS from Neosho, Missouri, to the state line (MoDOT Job Number J7P0427 - FHWA-EIS-90-02-F). South of Segment C, including Segments D/E, F, G and H, the Near West Alternative is separate from the Existing Alternative. Segment H for the Near West and Far West Alternatives are identical. Each of these segments are divided into alternative alignments which range from one to five in number within each segment.

Segment H was previously described under the Far West Corridor. Waters of the U.S. impacts along existing US 71 at McKisic Creek were described under the Far West Corridor.

- **Segments A, B and C (EX/NWA1,B1,C1)** - includes the area between Route H, southwest of Pineville, Missouri, to the diversion point north of Gordon Hollow Creek, near the Missouri/Arkansas state line and has only one alignment.

  The alignment in Segments A, B and C would cross three intermittent streams: Goodin Hollow, Brush Creek and Miser Hollow. Goodin Hollow would be bridged and impacts would total 0.08 hectares (0.21 acres). Brush Creek would be bridged and impacts would total 0.09 hectares (0.23 acres). Miser Hollow would be culverted and impacts would total 0.08 hectares (0.20 acres).

- **Segment D/E (NWD1/E1)** - includes the area from north of Gordon Hollow Creek to the Missouri/Arkansas state line which contains one alignment.

  NWD1/E1 would directly impact two regulated ponds totaling approximately 0.17 hectares (0.43 acres) of emergent wetland. One intermittent stream crosses this segment with an impact of 0.07 hectares (0.18 acres). The stream crossed is a tributary of Little Sugar Creek and would be culverted. In addition, a portion of Gordon Hollow Creek (NWD1E1-1) comes close to the edge of the corridor, but it is anticipated that no impacts would occur. If, in the design phase, it is found that impacts could occur at this location, the alignment would be adjusted to avoid impacts or MoDOT would reapply for a permit.

- **Segment F (NWF)** - includes the areas between the Missouri/Arkansas state line and west of Chelsea Road and north of County Road 39. The segment contains five alternative alignments.

  NWF1 (Links 1, 4 and 8) would have no impacts to special aquatic sites or regulated ponds. Stream impacts include two at Gordon Hollow Creek, which is below the headwaters, and one at a tributary of Tanyard Creek. The perennial portion of Gordon Hollow Creek is culverted with impacts totaling 0.10 hectares (0.24 acres). The intermittent portion of Gordon Hollow Creek is a relocation impacting 0.12 hectares (0.31 acres). The tributary of Tanyard Creek is intermittent and would be culverted with impacts totaling 0.01 hectares (0.03 acres).

  NWF2 (Links 1, 3, 5, 6 and 8) would directly impact the same Waters of the U.S. as listed above in NWF1 with the exception that Gordon Hollow is impacted at only one location which is a crossing, thereby eliminating the 0.12 hectares (0.31 acres) relocation impact.

NWF3 (Links 2, 5, 6 and 8) would cross one perennial stream and one intermittent stream. Stream crossing impacts are estimated to be 0.11 hectares (0.27 acres) for the perennial stream which is Gordon Hollow. It is below the headwaters and would be culverted. A tributary of Tanyard Creek is the intermittent stream. It would be culverted with impacts totaling 0.01 hectares (0.03 acres).

NWF4 (Links 1, 3, 5 and 7) would have the same impacts to Gordon Hollow Creek and the tributary of Tanyard Creek as those described in NWF2. In addition, one special aquatic site, and impounded spring, would be impacted totaling 0.02 hectares (0.04 acres) of emergent wetland.

NWF5 (Links 2, 5 and 7) would have the same impacts to Gordon Hollow Creek and the tributary of Tanyard Creek as those described in NWF3. In addition, this alternative would impact the same special aquatic site described in NWF4.

- **Segment G (NWG1)** - includes the area from west of Chelsea Road and north of County Road 39 to east of County Road 49 (Becket Road) and contains one alignment.

  NWG1 would have no impacts to any Waters of the U.S.

- **Segment H (FW/NWH)** - FW/NWH1 and H2 have the same impacts as those in the Far West Alternative.

Existing US 71 Roadway

As presented in Chapter II, in addition to the freeway relocation, the Near West Alternative would include roadway widening, one-lane in each direction, along existing US 71 from the US 71/US 71B Interchange to the Sugar Creek Center area. As part of the roadway widening, bridge widening would occur at McKisic Creek. The creek has been relocated previously and now flows along the toe of the existing roadway embankment slope. The widened bridge would require a relocation of the creek farther west, moving the creek away from the toe of slope. This would provide the opportunity to reconfigure the alignment of the creek to approach a more natural curvature, and reestablish a stream bottom including development of riffle pool complexes.

c. Existing Alternative

The Existing Corridor contains five segments: Segments A, B, C, D and E. There is one alignment in each segment. The Existing Alternative has no interim improvement impacts.

Segments A, B and C were previously described under the Near West Corridor.

- **Segment D (EXD1)** - EXD1 would directly impact two regulated ponds totaling 0.17 hectares (0.43 acres) of emergent wetland. One special aquatic site, a spring, is impacted totaling 0.004 hectares (0.01 acres) of emergent wetland. One intermittent stream, a tributary of Little Sugar Creek, is culverted with impacts totaling 0.03 hectares (0.07 acres). Gordon Hollow Creek, a perennial stream below the headwaters, is bridged with impacts totaling 0.18 hectares (0.44 acres). Little Sugar Creek is below the headwaters and is bridged at two locations. At existing US 71, impacts total 0.25 hectares (0.62 acres). At Bear Creek Hollow Road on the state line impacts, total 0.05 hectares (0.12 acres) on the Missouri side.

- **Segment E (EXE1)** - This segment includes the area between the Missouri/Arkansas state line and the US 71/ US 71B Interchange. EXE1 would have no impacts to special aquatic sites or regulated ponds. Stream crossings would include four at Little Sugar Creek which is perennial and below the headwaters, one at McKisic Creek which is perennial and below the headwaters, one at Pinion Creek which is intermittent, and two at a tributary of McKisic Creek which is intermittent. Bear Creek Hollow Road on the state line would bridge Little Sugar Creek with impacts totaling 0.05 hectares (0.12 acres) on the Arkansas side. Little Sugar Creek would also be bridged at Route 340 with impacts totaling 0.12 hectares (0.30 acres). Little Sugar Creek also runs under US 71 at the Berksdale Golf Course where a new bridge would replace the existing one resulting in total impacts of 0.11 hectares (0.27 acres). Pinion Creek would be culverted at a frontage road south of the Town Center with impacts totaling 0.01 hectares (0.03 acres). McKisic Creek would be bridged at US 71 with impacts totaling 0.05 hectares (0.12 acres). A tributary of McKisic Creek would be culverted in two locations at the US 71/US 71B interchange with impacts totaling 0.21 hectares (0.51 acres). In addition, Little Sugar Creek runs parallel and adjacent to existing US 71 just south of the intersection with Kingsland Drive (EXE1-8 and EXE1-9). At this location a bridge structure and retaining wall would be constructed to prevent erosion of the roadway embankment. Little Sugar Creek also runs parallel and adjacent to US 71 just south of Greenwich Road and the Sugar Creek Center (EXE1-18 and EXE1-19). It is anticipated that no impacts would occur at this location. However, if, in the design phase, it is determined that impacts could occur, AHTD would reapply for a permit.

3. PROJECT IMPLICATIONS AND RECOMMENDATIONS

a. Preferred Alternative

The Preferred Alternative lies within the Far West corridor and includes segments FWA3 and FWB2/C2 in McDonald County, Missouri; and FWB2/C2, FWD1 and FW/NWH1 in Benton County, Arkansas. Impacts to Waters of the U.S. resources due to the interim improvements in Missouri will be governed by the earlier MoDOT EIS and ROD.

As stated earlier in this section, field investigations were previously performed within the corridor on all ponds, perennial streams, streams designated as "Riverine" on the NWI maps, and streams having a flow greater than 0.14 m^3 per second (5 cfs). According to the AHTD wetlands protocol, the preliminary phase of the study did not require field checks for intermittent streams. However, after the Preferred Alternative was selected, each USGS blue line stream crossing within the Preferred Alternative was photographed and was checked to determine the presence or absence of adjacent wetlands. The presence or absence of the Ordinary High Water Mark (OHWM) of each stream was also determined and the width was measured for those with an OHWM. The length of stream lying within the corridor was scaled from the aerial photographs to determine the acreage within the OHWM.

All of the previous and recent water resource data for the Preferred Alternative was compiled in two documents titled Waters of the U.S. and Preliminary Jurisdictional Wetland Determinations Summary Report. A separate document was prepared for each county and sent to the Little Rock District US Army Corps of Engineers for review and approval as part of the Section 404 permitting process. The USACE has since concurred with the findings and has determined that each stream crossing in McDonald County is authorized by a Department of the Army Nationwide Permit (NWP) No. 14; and that each stream crossing in Benton County is

authorized by a Department of the Army General Permit. Each report can be found in Appendix E along with the Section 404 permits. The results and conclusions of the water resource investigations for the Preferred Alternative are summarized for each county in the following text and tables. The location of each water resource can be found on Exhibit 2 of Appendix E and on the Plan Plates in Appendix C.

McDonald County, Missouri

It was determined that the Preferred Alternative in McDonald County did not contain any jurisdictional wetland areas. There was only one pond (an upland stock pond), but it did not qualify as a Water of the U.S., and is therefore not regulated by the USACE. Field investigations were also performed at 13 mapped streams. Ten (10) of those had a discernible channel with an OHWM and are therefore regulated, and 3 of those lacked a channel with an OHWM. All of the regulated streams are intermittent and 2 of the 10 regulated streams, Goodin Hollow Creek and Rattlesnake Hollow Creek, would be bridged and therefore would avoid impacts. The 8 remaining streams would be culverted resulting in total potential impacts of 910.5 meters (2,987 feet) of channel including 0.22 hectares (0.54 acres) of Waters of the U.S. within the OHWM. Table IV-24a summarizes the potential water resource impacts for the Preferred Alternative in McDonald County. In addition, tables of detailed information regarding each water resource and typical profiles of bridged and culverted stream crossings can be found in Appendix E.

Benton County, Arkansas

It was determined that the Preferred Alternative in Benton County would potentially impact only one jurisdictional wetland area (Site B-3a from the Summary Report, as also shown on Plate FW4 in Appendix C). It is an "emergent" wetland area covering 0.04 hectares (0.10 acres) with no open water. A photo and location for this resource is shown in Exhibit IV-5. During the roadway design phase, all reasonable and practicable efforts will be made to avoid this wetland. Commitments to reinvestigate the roadway alignment in this area have already been made regarding the proximity of the alignment to the Highlands Golf Course area. A slight shifting of the alignment in this area would both mitigate the proximal impacts of the freeway for the golf course as well as avoid this wetland resource. If it is determined that impacts to the wetland cannot be avoided, AHTD will reapply for a Section 404 Permit.

None of the 14 ponds (several were upland stock ponds) in the corridor qualified as Waters of the U.S., and are therefore not regulated by the USACE. Field investigations were also performed at 21 mapped streams. Twelve (12) of those had a discernible channel with an OHWM and are therefore regulated, and 9 of those lacked a channel with an OHWM. Two (2) of the regulated streams in the corridor are perennial and 10 are intermittent. One of the perennial streams, McKisic Creek, has a flow greater than 0.14 m^3 per second (5 cfs), and would be bridged to avoid impacts. The other perennial stream is a tributary of McKisic Creek, and has a flow of less than 0.14 m^3 per second (5 cfs). The affected portion of this stream, which would be culverted, had previously been channelized, as it lies within the existing interchange of US 71 and US 71 Business.

There are two intermittent streams in the corridor that would be bridged and thus avoid impacts --- Rattlesnake Hollow Creek located at the Missouri/Arkansas state line, and Mill Creek located about one-half mile south of the state line. The remaining 8 intermittent streams, and the perennial tributary of McKisic Creek, previously mentioned, would be culverted resulting in total potential impacts of 1030.3 meters (3,380 feet) of channel including 0.22 hectares (0.54 acres)

of Waters of the U.S. within the OHWM. Table IV-24b summarizes the potential water resource impacts for the Preferred Alternative in Benton County. In addition, tables of detailed information regarding each water resource can be found in Appendix E.

TABLE IV-24a
SUMMARY OF POTENTIAL IMPACTS TO WATERS OF THE U.S.
FOR THE PREFERRED ALTERNATIVE
McDonald County, Missouri

SEGMENT	SPECIAL AQUATIC SITES (emergent wetlands)		REGULATED PONDS (waters of the U.S.)		STREAM CROSSINGS *meters (feet) & hectares (acres)*					
					CULVERTED			BRIDGED*		
	#	Size	#	Size	#	Length	Area OHWM	#	Length	Area OHWM
FWA3	0	0	0	0	7	809.9 m (2657 ft)	0.204 ha (0.50 ac)	1	213.4 m (700 ft)	0.17 ha (0.42 ac)
FWB2/C2	0	0	0	0	1	100.6 m (330 ft)	0.02 ha (0.04 ac)	1	91.4 m (300 ft)	0.07 ha (0.18 ac)
TOTAL	**0**	**0**	**0**	**0**	**8**	**910.5 m (2987 ft)**	**0.22 ha (0.54 ac)**	**2**	**304.8 m (1000 ft)**	**0.24 ha (0.60 ac)**

*Stream crossing impacts at bridged streams are considered as being avoided, but quantities are listed for informative and comparative purposes.

TABLE IV-24b
SUMMARY OF POTENTIAL IMPACTS TO WATERS OF THE U.S.
FOR THE PREFERRED ALTERNATIVE
Benton County, Arkansas

SEGMENT	SPECIAL AQUATIC SITES (emergent wetlands)		REGULATED PONDS (waters of the U.S.)		STREAM CROSSINGS *meters (feet) & hectares (acres)*					
					CULVERTED			BRIDGED*		
	#	Size	#	Size	#	Length	Area OHWM	#	Length	Area OHWM
FWB2/C2	1	0.04 ha (0.10 ac)	0	0	2	289.5 m (950 ft)	0.02 ha (0.06 ac)	2	243.8 m (800 ft)	0.15 ha (0.36 ac)
FWD1	0	0	0	0	4	381.1 m (1250 ft)	0.06 ha (0.14 ac)	0	0	0
FW/NWH1	0	0	0	0	3	359.7 m (1180 ft)	0.14 ha (0.34 ac)	1	109.7 m (360 ft)	0.22 ha (0.54 ac)
TOTAL	**1**	**0.04 ha (0.10 ac)**	**0**	**0**	**9**	**1030.3 m (3380 ft)**	**0.22 ha (0.54 ac)**	**3**	**353.5 m (1160 ft)**	**0.37 ha (0.90 ac)**

*Stream crossing impacts at bridged streams are considered as being avoided, but quantities are listed for informative and comparative purposes.

Total Impacts (McDonald and Benton Counties)

The US 71 Preferred Alternative from Bella Vista to Pineville would potentially impact one jurisdictional "emergent" wetland area covering 0.04 hectares (0.10 acres), although avoidance will be sought in the roadway design phase. There are no regulated ponds within this corridor. Five (5) regulated streams would be bridged, and 17 regulated streams would be culverted resulting in total potential impacts of 1940.8 meters (6,367 feet) of channel including 0.44 hectares (1.08 acres) of waters of the U.S. within the OHWM. This information is also presented in Table IV-24c.

TABLE IV-24c
SUMMARY OF POTENTIAL IMPACTS TO WATERS OF THE U.S.
FOR THE PREFERRED ALTERNATIVE
McDonald & Benton Counties

COUNTY	SPECIAL AQUATIC SITES (emergent wetlands)		REGULATED PONDS (waters of the U.S.)		STREAM CROSSINGS *meters (feet) & hectares (acres)*					
					CULVERTED			BRIDGED*		
	#	Size	#	Size	#	Length	Area OHWM	#	Length	Area OHWM
McDonald	0	0	0	0	8	910.5 m (2987 ft)	0.22 ha (0.54 ac)	2	304.8 m (1000 ft)	0.24 ha (0.60 ac)
Benton	1	0.04 ha (0.10 ac)	0	0	9	1030.3 m (3380 ft)	0.22 ha (0.54 ac)	3	353.5 m (1160 ft)	0.37 ha (0.90 ac)
TOTAL	**1**	**0.04 ha (0.10 ac)**	**0**	**0**	**17**	**1940.8 m (6367 ft)**	**0.44 ha (1.08 ac)**	**5**	**658.3 m (2160 ft)**	**0.61 ha (1.50 ac)**

*Stream crossing impacts at bridged streams are considered as being avoided, but quantities are listed for informative and comparative purposes.

b. Project Recommendations

In any project which has potential impacts to wetlands or other Waters of the U.S., each resource should be individually examined and the construction limits of the roadway improvements should be reevaluated to see if the wetlands resource can reasonably be avoided. Avoidance is the best wetlands strategy. When impacts are unavoidable, they should be minimized and the impacted wetlands resource should be mitigated and enhanced to the extent practical.

Special conditions to minimize harm to wetlands and other aquatic resources will be considered. As part of the compliance with the provisions of the Section 404 Permits (see Appendix E), these measures would include the following:

- Dredged or fill material used for construction would be nonpollutional material in accordance with the EPA Guidelines for the Discharge of Dredged or Fill Material, found in 40 CFR 230.
- All construction activity would be performed in a manner that would minimize increased turbidity of the water in the work area and otherwise avoid adverse effects on water quality and aquatic life.
- All dredged material not used as backfill would be placed on land and no runoff water from the disposal site would be allowed to enter the waterway.
- The discharge would not be located in the proximity of a public water supply intake.
- The discharge would not contain unacceptable levels of pathogenic organisms in areas used for sports involving physical contact with the water.
- The construction activity will not relocate the stream or river channel unnecessarily.
- Erosion, both during and after construction, would be controlled as outlined in the "Federal-Aid Highway Program Manual", Volume 6, Chapter 7 Section 3, and the latest edition of the AHTD and MoDOT Standard Specifications.

- The project will not significantly disrupt the movement of those species of aquatic life indigenous to the waterbody.
- Temporary work ramps or haul roads, when needed must provide sufficient waterway openings to allow the passage of expected high flows.
- All temporary fills would be removed in their entirety.
- The contractor shall take precautions in the handling and storage of hazardous materials including lubricants and fuels to prevent discharges or spillage's that would result in degradation of water quality.
- Protection of wetlands:
    a. Wetland areas would be avoided to the maximum extent practicable.
    b. Wetlands outside the construction limits would not be used for construction support activities (borrow sites, waste sites, storage, parking access, etc.).
    c. Heavy equipment working in wetlands would be placed on mats.
    d. Clearing of wetlands would be limited to the minimum necessary for the completion of the job.
    e. The contractor would be responsible for the protection of adjacent wetlands.

N. Water Body Modification and Wildlife Impacts

Transportation improvement projects impact aquatic and terrestrial habitat directly through right-of-way acquisition and indirectly through habitat modification and fragmentation. Right-of-way acquisition results in a direct loss of land area and a reduction in habitat size. These losses are quantifiable and relatively easy to understand. However, when a highway segment bisects an area of a previously wooded habitat or, perhaps, uses a culvert to carry a small stream under the highway, a "fragmentation" also occurs, and this can have an adverse effect on species diversity. Habitat fragmentation, whether it be terrestrial or aquatic, creates what is now being referred to as an "island" biogeography where variably-sized parcels or "islands" of viable habitat function within an overall landscape altered for human uses. Some species display varying degrees of tolerance to this fragmentation, and are able to maintain breeding populations. Other species, whose habitat requirements are more narrowly defined, are unable to adapt and are in danger of extirpation.

Correspondence information from the U.S. Fish and Wildlife Service stated that most of the remaining large contiguous blocks of forest in the Midwest occur in the Ozarks. These forests provide habitat for many species of neotropical forest interior birds. For the less area-sensitive species, the minimum size of unfragmented habitat that can support bird populations without substantial losses due to predation and nest parasitism is a forest block of at least 202 hectares (500 acres). The large blocks of forest located in the Study Area are composed of predominantly the Dry Mesic Limestone Dolomite type.

Other important habitat considerations are contiguous blocks of forested areas containing 16 hectares (40 acres) or more and all-riparian corridors associated with streams in the Study Area. Upland forested habitat and vegetated riparian corridors within the US 71 Study Area are

already fragmented from previous land use decisions. The importance of these environments is evident in areas where much of the forest has been cleared for agricultural purposes. However, when these areas are sparse, the migration of species is impaired, as they have limited areas in which to relocate.

The riparian forests within the study corridors were determined by studying aerial photographs, USGS topographic maps, and National Wetlands Inventory maps. Areas determined to be riparian forests were those that were designated on the NWI maps as palustrine forested, or low-lying forested areas adjacent to streams that were designated as riverine environments.

Streams and ponds also provide habitat values and are considered in the analysis. Water body modification can impact wildlife such as fish by the types of environments that some species of fish prefer to inhabit. The Missouri Water Quality Standards lists three perennial streams in the Study Area that have use designations for Protection of Warm Water Aquatic Life and Cool Water Fishery. These streams are the Elk River, Big Sugar Creek, and Little Sugar Creek. Not only do the streams and ponds within the Study Area serve as habitats for aquatic species, but they also provide drinking water for terrestrial wildlife. Commitments have been made by MoDOT and AHTD to assess as part of the preliminary design the need for runoff collection and treatment measures for the "Freeway Build" Alternatives to protect the quality of the habitat and drinking water of these aquatic species and terrestrial wildlife habitats.

1. "NO-BUILD" ALTERNATIVE

The "No-Build" Alternative, including TSM improvements, would not further fragment existing habitat. Existing wildlife and fisheries populations would continue to utilize available habitat in the Study Area, and existing rates and trends of highway-related mortality would continue. Development pressures, grazing, logging and other sources of degradation would continue to act on wildlife habitat independent of transportation improvements and water quality of streams would continue to be effected by runoff from the road surface.

2. "FREEWAY-BUILD" ALTERNATIVES

a. Primary Impacts

In defining the roadway alignments for the "Freeway-Build" Alternatives, all practical care was taken to avoid undue impacts to both aquatic and terrestrial habitats. To the fullest extent practical, large contiguous forest blocks, wherever unavoidable, would be crossed or fragmented for as little distance as practical to minimize any adverse impacts to these resources. In addition, subsequent design development of the preferred alternative would continue to refine the roadway alignment to further minimize any adverse impacts to aquatic and terrestrial resources.

Direct impacts to forested wildlife habitat are separated into three categories: (1) number of areas in which large contiguous forest blocks of at least 202 hectares (500 acres) are being fragmented, (2) number of areas in which contiguous forest blocks of at least 16 hectares (40 acres) are being fragmented, and (3) surface areas of riparian forest being impacted. Direct impacts to streams and ponds are also included. For the purposes of this impact analysis, hectareage (acreage) impacts were based on the 100 m (328 ft.) wide study corridor. There are several segments and options within each alternative, therefore wildlife impacts are presented as a range of impacts in Table IV-25.

Far West Alternative

The Far West Corridor contains four segments (A, B, C and D) of US 71 interim improvements and four additional segments of the ultimate improvements: Segments A, B/C, D and H. These ultimate improvement segments each contain two or three alternative alignments.

- **Interim Improvements**

  > **Segment A (EX/NWA1)** - includes the area from Route H southwest of Pineville, Missouri to the point where it meets existing US 71 just south of Wolf Pen Hollow. It would fragment two 16.2 hectare (40 acre) blocks of forest and impact 0.3 hectare (0.7 acre) of riparian forest. It would cross one stream impacting 0.06 hectares (0.1 acres) and would impact two ponds totaling 0.15 hectares (0.4 acres).

  > **Segment B (EX/NWB1)** - includes the area along existing US 71 from just south of Wolf Pen Hollow to Miser Hollow Creek. It would not fragment forest blocks, nor impact riparian forest. It would cross one stream impacting 0.06 hectares (0.1 acres) and would impact one pond totaling 0.02 hectares (0.05 acres).

  > **Segment C (EX/NWC1)** - includes the area along existing US 71 from Miser Hollow Creek to a point approximately 2195 meters (7200 feet) to the south on U.S. 71. It would not fragment forest blocks, but would impact 0.2 hectare (0.4 acre) of riparian forest. It would cross one stream impacting 0.05 hectares (0.1 acres), but would not impact any ponds.

  > **Segment D (EXD1)**- includes the area from the south end of Segment C to the Missouri/Arkansas state line. It would not fragment forest blocks, but would impact 0.7 hectare (1.8 acres) of riparian forest. It would cross three streams impacting 0.63 hectares (1.6 acres), but would not impact any ponds.

- **Ultimate Improvements**

  > **Segment A (FWA)** - includes the area from Route H, southwest of Pineville Missouri to north of the Missouri/Arkansas state line, near Mill Creek Road, and includes three alternative alignments. FWA1 would fragment five 16 hectare (40 acre) blocks of forest and impact 0.48 hectares (1.2 acres) of riparian forest. It would cross one stream impacting 0.03 hectares (0.07 acres) and would impact 4 ponds totaling 0.45 hectares (1.1 acres).

  FWA2 would fragment two 16 hectare (40 acre) blocks of forest and impact 0.85 hectares (2.1 acres) of riparian forest. It would cross three streams impacting 0.29 hectares (0.7 acres) and would impact 3 ponds totaling 0.23 hectares (0.6 acres).

  FWA3 would fragment three 16 hectare (40 acre) blocks of forest and impact 0.85 hectares (2.1 acres) of riparian forest. It would cross three streams impacting 0.29 hectares (0.7 acres) and would impact one pond totaling 0.15 hectares (0.4 acres).

TABLE IV-25
WATER BODY MODIFICATION AND WILDLIFE HABITAT IMPACTS
FORESTS, STREAMS AND PONDS

"FREEWAY-BUILD" ALTERNATIVES	UPLAND FOREST FRAGMENTATION		RIPARIAN FOREST	STREAMS		PONDS	
	202.3 ha (500 ac) block frag.	16.2 ha (40 ac) block frag.	hectares (acres)	hectares (acres)		hectares (acres)	
	No.	No.	Area	No.	Area	No.	Area
Far West							
Interim							
EX/NWA1	0	2	0.3 (0.7)	1	0.06 (0.1)	2	0.15 (0.4)
EX/NWB1	0	0	0	1	0.06 (0.1)	1	0.02 (0.05)
EX/NWC1	0	0	0.2 (0.4)	1	0.05 (0.1)	0	0
EXD1	0	0	0.7 (1.8)	3	0.63 (1.6)	0	0
Total: Interim	0	2	1.2 (2.9)	6	0.8 (1.9)	3	0.17 (0.45)
Ultimate (Not including interim quantities)							
FWA1	0	5	0.48 (1.2)	1	0.03 (0.07)	4	0.45 (1.1)
FWA2	0	2	0.85 (2.1)	3	0.29 (0.7)	3	0.23 (0.6)
FWA3	0	3	0.85 (2.1)	3	0.29 (0.7)	1	0.15 (0.4)
FWB1/C1	2	12	0.29 (0.7)	1	0.05 (0.1)	0	0
FWB2/C2	0	10	0.40 (1.0)	1	0.010 (0.03)	1	0.010 (0.02)
FWD1	0	0	0	0	0	12	1.63 (4.0)
FWD2	0	3	0	0	0	8	0.49 (1.2)
FW/NWH1	1	4	0	2	0.33 (0.8)	2	0.36 (0.9)
FW/NWH2	0	5	0	2	0.33 (0.8)	2	0.1 (0.2)
Total: Ultimate (Range)	0 to 3	16 to 25	0.77 to 1.25 (1.9 to 3.1)	4-6	0.37 to 0.67 (0.9 to 1.6)	11-19	0.74 to 2.45 (1.8 to 6.02)
Total: Interim + Ultimate (Range)	0 to 3	18 to 27	1.97 to 2.45 (4.8 to 6.0)	10-12	1.17 to 1.47 (2.8 to 3.5)	14-22	0.91 to 2.62 (2.25 to 6.47)
Total: Interim + Ultimate (Alt. FWA3,B2/C2,D1, FW/NWH1)	1	19	2.45 (6.0)	12	1.43 (3.43)	19	2.32 (5.77)
Near West							
Interim							
EXD1	0	1	0.21 (0.5)	2	0.46 (1.1)	7	0.74 (1.8)
Ultimate (Not including interim quantities)							
EX/NWA1,B1,C1	0	2	0.58 (1.4)	3	0.17 (0.4)	3	0.17 (0.4)
NWD1E1	0	1	0.32 (0.8)	1	0.01 (0.02)	3	0.16 (0.4)
NWF1	0	1	0.94 (2.3)	2	0.22 (0.5)	4	0.59 (1.5)
NWF2	0	2	0.52 (1.3)	1	0.1 (0.2)	4	0.59 (1.5)
NWF3	0	3	0.15 (0.4)	1	0.11 (0.3)	4	0.59 (1.5)
NWF4	0	2	0.52 (1.3)	1	0.1 (0.2)	6	0.7 (1.7)
NWF5	0	3	0.15 (0.4)	1	0.11 (0.3)	6	0.7 (1.7)
NWG1	0	3	0	0	0	1	0.12 (0.3)
FW/NWH1	1	4	0	2	0.33 (0.8)	3	0.39 (1.0)
FW/NWH2	0	5	0	2	0.33 (0.8)	3	0.1 (0.2)
Total: Ultimate (Range)	0 to 1	11 to 14	1.05 to 1.84 (2.6 to 4.5)	7 to 8	0.61 to 0.73 (1.42 to 1.72)	14 to 16	1.14 to 1.54 (2.8 to 3.8)
Total: Interim + Ultimate (Range)	0 to 1	12 to 15	1.26 to 2.05 (3.1 to 5.0)	9 to 10	1.07 to 1.19 (2.52 to 2.82)	21 to 23	1.88 to 2.28 (4.6 to 5.6)
Total: Interim + Ultimate (Alt. EX/NWA1,B1,C1, NWD1E1,F2,G1,FW/NWH1)	0	13	1.63 (4.0)	9	1.07 (2.52)	21	2.17 (5.4)
Existing							
Ultimate							
EX/NWA1,B1,C1	0	2	0.58 (1.4)	3	0.17 (0.4)	3	0.17 (0.4)
EXD1	0	1	0.21 (0.5)	2	0.46 (1.1)	7	0.74 (1.8)
EXE1	0	0	0	9	2.96 (7.3)	1	0.05 (0.1)
Total: Ultimate (Alt. EX/NWA1,B1,C1, EXD1,E1)	0	3	0.79 (1.9)	14	3.59 (8.8)	11	0.96 (2.3)

> **Segment B/C (FWB/C)** - includes the area from north of the Missouri/Arkansas state line near Mill Creek Road, crossing the state line, to south of Ferrel Road and includes two alternative alignments.

FWB1/C1 would fragment two 202 hectare (500 acre) blocks of forest, twelve 16 hectare (40 acre) blocks of forest, and impact 0.29 hectares (0.7 acres) of riparian forest. It would cross one stream impacting 0.05 hectares (0.1 acres) and would impact no ponds.

FWB2/C2 would fragment ten 16 hectare (40 acre) blocks of forest and impact 0.40 hectares (1.0 acres) of riparian forest. It would cross one stream impacting 0.01 hectares (0.03 acres) and would impact one pond totaling 0.01 hectares (0.02 acres).

> **Segment D (FWD)** - includes the area from south of Ferrel Road to east of County Road 49 (Becket Road) and includes two alternative alignments.

FWD1 would have no impacts to forest blocks, riparian forests or streams. It would impact twelve ponds totaling 1.63 hectares (4.0 acres).

FWD2 would fragment three 16 hectare (40 acre) blocks of forest but would have no impacts to riparian forest. It would cross no streams but would impact eight ponds totaling 0.49 hectares (1.2 acres).

> **Segment H (FW/NWH)** - includes the area from east of County Road 49 (Becket Road) to US 71/US 71B interchange and includes two alternative alignments. This Segment is the same for both the Far West Corridor and the Near West Corridor.

FW/NWH1 would fragment one 202 hectare (500 acre) block of forest and four 16 hectare (40 acre) blocks of forest, but would have no impacts to riparian forest. It would cross two streams impacting 0.33 hectares (0.8 acres) and would impact two ponds totaling 0.36 hectares (0.9 acres).

FW/NWH2 would fragment five 16 hectare (40 acre) blocks of forest but would have no impacts to riparian forest. It would cross two streams impacting 0.33 hectares (0.8 acres) and would impact two ponds totaling 0.1 hectares (0.2 acres).

Near West Alternative

The Near West Corridor contains one additional interim improvement segment (Segment D from the Existing Alternative) and seven ultimate improvement segments: Segments A, B, C, Segment D/E, F, G and H. These ultimate improvement segments each contain one to five alternative alignments.

- **Interim Improvements**

> **Segment D (EXD1)** - includes the area from north of Gordon Hollow Creek, near the Missouri/Arkansas state line to the Missouri/Arkansas state line and

has one alternative alignment. It would fragment one 16.2 hectare (40 acre) forest block, and would impact 0.21 hectares (0.4 acres) of riparian forest. It would cross two streams impacting 0.46 hectares (1.1 acres) and would impact seven ponds totaling 0.74 hectares (1.8 acres).

- **Ultimate Improvements**

Segment H is the same as previously described for the Far West Corridor.

> **Segments A, B and C (EX/NWA1, B1, C1)** - includes the area from Route H southwest of Pineville, Missouri to the diversion point north of Gordon Hollow Creek, near the Missouri/Arkansas state line. This segment has one alternative alignment and would fragment two 16 hectare (40 acre) blocks of forest and impact 0.58 hectares (1.4 acres) of riparian forest. It would cross three streams impacting 0.17 hectares (0.4 acres) and would impact three ponds totaling 0.17 hectares (0.4 acres).

> **Segment D/E (NWD1E1)** - includes the area from north of Gordon Hollow Creek, near the Missouri/Arkansas state line to the Missouri/Arkansas state line and has one alternative alignment.

NWD1E1 would fragment one 16 hectare (40 acre) block of forest and impact 0.32 hectares (0.8 acres) of riparian forest. It would cross one stream impacting 0.1 hectares (0.02 acres) and would impact three ponds totaling 0.16 hectares (0.4 acres).

> **Segment F** - includes the area from the Missouri/Arkansas state line to west of Chelsea Road and north of County Road 39. This segment has five alternative alignments.

Alternative NWF1 (Links 1, 4 and 8) would fragment one 16 hectare (40 acre) block of forest and impact 0.94 hectares (2.3 acres) of riparian forest. It would cross two streams impacting 0.22 hectares (0.5 acres) and would impact four ponds totaling 0.59 hectares (1.5 acres).

Alternative NWF2 (Links 1, 3, 5, 6 and 8) would fragment two 16 hectare (40 acre) blocks of forest and impact 0.52 hectares (1.3 acres) of riparian forest. It would cross one stream impacting 0.1 hectares (0.2 acres) and would impact four ponds totaling 0.59 hectares (1.5 acres).

Alternative NWF3 (Links 2, 5, 6 and 8) would fragment three 16 hectare (40 acre) blocks of forest and impact 0.15 hectares (0.4 acres) of riparian forest. It would cross one stream impacting 0.11 hectares (0.3 acres) and would impact four ponds totaling 0.59 hectares (1.5 acres).

Alternative NWF4 (Links 1, 3, 5 and 7) would fragment two 16 hectare (40 acre) blocks of forest and impact 0.52 hectares (1.3 acres) of riparian forest. It would cross one stream impacting 0.1 hectares (0.2 acres) and would impact six ponds totaling 0.7 hectares (1.7 acres).

Alternative NWF5 (Links 2, 5 and 7) would fragment three 16 hectare (40 acre) blocks of forest and impact 0.15 hectares (0.4 acres) of riparian forest. It

would cross one stream impacting 0.11 hectares (0.3 acres) and would impact six ponds totaling 0.7 hectares (1.7 acre).

> **Segment G (NWG1)** - includes the area from west of Chelsea Road and north of County Road 39 to east of County Road 49 (Becket Road) and has one alternative alignment.

NWG1 would fragment three 16 hectare (40 acre) blocks of forest but would have no impacts to riparian forest. It would cross no streams but would impact one pond totaling 0.12 hectares (0.3 acres).

Existing Alternative

The Existing Corridor contains five segments: Segments A, B, C, D and E. These segments each contain one alternative alignment.

Segments A, B and C (EX/NWA1, B1, C1) were previously described under the Near West Corridor.

- **Segment D (EXD1)** - includes the area from north of Gordon Hollow Creek, near the Missouri/Arkansas state line to the Missouri/Arkansas state line and has one alternative alignment. It would fragment one 16.2 hectare (40 acre) forest block, and would impact 0.21 hectares (0.5 acres) of riparian forest. It would cross two streams impacting 0.46 hectares (1.1 acres) and would impact seven ponds totaling 0.74 hectares (1.8 acres).

- **Segment E (EXE1)** - includes the area from the Missouri/Arkansas state line to the US 71/US 71B Interchange and would have no impacts to forest blocks or riparian forest. It would cross nine streams impacting 2.96 hectares (7.3 acres) and would impact one pond covering 0.05 hectares (0.1 acres).

In addition, two of the three streams having use designations for Protection of Warm Water Aquatic Life and Cool Water Fishery (the Elk River and Big Sugar Creek) are not directly impacted by any of the alternatives. The third, Little Sugar Creek, is crossed in three different locations by the Existing Alternative, but each crossing is currently bridged or is planned to be bridged.

b. Secondary and Cumulative Impacts

Roadway construction results in habitat fragmentation that creates variable sized parcels or "islands" of wildlife habitat. As the carrying capacity of one habitat unit declines and migration to better habitat becomes necessary for a species, this migration may be impaired by the distance, the lack of cover along the way, human development or limitations of the species itself. When the habitats that support wildlife are reduced to the point where the habitat can no longer support viable populations, species diversity can be lowered to the point that only those species with a high tolerance of man and development are those that survive within the disturbed habitat. Mortality rates will also increase as wildlife attempts to cross the roadway to move between available habitat areas.

These secondary impacts due to habitat fragmentation have a cumulative effect as wildlife species either adapt or relocate over time in response to the gradual depletion of the resource.

The size and quality of the remaining habitat, as well as the distance between other habitat "islands" are all factors that come into play when fragmentation threatens existing habitat.

Minimizing habitat fragmentation is one of the considerations of the alternatives analysis. Other potential remedies include tree replacement programs, bridging streams rather than installing culverts, and installing artificial wildlife corridors where such corridors can be shown to be effective for reducing mortality in existing wildlife populations. These ideas can serve to minimize the secondary and cumulative impacts of a new transportation facility. Commitments have been made as part of the Section 404 Permits regarding the clear spanning with bridges or the construction of drainage culverts for stream crossings. Specific commitments for tree replacement and the installation of wildlife corridors are not included with the project beyond the standard provisions or procedures of MoDOT and AHTD regarding these particular issues.

There is also the potential for runoff of sediment and toxic substances that could affect the water quality of streams including the Elk River, Big Sugar Creek, and Little Sugar Creek. The Far West Alternative would not impact the Little Sugar Creek floodplain, so there would be no runoff impacts for this creek as a result of this alternative. For the Existing Alternative, in the areas adjacent to the Little Sugar Creek, changes to the existing roadway stormwater runoff characteristics (i.e., flowrate, points of discharge and pollutant burden) would be minimal. In this area, extending generally from the state line to the US 71/US 71B Interchange, changes to the impervious surfaces would be limited to isolated interchange construction and some new frontage roads. The location and extent of the US 71 roadway surface, where the traffic volumes would exceed 30,000 vpd, would not change from what currently exists. Regardless, best management practices would be employed in the design and construction of the "Freeway-Build" Alternative. More information about water quality impacts is discussed in Chapter IV, Section K.

O. Floodplain Impacts

In the evaluation of potential impacts to floodplains in the Study Area, consideration is given to four issues: 1) increased flooding risks, 2) impacts to the existing natural and beneficial floodplain values, 3) support of probable floodplain development and 4) possible measures to minimize impacts and restore the existing floodplain values.

1. "NO-BUILD" ALTERNATIVE

The "No-Build" Alternative contains a project currently under construction that consists of a two-lane roadway and bridge crossing of Little Sugar Creek at the Sugar Creek Center in Bella Vista. To lessen the hydraulic impact and possible flooding risks, the channel has been widened for 900 m (about 3,000 ft.) in the vicinity of the new bridge. The floodplain upstream from this bridge is immediately adjacent to the east embankment of US 71, for about 1.3 km (4,450 ft.), to the Lake Bella Vista Dam, making the roadway vulnerable to any increase in flooding potential.

The new bridge would divert traffic from existing Dartmoor Road, which currently crosses the Lake Bella Vista Dam embankment, helping to preserve the integrity of the dam. However, the natural condition and perhaps the beneficial values of the floodplain could possibly have been compromised in this area in order to avoid an increase in flooding risks.

By facilitating access to the southeast section of Bella Vista, the bridge and roadway will support development in the upland areas east of the Little Sugar Creek floodplain.

As discussed in Chapter II, the existing US 71 roadway is overtopped at several locations within the Study Area by the 100-year flood on Little Sugar Creek. About 2.3 km (1.4 mi.) south of the state line, overtopping occurs with the 5-year flood; around Pinion Valley Road, there is overtopping with the 10-year flood; and near Dartmoor Road, the existing roadway is overtopped by events greater than the 50-year flood. In addition, the existing Route 340 bridge over Little Sugar Creek is overtopped by approximately the 70-year flood event. Though detailed Flood Insurance Studies (FIS) are not available for Little Sugar Creek in McDonald County, it is likely based on the extrapolation of data from the Benton County FIS, that the US 71 Little Sugar Creek bridge just north of the state line is overtopped by the 100-year flood. At the south end of the project, the McKisic Creek bridge appears to be overtopped by the 100-year event as well.

TSM improvements associated with the "No-Build" Alternative would result in no additional flooding risks, very minor impacts on natural and beneficial floodplain values, and no new support of probable incompatible floodplain development.

2. "FREEWAY-BUILD" ALTERNATIVES

Generally, the roadway grade of the "Freeway-Build" Alternatives would be set above the predicted 100-year flood levels and opportunities to incorporate remedial measures into the facility would be possible. Risks of flooding to users of the roadway and the potential for property loss and hazard would be minimized. Except for Little Sugar Creek, the major streams in the Study Area have relatively narrow floodplains. Encroachments would result in minor loss of flood conveyance and floodwater storage potential. Other beneficial stormwater roles, such as providing habitat for wildlife and stormwater purification, would not be threatened in the undeveloped areas, due to the relative magnitude of the impacted areas and the predominantly agricultural use of the existing floodplain areas.

The nature of the terrain in the undeveloped portions and the location of the existing highway make avoidance of floodplain areas impractical. Floodplain impacts would be minimized by following standard stream crossing design criteria, avoiding direct impacts on stream channels, and adjusting alignments where possible. Bridge and roadway design would be consistent with local, state and federal water resources and floodplain management programs. All practical measures to minimize harm to the floodplains would be incorporated. These measures would be incorporated into the roadway design to minimize impacts and comply with floodplain regulations. Though construction would be required in some unavoidable floodplain areas, impacts to base flood elevations would be in compliance with NFIP regulations.

None of the corridor alternatives would encourage incompatible floodplain development. The proposed project would have limited access, with access available only at interchanges. Section A - Land Use Impacts in Chapter IV - Environmental Consequences states that all of the "Freeway-Build" Alternatives would provide increased attractiveness for economic development, thus having the potential of secondary impacts. In the case of the bypass alternatives, particularly the Far West Alternative, by providing new freeway access to land areas currently not easily accessible and undeveloped, the freeway improvements would undoubtedly increase the rate of development in the area. However, the effects of this new access on secondary impacts would be mitigated by three primary factors.

First, the undeveloped areas west of the Far West Alternative do not have the infrastructure necessary to support land development while the existing Bella Vista development has the infrastructure and considerable capacity for additional residential and commercial development.

Secondly, the current, relatively slow rate of new housing starts in Bella Vista suggests that even if the distribution shifted to the west due to the Far West Alternative, the secondary effects would be minimal due to the lack of development intensity and density. Finally, because US 71 would be a freeway with only one access point west of Bella Vista, the scope of any induced development would be fairly limited due to the controlled access limitations and the constraints of the topography.

For these reasons, it is concluded that secondary impacts to floodplains for the Far West Alternative, and similarly for the Near West Alternative, would be minimal. A prerequisite for systematic impacts to floodplains and water quality is intense and dense development – neither of which would be reasonably anticipated as secondary impacts for the bypass alternatives.

a. Far West Alternative

Interim Improvements

Four major tributaries of Little Sugar Creek are crossed in Segments A, B, C and D (EX/NWA1, B1, C1 and EXD1) – Goodin Hollow, Brush, Miser Hollow and Gordon Hollow Creeks. Just north of the state line, within Segment D, Little Sugar Creek is also crossed. Each of these creeks is a FEMA regulated stream. In general, the floodplain widths vary from 90 to 100 m (300 to 330 ft.) at the bridge crossings. For Segments A, B and C, where the interim improvement alignment for the Far West Alternative is similar to the Near West and Existing Alternatives, roadway fill would generally not be allowed to impact the natural stream channels (Goodin Hollow Creek in Segment A, and Brush Creek and Miser Hollow in Segment B). All possible efforts would be made to avoid encroachment into the floodplains at these crossings. The existing US 71 bridges over Brush Creek and Miser Hollow Creek would be utilized and new, matching two-lane bridges would be constructed adjacent to the existing structures for the four-lane expressway in Segment B. In Segment C, floodplain impacts for the interim improvements, which consist of the widening of US 71 into a five-lane roadway, would entail the extension of the existing crossroad culverts and the replacement of the existing bridges over Gordon Hollow Creek and Little Sugar Creek with wider structures for the five-lane roadway. Since the five-lane improvement would be at the same general elevation and grade as the existing US 71 roadway, the bridge replacements would not need to be lengthened for improved hydraulic capacity.

Ultimate Improvements

Segment A (FWA) parallels Goodin Hollow as it runs south from Pineville. FWA2 and FWA3 cross Goodin Hollow Creek and a major tributary. FWA1 is located to the west, away from the floodplain, but crosses a Mill Creek tributary as the corridor approaches the state line. FWB1 crosses Mill Creek just north of the state line. The FWB2 alignment intersects the Rattlesnake Hollow floodplain, 250 m (820 ft.) wide, as it moves across the state line. Segments C and D proceed into the uplands and have no major floodplain or stream crossings. Segment H crosses McKisic Creek, a major tributary of Little Sugar Creek, at the interchange with existing US 71 on the southern end of the project.

Flooding Risks

Flooding risks are minimal for this alternative. The interim improvements are generally located along the existing US 71 roadway and existing flood levels and hazards would not be adversely affected by the improvements. For the ultimate improvements, most of the corridor is located

through undeveloped land (i.e. farmland or forested areas). Property loss and flood hazards would be prevented with appropriate roadway and bridge design.

Impacts on Natural and Beneficial Floodplain Values

Impacts to floodplain values would be minimal with the interim improvements due to its proximity to the current US 71 roadway. Any additional impacts to the floodplains of the interim improvements would be in association with those impacts which have already occurred with the original US 71 construction.

With the ultimate improvements, the Goodin Hollow and Rattlesnake Hollow floodplains would be impacted by FWA2/A3 and FWB2, respectively. These impacts would be most generally to wildlife habitat in these undeveloped areas and would be localized at the bridge crossings. Considering the relative size of the floodplain to the affected areas, impacts would be minimal.

McKisic Creek, a major tributary of Little Sugar Creek at the southern end of Segment H, intersects with the corridor at the proposed interchange with existing US 71. The several bridges necessary for the main roadway and various ramps at this interchange would most likely be detrimental to habitat for wildlife and other beneficial floodplain values. Precautions would be taken to minimize impacts on the area's natural state. These precautions would include spanning the channel with bridge structures and carefully placing bridge substructure foundations outside of the channel and its banks. This commitment is included as part of the Section 404 Permit granted for Benton County (see Appendix E).

Support of Probable Floodplain Development

Construction of this roadway would not encourage development in the relatively few floodplain areas that would be involved including those areas along existing US 71. Any future development along US 71 would likely have occurred regardless of the interim improvements.

b. Near West Alternative

This alternative shares Segments A, B and C (EX/NWA1, B1 and C1) with the Existing Alternative. The discussion of the floodplain impacts for these segments is presented in the Existing Alternative section.

NWD1/E1 follows the Gordon Hollow floodplain to the south. This floodplain varies from 125 m to 230 m (410 ft. to 750 ft.) as it approaches the confluence with Little Sugar Creek. Alternative NWF2 (Links 1, 3, 5 , 6 and 8) cuts across the floodplain diagonally at a length of 280 m (over 900 ft.). Alternatives NWF3 (Links 2, 5, 6 and 8) and NWF4 (Links 1, 3, 5 and 7) cross Gordon Hollow Creek again. Alternative NWF4 (Links 1, 3, 5 and 7) also encroaches on this floodplain, and selection of this alternative would require the relocation of the creek channel for about 200 m (660 ft.). South from Alternative NWF4, the proposed corridors move away from the floodplain areas.

Segment H, common with the Far West Alternative, includes a crossing of the McKisic Creek floodplain at the southern end of the project construction.

Flooding Risks

Flooding risks for Segments A, B and C, in common with the Existing Alternative, are discussed in that section. The roadway and bridges would be designed throughout the Goodin Hollow

floodplain to minimize flooding risks. No property loss or hazards would be anticipated; the land is generally farmland used for pasture.

Impacts on Natural and Beneficial Floodplain Values

All practical measures would be utilized to minimize damage to the Goodin Hollow floodplain, since construction would certainly disrupt wildlife habitat in Segments D/E and F. This is especially true of Alternative NWF4 (Links 1, 3, 5 and 7), which would require relocation of the channel within the floodplain. Mitigation measures would have to be considered if this relocation is necessary.

Impacts to McKisic Creek are discussed as part of the Far West Corridor.

Support of Probable Floodplain Development

Construction of this roadway would not encourage development in the relatively few floodplain areas that would be involved.

c. Existing Alternative

Four major tributaries are crossed in Segments A, B, C and D. Goodin Hollow, Brush, Miser Hollow and Gordon Hollow Creeks are all regulatory streams, with floodplains 90 to 100 m (300 to 330 ft.) wide at the proposed bridge crossings. Roadway fill would generally not be allowed to impact the natural stream channels and all possible efforts would be made to avoid encroachment into the floodplains at these crossings. Existing US 71 crosses Little Sugar Creek 0.5 km (0.3 mi.) north of the state line. This bridge would need to be lengthened due to the raised US 71 roadway profile to provide 100-year flood protection.

In Segment E, the existing US 71 roadway would be improved to meet freeway standards. The Dartmoor Road bridge currently under construction (discussed in the "No-Build" Alternative) would also be a part of this alternative. The existing roadway embankment defines the eastern floodplain boundary throughout much of the northern portion of Segment E. In some places, the existing fill is at the floodway limits. Floodways, created to assist local communities in control of flood hazards, must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. FEMA studies indicate that the floodway fringe area (between the floodway and floodplain boundary) can be filled without impacting the regulatory 100-year flood elevation.

Flooding Risks

For Segments A, B, C and D, the roadway would be designed to either maintain or decrease the existing flooding risk. Reduction of flooding risks could result from incorporation of remedial measures into the new design and removal of existing facilities that may be associated with current flooding risks.

Where the predicted 100-year flood event overtops the existing roadway, at the Little Sugar Creek bridge just north of the state line (Segment D) and in several areas through the developed sections of Bella Vista (Segment E), the proposed roadway profile would be raised above the 100-year flood elevation. Roadway embankments would be designed to comply with FEMA requirements where encroachment into the floodplain is unavoidable. Care must be taken at several locations not to encroach beyond adjacent floodway boundaries.

Impacts on Natural and Beneficial Floodplain Values

Where the roadway does not directly coincide with the existing US 71 roadway (Segments A, B, C and D), the impact of any encroachments on floodplain hydraulics would be minor for the three northernmost major stream crossings -- Goodin Hollow Creek, Brush Creek and Miser Hollow Creek. The floodplain at the Gordon Hollow Creek crossing, 760 m (less than 0.5 mi.) upstream from the confluence with Little Sugar Creek, is influenced by backwater from Little Sugar Creek and is 350 m (1,150 ft.) wide at the proposed bridge crossing. Floodplain values could be affected by the proposed roadway in this area, due to its considerable width.

Support of Probable Floodplain Development

Incompatible floodplain development as a result of the construction of the roadway in Segments A, B, C and D would not be anticipated. Existing US 71 (Segment E) supports floodplain development, primarily golf courses, as it passes through Bella Vista. The improved roadway would not encourage further development.

P. Impacts to Terrestrial Communities

1. NATURAL COMMUNITIES

The natural communities within the Study Area were discussed in Chapter III, Section B. The predominant natural communities are the upland forests. The wildlife habitat fragmentation impacts to the upland forests, in addition to riparian forests, are discussed in Chapter IV, Section N.

The predominant forest natural community of the Study Area is the Dry Mesic Limestone Dolomite Forest. It is well represented throughout the Ozark region as well.

The forested communities were classified as:

- *Dry Mesic Limestone Dolomite* - includes a fragmented component forest (an isolated stand of forest) and an altered component forest (altered by man's activities which may include logging or clearing and as a result of the loss of soil moisture has returned to a different forest type than the surrounding less altered forest);
- *Dry Limestone Dolomite*.
- *Dry Mesic Bottomland* - includes an altered component forest.
- *Dry Chert Forest* - Composed of predominantly short leaf pine.
- *Woodlot* - delineated as a separated forest type (woodlots are variable in size, located in prairie or pasture lands without a surrounding forest community).
- *Pasture Land* - classified as a separate natural community and includes improved and unimproved pasture and hay meadows.
- *Dry Mesic Cliff* - community is present at several locations and was initially delineated. However, none of the alternative alignments impact this community type.

While agriculture activities were formerly the primary reason for forest clearing and community alteration, more recent residential and commercial development has accounted for much of the forest community alteration, fragmentation and removal.

a. "No-Build" Alternative

The "No-Build" Alternative would allow all natural communities to remain constant with regard to project impacts. Development pressures, grazing, logging and other sources of degradation would continue to act on the natural environment independent of transportation improvements.

TSM enhancements would most likely not require additional right-of-way.

b. "Freeway-Build" Alternatives

The "Freeway-Build" Alternatives were subdivided into segments for the analysis purposes and each segment included one to five individual highway alignments. Primary impacts for each individual segment are discussed in the following narrative and are presented as a range of impacts in Table IV-26. The Study Area includes three corridors which may share individual segments. The Far West and New West corridors contain interim improvements of US 71 and ultimate improvements.

Far West Alternative

The Far West Corridor contains four segments (A, B, C and D) of US 71 interim improvements and four additional segments of the ultimate improvements: Segments A, B/C, D and H. These ultimate improvement segments each contain two or three alternative alignments.

- **Interim Improvements**

  > **Segment A (EX/NWA1)** - includes the area from Route H southwest of Pineville, Missouri to the point where it meets existing US 71 just south of Wolf Pen Hollow. It would directly impact 16.3 hectares (40.4 acres) of Dry Mesic Limestone Dolomite Forest and 17.9 hectares (44.2 acres) of Pasture Land.

  > **Segment B (EX/NWB1)** - includes the area along existing US 71 from just south of Wolf Pen Hollow to Miser Hollow Creek. It would directly impact 8.1 hectares (20.1 acres) of Dry Mesic Limestone Dolomite Forest, 11.0 hectares (27.3 acres) of Dry Limestone Dolomite Forest and 14.4 hectares (35.5 acres) of Pasture Land.

  > **Segment C (EX/NWC1)** - includes the area along existing US 71 from Miser Hollow Creek to a point approximately 2195 meters (7200 feet) to the south on U.S. 71. It would directly impact 0.2 hectares (0.4 acres) of Dry Mesic Limestone Dolomite Forest and 0.9 hectares (2.2 acres) of Pasture Land.

  > **Segment D (EXD1)** - includes the area from the south end of Segment C to the Missouri/Arkansas state line. It would directly impact 0.1 hectares (0.3 acres) of Dry Mesic Limestone Dolomite Forest, 0.6 hectares (1.5 acres) of Dry Mesic Bottomland Forest and 0.2 hectares (0.5 acres) of Pasture Land.

- **Ultimate Improvements**

  > **Segment A (FWA)** - includes the area from Route H, southwest of Pineville Missouri to north of the Missouri/Arkansas state line, near Mill Creek Road, and includes three alternative alignments.

TABLE IV-26
NATURAL COMMUNITY IMPACTS
hectares (acres)

"FREEWAY-BUILD" ALTERNATIVES	FOREST					Pasture Land
	Dry-mesic Limestone Dolomite	Dry Limestone Dolomite	Dry-mesic Bottomland	Dry Chert Forest	Woodlot	
Far West						
Interim						
EX/NWA1	16.3 (40.4)	0	0	0	0	17.9 (44.2)
EX/NWB1	8.1 (20.1)	11.0 (27.3)	0	0	0	14.4 (35.5)
EX/NWC1	0.2 (0.4)	0	0	0	0	0.9 (2.2)
EXD1	0.1 (0.3)	0	0.6 (1.5)	0	0	0.2 (0.5)
Total: Interim	24.7 (61.2)	11.0 (27.3)	0.6 (1.5)	0	0	33.4 (82.4)
Ultimate (Not including interim quantities)						
FWA1	58.3 (144.1)	0	0	0	0	31.5 (77.8)
FWA2	63.6 (157.2)	0	0	0	0	30.7 (75.8)
FWA3	60.2 (148.8)	0	0	0	0	35.0 (86.4)
FW B1/C1	58.9 (145.5)	0	0	0	0	3.7 (9.1)
FWB2/C2	50.7 (125.3)	0	0	0	0	9.5 (23.5)
FWD1	19.9 (49.2)	0	0	0	26.1 (64.5)	73.9 (182.6)
FWD2	48.5 (119.8)	0	0	0	13.0 (32.1)	48.6 (120.1)
FW/NWH1	44.7 (110.4)	0	0	0	0	15.9 (39.3)
FW/NWH2	46.0 (113.7)	0	0	1.0 (2.5)	0	13.4 (33.1)
Total: Ultimate (Range)	173.6 to 217.0 (429.0 to 536.2)	0	0	1.0 (2.5)	13 to 26.1 (32.1 to 64.5)	96.4 to 134.3 (238.1 to 331.8)
Total: Interim + Ultimate (Range)	198.3 to 241.7 (490.2 to 597.4)	11.0 (27.3)	0.6 (1.5)	1.0 (2.5)	13 to 26.1	129.8 to 167.7 (320.5 to 414.2)
Total: Interim + Ultimate (Alt. FWA3,B2/C2,D1, FW/NWH1)	200.2 (494.9)	11.0 (27.3)	0.6 (1.5)	1.0 (2.5)	26.1 (64.5)	167.7 (414.2)
Near West						
Interim						
EXD1	4.9 (12.1)	6.5 (16.1)	0	0	0	17.8 (44.0)
Ultimate (Not including interim quantities)						
EX/NWA1, B1, C1	26.5 (65.5)	13.2 (32.6)	0	0	0	59.0 (145.8)
NWD1E1	0	11.0 (27.2)	0	0	0	14.4 (35.6)
NWF1	40.8 (100.8)	0	0	0	0	9.4 (23.2)
NWF2	40.2 (99.3)	0	0	0	0	9.4 (23.2)
NWF3	49.5 (122.3)	0	0	0	0	10.0 (24.7)
NWF4	37.3 (92.2)	0	4.0 (9.9)	0	0	14.3 (35.3)
NWF5	46.6 (115.1)	0	4.0 (9.9)	0	0	14.9 (36.8)
NWG1	26.6 (65.7)	0	0	0	0	8.4 (20.7)
FW/NWH1	44.7 (110.4)	0	0	0	0	15.9 (39.3)
FW/NWH2	46.0 (113.7)	0	0	1.0 (2.5)	0	13.4 (33.1)
Total: Ultimate (Range)	135.1 to 148.6 (333.8 to 367.2)	24.2 (59.8)	0 to 4 (0 to 9.9)	0 to 1.0 (0 to 2.5)	0	104.6 to 112.6 (258.4 to 278.2)
Total: Interim + Ultimate (Range)	140.0 to 153.5 (345.9 to 379.3)	30.7 (75.9)	0 to 4 (0 to 9.9)	0 to 1.0 (0 to 2.5)	0	122.4 to 130.4 (302.4 to 322.2)
Total: Interim + Ultimate (Alt. EX/NWA1,B1,C1, NWD1E1,F2,G1,FW/NWH1)	142.9 (353.0)	30.7 (75.9)	0	0	0	124.9 (308.6)
Existing						
Ultimate						
EX/NWA1, B1, C1	26.5 (65.5)	13.2 (32.6)	0	0	0	59.0 (145.8)
EXD1	4.9 (12.1)	6.5 (16.1)	0	0	0	17.8 (44.0)
EXE1	5.3 (13.1)	0	0	0	0	1.3 (3.2)
Total: Ultimate (Alt. EX/NWA1,B1,C1,EXD1,E1)	36.7 (90.7)	19.7 (48.7)	0	0	0	78.1 (193.0)

FWA1 would directly impact 58.3 hectares (144.1 acres) of Dry Mesic Limestone Dolomite Forest, 30.7 hectares (75.9 acres) of which is fragmented and 31.5 hectares (77.8 acres) of Pasture Land.

FWA2 would directly impact 63.6 hectares (157.2 acres) of Dry Mesic Limestone Dolomite Forest, 22.3 (55.1 acres) of which is fragmented, and 30. hectares (75.8 acres) of Pasture Land. FWA3 would directly impact 60.2 hectares (148.8 acres) of Dry Mesic Limestone Dolomite Forest of which 7.4 hectares (18.3 acres) are fragmented and 35.0 hectares (86.4 acres) of Pasture Land.

> **Segment B/C (FWB/C)** - includes the area from north of the Missouri/Arkansas state line near Mill Creek Road, crossing the state line, to south of Ferrel Road and includes two alternative alignments.

FWB1/C1 would directly impact 58.9 hectares (145.5 acres) of Dry Mesic Limestone Dolomite Forest and 3.7 hectares (9.1 acres) of Pasture Land.

FWB2/C2 would directly impact 50.7 hectares (125.3 acres) of Dry Mesic Limestone Dolomite Forest and 9.5 hectares (23.5 acres) of Pasture Land.

> **Segment D (FWD)** - includes the area from south of Ferrel Road to east of County Road 49 (Becket Road) and includes two alternative alignments.

FWD1 would directly impact 19.9 hectares (49.2 acres) of Dry Mesic Limestone Dolomite Forest of which 4.3 hectares (10.6 acres) are fragmented, 26.1 hectares (64.5 acres) of Woodlot and 73.9 hectares (182.6 acres) of Pasture Land.

FWD2 would directly impact 48.5 hectares (119.8 acres) of Dry Mesic Limestone Dolomite Forest including 11.4 hectares (28.2 acres) of fragmented community, 13.0 hectares (32.1 acres) of Woodlot and 48.6 hectares (120.1 acres) of Pasture Land.

> **Segment H (FW/NWH)** - includes the area from east of County Road 49 (Becket Road) to US 71/US 71B Interchange and includes two alternative alignments. This Segment is the same for both the Far West Corridor and the Near West Corridor.

FW/NWH1 would directly impact 44.7 hectares (110.4 acres) of Dry Mesic Limestone Dolomite Forest and 15.9 hectare (39.3 acres) of Pasture Land.

FW/NWH2 would directly impact 46.0 hectares (113.7 acres) of Dry Mesic Limestone Dolomite Forest, 1.0 hectare (2.5 acres) of Dry Chert Forest, and 13.4 hectares (33.1 acres) of Pasture Land.

Near West Alternative

The Near West Corridor contains one interim improvement segment (Segment D of the Existing Alternative) and seven ultimate improvement segments: Segment A, Segment B, Segment C, Segment D/E, Segment F, Segment G and Segment H. These ultimate improvement segments each contain one to five alternative alignments.

- **Interim Improvements**

  > **Segment D (EXD1)** - includes the Existing Corridor as it diverges from the Near West Corridor north of Gordon Hollow Creek to the Missouri/Arkansas state line and would directly impact 6.5 hectares (16.1 acres) of Dry Limestone Dolomite Forest, 4.9 hectares (12.1 acres) of Dry Mesic Limestone Dolomite Forest all of which are fragmented and 17.8 hectares (44.0 acres) of Pasture Land.

- **Ultimate Improvements**

  Segment H is the same as previously described for the Far West Corridor.

  > **Segments A, B and C (EX/NWA1, B1 and C1)** - includes the area from Route H southwest of Pineville, Missouri to the diversion point north of Gordon Hollow Creek, near the Missouri/Arkansas state line. This segment has one alternative alignment and would directly impact 26.5 hectares (65.5 acre) of Dry Mesic Limestone Dolomite Forest, 13.2 hectares (32.6 acres) of Dry Limestone Dolomite Forest of which 11.0 hectares (22.3 acres) are altered, and 59.0 hectares (145.8 acres) of Pasture Land.

  > **Segment DE (NWD1E1)** - includes the area from north of Gordon Hollow Creek, near the Missouri/Arkansas state line to the Missouri/Arkansas state line and has one alternative alignment. NWD1E1 would directly impact 11.0 hectares (27.2 acres) of Dry Limestone Dolomite Forest of which 4.9 hectares (12.1 acres) are fragmented, and 14.4 hectares (35.6 acres) of Pasture Land.

  > **Segment F (NWF)** - includes the area from the Missouri/Arkansas state line to west of Chelsea Road and north of County Road 39. This segment has five alternative alignments.

  Alternative NWF1 (Links 1, 4 and 8) would directly impact 40.8 hectares (100.8 acres) of Dry Mesic Limestone Dolomite Forest of which 7.4 hectares (18.3 acres) is fragmented, and 9.4 hectares (23.2 acres) of Pasture Land.

  Alternative NWF2 (Links 1, 3, 5, 6 and 8) would directly impact 40.2 hectares (99.3 acres) of Dry Mesic Limestone Dolomite Forest, of which 7.4 hectares (18.3 acres) is fragmented, and 9.4 hectares (23.2 acres) of Pasture Land.

  Alternative NWF3 (Links 2, 5, 6 and 8) would directly impact 49.5 hectares (122.3 acres) of Dry Mesic Limestone Dolomite Forest, of which 7.4 hectares (18.3 acres) is fragmented, and 10.0 hectares (24.7 acres) of Pasture Land.

  Alternative NWF4 (Links 1, 3, 5 and 7) would directly impact 37.3 hectares (92.2 acres) of Dry Mesic Limestone Dolomite Forest of which 6.0 hectares (14.8 acres) is altered, 4.0 hectares (9.9 acres) of Dry Mesic Bottomland Forest all of which has been altered and 14.3 hectares (35.3 acres) of Pasture Land.

  Alternative NWF5 (Links 2, 5 and 7) would directly impact 46.6 hectares (115.1 acres) of Dry Mesic Limestone Dolomite Forest of which 6.0 hectares (14.8 acres) is altered, 4.0 hectares (9.9 acres) of Dry Mesic Bottomland Forest all of which is altered, and 14.9 hectares (36.8 acres) of Pasture Land.

> **Segment G (NWG1)** - includes the area from west of Chelsea Road and north of County Road 39 to east of County Road 49 (Becket Road) and has one alternative alignment.

NWG1 would directly impact 26.6 hectares (65.7 acres) of Dry Mesic Limestone Dolomite Forest and 8.4 hectares (20.7 acres) of Pasture Land.

Existing Alternative

The Existing Corridor contains five segments: Segments A, B, C, D and E. These segments each contain one alternative alignment.

Impacts along Segments A, B and C would be the same as the Near West Corridor.

- **Segment D (EXD1)** - includes the Existing Corridor as it diverges from the Near West Corridor north of Gordon Hollow Creek to the Missouri/Arkansas state line and would directly impact 6.5 hectares (16.1 acres) of Dry Limestone Dolomite Forest, 4.9 hectares (12.1 acres) of Dry Mesic Limestone Dolomite Forest all of which are fragmented and 17.8 hectares (44.0 acres) of Pasture Land.

- **Segment E (EXE1)** - includes the area from the Missouri/Arkansas state line to the US 71/US 71B Interchange and would directly impact 5.3 hectares (13.1 acres) of Dry Mesic Limestone Dolomite Forest of which 3.0 hectares (7.4 acres) are fragmented and 1.3 hectares (3.2 acres) of Pasture Land.

Secondary and Cumulative Impacts

Secondary and cumulative impacts are those which can be reasonably foreseen or anticipated to result from the assessment and evaluation of the reasonable alternatives. In that respect the Far West Alternative would have the greatest potential for continuing impacts to the natural communities which are present.

The area traversed by the reasonable alternatives in Missouri is essentially undeveloped with only scattered farm and non-farm residences being present. South of the state line, the area to the east of the Far West Corridor is developing in residential and associated commercial land use. The southern part of the Far West Corridor is through low intensity agricultural and residential land use.

Secondary development would likely follow the Far West Corridor in the areas near Bella Vista causing further habitat fragmentation and natural community alteration through the land development process. The provision of high quality access roadways provides one of the key components necessary for development to occur. Utility service is presently provided at rural levels-of-service and significant upgrades would be necessary before development levels at or near comparable levels with the Bella Vista Community would be feasible in this portion of the Far West Corridor. The management of Cooper Communities has stated that they have no plans to develop their holdings that are located west of the Far West Alternative. They plan to concentrate development activities on infill development. It should be noted that the Bella Vista Community map does show the area in question identified as "Reserved for Future Development". The area west of the Far West Alternative has been master planned by Cooper Communities at the neighborhood level with only major circulation identified.

In the case of the Near West Corridor and the Existing Corridor, natural community impacts and habitat fragmentation have already occurred and either of these two reasonable alternatives would have little additional impact to the forest communities which remain.

2. NATURAL FEATURES

The natural features and elements of special concern that occur in the Study Area were discussed in Chapter III, Section B. For the purposes of the alternatives analysis, all of these sites within the Study Area that were listed in the MDC's *Natural Features Inventory* and those listed by the Arkansas Natural Heritage Commission were used as environmental control points.

a. "No-Build" Alternative

The "No-Build" Alternative would allow all natural features and elements of special concern to remain constant with regard to project impacts. Development pressures, grazing, logging and other sources of degradation would continue to act on the natural environment independent of transportation improvements. The TSM enhancements would most likely not require additional right-of-way and therefore no direct impacts to the natural features and elements of special concern within the study corridor would occur.

b. "Freeway-Build" Alternatives

Primary Impacts

Although it was intended to avoid all of the Natural Features Inventory sites and Elements of Special Concern sites, the interim improvements of the Far West Alternative, and the Near West and Existing Alternatives (EX/NWB1) in McDonald County would directly impact Natural Features Site #71 (Henson Cave) -- a network cave 1,200 m (3,900 ft.) long which is listed as a geologic feature. It was also listed as an endangered animal site providing habitat for the Gray Bat (*Myotis grisescens*) in 1981. However, a 1996 investigation by the Project Team ecologists found that no bats were present, mainly due to previous human intrusion (See memorandum dated August 5, 1996, and other related correspondence in Appendix J.) Due to its location and proximity to the existing US 71 roadway, direct impacts to the cave's entrance can not be reasonably avoided. (See discussion in Geology and Cave Impacts.)

No sites listed by the Arkansas Natural Heritage Commission would be impacted by the "Freeway-Build" Alternatives.

Secondary and Cumulative Impacts

The "Freeway-Build" Alternatives could result in secondary and cumulative impacts to natural features sites and elements of special concern by inducing more development within the Study Area. As more land is encroached upon by private development, the potential for disturbance of natural areas increases.

3. ENDANGERED, THREATENED AND RARE SPECIES

Endangered, threatened and rare species sites within the US 71 Study Area were compiled and located through coordination with the USFWS, and used as environmental control points for the definitions of the "Freeway-Build" Alternatives. These sites are discussed in Chapter III, Section B.

a. "No-Build" Alternative

The "No-Build" Alternative would have no direct impacts to listed endangered, threatened or rare species in the Study Area. Development pressures, grazing, logging and other sources of degradation would continue to act on species habitat independent of transportation improvements.

b. "Freeway-Build" Alternatives

Primary Impacts

Although alignment alternatives within each Study Corridor attempted to avoid all of the endangered, threatened, and rare species sites, the interim improvements of the Far West Alternative and the Near West and Existing Alternative, (EX/NWB1), in McDonald County would directly impact Site #71 of the Missouri Natural Features Inventory. This cave, known as Henson Cave, consists of a cave network approximately 1,200 m (3,900 ft.) long and is listed as a geologic feature and as an endangered animal site providing habitat for the Gray Bat (*Myotis grisescens*). This site was listed in 1981. The Gray Bat is federally listed as endangered, and listed in Missouri as undetermined. However, a 1996 investigation by Project Team ecologists found that no bats were present in Henson Cave, mainly due to previous human intrusion.

In a memorandum dated August 5, 1996 (see Appendix J), the Project Team's Biological Specialist stated that "The cave should continue to be considered an abandoned gray bat cave and will undoubtedly remain unsuitable as maternity habitat for the gray bat, given the high level of human disturbance. Further, this cave is not a suitable hibernaculum for either gray or Indiana bats."

The USDOI, Fish and Wildlife Service did comment on the project when it was part of the US Route 71 FEIS from Interstate 44 to the Arkansas State Line through Jasper, Newton and McDonald Counties (approved August 3, 1992). The concern for threatened and endangered species at that time was the presence of the Ozark Cavefish (Amblyopsis rosae). The Ben Lassiter Cave is located north of Pineville, Missouri -- the commencement point of this project. The letter of comment from the previous study is included in Appendix J.

Further, additional inquiries of the USDI were made regarding the status of Henson Cave. Upon further discussion with the USDI, it was determined by the USDI that Henson Cave was not considered a significant resource and that no additional consultation was necessary for the impacts to the cave. Documentation to this effect is included in Appendix J.

Though avoidance of the cave would be desirable, due to its proximity to the existing US 71 roadway, avoidance of the cave's entrance would not be practicable by the interim improvements. The entrance would need to be backfilled and capped in preparation for the construction of the two new roadway lanes.

Secondary and Cumulative Impacts

The "Freeway-Build" Alternatives could result in secondary and cumulative impacts to endangered, threatened and rare species by reducing available habitat, by habitat fragmentation and by a decrease in the diversity of the landscape. The "Freeway-Build" Alternatives could also secondarily induce more development within the Study Area. As more land is encroached upon by private development, the potential for disturbance of species

habitat increases. The cumulative impact of less available habitat and increased animal mortality rates could make it more difficult for affected species to sustain a dynamic population. Of the three "Freeway-Build" Alternatives, the Far West Alternative, due to its location within currently undisturbed areas, would have the greatest potential for secondary and cumulative impacts to habitats for endangered, threatened and rare species.

Minimizing habitat fragmentation is one of the considerations of the alternatives analysis. Other remedies include tree replacement programs, bridging streams rather than installing culverts, and installing artificial wildlife corridors where such corridors can be shown to be effective for reducing mortality in existing wildlife populations. The implementation of these ideas can serve to minimize the secondary and cumulative impacts of a new transportation facility.

Q. Historic and Archaeological Preservation

In accordance with AHTD procedures and the MoDOT Protocol for Cultural Resources "Investigations Associated with Environmental Assessment or Environmental Impact Statements", those cultural resources that would be affected by any of the US 71 improvement alternatives have been identified. These resources have been considered based on the various investigations – archaeological, architectural, historical bridges, and historical sites. All of the potentially affected resources for each of the reasonable alternatives have been reviewed with the State Historic Preservation Office (SHPO) to determine eligibility of each site for inclusion in the National Register of Historic Places (NRHP). For each of the reasonable alternatives, a discussion of these determinations is presented in the following section.

Utilizing the methods described in Chapter III, Section B for the archaeological investigations, the probability of affecting previously recorded archaeological sites – presented according to the degree of probability – is described for each reasonable alternative. Selection of the preferred alternative was based on the comparison of the impacts of the reasonable alternatives which were assessed based on these methodologies. For architectural resources, determinations of NRHP eligibility were provided for all potentially impacted resources. The archaeological, architectural, historic and bridge studies were conducted in the Area of Potential Effect (APE) defined for the purpose of this review as the 100 m (328 ft.) wide alternative alignment corridor with an additional 30 m (100 ft.) buffer on each side for the architectural study as required by MoDOT cultural resources protocol.

Since the initial reviews by the Arkansas and Missouri SHPO, alignment refinements have been performed to each of the "Freeway-Build" Alternatives to minimize the direct impacts of the improvements to the NRHP-eligible resources. Potential impacts to several of these sites were eliminated due to the selection of the best alternative alignment within each Study Corridor, and then by the selection of the Far West Alternative as the preferred alternative. Consequently, the preferred alternative (i.e., Far West Alternative) would not directly impact any NRHP-eligible architectural structures. Furthermore, it was determined by the Arkansas SHPO after the issuance of the Draft EIS that none of the potentially NRHP-eligible structures in the vicinity of the Far West Alternative would be adversely affected by the project. No additional work is required regarding architectural resources in Missouri or Arkansas for the Far West Alternative. Documentation to this effect is included in Appendix I.

The preferred alternative would not impact any known archeological sites in Arkansas. Similarly in Missouri, the ultimate improvements for the Far West Alternative would also not impact any known archeological sites. However, the interim improvements would impact seven known

sites along the existing US 71 roadway. The mitigation of these impacts would be governed by the MOA executed as part of the US 71 EIS (I-44 to state line) completed by MoDOT.

Phase I archeological investigations of the preferred alternative (i.e., Far West Alternative) were conducted subsequent to its selection. As determined by the Missouri and Arkansas SHPOs, only one site, Site 3BE634, located in Benton County, would be impacted that has the potential of containing significant information that can contribute to prehistory and history. A Phase II assessment was conducted at 3BE634 and it was not considered to contain intact subsurface cultural features or deposits or otherwise have the potential to contain information important in prehistory. The Arkansas SHPO has determined that no further work is necessary for this site (Appendix I).

1. "NO-BUILD" ALTERNATIVE

Potentially eligible cultural resources would be affected where they are present in areas that are planned for future development. Cultural resource investigations are seldom performed when a private individual or company develops a tract of land. Many cultural resources remain unknown to the professional community or the various resource agencies. Because of this, there is little doubt that some potentially eligible resources would be affected without mitigation in private development areas.

Because little or no additional right-of-way is anticipated for the TSM measures, it is anticipated that the TSM improvements would not affect any potentially eligible cultural resources.

2. "FREEWAY-BUILD" ALTERNATIVES

Cultural resources of various types, sizes, and importance have been found in all environmental settings throughout the Study Area. A number of cultural resources would be affected by most of the alternatives being considered. Consideration has been given to the location and characteristics of the recorded cultural resources in the design and assessment of each alternative. Efforts have been made to avoid potentially significant cultural resources throughout the Study Area and to otherwise minimize effect.

a. Archaeological Resources

In 1991 and 1992, MoDOT conducted a cultural resource survey of selected portions of US 71 in Jasper, McDonald and Newton counties, Missouri (MoDOT Job No. J7P0427 and J7P0492) (see Appendix I; MOA). In McDonald County, 21 archaeological sites were identified. Eleven of these sites are in proximity to the current proposed alternatives (MoDOT Job No. J7P0427, FHWA-EIS-90-02-F). MoDOT recommended additional assessment work to determine potential eligibility for seven archaeological sites. No additional work was recommended for three of these sites. Seven archaeological sites recorded during the MoDOT survey are within the current project alternatives (Table IV-27). Testing was recommended for several of these resources (Appendix I, MOA).

Twelve archaeological sites in Missouri and nineteen archaeological sites in Arkansas which were identified as being located within the Study Corridors were reduced to seven sites in Missouri, four sites in Arkansas, and one site in both Missouri and Arkansas as the location of each alternative was adjusted and refined (Table III-16). Once the site location in connection with each alternative was determined, a site visitation was conducted. Two archaeological sites (23MD32 and 23MD83/3BE546) are within the limits of Existing Alternative D1, five

archaeological sites (23MD83/3BE546, 3BE204, 3BE211, 3BE250, and 3BE251) are within the limits of Existing Alternative E1, and one archaeological site (23MD32) is within the limits of Near West Alternative D1/E1. Site 23MD83/3BE546 is located on the Missouri-Arkansas state line, therefore, it would be included in both Segment D and Segment E for the Existing Alternative. Site 23MD32 is located a short distance north of the Near West and Existing Alternatives divergence point, and consequently, would be impacted by either alternative. Site 23MD29, Site 23MD87, Site 23MD88, Site 23MD89, Site 23MD90 and Site 23MD91 would be impacted by the Far West Alternative interim improvements.

TABLE IV-27
MoDOT 1991/1992 CULTURAL RESOURCE SURVEY RESULTS

Site Number	DOE Status	Relationship to Current Proposed Alternatives	Action Required per MoDOT MOA (Appendix I)
23MD29	undetermined	inside	no additional work, (Outside MoDOT Improvements)
23MD46	potentially eligible	outside	no additional work, (Outside MoDOT Improvements)
23MD75	undetermined	outside	limited testing
23MD82	undetermined	outside	testing
23MD83/3BE546	undetermined	inside	testing
23MD87	undetermined	inside	testing
23MD88	undetermined	inside	extensive testing
23MD89	undetermined	inside	testing
23MD90	ineligible	inside	no additional work, (Outside MoDOT Improvements))
23MD91	undetermined	inside	limited testing
23MD93	undetermined	outside	extensive testing

Descriptions of Archaeological Sites in the Alternatives

- **Site 23MD29** - This site was recorded by Lawrence L. Hopper in 1957. During the 1991/1992 MoDOT survey this site was recorded as a moderate density lithic scatter of approximately 80,000 m^2 (c.8ha). Artifacts recorded from this site indicate that it is a multi-component site dating from the Early Archaic to Late Woodland periods. A Late Prehistoric component may also be present but this was not confirmed. During the Draft EIS survey, this site area was in a pasture and apparently had not experienced any recent disturbance or modification. No artifacts were observed on the surface and visibility was severely limited by the pasture cover. The site form indicates that this site has been extensively collected and intensively farmed for many decades. Other effects to the site include historic deforestation, erosion and natural causes, construction of a private drive off US 71 and the construction of US 71. Far West Alternative interim improvements (Segment D along the existing US 71 roadway) would directly affect this site. Based on available information, this site may contain intact cultural deposits that may make it eligible for inclusion to the National Register of Historic Places. This site would require additional assessment to determine temporal and spatial boundaries, as well as use and function.

- **Site 23MD32** -, This site, locally known as Tater Knob, was not included in the MoDOT MOA due to its location away from the MoDOT improvements. The site is situated on a rocky outcrop overlooking a western tributary of Little Sugar Creek. Early amateur excavations at this site reported the presence of "multiple burials." Other artifacts recovered from these early efforts include shell beads, human teeth, and animal teeth. No other temporally diagnostic artifacts were recovered. During this DEIS survey, the site did not appear to be recently disturbed and no artifacts were observed on the surface. EXD1 and NWD1E1 would directly affect this site. Based on available information, this site may contain intact cultural deposits that may make it eligible for inclusion to the National Register of Historic Places. This site would require additional assessment to determine temporal and spatial boundaries, as well as use and function.

- **Site 23MD83/3BE546** - This site was reported as a light lithic scatter of approximately 6000 m^2. This site is situated on an eastern terrace of Little Sugar Creek. Limited site excavations were conducted on this site in 1992 during MoDOT's Phase I survey for portions of US 71 (Martin and Austin 1992). No temporally diagnostic artifacts were recovered from this site. During this DEIS survey, the site was experiencing moderate disturbance from earth moving activities from the east side of US 71 to several hundred meters west of US 71 and numerous artifacts were observed on the surface. Numerous non-diagnostic artifacts were observed on the surface. EXD1 and E1 would directly affect this site. Based on available information, this site may contain intact cultural deposits that may make it eligible for inclusion to the National Register of Historic Places. This site would require additional assessment to determine temporal and spatial boundaries, as well as use and function.

- **Site 23MD87** - This site was recorded by the MoDOT team in 1991 as a Late Archaic site encompassing 28,800 m^2 (2.9 ha). Diagnostic artifacts recovered from this site include a Stone Square Stemmed-like point and an untypable corner-notched point. Site limits during the 1991/1992 study were poorly defined and may be much larger than originally plotted. Disturbances affecting this site included amateur collecting, repeated agricultural activities, natural erosion, construction of a private house and driveway and construction of US 71. During the DEIS survey, this site was in a pasture and apparently had not experienced any recent disturbance or modification. No artifacts were observed on the surface and visibility was severely limited by the pasture cover. EXD1 would directly affect this site. Based on available information, this site may contain intact cultural deposits that may make in eligible for inclusion to the National Register of Historic Places. This site would require additional assessment to determine temporal and spatial, as well as use and function.

- **Site 23MD88** - This site, locally known as the Harmon site, was recorded in 1992 by the MoDOT team as a Middle/Late Archaic and twentieth century Euroamerican site encompassing 89,600 m^2 (8.96 ha). Diagnostic artifacts recovered from this site include a Frio point, a Rice Lobed point fragment and a Jakie Stemmed-like point. The historic material recovered from this site is associated with the farmstead (recorded as Missouri Architectural Resource 20). Disturbances affecting this site include amateur collecting, repeated agricultural activities, natural erosion, and construction of the farmstead and construction of US 71. Site limits during the 1991/1992 study were poorly defined and may be much larger than originally plotted. During the DEIS survey, the site was in a pasture and apparently had not experienced any recent disturbance or modification. No artifacts were observed on the surface and

visibility was severely limited by the pasture cover. EXD1 would directly affect this site. Based on available information, this site may contain intact cultural deposits that may make in eligible for inclusion to the National Register of Historic Places. This site would require additional assessment to determine temporal and spatial, as well as use and function.

- **Site 23MD89** - This site was recorded in 1992 by the MoDOT team as a prehistoric site of unknown cultural affiliation encompassing 24,400 m^2 (2.24 ha). No diagnostic artifacts were recovered during their study. Artifacts recovered from this site include several flakes, two cores and two biface fragments. Disturbances affecting this site include repeated agricultural activities, natural erosion, construction of US 71 and construction of a county road. Site limits during the 1991/1992 study were poorly defined and may be much larger than originally plotted. During the DEIS survey, the site was in a pasture and apparently had not experienced any recent disturbance or modification. No artifacts were observed on the surface and visibility was severely limited by the pasture cover. EXD1 would directly affect this site. Based on available information, this site may contain intact cultural deposits that may make in eligible for inclusion to the National Register of Historic Places. This site would require additional assessment to determine temporal and spatial, as well as use and function.

- **Site 23MD90** - This site was recorded in 1992 by the MoDOT team as a prehistoric site of unknown cultural affiliation encompassing 4800 m^2. No diagnostic artifacts were recovered during their study. Artifacts recovered from this site include several flakes and the base of a contracting stemmed point. Disturbances affecting this site include historic deforestation and construction of US 71, a private drive and a private residence. Site limits during the 1991/1992 study were poorly defined and may be much larger than originally plotted. During the DEIS survey, the site was covered by small trees and grass and apparently had not experienced any recent disturbance or modification. No artifacts were observed on the surface and visibility was severely limited by the ground cover. EXD1 would directly affect this site. Based on available information, this site may contain intact cultural deposits that may make it eligible for inclusion to the National Register of Historic Places. This site would require additional assessment to determine temporal and spatial, as well as use and function.

- **Site 23MD91** - This site was recorded in 1992 by the MoDOT team as a prehistoric site of unknown cultural affiliation encompassing 12,000 m^2. This site also includes a historic chimney feature on the extreme western edge of the site. No prehistoric or historic diagnostic artifacts were recovered from this site. The site report indicates that there were bricks in the chimney stamped with the "Laclede" mark. These bricks date from the 1850s to the 1920s. Prehistoric artifacts recovered from this site include several flakes and a thin biface fragment. Disturbances affecting this site include historic deforestation, natural erosion, limited agricultural activities and the construction of US 71 and a private drive. Site limits during the 1991/1992 study were poorly defined and may be much larger than originally plotted. During the DEIS survey, the site was covered by small trees and grass and apparently had not experienced any recent disturbance or modification. No artifacts were observed on the surface and visibility was severely limited by the ground cover. EXD1 would directly affect this site. Based on available information, this site may contain intact cultural deposits that may make it eligible for inclusion to the National Register of Historic Places. This site would require additional assessment to determine temporal and spatial, as well as use and function.

- **Site 3BE204** - Locally known as Hay Bluff, was formally recorded in 1965 by Leon Allen. This is an approximately 0.4 km (0.25 mile) long bluff overlooking Little Sugar Creek. Some of the artifacts recovered from this site include numerous projectile points and stone tools, bone tools, a basket fragment, a fabric fragment, cord fragments, and several prehistoric ceramic sherds. Temporal boundaries for this site tentatively range from the Late Archaic to the Mississippi period based on the diagnostic artifacts recovered. A moderate amount of excavations and literature have been produced regarding this site. This site was in a good state of preservation during this DEIS survey. This site has experienced moderate disturbance from historic and recent US 71 improvement activities. All records of this site in the AAS site files indicate that past non-scientific excavations have disturbed portions of this site. They also indicate that there are areas of the site that have not experienced vandalism and may contain intact cultural deposits. EXE1 would directly affect the western edge of this site. Based on available information, this site may contain intact cultural deposits that may make it eligible for inclusion to the National Register of Historic Places. Although this site has been the subject of a small amount of scientific excavation, more extensive and controlled excavation of this site would be required to determine the extent of possible intact cultural deposits and determine site use and function.

- **Site 3BE211** - This site was recorded in 1966 as a small shelter along Little Sugar Creek. This site has also likely received moderate disturbance from historic and recent activities. The exact location of this site could not be determined from AAS site files and area visitation. This area has experienced moderate to major disturbance from recent roadway improvements. There is no mention of this site in the memorandum produced during the early 1970s highway improvements (AHTD Job 9579)(Appendix A). EXE1 would directly affect this site. It is possible that this site was completely destroyed during these improvements. Based on available information, this site may contain intact cultural deposits that may make it eligible for inclusion to the National Register of Historic Places. Additional assessment would include exact site location, condition, temporal and spatial boundaries, and use and function, if possible.

- **Site 3BE250** - This site is located on a low terrace overlooking Little Sugar Creek. This site was reported to have experienced extensive damage from golf course landscaping and improvement. Construction of US 71 has also greatly disturbed this site. Based on the site file and site visitation, little or no additional information would be obtained from additional assessment of this site and no additional assessment of this site would be required.

- **Site 3BE251** - Known as the Bridge Site, this site is located on the north bank of Little Sugar Creek on US 71. A US 71 bridge over Little Sugar Creek has extensively disturbed this site. Based on the site file and site visitation, little or no additional information would be obtained from additional assessment of this site and no additional assessment of this site would be required.

Prehistoric Archaeological Site Probability Factors

During the past several years, prehistoric archaeological site probability models have been developed for most types of terrain. Experience has shown that prehistoric habitation sites and temporary campsites tend to be restricted to areas adjacent to water that were not frequently flooded. Resource availability in several areas was also an important factor in site location.

Caves and shelters may have been used for shelter even though they were not close to water. Although the site probability model will isolate high and medium probability areas for sites with considerable accuracy, some extractive sites, such as quarries or lithic procurement zones, may be found in upland settings far from water. Another consideration is that streams meander and springs become activated and later go dry. So, sites may occasionally be found in unlikely areas.

High probability areas are located near perennial water sources because prehistoric inhabitants required water for survival. Water was also used for transportation and food procurement. Terrestrial animals also required water. Prehistoric populations took advantage of this necessity by establishing base camps and seasonal camps near perennial water sources to utilize this food source. Many edible plant species, nuts and acorns were also found in alluvial terrace settings. High probability areas are almost never located in areas susceptible to frequent flooding. High terraces, elevated ridges, and hilltops near perennial water sources were usually chosen for base camps and seasonal camps. Conditions may have changed over the past several thousand years and water sources may have changed. The presence of old meander scars or oxbow lakes near elevated areas may represent high probability areas. Bluff shelters and caves located above the flood zone were also utilized. Bluffs and caves may also represent locations used for extracting lithic raw materials to use in stone tool manufacturing.

Medium probability areas are often located near intermittent water sources. Large sites and even temporary sites, however, are less likely to be located near intermittent water sources. Medium probability areas are likely to contain temporary hunting-foraging or resource extractive sites. These areas are often on moderately sloped terrain such as toe slopes or low ridges fairly close to a water source (perennial or intermittent). Water levels have fluctuated over the last several thousand years. Water sources, however, can frequently be determined to have been (prehistorically) perennial or intermittent by the extent of gravels and the condition or frequency of meander scars. Food resources in medium probability areas are represented by narrow hollows and extensions of prairie fairly near water sources.

Low probability areas are located far from water sources. These areas are represented by upland forests and prairie zones, hilltops, and ridges. An exception to this may be the extractive sites. Low, frequently flooded and swampy areas also represent low probability zones. This does not suggest that these areas were not prehistorically inhabited, but with a choice between a well-drained, elevated terrace and a swamp, the terrace would have likely been chosen. These upland areas rarely offered a wide variety of reliable plant and animal resources. Small groups of prehistoric populations may have traversed these areas, but base camps and even seasonal camps are not often found in these environmental areas.

Initially, the length of each alternative was measured. The percentage of the high, medium, and low probability areas of the total alternative length was then calculated. Following this, each probability was assigned a weighted value from 1 to 5, with 1 for the lowest probability areas, 3 for the medium probability areas, and 5 for the highest probability areas. The weighted value also takes into account the number of recorded sites within each alternative. The number of recorded sites in each alternative, however, cannot be used solely to determine the weighted value since large portions of the Study Area have not been subjected to systematic cultural resource surveys. This weighted value was multiplied by the percentage of the probability area coverage. This resulted in a high, medium, and low probability area weighted score, rounded to the nearest tenth. These three weighted scores were then added together to produce a rating, rounded to the nearest integer. This rating is in the range from 1 to 5, with 1 representing the

lowest priority areas, 2 representing the low/medium priority areas, 3 representing the medium priority areas, 4 representing the medium/high priority areas and 5 representing the high priority areas. A summary and the results of this procedure are illustrated in Table IV-28.

TABLE IV-28
ARCHAEOLOGICAL RESOURCE PROBABILITY MODEL

Alternative	High Probability (km) (% of Alt. Length)	Weighted Score[1]	Medium Probability (km) (% of Alt. Length)	Weighted Score[1]	Low Probability (km) (% of Alt. length)	Weighted Score[1]	Rating[2]
Existing							
EX/NWA1	1.0 (25%)	1.3	0.6 (15%)	0.5	2.4 (60%)	0.6	2
EX/NWB1	1.9 (34%)	1.7	0	0	3.7 (66%)	0.7	2
EX/NWC1	0.2 (10%)	0.5	1.2 (60%)	1.8	0.6 (30%)	0.3	3
EXD1	3.8 (100%)	5.0	0	0	0	0	5
EXE1	9.7 (100%)	5.0	0	0	0	0	5
Near West							
EXD1	3.8 (100%)	5.0	0	0	0	0	5
EX/NWA1,B1,C1	3.1 (27%)	1.4	1.8 (15%)	0.5	6.7(58%)	0.6	3
NWD1E1	1.6 (59%)	3.0	1.1 (41%)	1.2	0	0	4
NWF1 (Links 1,4,8)	1.4 (23%)	1.2	2.0 (32%)	1.0	2.8 (45%)	0.5	3
NWF2 (Links 1,3,5,6,8)	0.9 (15%)	0.8	1.2 (19%)	0.6	4.1 (66%)	0.7	2
NWF3 (Links 2,5,6,8)	0	0	0.7 (11%)	0.3	5.6 (89%)	0.9	2
NWF4 (Links 1,3,5,7)	0.9 (12%)	0.6	2.2 (30%)	0.9	4.3 (58%)	0.6	2
NWF5 (Links 2,5,7)	0	0	1.7 (23%)	0.7	5.8 (77%)	0.8	2
NWG1	0	0	0.5 (15%)	0.5	2.8 (85%)	0.9	1
FW/NWH1	0.7 (11%)	0.6	1.1 (18%)	0.5	4.3 (70%)	0.7	2
FW/NWH2	0.7 (11%)	0.6	1.1 (18%)	0.5	4.3 (70%)	0.7	2
Far West							
EX/NWA1	1.0 (25%)	1.3	0.6 (15%)	0.5	2.4 (60%)	0.6	2
EX/NWB1	1.9 (34%)	1.7	0	0	3.7 (66%)	0.7	2
EX/NWC1	0.2 (10%)	0.5	1.2 (60%)	1.8	0.6 (30%)	0.3	3
EXD1	3.8 (100%)	5.0	0	0	0	0	5
FWA1	0	0	0.6 (7%)	0.2	8.2 (93%)	0.9	1
FWA2	0	0	1.2 (13%)	0.4	7.9 (87%)	0.9	1
FWA3	0	0	0.6 (7%)	0.2	8.2 (93%)	0.9	2
FWB1/C1	0	0	1.3 (25%)	0.8	3.9 (75%)	0.8	1
FWB2/C2	0	0	3.6 (71%)	2.1	1.5 (29%)	0.3	2
FWD1	0	0	6.0 (53%)	1.6	5.3 (47%)	0.5	2
FWD2	0	0	4.6 (49%)	1.5	4.7 (51%)	0.5	2
FW/NWH1	0.7 (11%)	0.6	1.1 (18%)	0.5	4.3 (70%)	0.7	2
FW/NWH2	0.7 (11%)	0.6	1.1 (18%)	0.5	4.3 (70%)	0.7	2

[1] Weighted Score = % of segment length x weighted value (Low has a weighted value of 1; Medium has a weighted value of 3; and High has a weighted value of 5).
[2] Rating = Sum of Weighted Scores. Rating: 1 = Low Probability; 2 = Low/Med. Prob.; 3 = Med. Prob.; 4 = Med./High Prob.; 5 = High Prob.

Historic Archaeological Site Probability Factors

Historic sites often have different criteria for their location. Close proximity to water was often desirable but not imperative as it was to prehistoric populations. The first settlers in this area often chose open, prairie/forest edge sites for their homesteads. These locations allowed them to take advantage of the rich prairie soils for agricultural use and also having a ready supply of timber for house and building construction. The prairie/forest edge areas did not require great efforts to clear the necessary land for settlement. The edge areas also provided two types of landscape for a well-rounded diet. If these edge areas were not available a second desirable location would be the rich river and stream bottomland. While these areas required a

surmountable expenditure in land clearing, they were advantageous in their rich soils for crops. As time passed and more settlers came to the area, many of these desired locations were already settled. Therefore, later immigrants had to look elsewhere for settlement locations. These later historic settlers could dig wells to supply water and could clear land for house placement almost anywhere. Historic sites are often located close to early or present-day roads. Other aspects of historic archaeological site location may include the slope and elevation of the terrain. Sites such as historic gristmills, sawmills, mines, schools, stores, and churches may be located near historic population concentrations or water sources and may not be determined by soil quality or altitude.

b. Architectural Resources

In 1992, MoDOT conducted an architectural survey for US 71 (MoDOT Job Number J7P0427, 7-P-71-427). During this study, 164 principal structures were identified in Jasper, Newton and McDonald counties, Missouri. In a March 18, 1992, letter to Mr. G. Tracy Mehan III (MDNR), 43 of these structures were submitted to SHPO as being "deemed of sufficient age to qualify for listing on the National Register of Historic Places." The SHPO determined that six structures (5, 24, 53A, 53B, 98 and 99) are eligible for inclusion in the National Register of Historic Places (NRHP). Of these six structures, only Structure 99 is in proximity to the Study Area but is well outside the proposed alternatives. Of the 43 structures submitted, 24 Structures (69, 70, 73, 74, 75, 77, 80-84, 86, 98, 99, 105, 106, 112, 124, 132, 134, 136, 140, 145 and 162) were located in McDonald County and 13 of the 24 are in proximity to the current Study Area. As shown in Table IV-29, all of the 13 structures, which are located inside the alternatives, have been determined to be ineligible for inclusion in the NRHP.

TABLE IV-29
MoDOT 1992 ARCHITECTURAL SURVEY RESULTS

MoDOT Structure	DOE Status	Relationship to Current Proposed Alternatives
99	eligible	outside
105	ineligible	inside
106	ineligible	outside
111	ineligible	inside
112	ineligible	inside
116	ineligible	inside
124	ineligible	inside
132	ineligible	inside
134	ineligible	inside
136	ineligible	inside
140	ineligible	inside
145	ineligible	inside
162	ineligible	inside

Standing architecture in the proposed Study Area has been identified through intensive review of records and survey of 50+ year old structures located in each alternative. Review of each structure included the potential of each property to affect the quality and significance in American history, architecture, archaeology, engineering, and culture.

All recorded architectural resources within 30 m (100 ft.) of the Study Corridors were plotted on USGS 7.5' quadrangle maps to determine which sites were located near or within each alternative. The architectural resources in close proximity to each alternative were then plotted on the 1:5,000 and 1:2,500 aerial mosaic maps to determine more precisely potential effects to

each resource. Once the resource location in connection with each alternative was determined, resource visitation was conducted. Based on the description, condition, number of outbuildings, and architectural details, a determination of NRHP eligibility was made on those structures potentially affected by the "No-Build" and "Freeway-Build" Alternatives by the Missouri and Arkansas SHPO.

Fifty-three architectural resources are located within 30 m (100 ft.) of the limits of the alternatives (Tables IV-30 and IV-31). Three architectural resources (Missouri 113, Arkansas 1743, and Arkansas 3040) have been completely destroyed during recent development and are not included in this resource survey. No individual NRHP properties are within 30 m (100 ft.) of any of the alternatives in McDonald County, Missouri. Benton County, Arkansas, however, is listed as a Multiple Resource Area (MRA) in the NRHP (National Park Service 1994). No NRHP (MRA) sites would be affected by the improvement alternatives. Site BE2177 (New Home Church) listed in the MRA is located within 30 m (100 ft.) of the Far West and near West Alternatives.

TABLE IV-30
ARCHITECTURAL RESOURCE DISTANCE FROM ALTERNATIVES

Alternative	Architectural Resources within Alternative	Architectural Resources within 30 m (100 ft.) of Alternative	Total
Existing			
EX/NWA1	0	MoDOT 105	1
EX/NWB1	MoDOT 111, MoDOT 112, MoDOT 116	MoDOT 162, MO 5, MO 6	6
EX/NWC1	MO 12, MO 15	MO 13, MO 14	4
EXD1	MO 10, MO 11	0	2
EXE1	0	BE1702, AR 24, AR 25, AR 26, AR 27, AR 31	6
Near West			
EXD1	M010, M011	0	2
EX/NWA1,B1,C1	MoDOT 111, MoDOT 112, MoDOT 116, MO 12, MO 15	MoDOT 105, MoDOT 162, MO 5, MO 6, MO 13, MO 14	11
NWD1E1	0	MO 10	1
NWF1 (Links 1,4,8)	AR 21	0	1
NWF2 (Links 1,3,5,6,8)	0	0	0
NWF3 (Links 2,5,6,8)	0	0	0
NWF4 (Links 1,3,5,7)	AR 22	0	1
NWF5 (Links 2,5,7)	AR 22	0	1
NWG1	AR 16, AR 23	0	2
NWH1	AR 19	AR 17, AR 20, BE 2177	4
NWH2	BE0657, AR 18,	AR 20, BE 2177	4
Far West			
EX/NWA1	0	MoDOT 105	1
EX/NWB1	MO6, MoDOT 111, MoDOT 112	MoDOT 162, MoDOT 116, MO5	6
EX/NWC1	0	MO13, MO14, MoDOT 124, MO17, MO18	5
EXD1	0	MO19, MoDOT 132, MO 20, MoDOT 136	4
FWA1	0	0	0
FWA2	0	0	0
FWA3	MO 2	0	1
FWB1/C1	0	0	0
FWB2/C2	0	0	0
FWD1	AR 4, AR 6, AR 9	AR 15, AR 16	5
FWD2	AR 10, AR 12, AR 13, AR 14	BE065, BE0644, AR 1, AR 2, AR 7, AR 16	10
FW/NWH1	AR 19	AR 17, AR 20, BE 2177	4
FW/NWH2	BE0657, AR 18	AR 20, BE 2177	4

[1] Resources beginning with "MoDOT" are resources recorded during MoDOT's 1992 architectural survey for US 71 improvements.

TABLE IV-31
ARCHITECTURAL RESOURCES IN EACH ALTERNATIVE

Alternative	Resource Number	Style	Type	Construction Date	NRHP Eligibility
		Existing Alternative			
EX/NWA1	MoDOT 105	Craftsman	multiple gable	1900 - 1930	ineligible
EX/NWB1	MoDOT 111	Vernacular	side gable	1950s	ineligible
	MoDOT 112	none listed	barn	1910 - 1940	ineligible
	MoDOT 116	Craftsman	cross gable	1940	ineligible
	MoDOT 162	Saltbox	side gable	1900 - 1930	ineligible
	MO 5	National Folk	front gable	1900	ineligible
	MO 6	Corn Crib	corn crib	1940	ineligible
EX/NWC1	MO 12	Pole Barn	pole barn	1950 - 1960	ineligible
	MO 13	Vernacular	cross gable	1900	ineligible
	MO 14	Vernacular	side gable	1950	ineligible
	MO 15	Vernacular	cross gable	1920	ineligible
EXD1	MO 10	Vernacular	cross gable	1967	ineligible
	MO 11	Transverse Crib	barn	1940	ineligible
EXE1	AR 24	National Folk	side gable	1880	ineligible
	AR 25	Craftsman	front gable	1930	eligible
	AR 26	Craftsman	front gable	1930	ineligible
	AR 27	Craftsman	composite	1930	ineligible
	AR 31	Craftsman	front gable	1930	ineligible
		Near West Alternative			
EXD1	AMO 10	Vernacular	cross gable	1967	ineligible
	AMO 11	Transverse Crib	barn	1940	ineligible
EX/NWA1	MoDOT 105	Craftsman	multiple gable	1900 - 1930	ineligible
EX/NWB1	MoDOT 111	Vernacular	side gable	1950s	ineligible
	MoDOT 112	none listed	barn	1910 - 1940	ineligible
	MoDOT 116	Craftsman	cross gable	1940	ineligible
	MoDOT 162	Saltbox	side gable	1900 - 1930	ineligible
	MO 5	National Folk	front gable	1900	ineligible
	MO 6	Corn Crib	corn crib	1940	ineligible
EX/NWC1	MO 12	Pole Barn	pole barn	1950 - 1960	ineligible
	MO 13	Vernacular	cross gable	1900	ineligible
	MO 14	Vernacular	side gable	1950	ineligible
	MO 15	Vernacular	cross gable	1920	ineligible
NWD1E1	MO 10	Vernacular	cross gable	1967	ineligible
NWF1 (Links 1,4,8)	AR 21	Folk Victorian	cross gable	1890	ineligible
NWF4 (Links 1,3,5,7)	AR 22	Folk Victorian	cross gable	1930	ineligible
NWF5 (Links 2,5,7)	AR 22	Folk Victorian	cross gable	1930	ineligible
NWG1	AR 16	Craftsman	front gable	c. 1920	eligible
	AR 23	Craftsman	front gable	1920	ineligible
FW/NWH1	AR 19	none listed	barn	1940	eligible
	AR 17	Craftsman	front gable	1920	ineligible
	AR 20	Craftsman	side gable	1920	eligible
	BE2177	Plain/ Traditional	front gable	c. 1900	NRHP listed
FW/NWH2	BE0657	Craftsman	front gable	1920	ineligible
	AR 18	Craftsman	side gable	1930	eligible
	AR 20	Craftsman	side gable	1920	eligible
	BE2177	Plain/ Traditional	front gable	c. 1900	NRHP listed

Far West Alternative					
EX/NWA1	MoDOT 105	Craftsman	multiple gable	1900 - 1930	ineligible
EX/NWB1	MO 6	Corn Crib	barn	1940	ineligible
	MoDOT 111	Vernacular	side gable	1950s	ineligible
	MoDOT 112	Vernacular	gabled	early 20th	ineligible
	MO 5	National Folk	front gable	1900	ineligible
	MoDOT 162	Vernacular	side gable	early 20th	ineligible
	MoDOT 116	Bungalow/Craftsman	cross gable	1940	ineligible
EX/NWC1	MO 13	Vernacular	cross gable	1900	ineligible
	MO 14	Vernacular	side gable	1950s	ineligible
	MoDOT 124	Commercial	plat	early - mid 20th	ineligible
	MO 17	Rustic Craftsman	front gable	1940	ineligible
	MO 18	Vernacular	front gable	1940	ineligible
EXD1	MO 19	I House	cross gable	1922	ineligible
	MoDOT 132	Vernacular	side gable	early - mid 20th	ineligible
	MO 20	Vernacular	cross gable	1965	ineligible
	MoDOT 136	corn crib	barn	1930 - 1940	ineligible
FWA3	MO 2	Vernacular	side gable	1960	ineligible
FWD1	AR 4	Craftsman	front gable	c. 1930	ineligible
	AR 6	none listed	barn	1930	eligible
	AR 9	National Folk	pyramid	c. 1900	ineligible
	AR 15	Craftsman	front gable	c. 1940	ineligible
	AR 16	Craftsman	front gable	c. 1920	eligible
FWD2	BE0644	Craftsman	front gable	c. 1940	eligible
	BE065	Folk Victorian	side gable	1880	ineligible
	AR 1	Folk Victorian	Gabled-Ell	1947	ineligible
	AR 2	Folk Victorian	composite	1940	ineligible
	AR 7	Craftsman	side gable	1930	ineligible
	AR 10	Saltbox	side gable	1930	ineligible
	AR 12	none listed	outbuildings	1950	ineligible
	AR 13	Craftsman	front gable	1920	ineligible
	AR 14	Folk Victorian	cross gable	c. 1900	ineligible
	AR 16	Craftsman	front gable	c. 1920	eligible
FW/NWH1	AR 17	Craftsman	front gable	1920	ineligible
	AR 19	none listed	barn	1940	eligible
	AR 20	Craftsman	side gable	1920	eligible
	BE2177	Plain/ Traditional	front gable	c. 1900	NRHP listed
FW/NWH2	BE0657	Craftsman	front gable	1920	ineligible
	AR 18	Craftsman	side gable	1930	eligible
	AR 20	Craftsman	side gable	1910 - 1940	eligible
	BE2177	Plain/ Traditional	front gable	c. 1900	NRHP listed

c. Summary of Impacts

The following three tables present summaries of the potential cultural resources impacts for each "Freeway-Build" Alternative for the three evaluation issues – archeological sites, historic sites, and architectural sites.

TABLE IV-32
FAR WEST CORRIDOR
CULTURAL RESOURCES IMPACTS

Evaluation Factor	Units	Interim Total	Ultimate (Segment)								
			A			B/C		D		H	
			A1	A2	A3	B1C1	B2C2	D1	D2	H1	H2
Archeological Sites	Rating[1]	8/3	0/1	0/1	0/1	0/2	0/2	0/2	0/2	0/2	0/2
Historic	Number	0	0	0	0	0	0	0	0	0	0
Architectural Sites	Number	0	0	0	0	0	0	2	2	3	3

[1] Number of previously recorded archeological sites/predictive archeological model

TABLE IV-33
NEAR WEST CORRIDOR
CULTURAL RESOURCES IMPACTS

Evaluation Factor	Units	Interim Total	Ultimate (Segment)									
			Existing	D/E	F					G	H	
			A/B/C	D1E1	F1	F2	F3	F4	F5	G1	H1	H2
Archeological Sites	Rating[1]	2/1	6/3	1/4	0/3	0/2	0/1	0/2	0/2	0/1	0/2	0/2
Historic	Number	0	0	0	0	0	0	0	0	0	0	0
Architectural Sites	Number	0	0	0	0	0	0	0	0	1	3	3

[1] Number of previously recorded archeological sites/predictive archeological model

TABLE IV-34
EXISTING CORRIDOR
CULTURAL RESOURCES IMPACTS

Evaluation Factor	Units	Interim Total	Ultimate (Segment)				
			A	B	C	D	E
Archeological Sites	Rating[1]	0/0	1/4	4/4	1/3	2/1	5/1
Historic	Number	0	0	0	0	0	0
Architectural Sites	Number	0	0	0	0	0	1

[1] Number of previously recorded archeological sites/predictive archeological model

3. PREFERRED ALTERNATIVE

Since the selection of the preferred alternative (i.e., the Far West Alternative), a number of required cultural resource investigations have taken place in coordination with both the AR-SHPO and MO-SHPO.

Phase I field investigations of archeological, bridge and historic sites along the Far West Alternative, in accordance with AR-SHPO and MoDOT protocol, have been completed and reports submitted for review by the AR-SHPO and MO-SHPO. Each review concurred that, with the exception of a Phase II assessment program for the prehistoric site recorded as 3BE634, no further archeological, bridge or historic site investigations are necessary or required (AR-SHPO review letter dated January 14, 1999 and MO-SHPO letter dated December 11, 1998, see Appendix I). Following the selection of the Far West Alternative as the Preferred Alternative, a Phase II assessment was conducted at 3BE634 and the AR-SHPO has determined that no further work is necessary at this site (Appendix I). Investigations of archeological, bridge and historic sites along the interim improvements for the Far West Alternative will be governed by the MOA executed in association with the previous MoDOT EIS for US 71.

Documentation of architectural resources in accordance with AR-SHPO and MoDOT protocol have been completed and reports submitted for review by the AR-SHPO and MO-SHPO. No architectural resources will be affected in Missouri by the Far West Alternative and the MO-SHPO concurred (review letter dated 11 December 1998, see Appendix I) that no further investigations are necessary or required.

The EIS design team documented 37 structures within or within 100 ft (30 m) of the alternative alignments (corridor width of approximately 300 ft (91 m)). Of this total, 6 (16%) had been previously recorded during the 1983-1985 MRA effort and 31 (84%) were newly recorded. Documentation of these survey efforts was provided to the SHPO for review and comment in May 1997 in a report entitled DEIS Architectural Resource Documentation (Arkansas Resources 50+ Years). The purpose of the May 1997 document was to present to the SHPO, through completed AHPP architectural resource forms, preliminary information relating to each standing structure, building or object that is >50 years old and that is located within or within 100 ft (30 m) of the APE. The goal of that review was to arrive at a consensus about which, if any, of the documented resources possesses significant characteristics that would make them eligible for the NRHP. SHPO review of this documentation (by letter dated 18 June 1997, see Appendix I) concluded that AR 6, AR 16, AR 18, AR 19a and 19b, AR 20, AR 25a, BE0660 (along with previously listed BE2177) all appear to be eligible for listing in the NRHP and should be avoided if possible.

Since the time of the SHPO review, the selection process has proceeded toward identification of the Far West Alignment as the preferred alternative. Within the Far West Alignment, the best alternative was identified as comprising FWA3 (Segment A), FWB2/C2 (Segment B/C), FWD1 (Segment D) and FW/NWH1 (Segment H). Because the Near West and Existing Alternatives, as well as Far West Alternative segments FWA1, FWA2, FWB1/C1, FWD2 and FW/NWH2, were eliminated from further consideration, several resources considered potentially eligible by the SHPOs have been avoided in accordance with SHPO comments. Included among these resources are BE0660 (located in eliminated segment FWD2), AR 18 (located in eliminated segment FW/NWH2) and AR 25a (located in eliminated segment EXE1). Although AR 16 is located in FWD2 and AR 20 and BE2177 are located in FW/NWH2, each of these resources is also located in one of the segments retained as part of the Far West Alignment (AR 16 is also in FWD1 and AR 20 and BE2177 are also in FW/NWH1). Since the time of the SHPOs' initial reviews (Appendix I), the Far West Alignment has been adjusted to avoid each of the remaining resources considered by the SHPO to be eligible for the NRHP (AR 06, AR 16, AR 19, AR 20 and BE2177). These resources are now located outside and adjacent to one of the segments of the Far West Alternative.

A Determination of Effect document was prepared for SHPO review that provided a description of the proposed undertaking, a description of the efforts made to identify historic properties in the undertaking's APE, a description of the historic properties that may be affected and a description of how the Criteria of Adverse Effect were applied to each property pursuant to ACHP (1989) guidelines. Each of the resources identified by the SHPO as being potentially eligible for the NRHP has been reviewed by the FHWA in accordance with the Criteria of Adverse Effect set forth in 36 C.F.R. §§ 800.9(b) and (b)(1) and the relationship of each to the APE of the proposed undertaking has been established. The purpose of the Determination of Effect document was to seek SHPO concurrence in the application by FHWA of the Criteria of Adverse Effect set forth in 36 C.F.R. §§ 800.9(b) and (b)(1).

The barn at AR 06 [located 500 ft (150 m) from the preferred alignment] and the barn at AR 19a [located 128 ft (39 m) from the preferred alternative] and outbuilding at AR 19b [located 308 ft

(94 m) from the preferred alignment] are all examples of architectural resources in which people do not live or routinely congregate. None of these resources will be destroyed or altered [36 C.F.R. § 800.9(b)(1)], isolated [36 C.F.R. § 800.9(b)(2)], neglected [36 C.F.R. § 800.9(b)(4)] or transferred, leased or sold [36 C.F.R. § 800.9(b)(5)] as a result of the proposed undertaking. None of these resources are habitable and there will be no audible or atmospheric elements introduced that are out of character with or will diminish the integrity of significant characteristics these properties may possess [36 C.F.R. § 800.9(b)(3)]. AR 16 (David Free House) [located approximately 820 ft (252 m) from the preferred alternative] and AR 20 (Buena Vista Ranch) [located approximately 100 ft (30 m) from the preferred alternative] are all examples of architectural resources which include habitable structures along with various outbuildings in which people do not live or routinely congregate. None of these resources will be destroyed or altered [36 C.F.R. § 800.9(b)(1)], isolated [36 C.F.R. § 800.9(b)(2)], neglected [36 C.F.R. § 800.9(b)(4)] or transferred, leased or sold [36 C.F.R. § 800.9(b)(5)] as a result of the proposed undertaking. While the residences at AR 16 and AR 20 are habitable, it does not appear that audible or atmospheric elements will be introduced that are out of character with or will diminish the integrity of significant characteristics these properties may possess [36 C.F.R. § 800.9(b)(3)].

BE2177 (New Home Church) [located directly adjacent to the right-of-way required for the new roadway] is listed in the NRHP under Criterion C as part of the Benton County MRA (MRA No. 38) "as an unflawed example of the community architecture." This resource will not be destroyed or altered [36 C.F.R. § 800.9(b)(1)], isolated [36 C.F.R. § 800.9(b)(2)], neglected [36 C.F.R. § 800.9(b)(4)] or transferred, leased or sold [36 C.F.R. § 800.9(b)(5)] as a result of the proposed undertaking. It does not appear that audible or atmospheric elements will be introduced that are out of character with or will diminish the integrity of significant characteristics this property possesses [36 C.F.R. § 800.9(b)(3)].

The AR-SHPO concurred that the preferred alternative will have no adverse effect on either the structure listed in the NRHP or the structures determined eligible for listing in the NRHP (review letter dated 1 December 1998, see Appendix I).

Though mitigation measures are not required for the New Home Church, pursuant to the findings of the AR-SHPO, AHTD is committed to the continued consideration of design refinements to the Far West Alternative during the design phase to minimize the effects of the US 71 improvements on the church site.

A meeting with the New Home Church members was held in August, 1999 to discuss noise abatement issues related to the proposed US 71 Highway relocation located adjacent to their historic church. Abatement measures discussed included increasing the distance of the highway from the Church, using a typical noise barrier, using a small berm and/or rock wall, and using architecture soundproofing such as storm windows. These measures and various combinations were discussed to determine a preference among the church members in attendance. Moving the highway a sufficient distance to allow acceptable noise levels at the church was the group's first preference with the combination of rock wall/berm combination used with some soundproofing as their second choice. The group did not support the use of a typical noise barrier which would reduce noise levels, but would also result in creating an unacceptable visual barrier.

In the detailed design phase of this project, the Department will move the highway final alignment as far as possible, but still within the existing engineering and environmental

constraints of this interchange area near McKisic Creek. If this design alignment change is not sufficient to reduce the noise levels below the Federal Highway Administration criteria; then a small berm/rock wall combination with appropriate vegetation cover will be designed and coordinated with the church. Soundproofing options may be included if the berm/wall combination is not sufficient to achieve acceptable noise levels (FHWA criteria).

R. Hazardous Waste Sites

1. "NO-BUILD" ALTERNATIVE

The "No-Build" Alternative would have no effect on the potential hazardous waste sites identified within the Study Area. Any right-of-way acquisition to accommodate the TSM enhancements would most likely occur in areas that would not affect the identified potential hazardous waste sites.

2. "FREEWAY-BUILD" ALTERNATIVES

Existing waste sites identified in Chapter III, Section B could be affected by the improvements, depending on the "Freeway-Build" Alternative. Releases into the environment may be aggravated by construction activities resulting in new or additional contamination and possible worker exposures. Types of potential negative impacts may include, but are not limited to, those impacts listed as follows:

- Dust from disturbing contaminated soils during earth moving activities, with potential exposure to workers and nearby residents.
- Unearthing disposal sites and spreading hazardous materials.
- Exposing seeps during construction and releasing contaminated groundwater to the environment.
- Exposing workers to hazardous materials or waste unearthed or released during construction.
- Displacement of contaminated soils by borrowing or excavating and placing material in an embankment or undocumented area.

However, the likelihood of these impacts occurring is low due to preventative measures taken before and during construction. Avoidance of known sites would be provided to the extent possible. Known impacts would be remedied prior to or as part of construction of the roadway improvements. If an unknown site would be encountered during construction, measures would be taken as necessary to eliminate or minimize any adverse environmental consequences.

A positive impact of the freeway improvements would be the remediation or clean up of the existing waste sites identified within the Study Corridor of the selected alternative. Remediation of solid and hazardous waste sites, and related contamination, would be conducted in the pre-construction phase of the project.

The hazardous material screening of the Study Corridors rated the observed waste sites as having a high, moderate, or low degree of risk to public health and potential of impacting the

alternatives based on proximity. Listed below are the potential hazardous waste sites that would be impacted by each of the "Freeway-Build" Alternatives.

a. Far West Alternative

- **Salvage Operation (Site B-54)/Low Risk** - Site located in the path of FWD2, appears to be a privately owned metal salvage operation. The potential exists for contamination of soil and groundwater from the disposal of hazardous substances, if any, that were contained in drums, tanks, and appliances that have been salvaged.

- **Residence (Site B-47)/Low Risk** - This site is located on the edge of the proposed right-of-way of FW/NWH1. The site is a residence with an open dump located behind the house. Observed waste included old drums and junk cars. There is the potential for previous release of hazardous waste.

- **Jones Golf Cars (Site B-34)/Low Risk** - This site is located within the proposed right-of-way of FW/NWH1 and H2, where they join, approaching the southern terminus. The business involves golf cart sales and service. The potential exists for storage or release of fuel, lubricants, and batteries.

b. Near West Alternative

- **Residence (Site B-47)/Low Risk** - This site is located along FW/NWH1 as previously indicated. FW/NWH1 is common to the Far West and Near West Alternatives.

- **Jones Golf Cars (Site B-34)/Low Risk** - This site is located within the proposed right-of-way of FW/NWH1 and H2 as previously discussed. Segment H is common to the Far West and Near West Alternatives. The ranking and concerns of the site are the same for both alternatives.

c. Existing Alternative

- **Bella Vista Landfill (Site B-25)/High Risk** - This site is located along the proposed west service road of EXE1, near the state line interchange. The site was a sanitary landfill and is now closed. Based on historical evidence, the landfill if thought to contain household refuse rather than hazardous type materials. Right-of-way acquisition for the proposed service road may encroach onto the landfill. Due to the proximity of Sugar Creek to the landfill, disturbance of the landfill could result in not only the exposure of construction personnel to waste, but also allow release of leachate into the creek. The potential impacts of this site to the alternative may involve realignment or elimination of the proposed southbound frontage road, the realignment of the proposed Bear Creek, Hollow Road, or the removal and replacement of the landfill material.

- **Jug Store Liquors (Site M-12)/Moderate Risk** - This liquor store/gas station is located within the proposed right-of-way of EXD1. Fuel storage is provided by three aboveground storage tanks with an estimated capacity of 37,854 liters (10,000 gallons) each. The tanks are provided with spill containment in the form of a short concrete wall. The potential exists for soil and groundwater contamination from accidental release or leaking underground product piping.

- **Don's Stateline Store (Site M-11)/Moderate Risk** - This convenience store/gas station is located within the proposed right-of-way of EXD1. Fuel storage is provided by an estimated three underground storage tanks. The potential exists for soil and groundwater contamination from leaking underground tanks and piping.

- **All In One (Site B-28)/Moderate Risk** - This site is located along the proposed east service road of EXE1, near the Sugar Creek interchange. The site is a convenience store/gas station listed on the ADPC&E RST List. The site contains four underground storage tanks with 151,416 liters (40,000 gallon) aggregate capacity. The potential exists for soil and groundwater contamination from leaking tanks or piping.

- **Village Ship 'n' Shore (Site B-31)/Low Risk** - This site is located along the west service drive of EXE1 just north of the US 71/US 71B Interchange. The commercial site is a marine sales and service facility. There is the potential for storage or past release of fuels and lubricants.

3. MITIGATION

The low and moderate risk sites would have little impact on any of the proposed alternatives. The greatest projected impacts from these sites would be from leaking underground storage tanks and possible associated contaminated soil. Contamination of this type would not subject the project to undue costs or time delays. Any remediation would require the coordination and approval of the ADPC&E and MDNR. The positive impact to the community if sites as these are encountered and confirmed, is a clean up of the contamination which may otherwise continue. In summary, risks, impacts would typically be relatively low to the proposed project from these sites.

The potential impact of the one high-risk site (Bella Vista Landfill) may involve realignment or elimination of the proposed southbound frontage road as well as the realignment of the proposed Bear Creek Hollow Road. Further investigations are necessary to delineate the limits of the landfill so that a more definitive judgement of any necessary adjustments may be made.

Otherwise, but not preferred, a plan may be made to characterize and remove and replace the landfill material to a permitted facility. The removal and replacement can be performed with additional costs, and additional time would be needed. The landfill may also be avoided with an overpass from the planned northbound frontage road accessing the residential area. In summary, the landfill impacts may be mitigated by avoidance, removal, or roadway realignment. Additional costs for the mitigation of this site have not been included with the Existing Alternative.

S. Visual Impacts

Visual impact is determined by the change in the visual environment as related to viewer response.

1. "NO-BUILD" ALTERNATIVE

a. Primary Impacts

The "No-Build" Alternative would not alter the existing visual quality of the US 71 Corridor.

Since there would be no changes in width or horizontal and vertical alignment, the existing visual environment would be left intact, and scenic views would remain unchanged. The TSM improvements would not alter the existing visual quality of the environment, except for those intersection areas where traffic signals would be added and/or additional turn lanes would be provided.

b. Secondary and Cumulative Impacts

The "No-Build" alternative could secondarily and cumulatively have a positive impact on the visual environment in some areas that are not used for agricultural purposes. With the absence of construction activity in the existing right-of-way and adjacent parcels, native trees, grasses and wildflowers, as they multiply and mature, would increase the quality of views from the road and would help existing roadways blend into the environment.

2. "FREEWAY-BUILD" ALTERNATIVES

All of the "Freeway-Build" Alternatives would impact the existing visual resources in the Study Area. The single most important factor in determining visual compatibility is the relative integration of the roadway with existing topography. The rock subsurface and the often shallow soil cover are difficult conditions in which to affect inconspicuous or easily concealed earthwork operations. (See Exhibit I-5 for typical cross-sections of the roadway.)

a. Primary Impacts

Far West Alternative

The Far West Alternative would have an overall moderate visual impact on the environment.

- **Interim Improvements**

  > **Segments A, B, C and D (EX/NWA1, B1, C1 and EXD1)** - would have a moderately low visual impact as the majority of the alignment is on existing US 71. The visual change would be minimal since there is already an existing roadway. The relative concentration of sensitive visual receptors is moderately low throughout this portion of the corridor, therefore the potential for views of the road is moderately low. Views from the road would be of moderate quality as opportunities exist at the Little Sugar Creek valley and through the forested areas.

- **Ultimate Improvements**

  > **Segment A (FWA)** - would have a moderate visual impact as it would travel through a mixture of forested and cleared areas of severe terrain. The relative concentration of sensitive visual receptors is low throughout this portion of the corridor, therefore the potential for views of the road is low. Views from the road would be of moderately high quality as opportunities are provided at elevated valley crossings and through forested areas.

  > **Segment B/C (FWB/C)** - would have a moderately high visual impact as it would travel through dense forested areas of severe terrain. The relative concentration of sensitive visual receptors is low throughout this portion of the corridor except

at FWB2/C2 where it parallels the golf course, providing recreationists with potential views of the road. Views from the road would be of high quality as opportunities are provided at elevated valley crossings and through the forested areas.

> **Segment D (FWD)** - would have a moderately low to moderate visual impact as it would travel through an area of mostly cleared land used for agriculture, scattered forest areas, and moderate terrain. The relative concentration of sensitive visual receptors is moderate as this segment would bypass the small community of Hiwasse and travel near farms/ranches and outlying residences scattered throughout this portion of the corridor. The potential for views of the road would therefore be moderate. Views from the road would be of moderate quality as the main opportunities are provided through the forested areas.

> **Segment H (FW/NWH)** - would have a moderately high visual impact as it would travel through a mixture of forested and cleared areas of severe terrain The relative concentration of sensitive visual receptors is moderately low throughout this portion of the corridor, therefore the potential for views of the road is moderately low. Views from the road would be of moderately high quality as opportunities are provided at elevated valley crossings, through the forested areas, and along the ridgetop.

Near West Alternative

The Near West Alternative would have an overall moderately high visual impact on the environment.

- **Segment A, B, and C (EX/NWA1, B1 and C1)** - would have the same visual impacts as those of the interim improvements in the Far West Alternative.

- **Segment D/E (NWD1E1)** - would have a moderately high visual impact as it would travel through a mixture of forested and cleared areas, and would parallel a stream in Gordon Hollow. The relative concentration of sensitive visual receptors is low throughout this portion of the corridor, therefore the potential for views of the road is low. Views from the road would be of moderately high quality as opportunities are provided in the riparian environment of Gordon Hollow and through the forested areas.

- **Segment F (NWF)** - would have a high visual impact as it would travel through an area of mostly forest with a minimum of cleared areas and somewhat severe terrain. The relative concentration of sensitive visual receptors is high, with a golf course and many residences clustered throughout this portion of the corridor. Therefore, the potential for views of the road is high. Views from the road would be of moderately high to high quality as opportunities are provided through the forested areas and at the elevated valley crossings where there is the potential for views of the area lakes.

- **Segment G (NWG1)** - would have a moderately high visual impact as it would travel through an area of mostly forest with some scattered cleared areas. The relative concentration of sensitive visual receptors is moderate as the alignment travels

along the edge of a low-density residential area in this portion of the corridor, therefore the potential for views of the road is moderate. Views from the road would be of moderately high quality as opportunities are provided through the forested areas and at the elevated valley crossings.

- **Segment H (FW/NWH)** - would have a moderately high visual impact as it would travel through a mixture of forested and cleared areas of severe terrain. The relative concentration of sensitive visual receptors is moderately low throughout this portion of the corridor. Therefore, the potential for views of the road is moderately low. Views from the road would be of moderately high quality as opportunities are provided at elevated valley crossings, through the forested areas, and along the ridgetop.

Existing Alternative

The Existing Alternative would have an overall moderately low visual impact on the environment. The visual change would be minimal since there is already an existing roadway. Existing Alternative impacts would result in more pavement and a more expansive looking facility. The increased width would require displacement of some residences, commercial/business structures and parking areas. The widening brings the pavement closer to business and residential areas. This visual impact and views of the road are of less importance to business owners than they are to residential owners. In affected areas, the visual impact to the residences will be somewhat greater, although not substantially different than that to which they have been accustomed. The views of the road will be affected by the increased pavement width and increased traffic volumes. Views from the road would be of moderately high quality in certain areas. These include views into the valleys of Little Sugar Creek, Brush Creek and Bear Creek, and views of the golf courses and area lakes.

b. Secondary and Cumulative Impacts

The "Freeway-Build" Alternatives would secondarily and cumulatively impact the visual quality of the environment as increases in growth, development and traffic volumes occur as a result of new or improved roadways. New development, in the absence of visual design guidelines and regulations, and increased traffic volumes would contribute to a decline in the visual quality of the environment as open or natural areas become built-up.

The rock subsurface and the often-shallow soil cover conditions of the Study Area are difficult conditions in which to affect inconspicuous or easily concealed earthwork operations. The "Freeway-Build" Alternatives include segments of cut and fill grading throughout the rolling Ozark topography due to the required gradients for motorist safety. Visual impacts can be minimized in these sections by "benching" rock cuts and revegetating soil slopes with native plants. These measures serve to somewhat mitigate the views of the roadway and reinforce the natural beauty of the area.

T. Energy

Energy considerations to be taken into account when evaluating the various alternatives include the energy consumed during construction and the energy consumed during normal operations and maintenance. Direct and indirect energy impacts should also be considered. Direct impacts include the energy consumed by vehicles using the facility. Indirect impacts include

construction energy and such items as the effects of any changes in automobile usage due to the construction of the facility.

Energy consumed during construction includes energy consumed for earthwork and construction activities, as well as energy consumed off-site for the production of materials and equipment. Energy consumed during construction also includes energy expenditures caused by vehicle delay due to construction activities, such as lane closures. Table IV-35 shows two evaluation variables of construction costs and a maintenance of traffic rating used to measure energy consumed during construction.

Energy consumed after construction includes energy used to fuel vehicles, as well as energy used for maintenance of the vehicles and roadway. Table IV-35 shows two evaluation variables of vehicle kilometers of travel and vehicle hours of travel. These variables provide a measure of vehicle fuel consumption and roadway usage. When considering energy required for operations and maintenance after construction, the marginal energy expenditure must be considered. For example, the energy required for the maintenance of a four-lane facility would be expected to be less than twice the energy required for the maintenance of the current two-lane facility, due to economies of scale. However, a four-lane freeway facility would more than double the capacity of a two-lane facility without limited access.

As shown in the table, the Near West Alternative would expend the greatest energy during construction and the No-Build would expend the least amount of energy during construction. After construction, the Far West and the "No-Build" Alternatives would expend the greatest amount of energy. The Existing Alternative would expend the least amount of energy after construction.

TABLE IV-35
ENERGY CONSUMPTION BY ALTERNATIVE

Evaluation Factor	"No-Build"	Far West	Near West	Existing
Energy Consumed During Construction				
Construction Costs ($ Million)	$1.6 M	$116.9-$123.0 M	$120.1 - 123.9 M	$107.5 M
Maintenance of Traffic	Fair	Good	Fair	Marginally Poor
Energy Consumed After Construction				
Vehicle Kilometers of Travel (VKT)	4,150,000	4,317,000	4,281,000	4,194,000
Vehicles Hours of Travel (VHT)	85,000	75,000	76,000	72,000

The energy consumed by vehicles traveling on the proposed facility should be considered in a global, rather than local, framework. For example, while the proposed facility would carry additional vehicles, it is likely that these vehicles represent trips diverted from other facilities rather than latent demand. Thus the issue to be considered is the relative energy consumption. Because the proposed facility is a fully-limited access controlled freeway facility with adequate capacity, vehicles would be expected to travel at free flow speeds, which represents very favorable conditions with respect to fuel consumption. Furthermore, the fuel consumption for trips that continue to be served on the facility would be expected to decrease because the average operating speeds on the new facility would be higher than the existing speeds, due both to the increased capacity and limited access.

U. Construction Impacts

1. POLLUTION CONTROL

a. Standards

For the portion of the US 71 improvements located in Missouri, MoDOT construction standards would be utilized. MoDOT has developed a series of Standard Specifications for Highway Construction. These specifications include, but are not limited to, air, noise and water pollution control measures to minimize impacts to the surrounding areas during construction. Pollution control measures, both temporary and permanent, would be enacted under the project construction specifications.

In Arkansas, to the extent available, AHTD pollution control standards and specifications would be utilized for the construction of the "Freeway-Build" Alternatives. As necessary, project-specific details would be developed to augment the available standards. These measures would be implemented to minimize adverse impacts to adjacent areas including noise, air, and water quality.

b. Noise and Air Quality

Roadway construction activities can have adverse impacts on local noise and air quality levels in those areas adjacent to the roadway alignment. However, construction impacts would be of relatively limited duration, and because much of the US 71 improvements would be located in rural areas, the number of receptors exposed to the increased noise level and decreased air quality would be limited. Furthermore, these impacts would be mitigated by adherence to construction permit and contract conditions, which would likely include prohibitions against the burning of construction debris and control measures to limit pollution if tree trunks and limbs are permitted to be burned on site. Right-of-way burning would also adhere to construction permits and contract conditions, and would also likely include prohibitions concerning its burning and control measures to limit pollution if right-of-way burning is permitted. MoDOT will consider the use of MDNR's Waste Management Program and contractors would always have the optional construction methods available at their discretion regarding removal of trees, including the reuse of trees as lumber or compost. Contract conditions would also likely place limits or controls on the contractor's blasting activities for the rock excavation to limit the noise and vibration impacts of the blasting. Other typical measures would include limitations on the time of construction and a watering program to limit construction dust.

Due to the location of the roadway alignment outside of the more densely developed areas associated with the Bella Vista Village, it is likely that the Far West Alternative would not have as significant of an effect on local noise and air quality. For the Near West and Existing Alternatives which are located within the Village, the temporary noise and air quality impacts associated with the construction would be more acute due to the greater number of receptors located in the immediate vicinity of the alternatives. Measures to minimize these impacts would be critical to avoid major disturbances to the existing noise and air quality of the Village.

c. Wastes

Specifications and procedures for the proper disposal and handling of wastes resulting from construction activities would be developed for both Missouri and Arkansas. In Missouri, consideration would be given to the Missouri Department of Natural Resources (MDNR) Solid

Waste Management Program as part of these procedures. (This program emphasizes the need to develop uses and markets for recycled and recyclable materials in construction activities.) Furthermore, any potential hazardous wastes in the right-of-way would be identified and handled in accordance with all applicable regulations within each respective state. Appropriate regulations would be adhered to in both states for the containment and handling of construction materials within the construction staging areas.

d. Water Resources

During the construction of the roadway improvements, measures need to be incorporated to minimize the short-term, direct impacts on the adjacent water resources. Within Missouri, stormwater runoff is addressed by MoDOT's Sediment and Erosion Control Program and these standards would be used to address this concern during construction. Similarly, AHTD standards or site-specific details would be developed for erosion control in Arkansas.

During or after construction, stormwater runoff from the roadway right-of-way can potentially impact immediately adjacent private wells. Private wells within the right-of-way would be located, mapped and protected until closure by the respective highway agencies in accordance with their standard specifications.

For construction activities in Missouri, the Missouri Department of Conservation (MDC) has stated that best management practices should be utilized to keep the impacts to the aquatic environment to a minimum. These best management practices, as outlined by the MDC, include conformance to the State Channel Modification Guidelines when altering channels or relocating streams; grading and seeding disturbed areas as soon as possible and in compliance with the MDC seeding and planting recommendations; minimizing disturbances to the stream banks and riparian zones; avoiding work in stream channels from the beginning of March to mid June as possible and practicable; and undertaking all necessary precautions to prevent petroleum products from entering streams.

For impacts to wetlands during construction, measures to minimize harm have been discussed in Chapter IV, Section M.

To compare the potential construction-related impacts on water quality for the three "Freeway-Build" Alternatives, the proximity and spatial relationship of the alternative to the existing topography and drainage courses should be considered. Due to the alignment of the Existing Alternative parallel with and adjacent to the Little Sugar Creek floodplain, it is reasonable to assume that the Existing Alternative would have the greatest potential for impacts to water quality during construction. However, since the existing four-lane pavement in Arkansas would be undisturbed except for a few isolated locations, the construction impacts would be reduced. Also, design features have been included to avoid any relocation of the Little Sugar Creek channel or channel bank encroachment. Furthermore, as with all the "Freeway-Build" Alternatives, appropriate sedimentation control measures would be provided during construction.

2. MAINTENANCE OF TRAFFIC

During the construction of the "Freeway-Build" Alternatives, the existing US 71 roadway would need to remain in operation. While the improvements are constructed, additional impacts to the existing roadway would result. Measures would be required as part of the construction to maintain existing traffic services along US 71 as well as along local roads, including local road accesses to US 71.

The maintenance of traffic plan for US 71 would be designed ideally to maintain two lanes of traffic in each direction. As an important route for multi-state traffic, including commercial trucks, it is important that the current capacity of US 71 be maintained during construction. This goal is even more critical considering the number of years the construction period could entail. Depending on the nature of the improvements, whether it is roadway widening associated with the Far West or Near West Alternative or more significant freeway conversion construction associated with the Existing Alternative, the requirements of the traffic maintenance plan would affect the magnitude of the construction impacts. Providing continuous four lanes of traffic during construction would result in greater impacts to the surrounding areas than only providing two lanes -- one lane in each direction. However, the adverse operational impacts to traffic would be considerably less with four lanes. From a construction standpoint, maintaining four lanes would be more expensive. Again, the magnitude of the cost differential would depend on the alternative -- Far West, Near West or Existing.

As a measure of the relative significance of the traffic maintenance issue, it is estimated that traffic delays resulting from two-lane construction zone operations would be approximately two minutes per vehicle per 1.6 km (1.0 mile) of construction under current traffic volumes. This measure of delay would increase over time, depending on when construction is initiated, due to the ongoing growth of traffic in the corridor. Over the course of one year, the aggregation of this delay could reach over 2.1 million hours of delay, depending on the timing and length of the construction. Experience by AHTD in similar situations would suggest that this level of delay and impact would likely be unacceptable on a route as important as US 71.

Though the traffic delays caused by a two-lane detour would likely be prohibitive, the additional costs and physical impacts caused by a four-lane detour would likely be even more detrimental. For the Existing Alternative, maintaining four lanes of traffic would add considerably to the overall construction costs and would increase the direct impacts of the improvements. For these reasons, it was assumed for the purposes of this assessment that the traffic maintenance plans would entail maintaining one lane in each direction along US 71. If it is subsequently determined that maintaining two lanes in each direction is required, some additional costs and temporary construction impacts would result.

Unlike the Existing Alternative, maintaining four lanes in each direction along US 71 for the Far West or Near West Alternatives would not add considerably to the alternatives' construction costs or temporary impacts.

The minor capital improvements associated with the TSM measures for the "No-Build" Alternative would be implemented without measurable impacts on existing traffic.

The standard specifications for MoDOT and AHTD include provisions for traffic control and safety measures and would be utilized for the construction.

a. Relocation Alternatives (Far West and Near West)

General

With either the Near West or Far West Alternative, there would still be a few maintenance of traffic issues for the existing US 71 roadway. The primary concern relates to the southern 3 km (1.9 mi) of existing US 71 that would need to be widened to three lanes in each direction (Sugar Creek Center to US 71/US 71B Interchange). This widening would involve removing the existing shoulder and replacing it with another through-lane and a new outside shoulder. Existing traffic along US 71 would need to be maintained during the construction of the US 71

widening. For the freeway relocation, maintenance of traffic along US 71 would be limited to the southern tie-in location at the US 71/US 71B Interchange. Along the new facility, local roads would be either closed during construction or would have minor detours, depending on the critical nature of the roadway.

US 71 Widening

For the widening of the existing US 71 roadway, since there is currently a curbed median along US 71, it would be difficult to maintain the existing two lanes of traffic in each direction while work is performed on the adjacent outside lanes. If a temporary concrete safety barrier was to be installed between the construction area and the existing travel lanes, it would require either 1.2 m or 1.8 m (4 ft. or 6 ft.) of pavement, depending on whether it was pinned (i.e. when the barrier is connected to the pavement by the use of pins) or unpinned. Assuming 1.2 m (4 ft.) of the existing 7.3 m travel lane width (24 ft.) is utilized for the barrier, two 3.0 m (10 ft.) lanes would remain. This would presumably be an inadequate condition given the existing traffic conditions along US 71, including a significant truck component and high traffic volumes. To maintain two lanes in each direction during construction without reducing the width of the existing 3.7 m (12 ft.) travel lanes, the median would need to be temporarily modified. These temporary modifications of the median, consisting of converting the raised median into a temporary travel lane, would result in additional construction costs and traffic disruptions.

Given that the additional construction costs for median modifications would prohibit maintaining four lanes of traffic during the widening construction, the existing US 71 roadway would be reduced to one travel lane in each direction during construction. Traffic barrels or a safety barrier could be utilized to separate the roadway traffic from the construction area. One advantage of using traffic barrels would be the option of moving the barrels during the non-construction hours to provide four travel lanes. For this option, notes would be included in the construction documents to address the need for temporary slopes at the pavement edges for vertical drop-offs during construction.

In addition to maintenance of traffic along US 71, local access driveways and roadways that intersect with US 71 would need to be maintained during construction. To maintain these access points, entrances would need to be built in two stages. A temporary entrance would need to be built adjacent to the existing entrance so that local traffic can be maintained while the US 71 widening pavement is constructed in front of the existing entrance. Then traffic would be shifted to the new pavement at the current entrance location. The temporary entrance would then be removed.

b. Existing Alternative

General

With the Existing Alternative, the complexities of maintaining existing US 71 traffic and local traffic access are considerably greater than for the other two "Freeway-Build" Alternatives. This is due to the proximity of the improvements to the existing roadway system, particularly US 71, and the high dependency of the region on these facilities for local mobility and access. The direct impacts to the existing US 71 roadway would be along the entire length of US 71 in Arkansas and along those portions in Missouri where the alternative is aligned along the existing roadway. Other issues which affect the complexities of this alternative include the limited space for construction detours, particularly adjacent to the golf courses or developed areas within Bella Vista.

Due to the complexities of the Existing Alternative and the need for active public involvement during construction, a Construction Management Plan could be developed and implemented by AHTD, in coordination with MoDOT, for the improvements through Bella Vista Village. This plan would efficiently manage and coordinate the construction activities to minimize impacts and disruptions to the Village. A critical element of this plan would be a public awareness program to proactively inform the public of the activities and to coordinate the activities with the local concerns. Aspects of this plan could entail construction information in the design public meetings, construction updates and announcements in the local papers and radio, a project phone line, and construction plan brochures or handouts. Details about this plan, if implemented, would be outlined as part of the final design activities.

US 71 Freeway Conversion

For the maintenance of existing traffic during the construction of the Existing Alternative, several traffic control and construction sequencing issues have been identified:

- The golf courses would be sensitive areas where temporary easements for detour construction would be avoided.

- The number of lanes along US 71 to be maintained during construction, two lanes in each direction or one lane in each direction, would affect the traffic maintenance strategies. Existing US 71 is a two-lane facility north of the state line and a four-lane roadway in Arkansas. If a single lane in each direction is acceptable during construction, there may be some areas that local traffic might warrant leaving the outside lanes as temporary acceleration/deceleration lanes.

- For those segments where the new US 71 centerline is concurrent with the existing centerline and profile changes are not required (i.e. the existing pavement would be utilized), the construction would be limited to median improvements and the elimination of driveway accesses. Under these circumstances, numerous sequencing options would be available.

- For those segments where the new US 71 centerline is concurrent with the existing centerline and the roadway profile is to be raised for improved flood protection, additional maintenance of traffic and detour construction costs would be incurred. These segments would require special construction. Staging provisions including temporary retaining walls and temporary pavement for detours.

- For those segments where the existing US 71 roadway curve radius is increased for a better, safer alignment, the construction would create more difficult sequencing situations. Of those segments that require these alignment adjustments, the reverse curves north of Wellington Road would necessitate multiple construction stages and temporary crossovers because of tight right-of-way constraints on both sides.

Because of the tight existing right-of-way and adjacent physical constraints within Arkansas, and because the proposed centerline is either on the existing centerline or crosses both west and east of the existing centerline, it is assumed that one lane of traffic in each direction would be maintained along US 71 during construction.

Wherever the new freeway centerline is concurrent with the existing centerline, the existing typical section allows several scenarios for proposed construction (see Exhibit IV-6). The most

obvious is to move all of the traffic to one side of centerline in Phase 1 while building the opposite side's new inside shoulders and median improvements, including the barrier. In Phase 2, traffic would be moved onto the newly constructed pavement and the other side would then be built. Another option would be similar but would maintain one lane in one direction and two lanes in the other direction. In either case, as part of this sequencing, there would be some intermediate segments required for cross-overs and ramp construction at interchanges. For those sections where the new centerline diverges from the existing centerline, coordination of the sequencing and staging would be required.

In those areas where the US 71 roadway curve radius is being increased in order to lengthen the curve and the realigned roadway crosses and conflicts with the existing roadway (i.e. segment near Wellington Road), the adjacent frontage road would be utilized as the US 71 detour as the US 71 roadway is constructed. As shown in Exhibit IV-7, in Phase 1, traffic would remain on the existing US 71 roadway and the frontage road would be constructed. Upon the completion of the frontage road, the US 71 traffic would be moved to the outside of the existing alignment onto the newly constructed frontage road (Phase 2). During Phase 2, the US 71 roadway realignment would be constructed and the old US 71 pavement would be obliterated. In Phase 3, the US 71 traffic would be moved back to the new US 71 alignment and the frontage road improvements would be finalized.

For those US 71 realignment segments which would not have an adjacent frontage road or where the realignment does not cross the existing roadway, such as the segment at the state line, at the US 71/Route 340 Interchange, the segment adjacent to Berksdale Golf Course immediately north of Riordan Road, and the segment just south of Sugar Creek Center, a two stage construction sequencing would be utilized. In Phase 1, US 71 traffic would be moved to the two lanes on the outside of the existing roadway curve, using one lane of traffic in each direction. During Phase 1, the two new lanes on the inside of the curve would be constructed. In Phase 2, the traffic would be moved to the newly constructed lanes and the existing two lanes on the outside of the curve would be obliterated. Upon the completion of the two new lanes on the outside of the curve, traffic would then utilize the new four-lane pavement.

At the new interchange areas, a different construction-staging plan would be utilized. At the Kingsland Drive Interchange, since the existing US 71 pavement would not be realigned through the interchange area, US 71 traffic would be maintained by simply reducing the number of lanes to one lane in each direction and detouring the traffic on the existing pavement. In the case of the interchanges at Sugar Creek Center and US 71B, since the US 71 mainline would be realigned in these areas, the ramps would need to be constructed first to provide detours while the US 71 mainline improvements are constructed.

During the construction of the US 71 improvements, local access would need to be maintained. This would be accomplished in general by constructing the frontage roads first, before the US 71 mainline improvements are initiated.

V. Relationship of Local Short-Term Uses Vs. Long-Term Productivity

1. "NO-BUILD" ALTERNATIVE

The "No-Build" Alternative would result in minimal changes to the local short-term use of land and resources. This scenario would include routine maintenance activities, TSM improvements and any improvements made by local entities, such as cities, counties or the private sector,

including developers and property owners who wish to improve access to their properties. The "No-Build" Alternative would have minimal impact on local short-term uses through localized TSM projects. The "No-Build" would be expected to have negative impacts on long-term productivity relative to the Highway-Build alternatives. Negative impacts include increases in vehicle delay, particularly in Bella Vista, and increases in the number of accidents as vehicle kilometers (miles) of travel continue to increase without any substantial roadway improvements.

2. "FREEWAY-BUILD" ALTERNATIVES

The highway-build alternatives would result in disbenefits to local short-term uses and significant benefits to long-term productivity. The highway-build alternatives would impact local land uses, resulting in displacements of residents and businesses and changes in access. The Near West Alternative impacts at least two times as many residences as the Far West and Existing Alternatives. The Existing Alternative impacts at least three times as many businesses as the Near West and Far West Alternatives. The Existing Alternative impacts at least three times as many public facilities as the Near West and Far West Alternatives.

The construction of any of the highway-build alternatives would, however, enhance long-term productivity by reducing delay and excess fuel consumption and increasing safety. To the extent that the resources conserved through improved travel efficiency are invested in more productive uses, long-term productivity would be impacted in a positive way.

W. Irreversible and Irretrievable Commitment of Resources

1. "NO-BUILD" ALTERNATIVE

The "No-Build" Alternative would be expected to result in increases in vehicle delay, particularly in the Bella Vista Community, and an increase in the number of accidents as vehicle kilometers of travel continue to increase. Increases in vehicle delay would result in lost time and energy. Increases in accidents would result in property damage, personal injury and lost lives. In addition, lost work productivity and increased expenditures for medical care could also be expected.

2. "FREEWAY-BUILD" ALTERNATIVES

The highway-build alternatives would consume substantial resources, including natural resources, both materials and energy, human resources and financial resources. These resources cannot effectively be recovered once they have been expended for the construction. The man-hours expended for the design and construction cannot be reclaimed, nor can the energy required for construction. The materials used in the construction may be, in some cases, recycled, but not without incurring additional and substantial costs.

Construction of any of the highway-build alternatives would also require conversion of land from its present use to use as a road or right-of-way. The Far West Alternative would require the greatest conversion of land to highway right-of-way. The impact of this conversion depends to some extent on the prior converted use, mainly the extent to which it was developed. Although it is possible for the land to be restored if the road is removed, restoration would be expected to incur substantial expenditures. Furthermore, since most land is subject to taxation based on its intrinsic value, current use and condition, conversion of land to use as a road or road right-of-way results in a lost opportunity cost, the magnitude of which is equal to the tax revenue that

would result if the land were not being used for a roadway. However, this effect is mitigated to the extent that new development or increased value of land adjacent to the roadway increases in value and offsets the loss of revenue from conversion of the land used for the road and right-of-way.

The commitment of the resources required for the construction of any of the highway-build alternatives is warranted on the presumption that the improvement of US 71 would contribute to the safety and economic welfare of residents in the Study Area, the states of Missouri and Arkansas, as well as those traveling from other parts of the country.

X. Public Lands

The proposed action would not impact any public lands since there are no public lands located within the Far West Corridor, Near West Corridor and the Existing Corridor. The "No-Build" Alternative and the "Freeway-Build" Alternatives would have no direct impact or functional impact on any public lands.

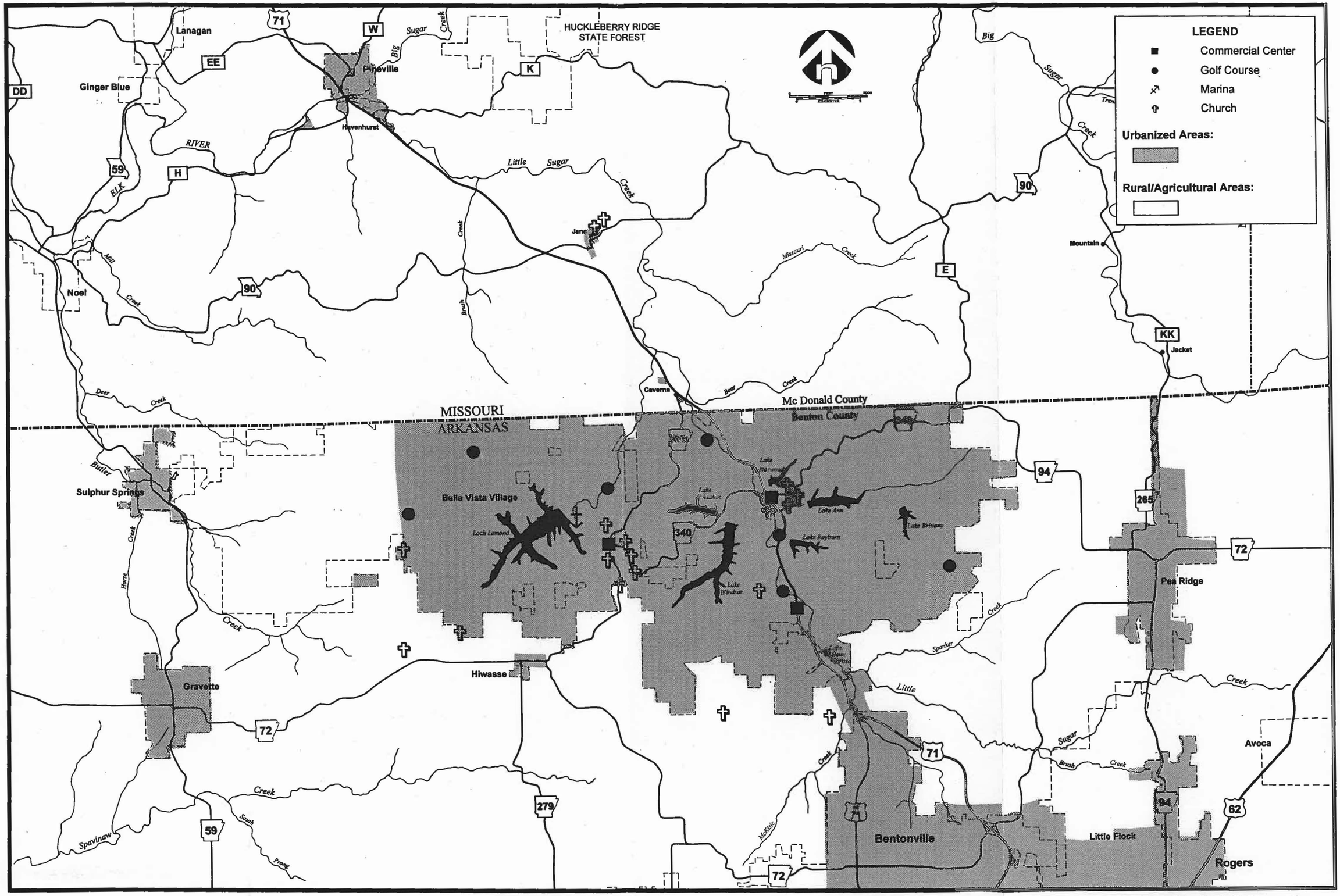


Exhibit IV-1 "No-Build" Alternative
2020 Land Use

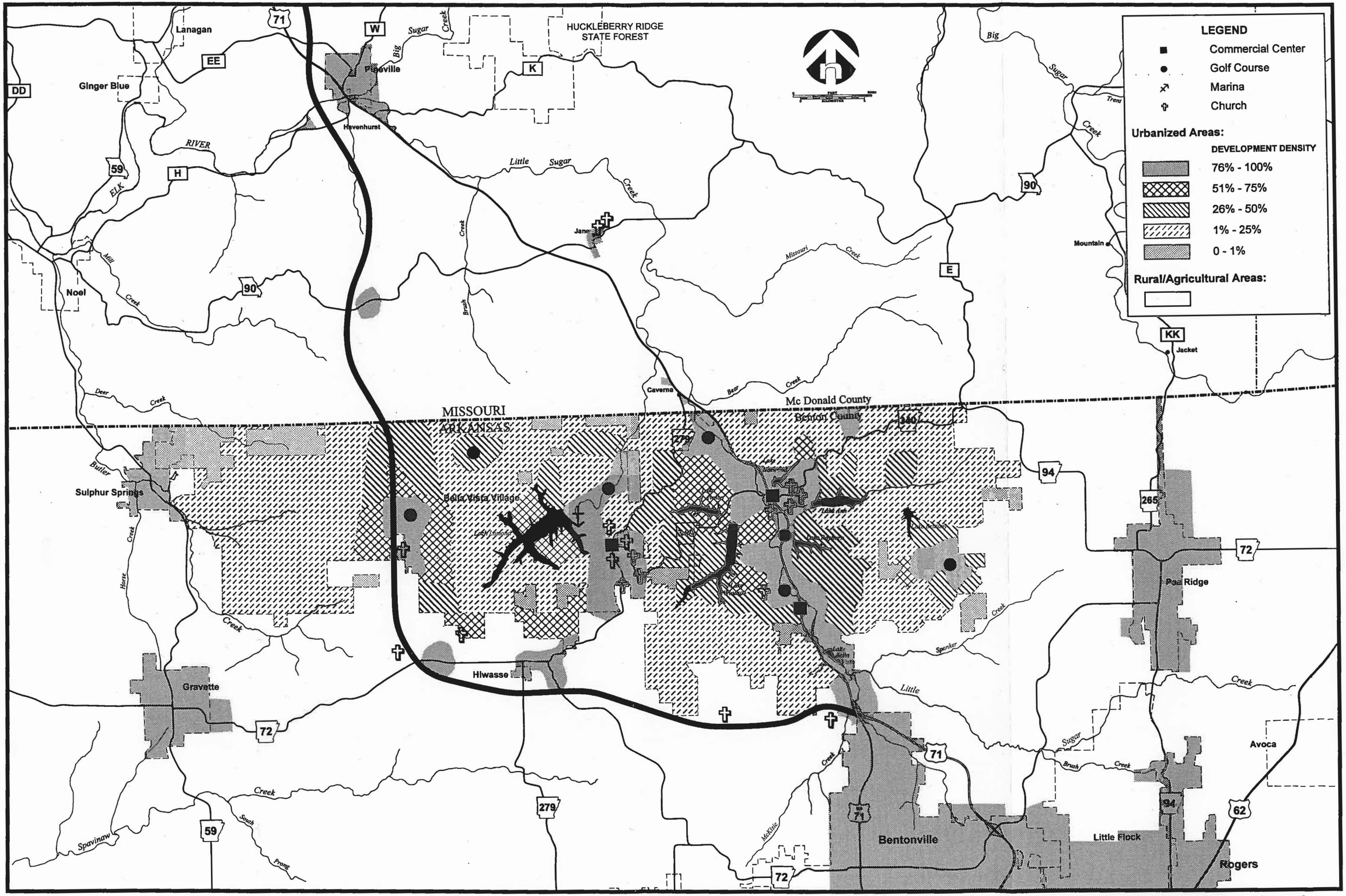


Exhibit IV-2 Far West Alternative
2020 Land Use

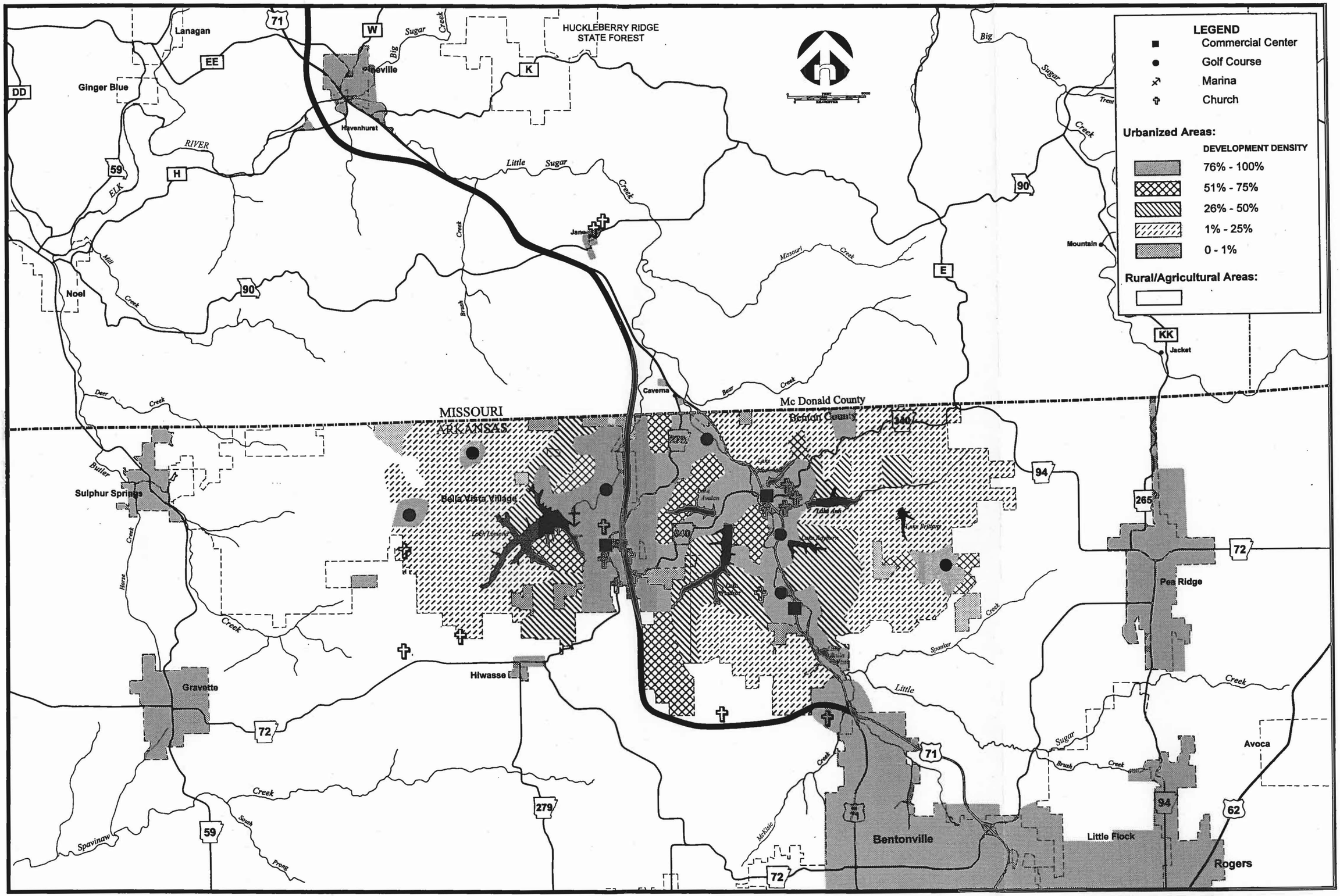


Exhibit IV-3 Near West Alternative

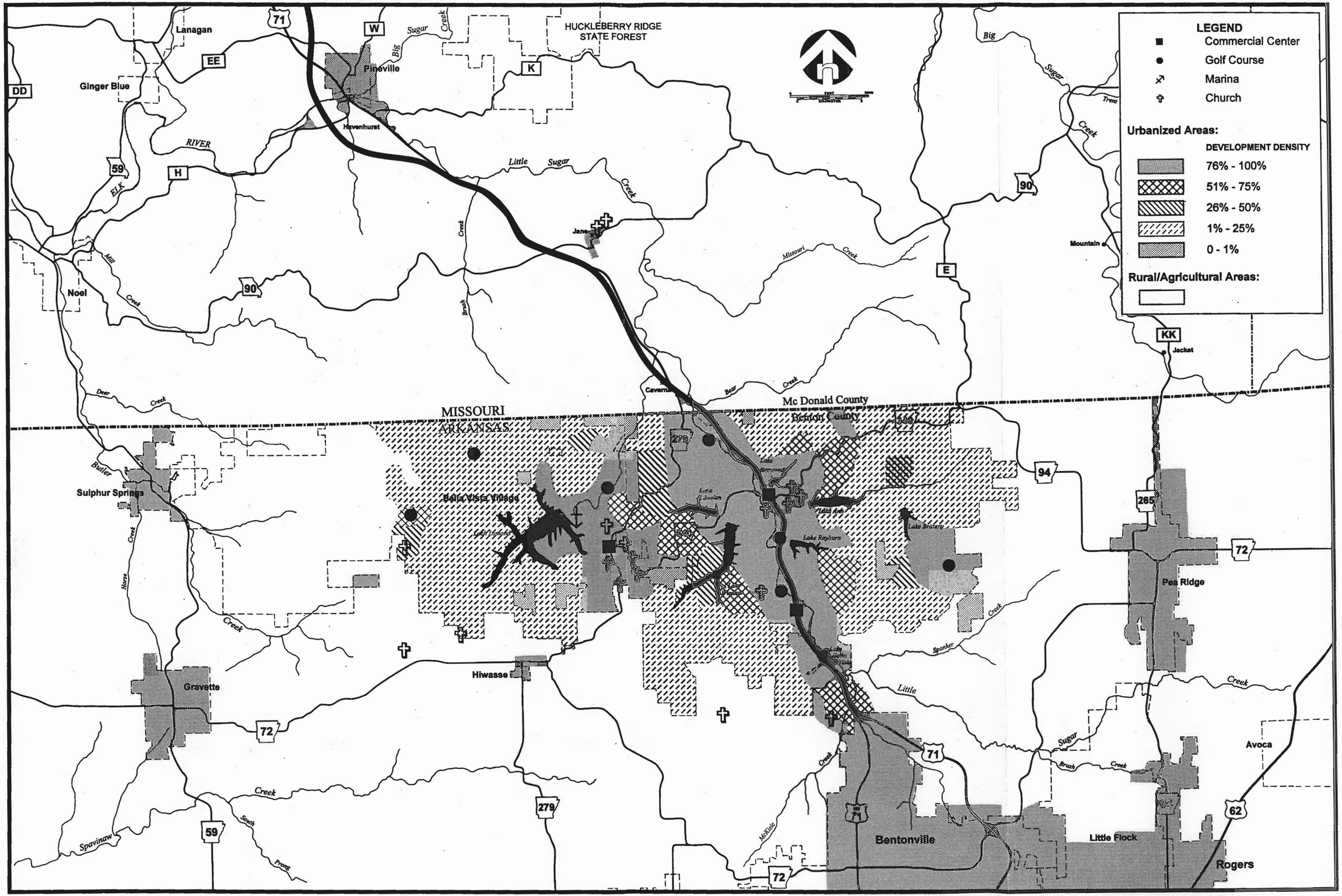
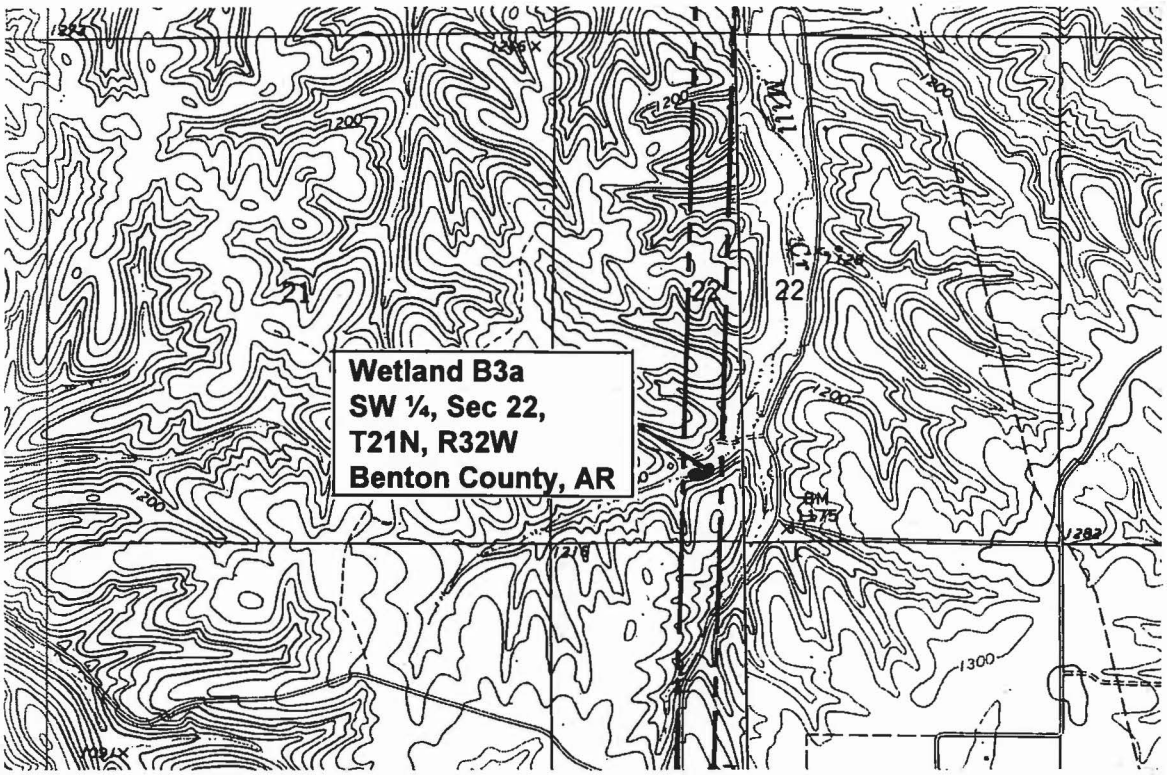


Exhibit IV-4 Existing Alternative
2020 Land Use



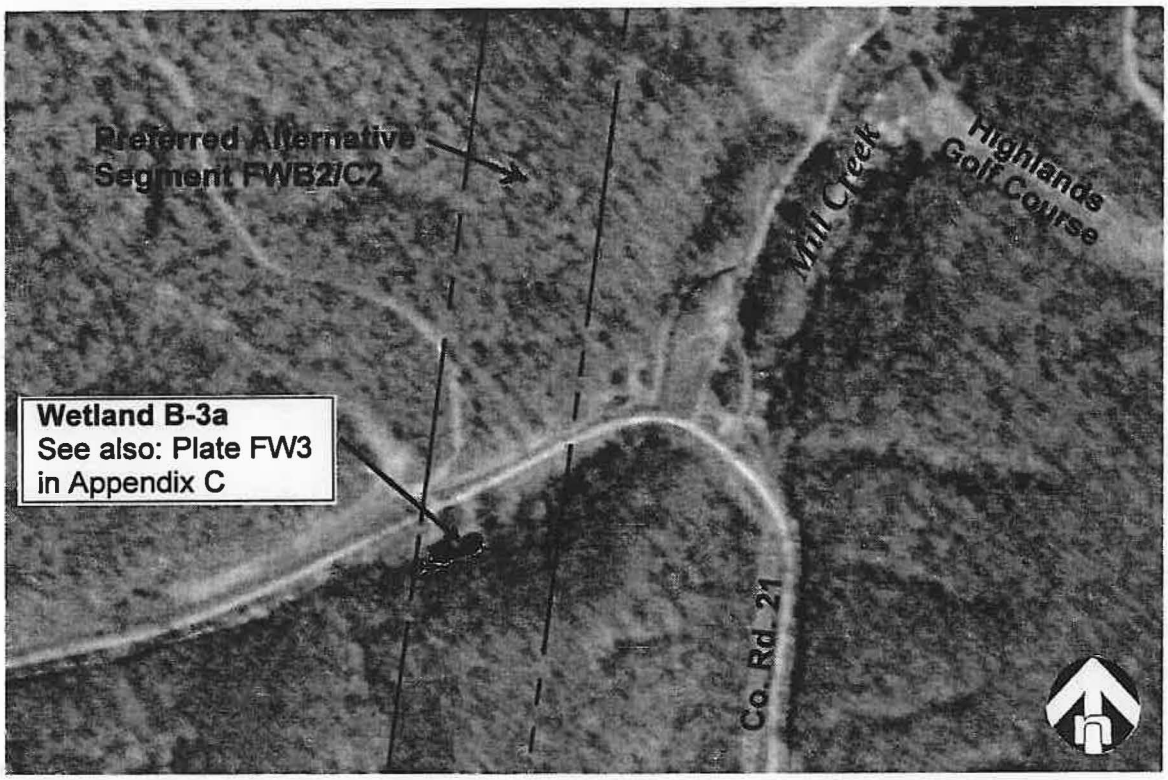
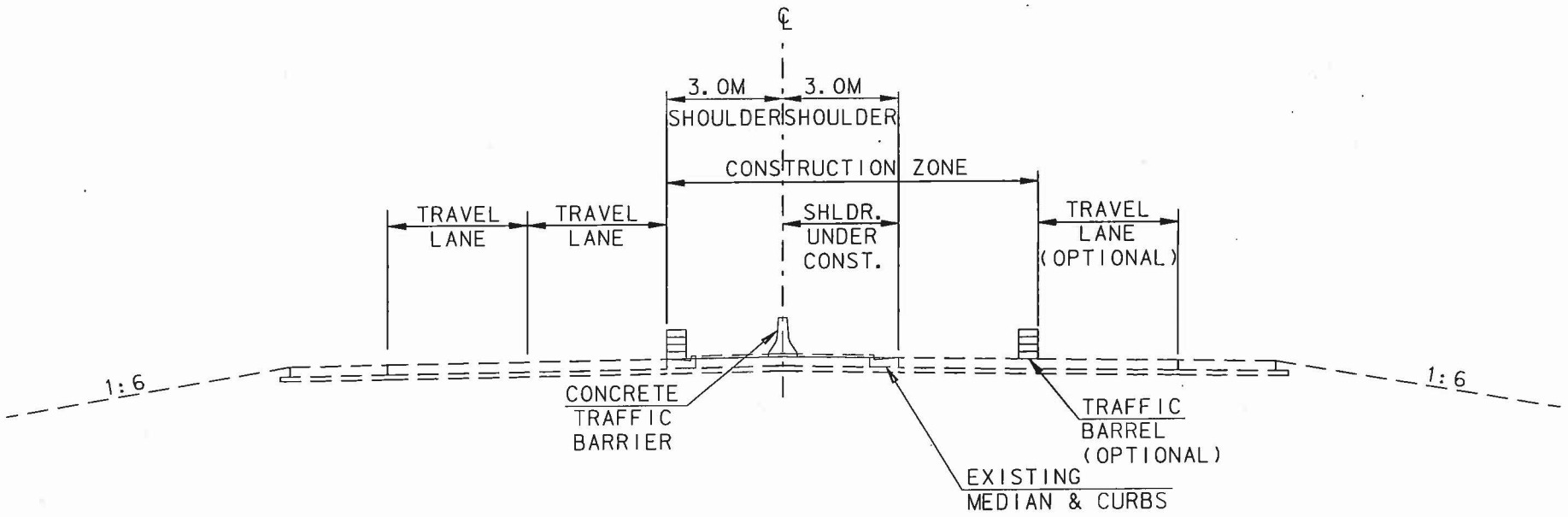


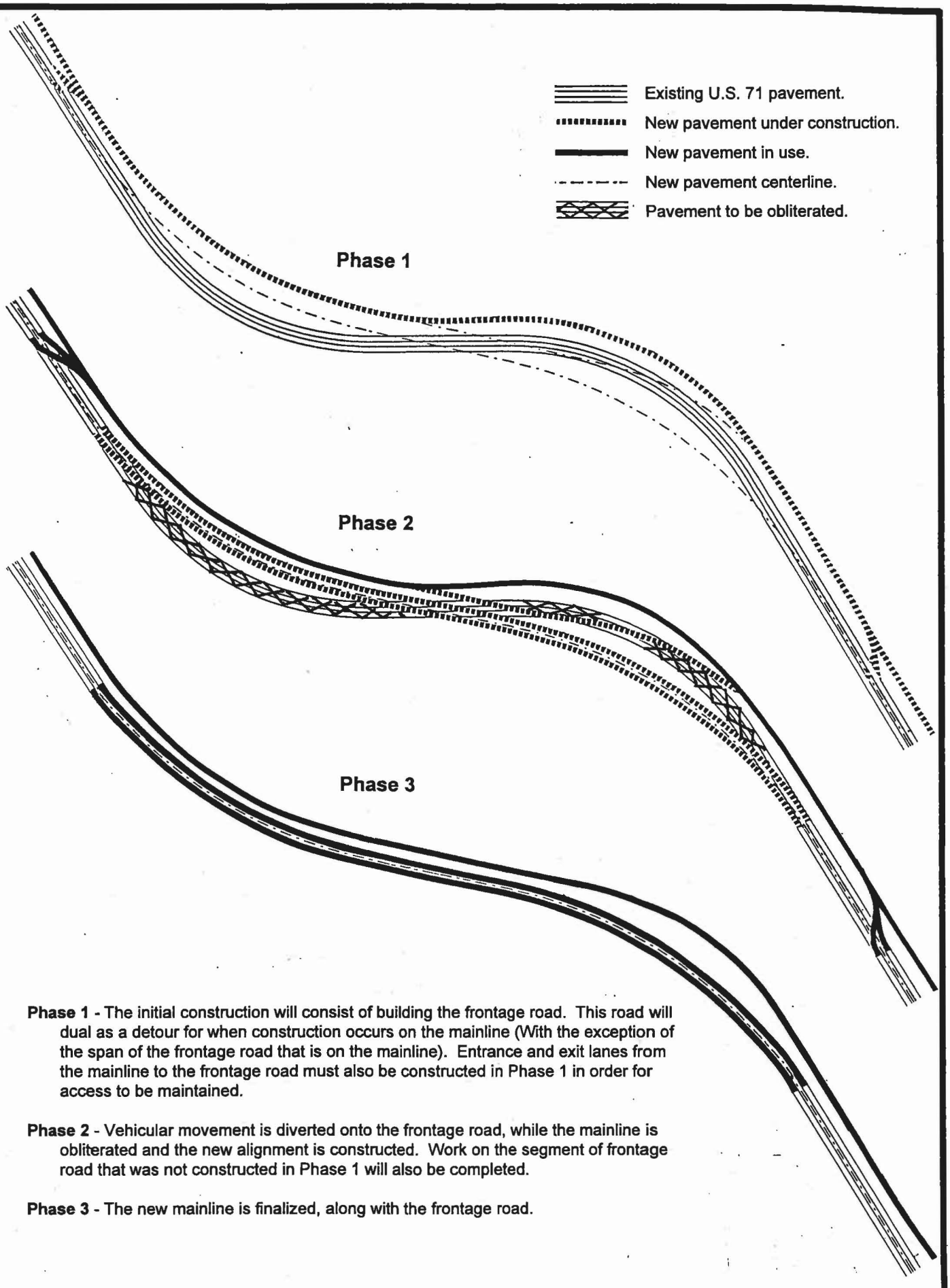
Exhibit IV-5 Wetland Location



US 71 MEDIAN REPLACEMENT

Shoulder and Median Construction

Exhibit IV-6 US 71 Median Replacement



Phase 1 - The initial construction will consist of building the frontage road. This road will dual as a detour for when construction occurs on the mainline (With the exception of the span of the frontage road that is on the mainline). Entrance and exit lanes from the mainline to the frontage road must also be constructed in Phase 1 in order for access to be maintained.

Phase 2 - Vehicular movement is diverted onto the frontage road, while the mainline is obliterated and the new alignment is constructed. Work on the segment of frontage road that was not constructed in Phase 1 will also be completed.

Phase 3 - The new mainline is finalized, along with the frontage road.

Exhibit IV-7 US 71 Realignment
Maintenance of Traffic Plan

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The Honorable Randy S. Koontz
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The Honorable Linda Levine
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The Hornorable Larry E. Patrick
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Rogers, AR 72756

The Honorable Shirley Borhauer
Justice
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Bentonville, AR 72712

The Honorable Terry Coberly
Mayor
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The Honorable Robert Evans
Justice
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203 E. Central
Bentonville, AR 72712

The Honorable Sheryll Harbaugh
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The Honorable Harris Steele
Mayor
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The Honorable Bonnie Ramsey
Mayor
City of Bethel Heights
530 Sunrise Drive
Springdale, AR 72765

The Honorable Steve Womack
Mayor
City of Rogers
300 West Poplar
Rogers, AR 72756

The Honorable Lida Schnitzer
Mayor
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Henry Smith
Commissioner
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The Honorable Russell Spicer
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Bentonville, AR 72712

The Honorable Tim Summers
Justice
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The Honorable M.L. Van Poucke
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E. COPIES AVAILABLE FOR PUBLIC VIEWING

- *Benton County*

  Bentonville/Bella Vista Chamber of Commerce
  412 South Main
  Bentonville, AR 72712
  Attn. Curt Loyd, President
  (2 copies)

  Hiwasse Country Store
  13471 W. Hwy. 72
  Hiwasse, AR 72739
  Attn. Mary Spears
  (2 copies)

- *Bella Vista*

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  Bella Vista Village Property Owners Association
  101 Town Center
  Bella Vista, AR 72714
  Attn. Billie Dooley, Administrative Secretary
  (2 copies)

  Bella Vista Townhouse Association
  2 Cora Circle
  Bella Vista, AR 72712
  Attn. Jack Wisner

- *McDonald County*

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  Attn. Joyce
  (2 Copies)

  Pineville City Hall
  P.O. Box 592
  Pineville, MO 64856
  Attn. Marilyn Carnell, Mayor
  (2 copies)

Chapter VII - Comments and Coordination

The Arkansas Highway and Transportation Department (AHTD), along with the Missouri Department of Transportation (MoDOT) and the Federal Highway Administration (FHWA), have provided several opportunities for input on the study of US 71 from Bella Vista, Arkansas to Pineville, Missouri from the general public and resource agencies. This chapter summarizes the public involvement and agency coordination programs carried out prior to the release of the Final Environmental Impact Statement (EIS).

A. Public Involvement

Plans to involve the public in the study of US 71 began at its inception. The public involvement program for US 71 was structured to; (1) maximize effectiveness in communicating with the public, (2) make record of and respond to the key issues and concerns of the various publics involved, and (3) achieve awareness of public and agency comment on the improvement strategy recommended.

A detailed public involvement program was developed which included many activities designed to meet the goals stated above. The program was developed to deal with some unusual elements of this particular study; two states involved in one process, a long history of discussion about improvement to US 71, and a previously-approved EIS on the Missouri side of the state line. Dealing with those issues and others that emerged throughout the study process was handled through the public involvement program discussed below.

1. MEETINGS

a. Information Gathering Meetings

Members of the US 71 Project Team met with several business and community leaders before embarking on the study. These meetings were held to gather information about the general character of the Bella Vista Village and Pineville communities and helped the team in determining the most appropriate activities for involving the public in the study process. The meetings also gave the team an opportunity to share initial information about the purpose, goals and objectives of the study. Meetings were held in May, 1996 with:

- Neff Basore, President, Bella Vista Village
- Marilyn Carnell, Mayor, Pineville, Missouri
- Jackie Crabtree, Mayor, Pea Ridge, Arkansas
- Gene Groseclos, Director of Community Affairs, Bella Vista Village
- Howard Hellerstedt, President/General Manager, Bella Vista Village Property Owners Association
- George Hutchins, Chairman of the Board, Bella Vista Village Property Owners Association
- Uvalde and Carol Lindsey, Ozark International Consultants on behalf of the Northwest Arkansas Council

- Curt Loyd, Executive Director, Bentonville/Bella Vista Chamber of Commerce
- Henry Smith, Commissioner, McDonald County, Missouri
- Bill Wilson, Presiding Commissioner, McDonald County, Missouri
- Larry Wood, Executive Director, Northwest Arkansas Regional Planning Commission

b. Public Meetings

Three public meetings were held to share study information with the community; Pre-Location, Preliminary Alternatives, and Design Information. All meetings were held at Riordan Hall in Bella Vista Village, which after extensive investigation, proved to be the only suitable location for handling the amount of people expected.

Pre-location Meeting

The Pre-location Meeting, held on July 9, 1996, introduced the project's goals and objectives and served to set a tone of openness, accessibility and a general atmosphere of information exchange. At the meeting, public comments were solicited regarding transportation-related problems on US 71 in the Bella Vista Village and Pineville areas. Information was shared regarding the four general corridors where an improvement to US 71 might be possible; a far western bypass, a near western bypass, an improvement along the existing route, and an eastern bypass. Meeting handouts included a newsletter, welcome sheet, study process flowchart, list of exhibits and a comment form. The five-hour meeting was conducted in an open-house format and a sign-in table was provided for people to add their name to the project mailing list. The meeting was staffed by 16 members of the Project Team, including representatives of AHTD, MoDOT and FHWA. Approximately 800 people attended the Pre-location Meeting and 165 written comments were received.

Preliminary Alternatives Meeting

The Preliminary Alternatives Meeting was held on December 9, 1996 and introduced the public to the preliminary alternatives established for improving or relocating US 71. The alternatives included Far Western and Near Western bypass routes, an improvement along the existing route, and an East bypass route. Alternatives were shown on large scale photographic base maps so members of the public could clearly identify locations of interest and determine how they might be affected by an improvement alternative. At this meeting, initial screening information was shared with the public. This information showed that the East bypass route would not serve the purpose and need of the project and therefore had been eliminated from consideration. Meeting handouts included a meeting overview, list of exhibits, study evaluation process flowchart, study newsletter and a comment form. The six-hour meeting was conducted in an open-house format and a sign-in table was provided for people to add their name to the project mailing list. The meeting was staffed by 18 members of the Project Team, including representatives of AHTD, MoDOT and FHWA. Approximately 550 people attended the Preliminary Alternatives Meeting and 181 written comments were received.

Design Information Meeting

Because of an inaccurate public perception of certain proposed design options, a third public meeting was scheduled. The Design Information Meeting was held on March 6, 1997. The purpose of the meeting was to provide a "snapshot" of the study in progress, and to give people an opportunity to see the design options being considered for each of the remaining improvement corridors: the Far West, Near West and Existing. Two handouts were provided to meeting attendees; a welcome sheet reviewing the format for the meeting, and an exhibit index providing a guide to the exhibits placed throughout the room. The meeting was staffed by 15 members of the Project Team including, representatives of AHTD, MoDOT and FHWA. A sign-in table was provided for people not already on the project mailing list. Three identical presentations were given at 1:00 P.M., 3:00 P.M. and 6:00 P.M., with each followed by an open house session where exhibits were displayed and questions were answered. The presentation featured a slide show created from digital images that provided a "walk through" of each remaining alternative. Areas of concern such as the location of access points to the route and amenities that may be affected were discussed. Slides were also shown displaying images of an elevated structure similar to that which may be considered for a section of US 71 through Bella Vista Village. The open house featured exhibits consisting of a series of maps shown on an aerial photographic base. Approximately 1,000 people attended the meeting. One hundred seventy-eight (178) comment forms were collected at the meeting, and an additional 353 were received through the post office box.

c. Location Public Hearing

On Thursday, May 21, 1998, from 3:00 p.m. to 8:00 p.m., the Arkansas Highway and Transportation Department, Missouri Department of Transportation and the Federal Highway Administration held a public hearing on the location of the US 71 improvements between Bella Vista and Pineville. Approximately 150 people attended the five-hour hearing, which was held at Riordan Hall in Bella Vista.

An open house format was used for the public hearing. This format allowed attendees to review project information at their own pace and ask questions of approximately 20 study team representatives (including AHTD, MoDOT and FHWA personnel) on a one-on-one basis. Attendees could visit any or all of the information stands, which included the following:

- Study History
- Ultimate Improvements
- Interim Improvements
- Assessment
- Recommendation
- Comments

Each station included an introductory exhibit board explaining what could be learned at the station, as well as other boards that included maps, graphs and photographs to help attendees understand the project. In addition to the stations listed above, three other areas were available; one table staffed by AHTD and MoDOT personnel; one table staffed by FHWA personnel, and one table with copies of the Draft EIS.

Prior to accessing the information stations, attendees were asked to sign in and were given handouts including meeting instructions, and a room layout. Also available were copies of the most recent newsletter that included information about the preferred alternative, Draft EIS availability and public hearing. The newsletter was mailed to all persons on the project database in early April. After signing in, attendees were free to visit the information stations of their choice.

People could comment for the official hearing record either in writing or verbally. Comment forms were available, as were two court reporters who recorded oral comments verbatim. In addition to submitting written comments at the hearing, people could mail written comments to the study's special post office box through June 5, 1998.

A total of 71 comments were received between the publication of the Draft EIS and June 5. Of those:

- 17 were verbal comments collected by the public hearing transcribers,
- 54 were written comments received at the public hearing or by mail before the June 5th deadline. Of the 54 written comments, 20 were questionnaires created and distributed by a private citizen in the area.

d. Other Meetings

In addition to the information gathering meetings, the three public meetings, and the location public hearing, the Project Team made itself available to other groups interested in learning more about the US 71 Location Study.

One such occasion was a meeting held with officials of Cooper Communities, Inc. (CCI). The meeting was held at CCI headquarters on February 21, 1997. During the meeting, members of the Project Team shared design options being considered in the three remaining corridors; the Far West, Near West and Existing.

On March 14, 1997, Jerry Mugg of the Project Team made a presentation to the Northwest Arkansas Homebuilders Association. The presentation was held at the Ramada Inn in Bentonville and centered on the design options being considered in the three remaining corridors: the Far West, Near West, and Existing.

On April 2, 1997, members of the US 71 Project Team met with two members of Senator Bumpers' staff; Nancy Kelley from Washington and Pat Williams from Little Rock. Also present were Lynn Malbrough and Tom Harrell of AHTD. The meeting was held at the Bella Vista Village Country Club and served to familiarize the Senator's staff with the US 71 study. Several issues were discussed, including the alternatives being considered, the selection process, public involvement opportunities, and public input gathered to date.

2. CORRIDOR ADVISORY COUNCIL

An advisory group of area residents was convened to assist in the US 71 Study process. The group consisted of 17 members and 11 alternate members representing many jurisdictions and organizations from both sides of the state line.

The purpose of the CAC was to review information at key points in the study, comment on the study as it developed, and serve as a communications link between the Project Team and the community at large. A listing of the US 71 CAC members is shown in Table VII-1. A listing of the alternate members is shown in Table VII-2.

TABLE VII-1
US 71 CORRIDOR ADVISORY COUNCIL MEMBERSHIP LIST

Contact Person	Position	Address	Phone
Marilyn Carnell	Mayor City of Pineville	P.O. Box 592 Pineville, MO 64856	(417) 223-4368
Bob Corcoran	Mayor City of Anderson	City Hall Anderson, MO 64831	(417) 845-6389
Jackie Crabtree	Mayor City of Pea Ridge	P.O. Box 29 Pea Ridge, AR 72751	(501) 451-1122
Dan Harmon	Resident City of Noel	P.O. Box 465 Noel, MO 64857	(417) 475-3191
Howard Hellerstedt	President/General Mgr. Bella Vista Village Property Owners Assn.	101 Town Center Bella Vista, AR 72714	(501) 855-8000
Lewis Holloway	Superintendent, Bentonville Public Schools	400 NW 2nd Street Bentonville, AR 72712	(501) 271-1100
Loren Holloway	Fire Chief Hiwasse Fire Dept.	13709 W. Hwy. 72 Hiwasse, AR 72739	(501) 787-5762
Bill Howard	Mayor City of Gravette	P.O. Box 130 Gravette, AR 72736	(501) 787-5757
Anna Lee Janisch	Resident City of Sulphur Springs	P.O. Box 97 Sulphur Springs, AR 72768	(501) 289-3591
Sherman Kinyon	Mayor City of Centerton	P.O. Box 208 Centerton, AR 72719	(501) 795-2750
Curt Loyd	President/CEO Bentonville/Bella Vista Chamber of Commerce	412 South Main Street Bentonville, AR 72712	(510) 273-2841
Don O'Brien	Resident McDonald County, MO	P.O. Box 734 Pineville, MO 64856	(417) 223-4391
Tom Rife	Resident Bentonville, AR	111 NW 2nd Street Bentonville, AR 72712	(501) 273-7406
Michael Rustman	Superintendent of Schools, McDonald County R-1	P.O. Box 378 Anderson, MO 64831	(417) 845-3321

Don Schlessman	County Sheriff, McDonald County	P.O. Box 775 Pineville, MO 64856	(417) 223-4318
Jack Wisner	General Manager, Bella Vista Townhouse Assn.	P.O. Box 5301 Bella Vista, AR 72714	(501) 855-9328
Larry Wood	Director, Northwest Arkansas Regional Planning Commission	406 N. Shiloh Springdale, AR 72765	(501) 751-7125

TABLE VII-2
US 71 CORRIDOR ADVISORY COUNCIL ALTERNATE MEMBERSHIP LIST

Contact Person	Position	Address	Phone
James Carroll for Dan Harmon	Mayor City of Noel	P.O. Box 1010 Noel, MO 64854	(417) 475-3696
Joe Chappelle for Tom Rife	Resident Bentonville, AR	5104 Townview Road Bentonville, AR 72712	(501) 273-7004
Sandy Easley for Jackie Crabtree	Recorder/Treasurer City of Pea Ridge	P.O. Box 29 Pea Ridge, AR 72751	(501) 451-1122
Kitty Eoff for Jack Wisner	Office Manager, Bella Vista Townhouse Assn.	P.O. Box 5301 Bella Vista, AR 72714	(501) 855-9328
Gordon Hall for Bill Howard	City Councilman City of Gravette	P.O. Box 130 Gravette, AR 72736	(501) 787-5757
Bob Harlan for Larry Wood	Director of Regional Transportation, Northwest Arkansas Regional Planning Commission	406 N. Shiloh Springdale, AR 72765	(501) 751-7125
Joe Harmon for Michael Rustman	Director of Transportation, McDonald Co. Schools	P.O. Box 378 Anderson, MO 64831	(417) 845-3321
Joe Peters for Curt Loyd	Board Member, Bentonville/Bella Vista Chamber of Commerce	2 Somerton Lane Bella Vista, AR 72714	(501) 855-2054
Robert Roberson for Anna Lee Janisch	Resident Sulphur Springs	14582 Strawberry Ridge Rd. Sulphur Springs, AR 72768	(501) 298-3574
A.J. Stroud for Sherman Kinyon	Alderman City of Centerton	1285 W. Centerton Blvd. Centerton, AR 72719	(501) 795-2750
Mike Taggart for Howard Hellerstedt	Public Works Administrator, Bella Vista Village Property Owners Association	51 Huntley Lane Bella Vista, AR 72714	(501) 855-8000

The CAC met at key intervals throughout the study to review information and offer their input. Meetings were held at various locations throughout the Study Area. All CAC members were given a three-ring binder to hold the agenda and handouts distributed at each meeting. Meeting summaries were prepared and distributed to all CAC members after each meeting.

The first meeting of the CAC was held on August 27, 1996 and served to introduce members to the study; its process, goals, objective and schedule. The meeting also outlined the preliminary traffic, economic, and environmental information gathered by the Project Team. Nine members and four alternate members attended.

The second CAC meeting was held on October 10, 1996. The focus of the meeting was to present the preliminary alternatives and explain the screening process. Information was presented on environmental aspects of the study and the public involvement process. Eleven members and two alternate members attended.

The third meeting of the CAC was held on December 5, 1996 and served as a preview to the second public meeting. Traffic data and other initial screening information were discussed. This information showed that the East bypass route would not serve the purpose and need of the project and therefore had been eliminated from consideration. Six members and two alternate members attended.

The fourth CAC meeting was held on March 3, 1997. The meeting focused on the design options being considered in each of the remaining improvement corridors; the Far West, Near West and Existing. Maps were displayed to provide a "walk-through" of each of the design options, noting areas of access control. Slides illustrating elevated structures were also shown. Nine members and three alternate members attended.

A fifth CAC meeting was held on April 14, 1998 for the purposes of describing the detailed evaluation of the reasonable alternatives, as presented in the Draft EIS, and discussing the preparations for the location public hearing.

3. PUBLIC OFFICIALS COMMUNICATIONS

With the assistance of AHTD and MoDOT, the Project Team identified a number of public officials who could have an interest in the study's outcome. In early July, 1996, the officials were sent an introductory letter and package containing general study information. A second informational mailing was sent to the officials in mid-November. Officials were instructed to contact the US 71 Project Office with any questions or concerns about the study.

Additionally, two briefings were held to update public officials on the status of the US 71 study. The briefings were held in conjunction with the third and fourth CAC meetings. The first briefing was held on December 5, 1997 at the Pea Ridge Community Room. Troy Henson, McDonald County Commissioner, and Gary Marble, Missouri State Representative, attended. The briefing provided an overview of the preliminary alternatives and shared initial screening data used to eliminate the East Corridor from further consideration. The second briefing was held on March 5 and detailed the design options being considered in each of the remaining improvement corridors; the Far West, Near West and Existing. Commissioner Troy Henson, and Mayor Sherman Kinyon of Centerton (CAC member) attended. A listing of the US 71 Public Officials Contacts is

shown in Table VII-3. This list was updated throughout the study to address changes in office due to local and state elections.

TABLE VII-3
US 71 PUBLIC OFFICIALS CONTACT LIST

Contact Person	Position	Address	Phone
Cary Anderson	Justice of the Peace Benton County	P.O. Box 685 Decatur, AR 72722	(501) 752-8174
Mary Badgett	Justice of the Peace Benton County	102 Henry Street Bentonville, AR 72712	(501) 273-3177
Charles Bilby	Justice of the Peace Benton County	P.O. Box 647 Siloam Springs, AR 72761	(501) 524-8022
David Bisbee	Representative Arkansas House of Representatives	14068 Pyramid Drive Rogers, AR 72756	(501) 636-2516
Fay Boozman, III	Senator Arkansas State Senate	2901 Honeysuckle Lane Rogers, AR 72758	(501) 636-7506
Shirley Borhauer	Justice of the Peace Benton County	23 Kenilworth Drive Bella Vista , AR 72714	(501) 855-9696
John Brown, III	Senator Arkansas State Senate	P.O. Box 1488 Bentonville, AR 72712	(501) 271-7872
C. Randy Bryant	Representative Arkansas House of Representatives	14138 DeGraff Road Rogers, AR 72756	(501) 451-8649
Dale Bumpers	Senator Arkansas United States Senate	229 Dirksen Building Washington, DC 20510	(202) 224-4843
Terry Coberly	Mayor City of Bentonville	115 West Central Bentonville, AR 72712	(501) 271-3112
Robert Evans	Justice of the Peace Benton County	P.O. Box 678 Gravette , AR 72736	(501) 787-5493
Earl Femmer	Justice of the Peace Benton County	2822 Highland Drive Rogers, AR 72756	(501) 631-6533
Jonathan Fitch	Senator Arkansas State Senate	R.R. 1 Hindsville, AR 72738	(501) 789-2608
Charlie Fuqua	Representative Arkansas House of Representatives	3907 Lankford Springdale, AR 72762	(501) 751-1107
Sam Gaskill	Representative Missouri House of Representatives	HCR 79, Box 345 Washburn, MO 65772	(417) 435-2304
Sheryl Harbaugh	Justice of the Peace Benton County	3015 Seminole Drive Rogers, AR 72758	(501) 636-1299

Jerry Harwell	Mayor City of Highfill	162 N. Highfill Gentry, AR 72734	(501) 736-2043
David Hausam	Representative Arkansas House of Representatives	1214 Northeast 10th Bentonville, AR 72712	(501) 444-4009
James Hendren	Representative Arkansas House of Representatives	Route 1, Box 260 Sulphur Springs, AR 72768	(501) 787-6500
Troy Henson	Commissioner McDonald County	P.O. Box 665 Pineville, MO 64856	(417) 223-4717
Tim Hutchinson	Senator Arkansas United States Senate	708 Hart Senate Office Building Washington, DC 20510	(501) 445-5258
Asa Hutchinson	Representative Arkansas United States House of Representatives	1535 Longworth House Office Building Washington, DC 20510	(202) 225-4301
Mark Latham	City Administrator City of Siloam Springs	P.O. Box 80 Siloam Springs, AR 72761	(501) 524-5136
Leo Lynch	Justice of the Peace Benton County	14176 Sugar Creek Road Rogers, AR 72756	(501) 451-8570
Gary Marble	Representative Missouri House of Representatives	Route 5, Box 354-A Neosho, MO 64850	(417) 451-1455
Charles McKinney	Mayor City of Springdale	201 Spring Street Springdale, AR 72764	(501) 750-8114
Anne Miners	Justice of the Peace Benton County	18838 Coppermine Road Rogers, AR 72756	(501) 925-2214
Jeff Moser	Justice of the Peace Benton County	Route 2, Box 294A Rogers, AR 72758	(501) 273-2086
C.L. Osterloh	Mayor City of Sulphur Springs	P.O. Box 145 Sulphur Springs, AR 72768	(501) 298-3218
Bonnie Ramsey	Mayor City of Bethel Heights	530 Sunrise Drive Springdale, AR 72765	(501) 751-7481
John Sampier, Jr.	Mayor City of Rogers	300 West Poplar Rogers, AR 72756	(501) 621-1117
Lida Schnitzer	Mayor City of Gateway	P.O. Box 2 Gateway, AR 72733	(501) 656-3934
Henry Smith	Commissioner McDonald County	P.O. Box 665 Pineville, MO 64856	(417) 223-4717
Russ Spicer	Justice of the Peace Benton County	1740 New Hope Road Rogers, AR 72758	(501) 636-3075
Tim Summers	Justice of the Peace Benton County	1805 Kimberly Place Bentonville, AR 72712	(501) 273-0773

M.L. VanPoucke	Mayor City of Siloam Springs	P.O. Box 80 Siloam Springs, AR 72761	(501) 524-5136
Bill Wilson	Commissioner McDonald County	P.O. Box 665 Pineville, MO 64856	(417) 223-4717
Margaret Wolf	Justice of the Peace Benton County	1315 Forest Drive Rogers, AR 72725	(501) 631-2655

4. NEWSLETTER

Newsletters were published in conjunction with the first and second public meetings and the location public hearing. The newsletters were distributed by mail to persons on the project database, and were provided as handouts at the public meetings. Copies of the newsletters were also available through various local venues including public libraries.

The first newsletter was released in August 1996 and described the study process, goals, objectives and schedule. The issue included information about opportunities for public input, and also included a map of the Study Area.

The second newsletter was released in December 1996 and described the preliminary alternatives for improving or relocating US 71. The newsletter included a map displaying the four improvement corridors, the preliminary alternatives established within each corridor, and those alternatives retained for further consideration. The newsletter also commented on the Corridor Advisory Council and the process of preparing and approving an Environmental Impact Statement.

A third and final newsletter was prepared in conjunction with the public release of the Draft EIS. It was distributed by mail to everyone on the project database and made available at public locations throughout the Study Area. The newsletter presented the assessment and evaluation of the reasonable alternatives. It also provided details regarding the Location Public Hearing. Copies of the three newsletters are included in Appendix K.

5. PROJECT CORRESPONDENCE

Several methods were enacted to establish communication between the public and members of the US 71 Project Team.

A project post office box was established and the address appeared on all communications with the public. All letters to the project office were reviewed and responded to appropriately; questions received a response via a personal letter, and comments that did not require a detailed response were acknowledged via a project postcard. A total of 347 letters were received.

A dedicated project telephone line was established for citizens to call with questions or comments. Telephone protocol established by the Project Team included responding to questions within 24 hours of the initial call. A total of 248 phone calls were received.

A database was created to include the name and address of all persons interested in the US 71 study. The database served as a mailing list for printed materials related to the

study. Names added to the list were those who had written or phoned the project office, and those who had attended a public meeting. Prior to release of the Final EIS, the database included 1,576 names.

6. MEETING NOTICES

Four activities were undertaken in the two weeks prior to each public meeting and the location public hearing to ensure maximum public involvement. These included: placing meeting notice advertisements in area newspapers; placing meeting notice posters in key community locations (grocery stores, beauty shops, etc.) located in the Study Area; sending postcard meeting notices to all persons on the database, and sending news release notices to all area media.

Notices for the July 9, 1996 Pre-location Meeting were prepared and placed on July 3, 1996 in the following newspapers; *Benton County Daily Record, The Morning News, McDonald County Gazette and Bella Vista Weekly Vista*. Notices also ran on Sunday, July 8, 1996 in the *Benton County Daily Record* and the *Morning News*.

Notices for the December 9, 1996 Preliminary Alternatives Meeting were prepared and placed on December 4, 1996 in the following newspapers: *Benton County Daily Record, Siloam Springs Herald-Leader, Bella Vista Weekly Vista, Gravette News Herald, Gentry Courier Journal, Decatur Herald, Rogers Hometown News, The Morning News, and McDonald County Gazette*. Notices also ran on December 8, 1996 in the *Benton County Daily Record* and the *Morning News*.

Notices for the March 6, 1997 Design Information Meeting were prepared and placed on March 5, 1997 in the following newspapers: *Benton County Daily Record, Siloam Springs Herald-Leader, Bella Vista Weekly Vista, Gravette News Herald, Gentry Courier Journal, Decatur Herald, Rogers Hometown News, The Morning News*, and *McDonald County Gazette*.

AHTD and MoDOT published an official public notice for the location public hearing which appeared during the weeks of April 6th and May 13th in the following publications: *The Morning News, The Benton County Daily Record, The McDonald County Gazette,* and *The Weekly Vista*. The date, time, location and format of the hearing, as well as the methods and deadline for making a comment, were publicized through the official notices. This information was also publicized through the third newsletter and a postcard meeting reminder, both of which were sent to all persons on the project database. News releases distributed to area media the week of April 6th, and again the week of May 13th, also publicized the location public hearing.

7. MEDIA RELATIONS

News releases were sent to the local media on several occasions throughout the study. Following are titles of the releases issued and the date they were sent:

- Study of US 71 Improvement Gets Under Way 5/23/96
- Public Input Needed for Study of US 71 6/17/96
- Video Explains US 71 Study Process 7/29/96
- Local Group Assembled to Assist in Highway Study 8/29/96

- Preliminary Alternatives Established for US 71 10/14/96
- Public Meeting to Address Options for US 71 Improvement 11/18/96
- Customer Survey to be Performed at Businesses Along US 71 1/3/97
- Public Meeting to Display More Detail for US 71 Improvement 2/12/97
- Planners Provide Update on US 71 Study 5/27/97
- Short-term Solutions Sought for US 71 9/12/97
- Options for US 71 Narrowed 10/10/97
- US 71 Study Information Available, Public Hearing Scheduled 4/6/98
- US 71 Public Hearing Scheduled for May 21 5/18/98

All releases were sent to the following media:

Newspapers

Benton County Daily Record
Bella Vista Weekly Vista
Arkansas Democrat Gazette
Washington County Observer
The Herald Ledger
McDonald County Gazette
The Morning News
Arkansas Business News
NW Arkansas Times
Van Buren Press Argus Courier
The Joplin Globe

Newspapers (Legal Notice for Public Hearing)

Benton County Daily Record
Gravette News Herald
McDonald County Gazette
The Morning News
The Weekly Vista

Television

KFSM TV-5 - Ft. Smith, AR
KHBS - Ft. Smith, AR

Radio

KJEM / KESE - Bentonville, AR
KAMO - Rogers, AR
KURM - Rogers, AR
KFAY / KKEG - Fayetteville, AR
KLSZ / KAYR - Ft. Smith, KR
KMAG / KWHN - Ft. Smith, AR
KFPW / KBBQ - Ft. Smith, AR
KIX - Joplin, MO
KXML - Carthage, MO
KRPS - Pittsburgh, KS
KBVA - Gravette, AR
KKIX - Fayetteville, AR
KMCK - Fayetteville, AR
KCIZ / KQXK - Fayetteville, AR
KUAO - Siloam Springs, AR
KZKZ / KFSA - Ft. Smith, AR
KTCS - Ft. Smith, AR
KKOW - Pittsburgh, KS
KOCD / KWAS - Joplin, MO
KWXD - Pittsburgh, KS

In addition to news releases, media relations for the US 71 study included holding briefings for the media just prior to each public meeting and the public hearing. This gave members of the media an opportunity to view exhibits and ask questions of Project Team members before the public entered. Briefings were announced through a bulletin at the bottom of news releases announcing public meetings.

The US 71 study received extensive coverage in the local media. Since May, 1996, approximately 150 news articles have addressed the US 71 study. Also generated were numerous letters to the editor as well as editorials in area newspapers.

8. OTHER ACTIVITIES

a. Logo

A visual identity was developed and appeared on study materials whenever feasible. The logo was intended to provide a consistent image for all project materials and draw attention to the information on which it was displayed.



b. Map Displays

Maps and other study information were placed in public locations throughout the Study Area in order to reach those people who were unable to attend a public meeting. Subsequent to the first public meeting, maps of the Study Area and four general improvement corridors were displayed. Subsequent to the second public meeting, maps of the preliminary alternatives, which showed the East Corridor eliminated, were displayed. All maps were mounted and displayed at a large scale on a photographic base. Locations of map displays included Riordan Hall, Bentonville/Bella Vista Chamber of Commerce, Bella Vista Village Property Owners Association, Bella Vista Townhouse Association, McDonald County Public Library, Bella Vista Village Public Library, Hiwasse Country Store, and Pineville City Hall.

c. Information Gathering Phone Calls

At various points throughout the study process, key contacts in the Study Area were consulted regarding how the study was being perceived by the public and what could be done to further facilitate communication. Calls were made to CAC members, as well as other figures in the community including Larry Frost of the Bella Vista Village Property Owners Association, Mayor Marilyn Carnell of Pineville, and Gene Groseclos of Cooper Communities. Information from these calls was helpful in structuring public involvement activities in a way that best suited the community.

9. EIS REVIEW

Draft versions of the EIS were made available for public review prior to the location public hearing. Other materials were also made available including a "guide to the EIS" glossary of terms, photocopies of the summary chapter of the document and comment forms. In addition, all members of the Corridor Advisory Council received a personal copy of the Draft EIS to share with their constituents. Draft EIS public review locations included:

- The McDonald County Public Library
- Pineville City Hall

- The Hiwasse Country Store
- The Bentonville/Bella Vista Chamber of Commerce
- The Bella Vista Property Owners Association
- The Bella Vista Townhouse Association
- The Bella Vista Public Library

Copies of the Draft EIS and other materials were delivered to public review locations on April 6, 1998. Members of the public were given until June 5, 1998 to submit a written comment. Comments about the Draft EIS also could be provided in writing or verbally at the location public hearing. All comments received in response to the Draft EIS are categorized and responded to in Section A.11 of this chapter.

The Final EIS also will be made available for public review.

The availability of and review locations for the Draft EIS and Final EIS were shared with the media through the news releases.

10. SUMMARY OF COMMENTS PRIOR TO DRAFT EIS

A considerable number of public comments were submitted prior to the release of the Draft EIS. The majority of comments received from residents of the Village clearly favored a Far West bypass improvement. Of these comments, many also expressed extreme opposition to using the Existing Route. Reasons cited for this position included the desire to maintain the integrity of the Village and its amenities, particularly the golf courses. Residents also felt upgrading the Existing Route to freeway standards would increase noise and pollution levels. Comments also were made regarding current congestion on the existing route. Residents believed the situation would only get worse, especially if existing US 71 continued to be the only north/south route in the area.

There also was a substantial amount of comments which favored use of the Existing Route. The majority of these came from residents of the Pineville, Missouri and Hiwasse, Arkansas areas, with a handful coming from the Bella Vista Village and Bentonville areas. Reasons cited for favoring use of the Existing Route included cost savings, direct route, and the desire to maintain the integrity of rural farmland, green spaces, and wildlife habitat.

The Near West bypass option received much attention and opposition early in the study, but public comments declined significantly. This may have been due to the public's belief that the only feasible alternatives remaining were those in the Far West and Existing corridors. Although there were few late comments about the Near West options, public input indicates that the majority of people in the area are opposed to them.

Early in the US 71 study, there was measurable support for the East Corridor. Many of those who favored a Far West bypass were also in favor of using the East Corridor, before it was eliminated. That elimination was the focus of significant attention. Letters to the project office suggested the Project Team reconsider an eastern alternative. Some residents believed the East Corridor would provide the most direct route to connect with alternate US 71 near Carthage, Missouri. Efforts were made to explain that MoDOT's previously approved ROD for US 71 improvements already determined that an

alternative along the existing US 71 roadway was preferred north of Pineville and that an eastern bypass which connects with the existing US 71 roadway near Carthage would not be as beneficial. Therefore, the East Corridor was no longer considered as a viable corridor.

11. SUMMARY OF DRAFT EIS AND PUBLIC HEARING COMMENTS

A total of 71 comments were received between the publication of the Draft EIS and June 5. Of those, 17 were verbal comments collected by the public hearing transcribers and 54 were written comments received at the public hearing or by mail before the June 5th deadline. Of the 54 written comments, 20 were questionnaires created and distributed by a private citizen in the area. Table VII-4 categorizes the main issues, concerns and suggestions in the public comments. (The numbers shown do not add to 71 as individuals could be recorded as having more than one comment/concern.)

TABLE VII-4
CATEGORIES OF DRAFT EIS AND LOCATION PUBLIC HEARING COMMENTS AND CONCERNS

COMMENT / CONCERN	NUMBER
◘ Favor Far West Alternative	27
◘ Use Segment C1 of Far West Alternative Rather Than C2	15
◘ Should Use the Existing Route	23
◘ Opposed to Far West Alternative	31
◘ Re-examine Eastern Route	10
◘ No Change Other than Adding Stoplights to Existing US 71	5
◘ Miscellaneous	----

Each category is listed below and followed by a brief summary of the comments made in that category. A generalized response to each comment/concern is provided wherever appropriate.

◘ ***Favor Far West Alternative***

The 27 comments in support of the preferred alternative identify its advantages in terms of fewer displacements of businesses and residents, less impact to area golf courses, greatly reduced congestion, and the best long-term solution for the region as their reasons for support.

- ***Use Segment C1 of Far West Alternative Rather Than C2***

Fifteen people in the area expressed a preference for using segment C1 rather than C2 in the Far West Alternative. These individuals cited noise pollution as their main concern as well as increased traffic in proximity to their homes and the Highlands Golf Course.

Response:

The process of determining the best alignment for a freeway relocation within a segment requires a balancing of the benefits and impacts of the competing alignment options. These benefits and impacts are typically defined in terms of engineering, traffic, environmental and social considerations. Because particular issues may be more important to some than others, it is the overall evaluation of all issues which helps guide the selection process.

The alignment choices in question are located in Segment B/C of the Far West Alternative. Two alternative alignments were identified – FWB1/C1 and FWB2/C2. Alternative FWB2/C2 was selected as the best alternative in the Draft EIS for two primary reasons – lower construction costs and habitat fragmentation.

From an engineering perspective, Alternative FWB2/C2 is favored due to a lower estimated construction cost. FWB2/C2 would be approximately $0.8 million less expensive.

Habitat fragmentation is an ecological issue relating to the potential fragmentation or subdivision impacts of large terrestrial habitat areas. From an environmental standpoint, there are concerns regarding the depletion of large tracts of contiguous wooded areas across the continent due to the activities of man. These large tracts are important habitats for certain wildlife, especially neotropical migratory birds. The measure used for this issue is the number of 202 hectare (500 acre) or greater block tracts of contiguous forested areas which would be directly affected by the project. In the case of the Far West Alternative, FWB2/C2 was selected in part due to its avoidance of these large tracts of wooded areas. FWB1/C1 would directly impact two large blocks of contiguous forest. In addition, due to its closer location to the already developed areas around the Highlands, FWB2/C2 would likely have fewer secondary impacts to the surrounding forested areas.

Unfortunately, due to its closer location to the developed areas of the Highlands, FWB2/C2 would have slightly greater noise impacts – one more NAC receptor and one additional receptor with a "substantial" increase. To address this issue, as well as other related concerns regarding the proximity of the alternative to the Highlands Golf Course, **refinements of the FWB2/C2 alignment would be performed in any subsequent design development activities.** These refinements would likely entail a shifting of the alignment to the west to provide greater distance (i.e., buffer) from the existing Golf Course. This process would also include the coordination of the roadway alignment with any planned westward expansion of the golf course, as mentioned by the Bella Vista Village Property Owners Association. Relatively minor alignment adjustments would be

acceptable as long as the environmental impacts of the adjustments would not be measurably changed from those documented in the EIS.

- ***Should Use the Existing Route***

Comments supporting the Existing Alternative came from 23 individuals and identified lower construction cost, reduced construction time, better access to homes and businesses and less impact on the natural environment as reasons for their preference.

Response:

There are several factors which support the recommendation of the Far West Alternative over the other options. From a long-term perspective, the Existing Alternative would be more costly due to the additional capacity that would be needed beyond 2020 as traffic continues to grow. The relocation alternatives provide greater traffic capacity to absorb traffic growth well into the future. With the Far West Alternative, current access to residences along US 71 would be improved with the reduction of through traffic. Furthermore, new and greatly improved access would be provided for residences in western Bella Vista. It is recognized that the Far West Alternative would have greater secondary impacts, however, considering all the issues, the Far West Alternative would best meet the purpose and need for the project, and has the greatest public support.

- ***Opposed to Far West Alternative***

Thirty-one area residents cited opposition to the Far West Alternative due to impacts to the natural environment noting the decreasing amount of open spaces and farmland in Northwest Arkansas and the desire to maintain the natural beauty of the area. Concerns about impacts to property and cultural sites, higher cost of construction, and cost of right-of-way acquisition were also expressed. Other comments indicated a belief that the Far West Alternative had been chosen to please local developers and their self-serving interests regarding development opportunities on the west side of Bella Vista.

Response:

The recommendation of the Far West Alternative as the preferred alternative was based on an overall evaluation of all impact and benefit issues. Considering the balancing of the alternative's benefit/impact tradeoffs, it is recognized that the Far West Alternative is not viewed as favorably as other options regarding some environmental issues. In particular, these issues include farmlands, forests and secondary impacts. However, from an overall perspective, the Far West Alternative is superior to others in terms of broad engineering, traffic and social/economic issues. Equally considering all these items, the recommendation of the Far West Alternative is justified.

The Far West Alternative (ultimate improvements) would not directly impact any previously recorded archeological, historical or architectural resources.

Though the initial costs of the freeway improvements for the Far West Alternative would be higher than the others, it would serve the community for a much longer period than the Existing Alternative.

The recommendation of the Far West Alternative was based solely on its merits as determined through the objective evaluation of the alternative's benefits and impacts and as documented in this EIS.

- ***Re-examine Eastern Route***

Ten comments expressed preference for the East Alternative and asked that it be re-examined. These comments were based on a belief that an alignment located on the east side of Bella Vista would incur far fewer environmental and property impacts than any of the other alternatives, and that it would provide better access to US 71 in Missouri.

Response:

There were three factors contributing to the decision to eliminate the East Alternative from consideration; traffic, cost and length. Based on current and anticipated travel patterns, studies indicated that a route in the eastern corridor would not pull enough traffic from the existing route to meet the purpose and need for the project. A route in the eastern corridor also would have to be built through rougher terrain, making the cost for construction higher that any of the other alternatives. Additionally, alternatives in the eastern corridor were longer than any of the other alternatives, therefore providing the least direct route.

Regarding better access to US 71 in Missouri, the Missouri Department of Transportation has already performed and approved an Environmental Impact Statement for US 71 from I-44 near Carthage to the state line. The preferred alternative in that study is very near or along the existing route, making Pineville the northern terminus of this study. That makes an eastern alternative a very long route and ultimately unfeasible for the reasons stated above.

- ***No Change Other than Adding Stoplights to Existing US 71***

Five individuals stated that no changes other than adding stoplights to existing highway 71 were needed. These individuals cited the need to maintain the areas heritage, reduce costs associated with building highway extensions, and maintaining their property as their main concerns.

Response:

One of the improvement options studied by the EIS was the "No-Build" Alternative. This alternative consists of doing nothing to US 71 other than installing traffic signals at several major cross streets and adding auxiliary left-turn and right-turn lanes at the various intersection roadway approaches. Through the analysis and evaluation of the alternatives, it was determined that the "No-Build" Alternative would not accomplish the goals of the study. Foremost of these goals was the establishment of a multi-state interstate facility between Kansas City, Missouri and Shreveport, Louisiana. The "No-Build" Alternative would not accomplish this basic need. Furthermore, the "No-Build" Alternative would not address safety issues relating to the separation of the higher speed through traffic from the local traffic. Without roadway capacity increases, either

through the conversion of the existing US 71 into a freeway or through the construction of a freeway bypass, roadway congestion along the existing US 71 will continue to worsen to unacceptable levels, resulting in an inefficient transportation system. For these reasons, the "No-Build" Alternative was not selected as the preferred alternative.

- ***Miscellaneous***

Many individuals expressed general on-going concerns with safety issues on the Existing Route 71 and reducing the speed limits in the area.

B. Agency Coordination

Resource agency coordination has been ongoing throughout the US 71 study. Environmental scoping to identify issues and concerns which would affect the definition and evaluation of the alternative improvements was performed from the beginning of the study, including the formal scoping meeting. In addition to the formal scoping meeting, individual meetings were held with various agencies to discuss the environmental issues and concerns in more detail.

1. ENVIRONMENTAL SCOPING MEETING

On July 30, 1996, an environmental scoping meeting was held at the Bella Vista Country Club Clubhouse for the US 71 Location Study (Bella Vista to Pineville). Prior to the meeting, special invitations were submitted to public agencies, local units of government, elected officials and special interest groups. Accompanying the invitation was a packet of information about the project, including a map showing the Study Area. A Notice of Intent to perform the study and announcement of the time and date of the scoping meeting was published in the Federal Register in advance of the meeting.

Those agencies and groups invited to attend the meeting are listed below. All agencies and groups who were invited were provided minutes of the meeting. Agencies and groups who attended the meeting are identified below with a check.

- Federal Agencies
  - √ Federal Highway Administration, Arkansas Division
  - √ Federal Highway Administration, Missouri Division
  - National Park Service
  - Soil and Water Commission
  - √ U.S. Army Corps of Engineers
  - U.S. Coast Guard
  - U.S. Environmental Protection Agency
  - U.S. Fish and Wildlife
- State Agencies
  - √ Arkansas Game and Fish Commission
  - √ Arkansas Natural Heritage Commission
  - √ Arkansas State Highway and Transportation Department
  - Arkansas State Historic Preservation
  - Arkansas State Parks

- √ Environmental Division Arkansas State
- √ Missouri Department of Conservation
- √ Missouri Department of Natural Resources
- Missouri Department of Transportation

- Local Agencies
  - McDonald County
- Non-Governmental Agencies
  - None

At the scoping meeting, an overview of the study was presented, including a presentation of the engineering, socio-economic and environmental issues. Issues discussed by the participants included the following:

a. Project Overview and Overall Schedule

The Study Area is situated between Pineville, Missouri and Bentonville, Arkansas along US 71. The Notice of Intent was presented in July 1996.

Public involvement has been active and is expected to grow. A corridor advisory council (CAC) will be formed with participation from local groups, social club leaders and public officials to advise the study team of local issues.

b. Location Studies

Four previously suggested corridors are currently under study. The Study Corridors are generally 1,220 meters (4,000 feet) wide. The highway design will be an access controlled, 110 km/hour (70 mph) freeway design. Right-of-way (ROW) utilization will be minimized in sensitive locations. Typical sections require approximately 110 m (350 ft.) of ROW, although sections can be reduced to 60 m (200 ft.) of ROW with the use of walls and barriers.

c. Traffic and Economic Studies

The existing alignment is a two lane facility in Missouri and a four lane facility in Arkansas. Most side road junctions are at-grade intersections. US 71 currently has an average daily traffic (ADT) volume between 7,300 and 19,300 vehicles. Accident rates average between 50 to 294 accidents per hundred million vehicle kilometers of travel (80 to 470 per hundred million vehicle miles of travel). The combination of the traffic volumes and accident rate cause the perceived level of service to be relatively poor. Origin/Destination (O/D) surveys will be conducted in September. The design year for this project will be the year 2020.

Approximately 35,000 lots have been sold in the Bella Vista Village. As of 1990 the Census population was 9,000. Cooper Communities Incorporated (CCI) has stated that they will donate the land for the highway that crosses any unsold property and they may not develop the land west of the Far West Corridor. Donated property can be discussed in the EIS and comparable value used as an advantage of a particular alignment, but it should not be a determining factor in alternative selection.

d. Environmental Considerations

The Study Area land use varies from unimproved pastures to intensive agriculture, as well as to residential neighborhoods. Several MDC natural features and Arkansas Natural Heritage Commission resources located within the Study Area. As a result of initial field work, three Royal Catch Fly sites are located in the Eastern Corridor and the Far West Corridor. The Royal Catch Fly plant was a category 2 watch list species, but has since been down graded to a C3 species. Also, one Oklahoma Salamander site is located in the Existing US 71 Corridor and other sites are nearby. Wetland fringe and wetland impacts will be small and fragmented.

It was noted during initial fieldwork that gravel mining has occurred on most area streams, therefore any remaining streams in their natural state will be noted. Improvements to the existing US 71 alignment will require attention to floodplain and erosion control considerations. Long linear intrusions into waterways should be addressed with erosion control with the Corps of Engineers.

Hazardous waste and water quality sites have been located within the Study Area. Roughly ninety-five percent of the hazardous waste sites are registered storage tanks. There are two dry cleaners, no National Priority Listing (NPL) or Superfund sites, and one Comprehensive Environmental Response Compensation and Liability Act (CERCLA) site -- the Bella Vista Village landfill.

Roughly 50 cave locations have been identified within the Study Area. Henson Cave was field reviewed and it is the conclusion of MoDOT that the cave has not been recolonized by the Gray Bat.

The public water supply will also be identified. Geologic reconnaissance as it relates to typical sections such as retaining walls and bridge foundations will also be performed.

Sinkholes could affect alternative selection. The geology will be analyzed to determine sinkhole presence, previously recorded sites will be noted and aerial photographs will be reviewed. After preliminary reviews of the geological profiles, the Project Team anticipates few if any sinkholes to be present.

Field verification of cultural resources and known natural resources have not been completed. Twenty percent of the Missouri corridors have been surveyed for historic places and archeology as part of the US 71 Neosho, Missouri to Missouri state line EIS. Early cabins and a water tower are listed on the National Register of Historic Places. None are within the suggested corridors. The Pineville Mound is the only large, known prehistoric location within the Study Area at this time. The Mound areas are on both sides of the existing US 71 highway. Public knowledge of the local resources is extremely limited as most of the residents are not from the local area.

The Bella Vista community is not a village or town, but rather a very large unincorporated subdivision. The golf courses are privately owned and require a membership. Since the community land, golf courses and lakes are privately owned and not public land, there are no public lands that would require a section 4(f) land relocation in Bella Vista Village. Recreational land must be publicly owned to require a 4(f) evaluation.

Although Bella Vista is not incorporated, the community is a strong community. Residents are typically retired, well educated, personal computer literate, understand the legal system and have time to devote to worthy causes.

e. General Discussion

FHWA (Little Rock) will be the lead FHWA office. Lead offices for the EPA and U.S. Fish and Wildlife Services were not identified.

Bear Hollow Cave is inhabited by a Federally Endangered Species of Cave Crayfish. In field examination of the near cave chambers, one crayfish was noted in a pool. Dye tracing will be conducted in Arkansas to determine the recharge area by Tom Aley of Ozark Underground Labs under direction of the AHTD.

The Ozark Cavefish is a Threatened Species and inhabits the Civil War Cave located on Route 72 south of the Study Area.

The Federally Endangered Gray Bat may inhabit Crystal Cave.

The current building patterns are centralized along US 71 and to a lesser extent, most ridge roads in Missouri and Arkansas.

The private "non-Bella Vista" holdings within the Near West Corridor appear to be mostly non-minority, middle income, mobile home residences.

The Study Area is composed of 85-90% retired residents.

Hispanic "communities" have been noted in field surveys in the rural areas of Missouri near the Study Area.
Signal improvement has been suggested at selected locations along existing US 71 alignment.

The land use of the previously suggested corridors is predominantly agricultural or wooded.

Specific lot use and development within Bella Vista is undetermined, but will be studied.

2. AGENCY COMMUNICATIONS

Agency coordination was necessary to gather the appropriate information for the preparation of the EIS. Table VII-5 is a list of the agencies and individuals contacted by the Project Team to provide the necessary information.

TABLE VII-5
AGENCY COMMUNICATIONS IN PREPARATION OF THE EIS

Name	Title/Section	Agency
Mr. Dennis Figg	Endangered Species Coordinator	Missouri Department of Conservation
Ms. Cindy Osborne	Data Manager	Arkansas Natural Heritage Commission
Mr. Gene Gardner	Biological Specialist	MoDOT, Jefferson City
Mr. Gary Christoff	Environmental Coordinator	Missouri Department of Conservation, Jefferson City, MO
Ms. Marge Harney	US Fish and Wildlife Service	Vicksburg, MS
Mr. Gene Gunn	Environmental Review	US Environmental Protection Agency
Mr. Gary Frazier	US Fish and Wildlife Service	Columbia, MO
Mr. David Schorr	MO Department of Natural Resources	Jefferson City, MO
Mr. Dan Dickeite	MO Natural Heritage Data Base and Planning Division	Missouri Department of Conservation, Jefferson City, MO
Mr. Craig K. Uyeda	River Basins Section	Arkansas Game & Fish Commission, Little Rock, Arkansas
Dr. James Johnson	AR Natural Heritage Inventory	Arkansas Cooperative Fish & Wildlife Research
Mr. Matthias A. Kerschbaum	US Fish and Wildlife Service	Ft. Snelling Minnesota
Mr. Larry Harrison	Regulatory Branch	Little Rock District COE, Little Rock, AR
Mr. John McFarland	Supervisory Geologist	Arkansas Geologic Commission, Little Rock, AR
Mr. Kenneth Steele	Director	Arkansas Water Resource Center, Fayetteville, Arkansas
Mr. Larry Coen	Director of Mining and Land Reclamation Division	MDNR, Jefferson City, MO
Mr. Bruce Martin	Regional Director	MDNR, Springfield, MO
Mr. Jerry Vineyard	Assistant State Geologist	MDNR, Rolla, MO
Mr. John Madras	Director Water Quality Div.	MDNR, Jefferson City, MO

3. DRAFT EIS AGENCY COMMENTS

On March 3, 1998, the FHWA and AHTD, in cooperation with the COE and MoDOT, issued the Draft EIS for the US 71 improvements in Benton County, Arkansas and McDonald County, Missouri between Bella Vista and Pineville. In accordance with the National Environmental Policy Act and Clean Water Act, comments offered by public agencies, the general public, or other interested parties need to be adequately addressed by the Final EIS. The following section presents the to all agency review comments received for the Draft EIS. The 45-day minimum comment period on the Draft EIS ended on June 5, 1998.

Comments on the Draft EIS were received from the following agencies and interested groups and are included in the following section:

- ✓ U.S. Environmental Protection Agency - May 28, 1998
- ✓ Arkansas Historic Preservation Program - July 20, 1998
- ✓ Arkansas National Heritage Commission - June 23, 1998
- ✓ Engineering and Technical Services Division Regulatory Section - April 29, 1998
- ✓ U.S. Army Corps of Engineers
- ✓ U.S. Department of Housing and Urban Development – April 9, 1998

Table VII-6 presents a summary of the agency letters and their labeling designations.

Public agency comment letters have been separated by review agency. Each of the agency letters received has been numerically labeled and its contents subdivided by subject matter and nature of comments. In the comment letters, specific issues or questions that require responses are identified by comment codes, bold numbers and letters in the margins. Immediately following the comment letters are that correlate to the comment codes. Applicable references to the relevant sections of the EIS are included for each comment.

Based on the comments received on the Draft EIS, the relevant sections of the Final EIS have been revised accordingly. In general, Draft EIS comments offered by the resource agencies have required clarification of the alternatives' impacts, particularly regarding secondary and cumulative impacts and impacts to cultural resources. Appropriate clarification of these issues has been provided either in the relevant sections of the EIS or in the response to the comment. No new information or issues were raised through the review of the Draft EIS that would affect the selection of the Far West Alternative as the preferred alternative.

Table VII-6
US 71 (BELLA VISTA TO PINEVILLE) DRAFT EIS AGENCY COMMENT SUMMARY

Letter No.	Agency	Comment Code	Description of Comment
1	US Environmental Protection Agency	1A	Cumulative Impacts
		1B	Cumulative Impacts of Frontage Roads
		1C	Soil Survey Information
		1D	Compliance with Floodplain Exec. Order
		1E	Secondary Impacts Affecting McDonald Co.
		1F	Impacts to Farmland Soils
		1G	Bisection of Wooded Areas
		1H	Impacts of Right-of-way Burning
		1I	Water Quality Impacts
		1J	Mitigation to Prevent Adverse Impacts to Wells
		1K	Cumulative/Secondary Impacts to Water Quality
		1L	Runoff Impacts
		1M	Impacts to Hollow Cave
		1N	Impacts to Henson Cave and the Gray Bat
		1O	Impacts to Wind Cave
		1P	Mitigation Plans for Wetlands
		1Q	Forest Block Fragmentation
		1R	Mitigation Proposals
		1S	Flooding Risks due to Construction
		1T	McKisic Creek Mitigation
		1U	Impacts of Creek Channel Relocation
		1V	Environmental Impacts in Minority/Low-Income Populations
2	Arkansas Historic Preservation Program[1]	2A (Part 1)	Impacts to Cultural Resources
		2A (Part 2)	Archeological Surveys
3	Arkansas Natural Heritage Commission	3A	Forest Habitat Fragmentation
		3B	Impacts to Ground Water and Water Quality
		3C	Evaluation of Preferred Alternative
4	US Army Corps of Engineers	4A	Bridged Crossings
5	US Dept. Housing and Urban Development	5A	Receipt of Draft EIS

[1] Comments from the AHPP were contained in two letters dated June 5, 1998 and July 20, 1998.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

Ms. Elizabeth A Romeo
Federal Highway Administration
3128 Federal Office Building
Little Rock, AR 72201

Dear Ms. Romeo:

The Environmental Protection Agency (EPA) has reviewed the Draft Environmental Impact Statement (DEIS) prepared by the Federal Highway Administration (FHWA) and the Arkansas Highway and Transportation Department (AHTD) for the proposed transportation improvements extending from 16.4 miles from the McKisic Creek Interchange south of Bella Vista, Arkansas, to Missouri Route H, southwest of Pineville, Missouri. Our review is pursuant to the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508), and Section 309 of the Clean Air Act.

The DEIS evaluates the associated impact with the proposal to improve US 71 to interstate standards along the existing alignment or a new alignment. The purpose of the project is to improve the safety and system efficiency of the facility. The DEIS incorporates a description of the environmental conditions and evaluates the potential impact of each project alternative.

According to the DEIS, selection of the preferred alternative, the Far West alignment, is preferred due to public preference and the limited impact on the status quo. The DEIS indicates that construction of the preferred alternative should cause fewer safety and capacity issues when compared to that along the existing route. The preferred route would provide an ultimate bypass facility around Bella Vista maintaining the nature and character of the Village, while providing an efficient regional transportation system.

EPA commends the FHWA and the AHTD for its analysis of potential impacts and its careful consideration of potential mitigation measures. However, our review has identified several environmental concerns which we believe warrant additional environmental analysis and information to be incorporated into the Final Environmental Impact Statement (FEIS).

EPA rates this proposed action and DEIS as "EC-2," i.e., EPA has "Environmental Concerns and Requests Additional Information in the Final EIS." Although the Draft EIS overall appears to be comprehensive, thorough, and to adequately address the impacts associated with the preferred action and the alternatives, we have identified some environmental concerns which we believe need to be included in the FEIS to complement and to more fully insure compliance with the requirements of NEPA and the CEQ regulations. Our classification will be published in the Federal Register according to our responsibility under Section 309 of the Clean

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Letter No. 1 - U.S. Environmental Agency (Page 1 of 11)

Air Act, to inform the public of our views on proposed Federal actions.

Detailed comments are enclosed with this letter which more clearly identify our concerns and the informational needs requested for incorporation into the FEIS. If you have any questions, please contact Mike Jansky of my staff at 214-665-7451 for assistance.

EPA appreciates the opportunity to review the DEIS. We request that you send our office five copy of the FEIS at the same time that it is sent to the Office of Federal Activities, EPA, 401 M Street S.W., Washington, D.C. 20460.

Sincerely yours,

Robert D. Lawrence, Chief
Office of Planning and Coordination
Compliance Assurance and Enforcement Division

Enclosures

cc: Lynn P. Malbrough (AHTD)
Lynn Kring (EPA Region 7)

Letter No. 1 - U.S. Environmental Agency (Page 2 of 11)

3

Copie to:

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

Lynn Kring
Environmental Review Coordinator
EPA Region 7
726 Minnesota Avenue
Kansas City, KS 66101

Letter No. 1 - U.S. Environmental Agency (Page 3 of 11)

SUMMARY PARAGRAPH

ERP NUMBER D-FHW-G40148-NM

TITLE: FEDERAL HIGHWAY ADMINISTRATION DRAFT ENVIRONMENTAL IMPACT STATEMENT US 71, BELLA VISTA, ARKANSAS, AND PINEVILLE, MISSOURI

RATING ASSIGNED TO PROJECT EC-2

NAME OF EPA OFFICIAL RESPONSIBLE ROBERT D. LAWRENCE

SUMMARY OF COMMENT LETTER

EPA rates this proposed action as "EC-2," i.e., EPA has "Environmental Concerns and Requests Additional Information in the Final EIS." Although the Draft EIS overall appears to be comprehensive, thorough, and to adequately address the impacts associated with the preferred action and the alternatives, we have identified some environmental concerns that need to be included in the Final EIS to insure and fully insure compliance with the requirements of NEPA and the CEQ regulations.

PARAGRAPH APPROVED FOR PUBLICATION

_____
(Initials of
Approving Official)

Letter No. 1 - U.S. Environmental Agency (Page 4 of 11)

DETAILED COMMENTS
FEDERAL HIGHWAY ADMINISTRATION
DRAFT ENVIRONMENTAL IMPACT STATEMENT
US 71 BELLA VISTA TO PINEVILLE
BENTON COUNTY, ARKANSAS AND MCDONALD COUNTY, MISSOURI

BACKGROUND

The Arkansas Highway and Transportation Department (AHTD), Missouri Department of Transportation (MODOT) and the Federal Highway Administration (FHWA) are proposing to improve US 71 from south of Bella Vista, Arkansas, to near Pineville, Missouri. In compliance with the appropriate provisions of the National Environmental Policy Act (NEPA), this Draft Environmental Impact Statement (DEIS) has been prepared to aid in the decision-making process for the proposed action (i.e. improvements to US 71). This section provides a summary of the alternative improvements considered for US 71 and the potential environmental impacts of these alternatives.

The DEIS contemplates the improvement of US 71 to interstate standards through or around the community of Bella Vista, Arkansas, connecting the existing US 71 bypass around Bentonville, Arkansas, to the south with the planned four-lane improvements by MODOT at or near the Missouri/Arkansas state line. These improvements entail the conversion of the existing two lane and four-lane partially-limited access roadway to a freeway facility with fully-controlled access either on the existing alignment or on a new location alignment.

The extent and character of the planned MODOT improvements were defined in a FEIS completed in 1992 which considered US 71 improvements north of the state line (MODOT Job Number J7P0427-FHWA-EIS-90-02-F). The selected alternative (Alternative 1 in the 1992 MODOT EIS) consists of a divided dual-lane traffic facility, built to interstate standards, between I-44 and the Arkansas state line. The alignment of the selected alternative begins at I-44, approximately 4.8 km (3.0 miles) east of the City of Joplin, then proceeds south along the existing US 71 corridor to the Arkansas state line. Those commitments enumerated in the MODOT FEIS and Record of Decision (ROD) will continue to be enforced except as modified by this Draft and FEIS.

The Study Area for this DEIS extends from a southern terminus connection with the existing US 71 bypass around Bentonville to a connection with the planned MODOT improvements at a point near Pineville, Missouri. This study area delineation was defined to fully encompass the areas in both Missouri and Arkansas which could potentially be impacted by possible route relocations on either side of the Bella Vista community.

PURPOSE AND NEED OF HIGHWAY IMPROVEMENTS

In 1991, the US Congress identified the existing US 71 corridor extending from Kansas City, Missouri to Shreveport, Louisiana, as a high-priority corridor. As listed in the Intermodal

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Surface Transportation Efficiency Act (ISTEA), this corridor, possibly to be designated I-49, was identified as a high-priority north-south highway corridor from the Gulf of Mexico to the Midwest. Towards this end, both AHTD and MODOT have begun implementing improvement programs to upgrade the corridor to an interstate standard.

Other purposes for the US 71 improvements which stem from the high-priority corridor status include: improved traffic safety, elimination of roadway deficiencies, efficient operations of the regional transportation system improved local access, sufficient capacity for future traffic conditions, and improved access to nearby recreational facilities.

ALTERNATIVES

In accordance with the preliminary screening of the "Freeway-Build" Study Corridors, the following group of reasonable alternatives were defined and evaluated: No-Build Alternative, Freeway-Build Alterative, Freeway Alternatives Within the Far West Corridor, Freeway Alternatives Within the Near West Corridor, and the Freeway Alternatives Within the Existing Corridor.

Within each remaining preliminary Study Corridor (Far West, Near West and Existing), a group of reasonable alternative freeway alignments were defined in greater detail utilizing current aerial mosaic maps and topographic data. These reasonable alternative alignments and the corresponding labeling nomenclature, using segment designations, are shown on Exhibit S-3 in the DEIS. In addition, aerial plan plates showing each of the alternatives are presented in Appendix C of the DEIS.

Due to the uncertainties of the collective abilities of AHTD and MODOT to jointly and instantaneously construct the freeway improvements, regardless of the improvement corridor, and due to the need to provide short-term improvements to the existing US 71 roadway for safety considerations, both interim and ultimate improvements were defined for each corridor. The interim improvements would consist of short-term investments to address the safety and capacity concerns of US 71 until the ultimate freeway improvements can be constructed throughout the entire Study Area. Depending on the ultimate freeway alternative (Far West, Near West or Existing) and the compatibility of the ultimate freeway construction with the short-term needs of US 71, these interim improvements would consist of roadway-related construction along the existing US 71 Corridor in addition to what would be required for the ultimate freeway construction. For the Near West and Existing Alternatives, the interim improvements represent a staging of the ultimate freeway improvements such that little or no additional construction would be necessary.

In compliance with Federal regulations requiring the consideration of all reasonable alternatives, a full set of improvement alternatives were considered for US 71. The alternatives were defined in accordance with the needs of the Study Area and traffic considerations. The following types of improvement concepts were considered:

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"No-Build" Concept - This concept consists of maintaining the existing roadway system plus any committed street and highway improvements within the Study Area. Committed improvements include Transportation System Management (TSM) measures applied to the existing US 71 roadway. These measures would include signalized intersection control at key intersections, intersection approach improvements and reductions in the posted speed (70 km/h (45 mph)). This concept provides a basis of comparison for the determination of the benefits and adverse impacts of the other improvement alternatives.

"Non-Freeway " Improvement to Existing Roadway Concept - This concept would involve retrofitting the existing US 71 roadway to the fullest extent reasonable to meet future travel demands and safety needs. This concept would not provide a freeway improvement. These retrofits would entail a combination of roadway widening, improved access control and TSM improvements. Because this concept would not provide a freeway improvement, it would not comply with the high-priority corridor interstate standard. Consequently, this concept was not considered further.

"Freeway-Build" Concept - This concept would involve the construction of a freeway facility either at a new location or along the existing US 71 alignment. Based on current land use and the built-up environment of the Bella Vista area, several preliminary corridors have been identified - Far West, Near West, Existing and East. Exhibit S-2 in the DEIS shows the locations of the Study Corridors.

Other Concepts - Public transportation alternatives, such as bus systems and rail transit, were considered as multi-modal options to the roadway alternatives. Due to the lack of land use and population densities and due to the highly dispersed trip origin/destination distributions of the Study Area, public transportation alternatives were not considered a reasonable alternative to the proposed action.

COMMENTS

The following comments are now being offered for consideration in preparation of the FEIS:

1. On page S-19 in the DEIS there is mention of a MODOT EIS/ROD that will provide the basis for any subsequent environmental investigations, permits, or mitigation for the interim

1A improvements in Missouri. It is further stated that, " for the Far West Alternative which is the preferred alternative, the impacts of the interim improvements would be processed through the MODOT EIS and any ultimate improvement impacts would be processed through this document." The cumulative impacts of the entire project should be presented and considered together. NEPA prohibits the segmentation of projects. A clear explanation of this concern should be provided in the FEIS.

1B 2. Page I-14 of the DEIS states that frontage roads would be utilized where needed to provide access to properties. Frontage roads are also referred to in other parts of the document. It is

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unclear whether the frontage roads currently exist or whether they would be constructed or improved. If not already included in this analysis, the primary, secondary and cumulative impacts of the frontage roads must also be discussed and addressed in the FEIS.

1C 3. Page III-16 of the DEIS states that the soil survey information for McDonald County, Missouri, has not been completed. The information contained in the completed soil survey should be made available to the appropriate resource agencies for review and comment. Please address in the FEIS.

1D 4. Page III-21 discusses floodplain locations. All construction should take place above the hundred year floodplain to prevent adverse environmental, social and economic impacts that might result from construction in the floodplain. Compliance with the Floodplain Executive Order should be fully discussed in the FEIS.

1E 5. The discussion of secondary and cumulative impacts associated with the Far West Corridor on page IV-5 appears solely to address secondary and cumulative impacts as they might occur in the Arkansas portion of the study area. Discussion of the secondary and cumulative impacts of this alternative as they would affect McDonald County, Missouri, should also be discussed. Please address in the FEIS.

1F 6. Discussion of farmland impacts on page IV-7 of the DEIS is dependent on soil survey information. This information was not available for McDonald County, Missouri. When this information is available, the preliminary estimates of impacts to farmland soils should be revised to reflect information provided in the completed soil survey. This information should be made available to the appropriate resource agencies for review and comment. Additionally, the DEIS states that the Far West Corridor would have the most secondary and cumulative impacts to farmlands. Effort should be made to impact as few acres of prime and other valuable farmland as possible. Please discuss this issue in the FEIS.

1G 7. It is stated on page IV-24 of the DEIS that two small, entirely wooded properties in Missouri would be bisected if the Far West Alternative is selected for construction. If bisection is unavoidable, care should be taken to bisect the properties through as short a distance as possible. Please discuss in the FEIS.

1H 8. Page IV-33 of the DEIS discusses burning activities that would be undertaken as part of the construction phase of the final project. To the extent possible, waste materials generated as a result of highway and bridge projects should be reused or recycled. In the case of trees cut down during construction, they should be sold for lumber or compost and not burned which would be a waste of a readily usable resource. Burning may also impose air quality impacts and require addition coordination with the state air control agencies. Discussion on these resource conservation activities and the potential air quality impacts should be discussed in the FEIS.

9. Page IV-43 discusses water quality impacts and states, "For those roadway segments with

5

predicted traffic volumes over 30,000 vehicles per day, during preliminary roadway design, studies *should* be undertaken to assess the need for collection and treatment of roadway runoff." This statement should be revised to state, ". . . studies *will* be undertaken to assess the need for
1I collection and treatment of roadway runoff." Additionally, the commitment should be made that if those studies reveal the need for collection and treatment of roadway runoff that systems will be put into place to accomplish the collection and treatment of the runoff. Nationally, roadway runoff is a major factor contributing to nonpoint source pollution that degrades environmental resources such as surface and ground water. Please address in the FEIS.

10. Page IV-43 of the DEIS states that small, individual or poorly constructed wells located in the Springfield aquifer could be impacted during construction and/or operation of all alternatives.
1J The FEIS should identify and discuss mitigation that will done to prevent adverse impacts to the wells and those who rely on them as a source of drinking water. For example, the impacted wells should be improved (grouted down a certain number of feet, raised and surrounded by a concrete pad, etc.) to protect those who rely on them. Please address this concern more fully in the FEIS.

11. Page IV-44 of the DEIS simply states that cumulative/secondary impacts to water quality
1K would occur due to the induced development at the new interchanges and possibly along the new right-of-way. There is no further discussion as to what the specific impacts may be or how they will be mitigated. A more complete discussion should be included to make the public fully aware of what the actual impacts of the project may be. Please discuss in the FEIS.

12. The discussion of the existing alternative on page IV-44 of the DEIS states that the most impacted drainage would be Little Sugar Creek which is located immediately adjacent to much of
1L the alternative where little dilution would occur before runoff enters the stream. Again, mitigation activities that would be taken to minimize the adverse impacts to water quality if this alternative is chosen should be discussed here. A commitment should be made by the project petitioners to address adverse environmental impacts that may result by building any of the project options. Please discuss in the FEIS.

13. Page IV-45 of the DEIS discusses impacts to Hollow Cave should the Far West Alternative
1M be selected for construction. The cave system is said to be extensive and to contain running water. Given the inherent value in maintaining diverse and rare resources such as caves like Hollow Cave, the preferred alignment, at least as far as it affects Hollow Cave, should be avoided. Please provided discussion on this concern in the FEIS.

14. Page IV-45, as well as page IV-77, includes a discussion of potential impacts to Henson Cave. The cave is identified as a habitat cave for the Gray Bat. Although no bats were present in
1N the cave in 1996, it is possible that they may search out the habitat at a later date. To backfill and cap the entrance would essentially be a habitat loss to the Gray Bat. Any alternative, or, more specifically any portion of an alternative alignment, which might impact this cave should be avoided. Discussion on this concern and coordination with the US Fish and Wildlife Service and the respective State wildlife and fishery agencies should be provided in the FEIS.

Letter No. 1 - U.S. Environmental Agency (Page 9 of 11)

15. The discussion of the Existing Alternative on page IV-46 states that Wind Cave, an extensive cave system which contains running water would be impacted if the Existing Alternative
1O is chosen for construction. Again, there is inherent value in maintaining diverse and rare resources such as caves like Wind Cave and every effort should be made to avoid disturbing Wind Cave. Please provide discussion in the FEIS.

16. In the discussion on wetlands on page IV-58 of the DEIS, the statement is made that, "When impacts are unavoidable, they should be minimized and the impacted wetlands resources should be mitigated and enhanced to the extent practical." A list of some measures that "*could*"
1P be taken to minimize the impacts to wetlands and other aquatic resources are listed. It is not stated that those efforts *will* be taken to protect the wetlands and other aquatic resources. Another mitigation strategy that is not mentioned is the construction of wetlands to replace those that are lost or severely impacted due to project construction. Constructed wetlands should be considered by the project petitioners. Please provide definitive discussion on this issue in the FEIS.

17. Pages IV-61 through IV-65 of the DEIS discuss the project alternatives in light of the number of stream crossings each would require and the number of forest blocks that would be
1Q fragmented by the construction of the various project segments. In all cases, to the extent possible, the fewest number of forest blocks should be fragmented and the fewest streams crossed. In addition, when forest blocks must be fragmented or streams must be crossed they should be fragmented or crossed for as little a distance as possible to minimize adverse impacts. Please discussed fully in the FEIS.

18. Page IV-66 of the DEIS states, "Minimizing habitat fragmentation is one of the considerations of the alternatives analysis. Other remedies include tree replacement programs, bridging streams rather than installing culverts, and installing artificial wildlife corridors. . ."
1R Although these remedies are listed, there is no commitment to utilize them in final project construction and maintenance. To the extent possible, commitment should be made as to what remedies will be employed to minimize impacts so that the public is fully aware of the ramifications of all of the alternatives. Please provide discussion on this issue in the FEIS and the ROD.

19. Page IV-68 of the DEIS states that flooding risks associated with the Far West Alternative are minimal. In another part of the document it is stated that other development
1S (commercial/residential) will likely occur at a more accelerated pace in the area surrounding the Far West Alternative if it is chosen for construction. It follows that flooding risks would also be increased due to development of the area surrounding this alternative. Those secondary and cumulative impacts are not discussed nor are mitigation measures. A discussion of all of the impacts related to the construction of an alternative should be presented to the public. Please incorporate in the FEIS.

1T 20. On page IV-68 of the DEIS is a discussion of McKisic Creek which states, "The several bridges necessary for the main roadway and various ramps at this interchange would most likely

be detrimental to habitat or wildlife and other beneficial floodplain values. Precautions would be taken to minimize impacts on the area's natural state." The mitigation measures that would be taken should be discussed in detail. Please incorporate in the FEIS and the ROD.

21. The Near West Alternative discussed on page IV-68 of the DEIS states that this alternative would require the relocation of the creek channel for about 200 meters. This is a significant
1U change to the natural environment and should be avoided if possible. If this alternative is selected mitigation measures should be taken to minimize the impacts of the stream relocation and those mitigation measures should be discussed with the public and appropriate resource agencies. The same comment applies to the discussion of Goodin Hollow further down on page IV-68. Please discuss in the FEIS and the ROD.

22. Over the past two decades, there has been increasing concern over environmental impacts
1V in minority and low-income populations. To address these concerns, President Clinton signed Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" (hereafter, EO) on February 11, 1994.

NEPA mandates that Federal agencies fully consider environmental factors when proposing activities, programs, and policies which have the potential to significantly affect the human environment. Although social and economic impacts have always been a consideration in NEPA reviews, the Executive Order highlights the necessity to better integrate the consideration of human health, social, and economic effects into the NEPA process. The EO calls for collection and analysis of information on race, national origin, income level and other appropriate information for areas surrounding projects that have expected environmental, health and economic effect on those populations.

In reference to these concerns, the FEIS should include a section to address Environmental Justice concerns that addresses and identifies, as appropriate, whether the preferred action may cause disproportionately high and adverse environmental effects in minority and low-income populations. We have enclosed a copy of the EPA draft guidance on NEPA implementation of the EO for guidance purposes.

Letter No. 1 - U.S. Environmental Agency (Page 11 of 11)

ARKANSAS
HISTORIC
PRESERVATION
PROGRAM

June 5, 1998

Ms. Elizabeth A. Romero
Federal Highway Administration
3128 Federal Office Building
Little Rock, AR 72201

RE: Benton County - General
Section 106 Review - FHwA
Draft Environmental Impact Statement for US 71
Benton County, Arkansas and McDonald County,
Missouri, Bella Vista to Pineville

Dear Ms. Romero:

My staff has reviewed the above referenced draft environmental impact statement. We cannot concur that the "Far West Alternative" is the best route for the protection of cultural resources. The tables in the report indicate that 31 standing structures and 5 recorded archeological sites are located in the Arkansas section of this alternative. Two standing structures (BE662 and BE2177) are listed in the National Register of Historic Places, and some of the other historic properties may be eligible for listing. Therefore, we recommend that another project route be selected.

2A PART 1 We do concur that cultural resources surveys be conducted to identify and evaluate historic properties in the project area. Additional comments on National Register eligibility and assessments of effect (as per 36 CFR Part 800) can be made upon receipt of this additional information.

Thank you for your interest and concern for the cultural heritage of Arkansas. If you have any questions, please contact George McCluskey of my staff at (501) 324-9880.

Sincerely,

Cathy Buford Slater
State Historic Preservation Officer

CBS:GM

cc: Arkansas State Highway & Transportation Department
Arkansas Archeological Survey

1500 Tower Building • 323 Center • Little Rock, Arkansas 72201 • Phone (501) 324-9880
Fax (501) 324-9184 • TDD (501) 324-9811
A Division of the Department of Arkansas Heritage

Letter No. 2 – Arkansas Historic Preservation Program (Page 1 of 2)

ARKANSAS
HISTORIC
PRESERVATION
PROGRAM

July 20, 1998

Mr. Timothy C. Klinger
Director
Historic Preservation Associates
P.O. Box 1064
Fayetteville, AR 72702

RE: Benton County - General
Section 106 Review - FHwA
U.S. 71 Location Study - Bella Vista to Pineville

Dear Mr. Klinger:

2A
PART 2

My staff has reviewed the architectural report and additional information submitted on the draft environmental impact statement on this undertaking. While issues regarding the Far West Alternative route have been clarified, we believe it is premature to make an assessment of effect on historic properties. A number of the standing structures described are very close to the highway right-of-way. Since these structures are also features of archeological sites, potentially significant archeological deposits associated with these properties could be affected. Therefore, we recommend that the Federal Highway Administration proceed with an archeological survey. We can make an assessment of effect upon receipt of a report on this investigation.

Thank you for your interest and concern for the cultural heritage of Arkansas. If you have any questions, please contact George McCluskey of my staff at (501) 324-9880.

Sincerely,

Cathy Buford Slater
State Historic Preservation Officer

CBS:GM

cc: Federal Highway Administration
Arkansas State Highway & Transportation Department
HNTB Corporation
Arkansas Archeological Survey

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A Division of the Department of Arkansas Heritage

Letter No. 2 – Arkansas Historic Preservation Program (Page 2 of 2)

ARKANSAS NATURAL HERITAGE COMMISSION
1500 TOWER BUILDING
323 CENTER STREET
LITTLE ROCK, ARKANSAS 72201

Date: June 23, 1998
Subject: Draft Environmental Impact Statement
U.S. 71, Bella Vista to Pineville
ANHC No.: F-USDT-98-003

Lynn P. Malbrough
Arkansas Highway and Transportation Dept.
P.O. Box 2261
Little Rock, AR 72203-2261

Dear Mr. Malbrough:

Staff members of the Arkansas Natural Heritage Commission have reviewed the Draft Environmental Impact Statement (DEIS) for the proposed improvement of Highway 71 from Bella Vista, Arkansas to Pineville, Missouri. The DEIS defines and evaluates the reasonable project alternatives as "No-build" and "Freeway build". Three corridor alignments are addressed under the "Freeway Build" alternative: Far West, Near West, and Existing Corridors. Constructing the freeway on the Far West corridor has been identified in the DEIS as the preferred alternative.

3A The Far West alternative would have the greatest direct and indirect adverse environmental impacts. This area is currently undeveloped; placement of a road would significantly fragment forest habitat. The road would encourage a much higher level of development at a much faster rate than would otherwise occur. This type of fragmentation and development has significant impacts to native plants and animals. Recent declines in many bird populations have been attributed to habitat fragmentation. Development in this type of karst topography can result in

3B degradation of not only surface water, but also groundwater. The existence of many of the fish and other aquatic organisms of Ozark streams are dependent on good water quality. Species in cave streams are highly susceptible to water quality changes. The unique environments of Benton County are known to support many sensitive species. Although few have been reported for the Far West corridor, this is likely indicative of a lack of comprehensive inventory, rather than an absence of species.

3C Because of the substantial environmental costs of the Far West alternative, this agency favors construction of the highway along the existing corridor. Construction along this alignment would maintain existing development patterns, and, in the long run, have far fewer adverse environmental impacts. In the event that traffic capacity concerns beyond the year 2020 are deemed to be insurmountable for this alternative, more detailed consideration and evaluation of the Near West

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Letter No. 3 – Arkansas Natural Heritage Commission (Page 1 of 2)

alternative is warranted. This corridor may provide many of the benefits of the Far West Alternative, with fewer adverse environmental consequences. Because the area is already being developed, the overall pattern and rate of new development on the landscape would not be greatly altered. Additionally, because much of the land in this area has been set aside for future development, redesign of the community to accommodate the new highway still seems to be a viable option.

The opportunity to comment is appreciated.

Sincerely,

Cindy Osborne

Cindy Osborne
Data Manager

Letter No. 3 – Arkansas Natural Heritage Commission (Page 2 of 2)

Engineering and Technical Services Division
Regulatory Section

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

Dear Mr. Malbrough:

Please reference the Draft Environmental Impact Statement (EIS) for the upgrade of U.S. 71 to interstate standards between Bella Vista and Pineville, in Benton County, Arkansas and McDonald County, Missouri, Docket No. FHWA-AR-EIS-98-01-D.

It appears from a review of the Draft EIS and our discussions that the "Far West" alternative is strongly being considered as the preferred alignment for the proposed upgrade. Also, the Draft indicates that this alignment would only require fill in "waters of the United States" for bridged crossings that may be authorized under Section 404 Nationwide Permit No. 14. Should this be the case, detailed plans of each bridged crossing should be submitted to this office for a final permit determination well in advance of any work.

4A

We appreciate your cooperation in this process. The evaluation of your project will be given high priority and all procedures will be expedited to the extent possible. If you have any questions, please contact me at (501) 324-5296 and refer to File No. 13862.

Sincerely,

SIGNED

Larry J. Harrison
Project Manager

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Letter No. 4 – U.S. Army Corps of Engineers (Page 1 of 2)

- 2 -

Copy Furnished:
Howard Needles Tammen & Bergendoff Architects Engineers
Planners, 1201 Walnut, Suite 700, Kansas City,
Missouri 64141, ATTN: Mr. Daniel E. Van Petten
Missouri Highway and Transportation Department,
P.O. Box 270, Jefferson City, Missouri 65102
Mr. Glen Justis, Regulatory Section,
c/o Upper White River PO
Ch, Water Resources and Environmental Branch

Letter No. 4 – U.S. Army Corps of Engineers (Page 2 of 2)

U.S. Department of Housing and Urban Development

Kansas/Missouri State Office
Room 200
Gateway Tower II
400 State Avenue
Kansas City, KS 66101-2406

April 9, 1998

Elizabeth A. Romero
Federal Highway Administration
3128 Federal Office Building
Little Rock, AR 72201

Dear Ms. Romero:

Subject: Draft Environmental Impact Statement
US 71 Benton County, AR and Mcdonald County, MO
Bella Vista to Pineville

5A This is to acknowledge that the subject draft environmental impact statement has been received by this office. It is being reviewed by Lance Long, Environmental Officer.

Mr. Long will review the statement and provide comments, if any, directly to you by June 5, 1998. If you do not receive a reply within this time frame, you may assume we have no comments.

Sincerely,

Gary D. Ultican
Senior Environmental Officer

cc:
Lance Long, 7AD

Letter No. 5 - U.S. Department of Housing &Urban Development (Page 1 of 1)

4. RESPONSES TO AGENCY COMMENTS

Comment codes are used in this section to reference the specific agency letter that the responses correspond to.

COMMENT CODE: 1A

SOURCE: U.S. Environmental Protection Agency

RESPONSE: The cumulative impacts of the MoDOT improvements along the existing US 71 alignment through the Study Area (i.e., Interim Improvements) and the US 71 freeway improvements (i.e., Ultimate improvements) were considered in the EIS. As stated on Page S-19 of the Draft EIS, "For the purposes of evaluating the "Freeway-Build" Alternatives, the cumulative impacts of the ultimate and interim improvements were considered." Consequently, the impact estimates presented in the EIS (e.g., Table S-3) reflect the total, cumulative impacts of the proposed action. The statement that the impacts would be processed through each respective EIS was intended to clarify the relationship and governance of any future environmental investigations subsequent to each EIS. This statement was not intended to usurp the issue of cumulative impacts.

APPLICABLE REFERENCE: Summary, E.2

COMMENT CODE: 1B

SOURCE: U.S. Environmental Protection Agency

RESPONSE: As stated in the EIS, frontage roads would be provided with each "Freeway-Build" Alternative to maintain access to adjacent properties. Since access to the freeway improvements would be controlled and limited to only interchange locations, frontage roads would be necessary to maintain local access and connectivity. In some cases, an existing roadway may serve as a frontage road. In other cases, the frontage road may be a new roadway. In either event, frontage road requirements have been identified for each "Freeway-Build" Alternative and are shown in the Plan Plates (Appendix C). The impacts of the frontage roads were included in the assessment of the alternatives, including secondary and cumulative impacts.

APPLICABLE REFERENCE: Chapter IV – Environmental Consequences, A.2.b

---

COMMENT CODE: 1C

SOURCE: U.S. Environmental Protection Agency

RESPONSE: Since the completion of the Draft EIS, the NRCS has prepared detailed soil maps for only a portion of the area in southern McDonald County, associated with the corridor locations. The publication of the McDonald County Soil Survey Report is

anticipated between 2001 to 2003. Although the soil mapping for the corridor sin McDonald County is not yet complete, farmland impact estimates for the "Freeway-Build" Alternatives have been updated to reflect this latest information, dated Fall 1998.

APPLICABLE REFERENCE: Chapter IV - Environmental Consequences, B

COMMENT CODE: 1D

SOURCE: U.S. Environmental Protection Agency

RESPONSE: As observed, Chapter III - Affected Environment describes the existing NFIP regulated streams in the Study Area in the context of defining the natural setting which potentially would be impacted by the proposed action. Pursuant to Executive Order 11988, Floodplain Management, May 24, 1977, and subsequent FHWA policies and regulations regarding floodplain encroachment, location hydraulic studies were conducted to assess the consequences of the "Freeway-Build" Alternatives. As stated in Chapter IV - Environmental Consequences, Section O - Floodplain Impacts, there are no practicable alternatives to avoiding encroachments into floodplains. However, measures would be incorporated into the roadway design to minimize impacts and comply with floodplain regulations. Though construction would be required in some unavoidable floodplain areas, impacts to base flood elevations would be in compliance with NFIP regulations. Assessments commensurate with the environmental impacts were conducted and documented regarding 1) increased flooding risks, 2) impacts to natural and beneficial floodplain values, 3) support of probable incompatible floodplain development, and 4) possible measures to minimize harm.

APPLICABLE REFERENCE: Chapter III – Affected Environment, B.4.c; Chapter IV – Environmental Consequences, O.2

COMMENT CODE: 1E

SOURCE: U.S. Environmental Protection Agency

RESPONSE: Based on current development synergies, it is anticipated that any secondary impacts created by the Far West Alternative would be focused in Benton County. Though the chance of induced development in McDonald County would exist, it is likely that the secondary and cumulative impacts for McDonald County would be minimal. There is currently very little development initiative in western McDonald County and it is not anticipated that the Far West Alternative would change this trend. Any induced development would likely occur near interchanges, and there would only be one in McDonald County – Route 90. (The Route H Interchange would be constructed as part of the MoDOT improvements to the north.) Because convenience commercial facilities are already present at Route H and US 71, there may be little incentive for similar types of development at Route 90. Furthermore, the topography in the vicinity of the interchange of Route 90 and the Far West Alternative is not conducive to large-scale development.

APPLICABLE REFERENCE: Chapter IV - Environmental Consequences, A.2.b

COMMENT CODE: 1F

SOURCE: U.S. Environmental Protection Agency

RESPONSE: As referred to in Comment 1C, since the completion of the Draft EIS, the NRCS has prepared detailed soil maps for the southern portions of McDonald County, especially the areas south of Pineville. The publication of the McDonald County Soil Survey Report is anticipated between 2001 to 2003. Farmland impact estimates for the "Freeway-Build" Alternatives have been updated to reflect this latest information, dated Fall 1998. The Draft EIS utilized the best information available at that time.

Due to the proximity of the Far West Alternative to farmland areas, it is reasonable to conclude that it would have the greatest potential for secondary farmland impacts. Many factors would affect the degree at which secondary development impacts farmland. Efforts should be taken by Benton County, the City of Hiwasse and Bella Vista to manage any development created by the Far West Alternative.

APPLICABLE REFERENCE: Response to Comment 1C; Chapter IV - Environmental Consequences, B.2.a

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COMMENT CODE: 1G

SOURCE: U.S. Environmental Protection Agency

RESPONSE: Woodlands of 16.2 ha (40 ac) and 202.3 ha (500 ac) in size were used as evaluation factors in determining the overall rating of the various alternative alignments and their respective links. It was not feasible to avoid all wooded tracts. However, efforts were made in the alignment location studies to minimize the impacts to wooded areas. In addition, during design development activities, refinements of the alignment would be performed to further minimize any impacts to wooded areas.

APPLICABLE REFERENCE: Chapter IV - Environmental Consequences, E.4.d

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COMMENT CODE: 1H

SOURCE: U.S. Environmental Protection Agency

RESPONSE: Chapter IV - Environmental Consequences, Section U - Construction Impacts, presents a discussion regarding the recycling of construction-related materials. As stated, MoDOT will consider the use of MDNR's Waste Management Program. Furthermore, contractors would always have optional construction methods available at their discretion regarding the removal of trees, including the reuse of trees as lumber or compost. Environmental impacts during construction are discussed in Chapter IV - Environmental Consequences, Section I - Air Quality Impacts, Section J - Noise Impacts and Section U - Construction Impacts. These sections state that on-site burning, if performed, would be conducted in compliance with local laws and state regulations for

such activities. Those agencies that regulate these activities are included in the circulation of this EIS. In addition, contract requirements would place prohibitions on burning activities in accordance with MoDOT and AHTD procedures.

APPLICABLE REFERENCE: Chapter IV – Environmental Consequences, U.1.b and I.3

COMMENT CODE: 1I

SOURCE: U.S. Environmental Protection Agency

RESPONSE: For those roadway segments with projected volumes in excess of 30,000 vehicles per day (vpd), MoDOT and AHTD are committed to performing additional studies to assess the need for stormwater runoff collection and treatment measures. These assessments would be conducted as part of preliminary design activities and their recommendations would be implemented by the highway agencies.

APPLICABLE REFERENCE: Chapter IV- Environmental Consequences, K.1.b

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COMMENT CODE: 1J

SOURCE: U.S. Environmental Protection Agency

RESPONSE: During the design and construction process, impacted wells will be identified and monitored. If wells or water quality are impacted, they will be repaired or reconstructed to modern standards and regulations.

APPLICABLE REFERENCE: Chapter IV - Environmental Consequences, K.1.b

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COMMENT CODE: 1K

SOURCE: U.S. Environmental Protection Agency

RESPONSE: Section A - Land Use Impacts in Chapter IV - Environmental Consequences states that all of the "Freeway-Build" Alternatives would provide increased attractiveness for economic development, thus having the potential of secondary impacts. In the case of the Far West Alternative, by providing new freeway access to land areas currently not easily accessible and undeveloped, the freeway improvements would undoubtedly increase the rate of development in the area. However, the effects of this new access on secondary impacts would be mitigated by three primary factors.

First, the undeveloped areas west of the Far West Alternative do not have the infrastructure necessary to support land development and the existing Bella Vista development has the infrastructure and considerable capacity for additional residential and commercial development. Secondly, the current, relatively slow rate of new housing starts in Bella Vista suggests that even if the distribution shifted to the west due to the

Far West Alternative, the secondary effects would be minimal due to the lack of development intensity and density. Finally, because US 71 would be a freeway with only one access point west of Bella Vista, the scope of any induced development would be fairly limited due to the controlled access limitations and the constraints of the topography.

For the Near West Alternative, similar mitigating factors would exist. Increased development resulting from the US 71 improvements would likely lack intensity and density. In addition, access from the freeway would be limited to one location near Route 340.

For these reasons, it is concluded that secondary impacts to water quality for the relocation alternatives would be minimal. A prerequisite for systematic impacts to water quality is intense and dense development – neither of which would be reasonably anticipated as secondary impacts. Any light development west of or within Bella Vista, whether resulting from the US 71 improvements or otherwise, would likely result in additional septic sewage disposal systems in the area. However, the type and intensity of the development, and the existing regulations governing residential sewage disposal, would effectively mitigate any indirect water quality impacts.

APPLICABLE REFERENCE: Chapter IV - Environmental Consequences, A.2.b and K.1.b

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COMMENT CODE: IL

SOURCE: U.S. Environmental Protection Agency

RESPONSE: Commitments have been made by MoDOT and AHTD to assess, as part of preliminary design, the need for runoff collection and treatment measures for the "Freeway-Build" Alternatives. For the Existing Alternative in the areas adjacent to Little Sugar Creek, changes to the existing roadway stormwater runoff characteristics (i.e., flowrate, points of discharge and pollutant burden) would be minimal. In this area, extending generally from the state line to the US 71/US 71B Interchange, changes to the impervious surfaces would be limited to isolated interchange construction and some new frontage roads. The location and extent of the US 71 roadway surface, where the traffic volumes would exceed 30,000 vpd, would not change from what currently exists. Regardless, best management practices would be employed in the design and construction of the "Freeway-Build" Alternative.

The Far West Alternative (Preferred Alternative) is not located along the Little Sugar Creek floodplain.

APPLICABLE REFERENCE: Chapter IV – Environmental Consequences, K.1.b

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COMMENT CODE: 1M

SOURCE: Environmental Protection Agency

RESPONSE: The Draft EIS identified potential impacts to Cave Hollow should Alternative FWA2 be selected. However, Alternative FWA3, which would avoid Cave Hollow, was selected as the best alignment in Segment A for the Far West Corridor. (The Far West Alternative was recommended as the preferred alternative.) Consequently, Cave Hollow would not be impacted by the US 71 improvements.

APPLICABLE REFERENCE: Chapter IV – Environmental Consequences, K.2.b

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COMMENT CODE: 1N

SOURCE: U.S. Environmental Protection Agency

RESPONSE: As stated in the EIS, a field investigation of Henson Cave was conducted in the summer of 1996 for the purpose of determining its status as a maternity site for the gray bat. From this field review, it was the conclusion of the MoDOT biologist that the cave is unsuitable as maternity habitat or as a hibernaculum due to the high level of human disturbance. This conclusion was reported to the various agencies at the EIS scoping meeting held on July 30, 1996 and in the Draft EIS.

Prior to the investigation completed in 1996, the issue of impacts to Henson Cave was addressed by MoDOT's EIS for US 71 (I-44 to State Line). Coordination with the USDOI was completed as part of this earlier EIS, including issues relating to caves, water quality, and threatened and endangered species impacts. USDOI offered no comments regarding Henson Cave in its review of the earlier EIS. A Record of Decision for the US-71 improvements (I-44 to State Line) was executed on September 14, 1992, thus authorizing MoDOT to proceed with design development. Henson Cave was <u>not</u> considered an outstanding issue or an issue requiring measures to minimize harm. This ROD would govern the interim improvements for the Far West Alternative.

Since the Draft EIS was issued, additional coordination with the US Fish and Wildlife Service was conducted to verify the significance of the impacts to the cave. It was confirmed that the cave, for the reasons identified by the MoDOT biologist as described above, was not viewed as a significant resource and was not an issue requiring consultation or special design considerations.

APPLICABLE REFERENCE: Chapter IV – Environmental Consequences, K.2.b and P.3.b

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COMMENT CODE: 1O

SOURCE: U.S. Environmental Protection Agency

RESPONSE: The Draft EIS identifies potential impacts to Wind Cave should the Existing Alternative be selected. (Wind Cave is located in Segment D of the Existing Corridor.) However, the Far West Alternative was recommended as the preferred alternative, and consequently, Wind Cave would be avoided by the freeway improvements. In addition to the freeway improvements, the Far West Alternative would include interim improvements along the existing US 71 roadway in Missouri in the vicinity

of Wind Cave. However, all construction would be contained within the existing MoDOT right-of-way in the vicinity of Wind Cave. The existing MoDOT right-of-way is located downstream of the cave. Therefore, Wind Cave would not be adversely affected by the Far West Alternative's interim improvements.

APPLICABLE REFERENCE: Chapter IV – Environmental Consequences, K.2.b

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COMMENT CODE: 1P

SOURCE: U.S. Environmental Protection Agency

RESPONSE: Section 404 Permits have been granted by the US Army Corps of Engineers for the Far West Alternative (ultimate improvements) in accordance with the provisions of the Department of Army Nationwide Permit No. 14 in McDonald County and the Department of Army General Permit GB in Benton County. MoDOT and AHTD will adhere to the provisions of these permits, respectively. Measures to minimize harm to wetlands have already been incorporated into the route selection. Furthermore, construction methods and limitations would include those items listed in Chapter IV – Environmental Consequences, M.3, as stipulated by the permits. Through the more detailed wetlands investigations of the preferred alternative (i.e., Far West Alternative) conducted subsequent to the location public hearing and as supported by the issuance of the permits, it was determined that no jurisdictional wetlands would be impacted by the Far West Alternative. (One wetland site was identified, but commitments have been made by AHTD to avoid this resource during the design phase.) Consequently, construction of wetlands to replace wetland losses is not proposed. Impacts to Waters of the U.S. were identified in the permit applications and resulting permits such that crossing types (culvert or bridge) have been identified. Bridges will be utilized, as identified in the permits, to avoid impacts to the Waters of the U.S. The Section 404 Permits are located in Appendix E.

APPLICABLE REFERENCE: Chapter IV - Environmental Consequences, M.3; Appendix E

COMMENT CODE: 1Q

SOURCE: U.S. Environmental Protection Agency

RESPONSE: The issues of forest block fragmentation and stream encroachment were both considered as factors in the development of the roadway alignments and in the evaluation of the "Freeway-Build" Alternatives. During the alignment studies for the alternatives, all practical care was taken to avoid undue impacts on both forest and stream resources. The Section 404 Permit process also addresses stream resources. As articulated in the response to Comment 1P, commitments have been made as part of the Section 404 Permits regarding the clear spanning with bridges or the construction of drainage culverts for stream crossings.

APPLICABLE REFERENCE: Chapter IV - Environmental Consequences, M.3 and N.2.a; Appendix E

COMMENT CODE: 1R

SOURCE: U.S. Environmental Protection Agency

RESPONSE: As articulated in the response to Comment 1P and 1Q, commitments have been made as part of the Section 404 Permits regarding the clear spanning with bridges or the construction of drainage culverts for stream crossings. Specific commitments for tree replacement and the installation of wildlife corridors are not included beyond the standard provisions or procedures of MoDOT and AHTD regarding these particular issues.

APPLICABLE REFERENCE: Chapter IV - Environmental Consequences, M.3, N.2.a and N.2.b; Appendix E

COMMENT CODE: 1S

SOURCE: U.S. Environmental Protection Agency

RESPONSE: Section A - Land Use Impacts in Chapter IV - Environmental Consequences states that all of the "Freeway-Build" Alternatives would provide increased attractiveness for economic development, thus having the potential of secondary impacts. In the case of the Far West Alternative, by providing new freeway access to land areas currently not easily accessible and undeveloped, the freeway improvements would undoubtedly increase the rate of development in the area. However, the effects of this new access on secondary impacts would be mitigated by three primary factors.

First, the undeveloped areas west of the Far West Alternative do not have the infrastructure necessary to support land development while the existing Bella Vista development has the infrastructure and considerable capacity for additional residential and commercial development. Secondly, the current, relatively slow rate of new housing starting in Bella Vista suggests that even if the distribution shifted to the west due to the Far West Alternative, the secondary effects would be minimal due to the lack of development intensity and density. Finally, because US 71 would be a freeway with only one access point west of Bella Vista, the scope of any induced development would be fairly limited due to the controlled access limitations and the constraints of the topography.

For these reasons, it is concluded that secondary impacts to floodplains for the Far West Alternative would be minimal. A prerequisite for systematic impacts to floodplains and water quality is intense and dense development -- neither of which would be reasonably anticipated as secondary impacts for the Far West Alternative.

APPLICABLE REFERENCE: Chapter IV - Environmental Consequences, A.2.b and O.2.

COMMENT CODE: 1T

SOURCE: U.S. Environmental Protection Agency

RESPONSE: McKisic Creek consists of a linear aquatic habitat corridor with edge terrestrial habitats along the channel bank fringes. Immediately downstream of the Far West Alternative's crossing of the Creek's corridor, the channel and floodplain have been previously altered by the Bella Vista Waste Water Treatment Plant complex and the existing US 71 roadway crossing. Upstream of the Far West Alternative, the Creek is relatively unaltered except for adjacent agricultural activities. Though it is unlikely that the Creek's corridor provides wildlife access to a larger habitat system due to the preexisting barrier created by existing US 71 and the Bella Vista development to the north, the Creek is an important resource from a local perspective. Consequently, precautions would be taken as part of design to minimize impacts to the floodplain. These precautions would include spanning the channel with bridge structures and carefully placing bridge substructure foundations outside of the channel and its banks. This commitment is included as part of the Section 404 Permit granted for Benton County (see Appendix E).

APPLICABLE REFERENCE: Chapter IV - Environmental Consequences, O.2.a; Appendix E

COMMENT CODE: 1U

SOURCE: U.S. Environmental Protection Agency

RESPONSE: As discussed in Summary, Section D - Summary of Major Impacts, 1. Study Corridor Alternative Alignment Evaluation (Phase 1), the best alternative identified within the Near West Corridor for Segment F was Alternative NWF2. This alternative alignment was identified as the best due to the impacts of the other alignment options on Gordon Hollow Creek, its associated wetlands and the Scottsdale Golf Course. Therefore, if the Near West Alternative was selected as preferred, the channel relocation of Gordon Hollow Creek would be avoided.

The Far West Alternative is the preferred alternative.

APPLICABLE REFERENCE: Summary, D.1.b

COMMENT CODE: 1V

SOURCE: U.S. Environmental Protection Agency

RESPONSE: Environmental Justice was evaluated as part of the corridor and alignment selection process. Chapter IV - Environmental Consequences, Section D provides an assessment of the "Freeway-Build" Alternatives and concludes that no adverse disproportional impacts to low income or minority population would result for any of the alternatives.

APPLICABLE REFERENCE: Chapter IV – Environmental Consequences, D.1

COMMENT CODE: 2A (Part 1 and 2)

SOURCE: Arkansas Historic Preservation Program

RESPONSE: In a letter dated June 18, 1997 from the Arkansas Historic Preservation Program (Appendix I), eight potentially NRHP-eligible architectural structures were identified within the preliminary Far West, Near West and Existing Alternatives in Arkansas. This letter was in response to documentation submitted for review for 50+ architectural resources in Arkansas. A similar review was conducted in Missouri, and as documented in a letter from MDNR on October 15, 1997, no structures were determined to be eligible in Missouri (Appendix I).

Since the initial review by the Arkansas SHPO, alignment refinements have been performed to each of the "Freeway-Build" Alternatives to minimize the direct impacts of the improvements to the NRHP-eligible resources. Potential impacts to several of these sites were eliminated due to the selection of the best alternative alignment within each Study Corridor, and then by the selection of the Far West Alternative as the preferred alternative. Consequently, the preferred alternative (i.e., Far West Alternative) would not directly impact any NRHP-eligible architectural structures. Furthermore, it was determined by the Arkansas SHPO after the issuance of the Draft EIS that none of the potentially NRHP-eligible structures in the vicinity of the Far West Alternative would be adversely affected by the project. No additional work is required regarding architectural resources in Missouri or Arkansas for the Far West Alternative. Documentation to this effect is included in Appendix I.

The preferred alternative would not impact any known archeological sites in Arkansas. Similarly in Missouri, the ultimate improvements for the Far West Alternative would also not impact any known archeological sites. However, the interim improvements would impact seven known sites along the existing US 71 roadway.

Phase I archeological investigations of the preferred alternative (i.e., Far West Alternative) were conducted subsequent to the location public hearing. As determined by the Missouri and Arkansas SHPOs, only one site, located in Benton County, would be impacted that has the potential of containing significant information that can contribute to prehistory and history. A Phase II investigation of the site 3BE634 was performed and it was determined to not contain intact subsurface cultural features or deposits or otherwise have the potential to contain information important in prehistory [36 C.F.R. § 60.4(a)]. Therefore, no further work is recommended for this resource.

APPLICABLE REFERENCE: Summary, E.4.b; Chapter IV - Environmental Consequences, Q; Appendix I

COMMENT CODE: 3A

SOURCE: Arkansas Natural Heritage Commission

RESPONSE: While it is stated in the EIS that the Far West Alternative would have the greatest direct and indirect adverse environmental impacts, the alignment of the Far west Alternative was chosen to maximize the avoidance of undue impacts to native plants, animal habitats, and forest fragmentation. Subsequent design development of the preferred alternative would continue to refine the roadway alignment to further minimize any adverse impacts to aquatic and terrestrial resources. The selection of the Far West Alternative as the preferred alternative was based on an overall, balanced review of the engineering, traffic, environmental and social issues.

Plats for the areas west of the current development show that expansion of the Village to the west is planned. Bella Vista Community maps for the western areas of the Village identify the area as "Reserved for Future Development". Even with the implementation of this future planned development, the western area is not anticipated to experience a large amount of growth. The undeveloped areas west of the Far West Alternative do not have the infrastructure necessary to support land development. However, the existing Bella Vista development does have the infrastructure and considerable capacity for additional residential and commercial development. The current, relatively slow rate of new housing starts in Bella Vista suggests that even if the distribution shifted to the west due to the Far West Alternative, the secondary effects would be minimal due to the lack of development intensity and density. Finally, because US 71 would be a freeway with only one access point west of Bella Vista, the scope of any induced development would be fairly limited due to the controlled access limitations and the constraints of the topography.

APPLICABLE REFERENCE: Summary, E; Chapter IV – Environmental Consequences, K.1.b, P.1 and N.2.b

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COMMENT CODE: 3B

SOURCE: Arkansas Natural Heritage Commission

RESPONSE: Every reasonable effort shall be made to protect the quality of surface water and ground water. Chapter IV, Section K.1. b states that no specific karstic features were identified during the literature search and field reconnaissance. Field reconnaissance activities consisted of on-site verification of recorded or known cave features, and observations of the areas around the alternative alignments. Impacts, if any, would likely occur in the upper, unconfined Springfield Plateau Aquifer – not greatly affecting the value of the resource from its present state. Furthermore, MoDOT and AHTD have committed to study in more detail the need for stormwater runoff collection and treatment measures. To be determined by these studies as part of the roadway design development, "Best Management Practices" or BMP's, would be followed during preliminary design, final design, and construction. BMP's, utilizing structural and non-structural systems, can effectively minimize the impacts to water quality. Structural BMP's such as detention ponds, filters, infiltration basins, grassed swales, and constructed wetlands use mechanical means to remove pollutants. Other non-structural BMP's such as street sweeping, debris and litter removal, and control of fertilizer, pesticide, and herbicide use can control pollutants.

During the design and construction process impacted wells will be identified and monitored. If wells or water quality is impacted, they will be repaired, reconstructed, or replaced to modern standards and regulations. Furthermore, should an unknown cave feature be discovered during the design or construction process, appropriate measures would be implemented to possibly avoid or mitigate the concern, as deemed necessary. A description of the resulting action should this occur is provided in Chapter IV – Environmental, Section K.1.b.

APPLICABLE REFERENCE: Chapter IV – Environmental Consequences, K.1.b

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COMMENT CODE: 3C

SOURCE: Arkansas Natural Heritage Commission

RESPONSE: While it is true that the Far West Alternative has the greatest direct and indirect adverse environmental impacts, it can be seen in the summary that other factors such as traffic safety and overall system capacity were strong influences in the decision to select the Far West Alternative. Traffic capacity concerns beyond 2020 would not be suitably met by the Existing Alternative. This alternative would reach its capacity by 2020 and additional lanes would need to be constructed, generally in the southern segments, to efficiently serve the travel demands beyond 2020. There are also tight physical constraints with the Existing Alternative, resulting in inherent difficulties with future roadway widening. If the study horizon was extended beyond 2020, this alternative would not be the lowest cost improvement and its adverse impacts to the surrounding environments would be measurably greater.

As stated in the EIS, much of the Bella Vista population is comprised of elderly drivers so safety is a major factor in selection of the preferred alternative. The Far West Alternative would provide the best crash benefits in terms of safety. The Far West Alternative also has the ability to effectively separate the local trips from the through trips, thus improving traffic safety through the Bella Vista area.

From a long-range planning perspective, the Far West Alternative would provide a superior framework for the long-term transportation needs of the Study Area. The benefits of greater overall system capacity, traffic safety, improved local access, and little to no adverse impacts to existing business/commercial facilities during construction all support the decision to select the Far West Alternative as the preferred alternative.

As mentioned in Comment 3A, the plats for the western Bella Vista area show that development of the western areas was already planned for future expansion. This designation is evident on the Bella Vista Community map for the western area, identified under the title, "Reserved for Future Development". Also, a prerequisite for systematic impacts to water quality is intense and dense development – neither of which would be reasonably anticipated as secondary impacts for the relocation alternatives.

APPLICABLE REFERENCE: Summary, E

COMMENT CODE: 4A

SOURCE: U.S. Army Corps of Engineers

RESPONSE: In compliance with the Section 404 Permits, detailed plans of each bridged crossing will be submitted to the office of Engineering and Technical Services Division, Regulatory Section for a final permit determination and well in advance of any work. This will be completed for all bridged crossings as identified in Nationwide Permit No. 13862 for McDonald County and General Permit No. 13862 for Benton County (see Appendix E).

APPLICABLE REFERENCE: Chapter IV – Environmental Consequences, L.2.a and M.2; Appendix E

COMMENT CODE: 5A

SOURCE: U.s. Department of Housing & Urban Development

RESPONSE: None

APPLICABLE REFERENCE: None

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US 71 LOCATION STUDY (Bella Vista to Pineville)

Design Criteria Summary (Metric)

Criteria Type	Design Feature	Freeway	Arterial	Collector Route	Local Road	Ramp
Roadway Type	Access Control	Fully-Controlled (Fully-Limited)	Partially -Controlled (Limited)	Partially Controlled (Limited)	Partially-Controlled (Partially-Limited)	Fully-Controlled (Fully-Limited)
	Intersection Type	Interchange / Grade separated	Mixed	Mixed	At-Grade	N/A
Geometrics	Design Speed	110 km/h(70mph)	100 km/h(60 mph)	90 km/h(55 mph)	60 km/h(40mph)	100 km/h(60mph)
	Design Vehicle	WB-15	WB-15	WB-15	SU	WB-15
	Horizontal Curvature (Min.) (Radius-Meters)	500	395	305	125	395
	Vertical Grades (Max.)	4%	4%	5%	10%	5%
	Vertical Clearances (Min.) (Meters)					
	- Over Roadway	5.1	5.1	5.1	4.8	5.1
	- Over Railroad	7.2	7.2	7.2	7.2	7.2
	K-value					
	- Crest (Min.-Des.)	80-151	62-105	43-71	14-18	62-105
	- Sag (Min.-Des.)	43-62	37-51	30-40	15-18	37-51
Cross Section	Number of Lanes	4 Lanes	As Required	As Required	2 Lanes	As Required
	Lane Width	3.6	3.6	3.6	3.3	5.4 - 1 lane 7.2 - 2 lane
	Shoulders					
	- Inside	1.8	1.8	--	--	1.2 (Diamond)
	- Outside	3.0	3.0	2.4	1.8	1.8 (Diamond)
	- Inside					
	- Outside					3.0 (1 Lane Directional Loop)
	Median Width (Meters)	18	--	--	--	--
	Cross Slope					
	- Driving Lanes	2.0%	2.0%	2.0%	2.0%	2.0%
	- Shoulder	4.0%	4.0%	4.0%	4.0%	4.0%
	Grading Side Slopes (Vertical:Horizontal)					
	- Clear Zone	1:4 to 1: 6	1:4 to 1: 6	1:4 to 1: 6	N/A	1:6
	- Fill (Max.)	1:3	1:3	1:3	1:3	1:3
	- Cut (Max.)	1:3	1:3	1:3	1:3	1:3
	Ditch Depth (Min.) (Meters)	0.5	0.5	0.5	0.5	0.5
Drainage	Design Frequency					
	- Culverts	50-Year	50-Year	50-Year	25-Year	50-Year
	- Bridges	100-Year	100-Year	100-Year	50-Year*	100-Year
	- Pavement Drainage	10-Year	10-Year	10-Year	10-Year	10-Year

* 100-Year for regulatory streams

Note: This table is a compilation of AHTD and MoDOT design criteria and standards specifically developed as a total-project methodology for this project.

APPENDIX A

APPENDIX B

Preliminary Corridor Screening

Preliminary Corridor Screening Matrix (Tier 1)

EVALUATION FACTOR	UNITS	FAR WEST CORRIDOR		NEAR WEST CORRIDOR		EXISTING	EAST CORRIDOR	
		HIGH	LOW	HIGH	LOW	CORRIDOR	HIGH	LOW
ENGINEERING/TRAFFIC								
Length	Meters	31,800	29,920	30,550	29,300	25,700	36,900	34,612
Order-of-Magnitude Construction Cost	$ (Millions)	$121.97	$114.42	$103.38	$98.32	$95.14	$138.29	$109.63
Staged Construction	Rating[1]	1	1	3	3	4	2	2
Change in 1996 Regional MOE's[6,7]								
Daily Vehicle Kilometers Travelled	VKT (1,000's)	2,222	2,222	2,216	2,216	2,169	2,233	2,233
Daily Vehicle Hours Travelled	VHT	42,390	42,390	42,690	42,690	42,210	43,020	43,020
Average Increase in Speed	Kilometers/Hour	2.8	2.8	2.3	2.3	1.8	2.3	2.3
Local Access	Rating[1]	3	2	3	3	4	3	2
ENVIRONMENTAL								
Hazardous Waste Sites	Number[2]	1/0/3	0/0/2	2/6/3	2/3/2	2/11/2	3/7/3	1/2/1
Cultural Resource Sites	Number[3]	3/5/0	1/3/0	10/1/0	7/0/0	15/11/0	12/1/0	3/0/0
Wetlands								
Ponds	Number/Hectares	50/13.1	38/8.3	39/13.9	34/9.6	18/8.2	49/14	30/8.4
Streams (intermittent and perennial)	Number/Meters	6/2,043	4/1,219	11/4,511	9/3,535	16/5,839	15/6,978	9/3,565
Floodplain Crossings	Meters	700	290	2,670	1,670	3,660	3,070	1,980
Parkland	Type/Number	0/0	0/0	0/0	0/0	0/0	0/0	0/0
Natural Features	Number	1	0	3	3	5	5	3
Terrestrial Communities								
Dry Limestone-Dolomite Forest	Hectares	0	0	45	45	39	97	49
Dry Mesic Limestone-Dolomite Forest	Hectares	615	513	468	431	139	539	413
Dry Mesic Bottomland Forest	Hectares	10	5	11	0	2.5	7	0
Dry Limestone-Dolomite Cliff	Hectares	0	0	0	0	6	0	0
Unimproved Pasture	Hectares	418	285	279	257	165	482	347
SOCIAL								
Impacts to Existing Structures								
Residential	Number[4]	37/20/62	22/5/38	151/27/31	67/14/13	68/2/0	109/52/62	49/3/28
Business	Number[5]	9/9	0/7	23/2	11/2	100/2	19/13	4/3
Public Use	Number	1	0	2	0	10	0	0
Environmental Justice	Rating[1]	3	3	3	3	3	3	3
Noise Impacts	Rating[1]	4	4	1	1	3	4	4
Regional Land Use	Rating[1]	4	4	2	2	5	3	3

Notes:

(1) Rating Scale
5 - Excellent, 4 - Good, 3 - Fair (No Effect), 2 - Marginally Poor, 1 - Poor

(2) High/Moderate/Low Risk

(3) Archeological/Architecture/Historic

(4) Houses/Mobile Homes/Outbuildings

(5) General/Poultry

(6) Existing US 71 speed set at 73 kph (45 mph) for Far West and Near West Corridors and 65 kph (40 mph) for Eastern Corridor.

(7) Existing system 1996 Daily MOE's: 1,341,000 VKT; 43,524 VHT; 49.6 kph (30.8 mph) average speed.

Preliminary Alternatives Evaluation Matrix (Tier 1)
Far West Corridor

EVALUATION FACTOR	UNITS	A1	A2	B1/C1	B2/C2	D1	D2	E1	H1	H2
ENGINEERING/TRAFFIC										
Length	Meters	8,100	7,700	6,250	5,950	10,000	9,020	1,600	5,650	5,850
Order-of-Magnitude Cost (millions)	Dollars	$31.98	$34.96	$24.40	$26.86	$26.14	$26.45	$5.41	$28.29	$26.49
Staged Construction	Rating(1)	1	1	1	1	2	2	2	2	2
Regional MOE's (VKT/VHT)	Kilometers/Hours	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)
Local Access	Rating(1)	2	2	2	2	3	2	2	2	2
ENVIRONMENTAL										
Hazardous Waste Sites	Number(2)	0/0/0	0/0/0	0/0/1	0/0/0	0/0/0	1/0/0	0/0/0	0/0/1	0/0/2
Cultural Resource Sites	Number(3)	1/0/0	2/0/0	0/0/0	0/0/0	0/3/0	0/4/0	0/0/0	1/0/0	0/1/0
Wetlands										
Ponds	Number/Hectares	8/1.8	7/1.4	1/0.2	4/1.0	27/7.3	22/5.1	0/0.0	11/3.0	8/1.6
Streams (intermittent and perennial)	Number/Meters	1/335	3/762	1/335	1/610	0/0	0/0	0/0	2/549	2/671
Floodplain Crossings	Meters	0	370	140	150	0	0	0	150	180
Parkland	Type/Number	0/0	0/0	0/0	0	0/0	0/0	0/0	0/0	0/0
Natural Features	Number	0	0	1	0	0	0	0	0	0
Terrestrial Communities										
Dry Limestone-Dolomite Forest	Hectares	0	0	0	0	0	0	0	0	0
Dry Mesic Limestone-Dolomite Forest	Hectares	134	131	180	166	62	134	36	131	118
Dry Mesic Bottomland Forest	Hectares	0	0	0	0	5	10	0	0	0
Dry Limestone-Dolomite Cliff	Hectares	0	0	0	0	0	0	0	0	0
Unimproved Pasture	Hectares	110	98	8	12	235	125	12	42	49
SOCIAL										
Displacements										
Residential	Number(4)	1/1/0	1/0/0	0/0/0	1/0/0	16/4/23	16/14/34	4/1/12	1/0/3	15/4/16
Business	Number(5)	0/0	1/0	0/0	0/0	0/9	0/7	0/0	0/0	8/0
Public Use	Number	0	0	0	0	0	0	0	1	0
Noise Receptors	Number	0	0	0	0	0	0	0	1	0
Regional Land Use	Rating(1)	4	4	3	4	4	3	4	4	3

Notes:

(1) Rating Scale
5 - Excellent, 4 - Good, 3 - Fair, 2 - Marginally Poor, 1 - Poor

(2) High/Moderate/Low Risk

(3) Archeological/Architecture/Historic

(4) Houses/Mobile Homes/Outbuildings

(5) General/Poultry

Preliminary Alternatives Evaluation Matrix (Tier 1)
Near West Corridor

EVALUATION FACTOR	UNITS	A1	A2	B1	C1/D1/E1	C1/D2/E2	B2/D3/E3	F1/F4	F2/F3/F4	F2/F5	G1	H1	H2
ENGINEERING/TRAFFIC													
Length	Meters	4,000	5,350	2,400	4,650	4,700	5,600	4,500	4,450	4,400	2,850	5,650	5,850
Order-of-Magnitude Cost (millions)	Dollars	$13.03	$11.26	$5.87	$18.52	$16.87	$16.59	$16.00	$14.67	$15.24	$10.41	$28.29	$26.49
Staged Construction	Rating[1]	3	3	3	2	2	2	2	2	2	2	2	2
Regional MOE's (VKT/VHT)	Kilometers/Hours	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)
Local Access	Rating[1]	3	3	3	3	3	3	3	3	3	3	3	3
ENVIRONMENTAL													
Hazardous Waste Sites	Number[2]	0/0/1	1/0/0	1/3/0	0/0/0	0/0/0	0/3/0	0/0/0	0/0/0	0/0/0	0/0/0	0/0/1	0/0/2
Cultural Resource Sites	Number[3]	2/0/0	0/0/0	2/0/0	3/0/0	3/0/0	5/0/0	0/0/0	0/0/0	0/0/0	0/0/0	1/0/0	0/1/0
Wetlands													
Ponds	Number/Hectares	5/2.6	2/0.4	4/1.6	3/0.6	3/0.6	4/2.9	6/1.4	6/1.6	7/2.0	6/1.4	11/3.0	8/1.6
Streams (intermittent and perennial)	Number/Meters	2/853	3/975	1/335	3/1,677	3/1,433	1/823	0/0	0/0	0/0	0/0	2/549	2/671
Floodplain Crossings	Meters	300	1000	0	510	1,190	200	0	0	0	0	170	180
Parkland	Type/Number	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
Natural Features	Number	1	2	0	0	0	0	0	0	0	0	0	0
Terrestrial Communities													
Dry Limestone-Dolomite Forest	Hectares	9	16	4	16	16	16	0	0	0	0	0	0
Dry Mesic Limestone-Dolomite Forest	Hectares	56	64	0	64	67	76	79	91	83	50	131	118
Dry Mesic Bottomland Forest	Hectares	0	0	0	0	4	4	0	7	7	0	0	0
Dry Limestone-Dolomite Cliff	Hectares	0	0	0	0	0	0	0	0	0	0	0	0
Unimproved Pasture	Hectares	56	39	0	56	49	54	42	35	43	36	42	49
SOCIAL													
Displacements													
Residential	Number[4]	4/0/0	6/0/0	24/1/0	12/10/1	5/11/2	65/12/1	23/2/4	32/9/0	33/9/0	4/1/9	1/0/3	15/4/16
Business	Number[5]	0/0	3/0	0/2	0/0	0/0	3/0	8/0	9/0	9/0	0/0	0/0	8/0
Public Use	Number	0	0	0	0	0	0	2	2	0	0	0	0
Noise Receptors	Number	0	0	0	0	0	0	1	2	0	0	0	0
Regional Land Use	Rating[1]	3	3	2	2	2	1	2	2	2	2	4	3

Notes:
(1) Rating Scale
5 - Excellent, 4 - Good, 3 - Fair, 2 - Marginally Poor, 1 - Poor
(2) High/Moderate/Low Risk
(3) Archeological/Architecture/Historic
(4) Houses/Mobile Homes/Outbuildings
(5) General/Poultry

Preliminary Alternatives Evaluation Matrix (Tier 1)
Existing US 71 Corridor

EVALUATION FACTOR	UNITS	A1	A2	B1	B2	C1	D1
ENGINEERING/TRAFFIC							
Length	Meters	4,000	5,350	2,400	1,800	1,200	10,950
Order-of-Magnitude Cost (millions)	Dollars	$12.60	$11.26	$5.44	$6.67	$3.73	$55.44
Staged Construction	Rating(1)	3	3	3	3	3	5
Regional MOE's (VKT/VHT)	Kilometers/Hours						
Local Access	Rating(1)	3	3	3	3	3	4
ENVIRONMENTAL							
Hazardous Waste Sites	Number(2)	0/0/1	1/0/0	1/3/0	0/2/0	0/2/0	0/4/1
Cultural Resource Sites	Number(3)	2/0/0	0/0/0	2/0/0	5/0/0	0/0/0	6/11/0
Wetlands							
Ponds	Number/Hectares	5/2.6	2/0.4	4/1.6	2/1.8	2/0.8	3/1.0
Streams (intermittent and perennial)	Number/Meters	2/853	3/975	1/335	1/823	2/823	7/2,030
Floodplain Crossings	Meters	300	1,000	0	200	360	1,800
Parkland	Type/Number	0/0	0/0	0/0	0/0	0/0	0/0
Natural Features	Number	1	2	0	0	0	2
Terrestrial Communities							
Dry Limestone-Dolomite Forest	Hectares	9	16	4	5	0	5
Dry Mesic Limestone-Dolomite Forest	Hectares	56	64	0	8	5	6
Dry Mesic Bottomland Forest	Hectares	0	0	0	0	2	0.5
Dry Limestone-Dolomite Cliff	Hectares	0	0	0	0	0	6
Unimproved Pasture	Hectares	56	39	0	41	29	0
SOCIAL							
Displacements							
Residential	Number(4)	4/0/0	6/0/0	24/1/0	13/1/0	4/0/0	17/0/0
Business	Number(5)	0/0	3/0	8/2	5/0	4/0	80/0
Public Use	Number	0	0	0	0	0	10
Noise Receptors	Number	0	0	0	0	0	10
Land Use							
Regional	Rating(1)	5	5	5	5	5	5
Local (Existing)	Rating(1)	4	4	2	2	5	1
Local (Planned)	Rating(1)	4	4	3	4	5	5

A 400' corridor was used for alignment D-1.

Notes:

(1) Rating Scale
5 - Excellent, 4 - Good, 3 - Fair, 2 - Marginally Poor, 1 - Poor

(2) High/Moderate/Low Risk

(3) Archeological/Architecture/Historic

(4) Houses/Mobile Homes/Outbuildings

(5) General/Poultry

Preliminary Alternatives Evaluation Matrix (Tier 1)
East Corridor

EVALUATION FACTOR	UNITS	A1	A2	B1/B2/B3/B5	B4/B5	B6	C1	D1	D2	E1	E2	F1	F2
ENGINEERING/TRAFFIC													
Length	Meters	4,000	5,350	15,220	13,650	13,900	1,550	5,500	5,880	3,800	4,100	762	800
Order-of-Magnitude Cost (millions)	Dollars	$12.60	$11.26	$57.55	$49.71	$76.67	$4.05	$16.05	$16.32	$13.75	$12.15	$3.64	$3.81
Staged Construction	Rating[1]	3	3	2	1	1	1	2	2	2	2	2	2
Regional MOE's (VKT/VHT)	Kilometers/Hours	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)
Local Access	Rating[1]	3	3	3	2	2	2	2	3	2	2	2	2
ENVIRONMENTAL													
Hazardous Waste Sites	Number[2]	0/0/1	1/0/0	2/6/0	1/2/0	0/2/0	0/0/0	0/1/0	0/0/0	0/0/0	0/0/1	0/0/0	0/0/1
Cultural Resource Sites	Number[3]	2/0/0	0/0/0	7/0/0	0/0/0	0/0/0	0/0/0	0/1/0	0/0/0	1/0/0	3/0/0	0/0/0	0/0/0
Wetlands													
Ponds	Number/Hectares	5/2.6	2/0.4	13/3.8	13/3.6	3/0.8	3/0.6	13/3.2	14/3.6	2/0.4	10/2.6	2/0.4	2/0.4
Streams (intermittent and perennial)	Number/Meters	2/853	3/975	5/2,164	2/853	7/3,901	0/0	1/457	1/427	2/792	1/457	0/0	0/0
Floodplain Crossings	Meters	300	1,000	730	350	1,200	0	240	0	300	300	30	30
Parkland	Type/Number	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
Natural Features	Number	1	2	0	2	2	0	0	0	0	0	0	0
Terrestrial Communities													
Dry Limestone-Dolomite Forest	Hectares	9	16	56	35	24	0	0	0	16	0	0	0
Dry Mesic Limestone-Dolomite Forest	Hectares	56	64	151	205	233	28	58	54	78	52	8	22
Dry Mesic Bottomland Forest	Hectares	0	0	0	0	0	0	7	0	0	0	0	0
Dry Limestone-Dolomite Cliff	Hectares	0	0	0	0	0	0	0	0	0	0	0	0
Unimproved Pasture	Hectares	56	39	178	168	113	14	104	123	21	72	0	0
SOCIAL													
Displacements													
Residential	Number[4]	4/0/0	6/0/0	63/46/24	18/35/21	14/1/9	6/1/4	12/1/17	9/3/10	13/1/7	10/0/5	5/1/10	0/0/0
Business	Number[5]	0/0	3/0	16/2	2/12	1/4	0/0	0/1	0/1	0/0	0/0	0/0	0/0
Public Use	Number	0	0	0	0	0	0	0	0	0	0	0	0
Noise Receptors	Number	0	0	0	0	0	0	0	0	0	0	0	0
Regional Land Use	Rating[1]	3	3	3	2	2	3	3	3	3	3	3	3

Notes:

(1) Rating Scale
5 - Excellent, 4 - Good, 3 - Fair, 2 - Marginally Poor, 1 - Poor

(2) High/Moderate/Low Risk

(3) Archeological/Architecture/Historic

(4) Houses/Mobile Homes/Outbuildings

(5) General/Poultry

APPENDIX B

Reasonable Alternatives Evaluation

Existing Corridor (May 1997)
Reasonable Alternatives Evaluation Matrix

EVALUATION FACTOR	UNITS	SEGMENT A/B/C	SEGMENT D	SEGMENT E
ENGINEERING				
Length	Kilometers	11.6	3.6	11.2
Construction Cost				
Construction	Dollars (Million)	43.0	18.1	63.8
Right-of-Way	Dollars (Million)	2.1	2.1	11.3
Total Construction Cost	Dollars (Million)	45.1	20.2	75.1
Staged Construction	Rating(1)	NA	NA	NA
Maintenance of Traffic	Rating(1)	NA	NA	NA
TRAFFIC				
Local Access	Rating(1)	NA	NA	NA
Regional MOE's (2020) Change from "No-Build"				
Vehicle Kilometers of Travel Reduced	Kilometers	NA	NA	NA
Vehicle Hours of Travel Reduced	Hours	NA	NA	NA
Projected Reduction in Accidents (2020)				
Fatal Accidents	Number	NA	NA	NA
Personal Injury Accidents	Number	NA	NA	NA
Property Damage Only (PDO) Accidents	Number	NA	NA	NA
ENVIRONMENTAL				
Parkland	Type	0	0	0
	Number	0	0	0
Waters of the U.S.				
Ponds: High Quality	Number	1	3	0
	Hectares	0.06	0.19	0.00
Ponds: Other	Number	2	4	1
	Hectares	0.11	0.55	0.05
Streams: Intermittent	Number	2	1	0
	Hectares	0.11	0.03	0.00
Streams: Perennial	Number	1	1	9
	Hectares	0.06	0.43	2.96
Floodplain (100 Year)	Hectares	3.8	2.9	8.8
Floodplain Crossings	Meters	490	460	270
Threatened and Endangered Species	Number	0	0	0
Natural Community Impacts				
Dry Limestone-Dolomite Forest	Hectares	13.2	6.5	0.0
Dry Mesic Limestone-Dolomite Forest	Hectares	26.5	4.9	5.3
Dry Mesic Bottomland Forest	Hectares	0.0	0.0	0.0
Woodlot	Hectares	0.0	0.0	0.0
Unimproved Pasture	Hectares	59.0	17.8	1.3
Habitat Fragmentation	Number(2)	0	0	0
Prime Farmlands	Hectares	3.64	4.45	1.65
Statewide Important Farmland	Hectares	7.28	6.90	1.44
Visual and Aesthetic Considerations	Rating(1)	4	5	3
Air Quality	Rating(1)	0	0	0
Cultural Resources				
Predictive Archeological Sites (Impact Probability)	Rating(1)	3	5	5
Previously Recorded Archeological Sites	Number	0	2	5
Historic Sites	Number	0	0	0
Architectural Sites	Number	11	2	6
Hazardous Waste Sites				
High Risk	Number	0	0	1
Moderate Risk	Number	0	2	1
Low Risk	Number	0	0	1
Natural Features and Caves	Number	1	1	0
SOCIAL AND ECONOMIC				
Impacts to Existing Structures				
Residential				
House	Number	3	3	6
Mobile Home	Number	2	1	0
Business				
General	Number	0	4	11
Poultry	Number	0	0	0
Public Use	Number	0	0	3
Noise Impacts				
NAC Receptors	Number	16	5	101
Additional "Substantial" Increase Receptors	Number	15	0	0
Total NAC Receptors Along Existing US 71	Number	7	0	312
Compatibility w/ Current Land Use	Rating	NA	NA	NA
Long-Term Regional Investment	Rating	NA	NA	NA
Impacts to Businesses During Construction	Rating	NA	NA	NA
Economic Considerations				
Highway User Cost Savings	Dollars (Million)	NA	NA	NA
O&M Costs	Dollars (Million)	NA	NA	NA
Environmental Justice	Rating(1)	NA	NA	NA

Notes: Data shown in the table represent analysis of the alternatives as of the date shown.
Adjustments and updates of the data subsequent to the date shown have occurred and are documented in the EIS.

(1) Rating Scale
5 - Excellent (High), 4 - Good (Medium/High), 3 - Fair (Medium), 2 - Marginally Poor (Low/Medium), 1 - Poor (Low)
(2) Number of 202 Hectare Forest Blocks (500 Acre Forest Blocks)
? Data Unavailable

= Selected Alternative

Reasonable Alternatives Evaluation Matrix (May 1997)

EVALUATION FACTOR	UNITS	SEGMENT A			SEGMENT B/C		SEGMENT D		SEGMENT H	
		A1	A2	A3	B1C1	B2C2	D1	D2	H1	H2
ENGINEERING										
Length	Kilometers	7.4	7.2	7.2	5.8	5.5	11.3	10.5	6.5	6.1
Construction Cost										
Construction	Dollars (Million)	39.8	40.0	38.5	22.8	22.0	33.8	33.4	29.1	25.4
Right-of-Way	Dollars (Million)	0.4	0.4	0.4	0.3	0.3	2.0	1.7	1.4	2.3
Total Construction Cost	Dollars (Million)	40.2	40.4	38.9	23.1	22.3	35.8	35.1	30.5	27.7
Staged Construction	Rating[1]	NA	NA	NA	NA	NA	NA	NA	NA	NA
Maintenance of Traffic	Rating[1]	NA	NA	NA	NA	NA	NA	NA	NA	NA
TRAFFIC										
Local Access	Rating[1]	NA	NA	NA	NA	NA	4	1	NA	NA
Regional MOE's (2020) Change from "No-Build"										
Vehicle Kilometers of Travel Reduced	Kilometers	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vehicle Hours of Travel Reduced	Hours	NA	NA	NA	NA	NA	NA	NA	NA	NA
Projected Reduction in Accidents (2020)										
Fatal Accidents	Number	NA	NA	NA	NA	NA	NA	NA	NA	NA
Personal Injury Accidents	Number	NA	NA	NA	NA	NA	NA	NA	NA	NA
Property Damage Only (PDO) Accidents	Number	NA	NA	NA	NA	NA	NA	NA	NA	NA
ENVIRONMENTAL										
Parkland	Type	0	0	0	0	0	0	0	0	0
	Number	0	0	0	0	0	0	0	0	0
Waters of the U.S.										
Ponds: High Quality	Number	1	0	0	0	0	0	0	0	1
	Hectares	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
Ponds: Other	Number	3	3	1	0	1	12	8	2	1
	Hectares	0.38	0.23	0.15	0.00	0.01	1.63	0.49	0.36	0.02
Streams: Intermittent	Number	1	3	3	1	1	0	0	0	0
	Hectares	0.03	0.29	0.29	0.05	0.01	0.00	0.00	0.00	0.00
Streams: Perennial	Number	0	0	0	0	0	0	0	2	2
	Hectares	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.33
Floodplain (100 Year)	Hectares	1.1	3.8	4.9	0.9	2.5	0.0	0.0	1.8	1.8
Floodplain Crossings	Meters	100	265	365	90	250	0	0	150	150
Threatened and Endangered Species	Number	0	0	0	0	0	0	0	0	0
Natural Community Impacts										
Dry Limestone-Dolomite Forest	Hectares	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dry Mesic Limestone-Dolomite Forest	Hectares	58.3	63.6	60.2	58.9	50.7	19.9	48.5	44.7	46.0
Dry Mesic Bottomland Forest	Hectares	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Woodlot	Hectares	0.0	0.0	0.0	0.0	0.0	26.1	13.0	0.0	0.0
Unimproved Pasture	Hectares	31.5	30.7	35.0	3.7	9.5	73.9	48.6	15.9	13.4
Habitat Fragmentation	Number[2]	0	0	0	2	0	0	0	1	0
Prime Farmlands	Hectares	1.21	0.60	0.60	0.40	0.40	15.08	2.23	3.25	3.25
Statewide Important Farmland	Hectares	2.02	3.64	3.64	9.87	7.92	33.10	3.48	0.34	0.34
Visual and Aesthetic Considerations	Rating[1]	3	3	3	2	2	4	3	3	2
Air Quality	Rating[1]	0	0	0	0	0	0	0	0	0
Cultural Resources										
Predictive Archeological Sites (Impact Probability)	Rating[1]	1	1	1	2	2	2	2	2	2
Previously Recorded Archeological Sites	Number	0	0	0	0	0	0	0	0	0
Historic Sites	Number	0	0	0	0	0	0	0	0	0
Architectural Sites	Number	0	0	1	0	0	6	11	4	4
Hazardous Waste Sites										
High Risk	Number	0	0	0	0	0	0	0	0	0
Moderate Risk	Number	0	0	0	0	0	0	0	0	0
Low Risk	Number	0	0	0	0	0	0	1	2	1
Natural Features and Caves	Number	0	1	0	0	0	0	0	0	0
SOCIAL AND ECONOMIC										
Impacts to Existing Structures										
Residential										
House	Number	0	0	1	0	0	10	7	2	6
Mobile Home	Number	0	0	0	0	0	1	11	2	1
Business										
General	Number	0	0	0	0	0	0	0	2	2
Poultry	Number	0	0	0	0	0	0	0	0	1
Public Use	Number	0	0	0	0	0	0	0	0	0
Noise Impacts										
NAC Receptors	Number	1	0	0	0	1	10	15	0	4
Additional "Substantial" Increase Receptors	Number	3	7	6	5	6	34	48	12	18
Total NAC Receptors Along Existing US 71	Number	NA	NA	NA	NA	NA	NA	NA	NA	NA
Compatibility w/ Current Land Use	Rating	NA	NA	NA	NA	NA	NA	NA	NA	NA
Long-Term Regional Investment	Rating	NA	NA	NA	NA	NA	NA	NA	NA	NA
Impacts to Businesses During Construction	Rating	NA	NA	NA	NA	NA	NA	NA	NA	NA
Economic Considerations										
Highway User Cost Savings	Dollars (Million)	NA	NA	NA	NA	NA	NA	NA	NA	NA
O&M Costs	Dollars (Million)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Environmental Justice	Rating[1]	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes: Data shown in the table represent analysis of the alternatives as of the date shown. Adjustments and updates of the data subsequent to the date shown have occurred and are documented in the EIS.

(1) Rating Scale
5 - Excellent (High), 4 - Good (Medium/High), 3 - Fair (Medium), 2 - Marginally Poor (Low/Medium), 1 - Poor (Low)

(2) Number of 202 Hectare Forest Blocks (500 Acre Forest Blocks)

? Data Unavailable

■ = Most Favorable

□ = Selected Alternative

Reasonable Alternatives Evaluation Matrix (May 1997)

EVALUATION FACTOR	UNITS	EXISTING SEGMENT A/B/C	SEGMENT D/E D1E1	SEGMENT F F1 (F1,4,8)	SEGMENT F F2 (F1,3,5,6,8)	SEGMENT F F3 (F2,5,6,8)	SEGMENT F F4 (F1,3,5,7)	SEGMENT F F5 (F2,5,7)	SEGMENT G G1	SEGMENT H H1	SEGMENT H H2
ENGINEERING											
Length	Kilometers	11.6	2.7	6.7	6.5	6.6	6.5	6.6	3.4	6.5	6.1
Construction Cost											
Construction	Dollars (Million)	43.0	10.0	28.6	26.0	28.7	26.5	28.4	13.3	29.1	25.4
Right-of-Way	Dollars (Million)	2.1	0.2	1.9	2.9	2.5	2.4	2.0	0.6	1.4	2.3
Total Construction Cost	Dollars (Million)	45.1	10.2	30.5	28.9	31.2	28.9	30.4	13.9	30.5	27.7
Staged Construction	Rating(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Maintenance of Traffic	Rating(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TRAFFIC											
Local Access	Rating(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Regional MOE's (2020) Change from "No-Build"											
Vehicle Kilometers of Travel Reduced	Kilometers	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vehicle Hours of Travel Reduced	Hours	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Projected Reduction in Accidents (2020)											
Fatal Accidents	Number	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Personal Injury Accidents	Number	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Property Damage Only (PDO) Accidents	Number	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ENVIRONMENTAL											
Parkland	Type	0	0	0	0	0	0	0	0	0	0
	Number	0	0	0	0	0	0	0	0	0	0
Waters of the U.S.											
Ponds: High Quality	Number	1	2	0	0	0	3	3	0	0	1
	Hectares	0.06	0.15	0.00	0.00	0.00	0.18	0.18	0.00	0.00	0.08
Ponds: Other	Number	2	1	4	4	4	3	3	1	2	1
	Hectares	0.11	0.01	0.59	0.59	0.59	0.52	0.52	0.12	0.36	0.02
Streams: Intermittent	Number	2	0	1	0	0	0	0	0	0	0
	Hectares	0.11	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Streams: Perennial	Number	1	1	1	1	1	1	1	0	2	2
	Hectares	0.06	0.01	0.10	0.10	0.11	0.10	0.11	0.00	0.33	0.33
Floodplain (100 Year)	Hectares	3.8	1.2	3.7	2.0	2.3	2.0	2.3	0.0	1.8	1.8
Floodplain Crossings	Meters	490	0	160	120	230	120	230	0	150	150
Threatened and Endangered Species	Number	0	0	0	0	0	0	0	0	0	0
Natural Community Impacts											
Dry Limestone-Dolomite Forest	Hectares	13.2	11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dry Mesic Limestone-Dolomite Forest	Hectares	26.5	0.0	40.8	40.2	49.5	37.3	46.6	26.6	44.7	46.0
Dry Mesic Bottomland Forest	Hectares	0.0	0.0	0.0	0.0	0.0	4.0	4.0	0.0	0.0	0.0
Woodlot	Hectares	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unimproved Pasture	Hectares	59.0	14.4	9.4	9.4	10.0	14.3	14.9	8.4	15.9	13.4
Habitat Fragmentation	Number(2)	0	0	0	0	0	0	0	0	1	0
Prime Farmlands	Hectares	3.64	0.40	4.03	2.66	1.90	2.66	1.90	0.00	3.25	3.25
Statewide Important Farmland	Hectares	7.28	4.85	10.07	10.07	5.17	8.14	3.24	0.00	0.34	0.34
Visual and Aesthetic Considerations	Rating(1)	4	3	1	1	1	1	1	2	3	2
Air Quality	Rating(1)	0	0	0	0	0	0	0	0	0	0
Cultural Resources											
Predictive Archeological Sites (Impact Probability)	Rating(1)	3	4	3	2	1	2	2	1	2	2
Previously Recorded Archeological Sites	Number	0	1	0	0	0	0	0	0	0	0
Historic Sites	Number	0	0	0	0	0	0	0	0	0	0
Architectural Sites	Number	11	1	1	0	0	1	1	2	3	3
Hazardous Waste Sites											
High Risk	Number	0	0	0	0	0	0	0	0	0	0
Moderate Risk	Number	0	0	0	0	0	0	0	0	0	0
Low Risk	Number	0	0	0	0	0	0	0	0	2	1
Natural Features and Caves	Number	1	0	0	1	0	0	0	0	0	0
SOCIAL AND ECONOMIC											
Impacts to Existing Structures											
Residential											
House	Number	3	0	6	15	14	10	9	3	2	6
Mobile Home	Number	2	0	0	1	2	1	2	1	2	1
Business											
General	Number	0	0	2	2	0	1	1	0	2	2
Poultry	Number	0	0	0	0	0	0	0	0	0	1
Public Use	Number	0	0	0	1	1	0	0	0	0	0
Noise Impacts											
NAC Receptors	Number	23	4	10	16	18	31	32	1	0	4
Additional "Substantial" Increase Receptors	Number	0	6	41	58	57	57	57	1	12	18
Total NAC Receptors Along Existing US 71	Number	7	NA	NA	NA	NA	NA	NA	NA	NA	NA
Compatibility w/ Current Land Use	Rating	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Long-Term Regional Investment	Rating	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Impacts to Businesses During Construction	Rating	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Economic Considerations											
Highway User Cost Savings	Dollars (Million)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
O&M Costs	Dollars (Million)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Environmental Justice	Rating(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes: Data shown in the table represent analysis of the alternatives as of the date shown. Adjustments and updates of the data subsequent to the date shown have occurred and are documented in the EIS.

(1) Rating Scale
5 - Excellent (High), 4 - Good (Medium/High), 3 - Fair (Medium), 2 - Marginally Poor (Low/Medium), 1 - Poor (Low)

(2) Number of 202 Hectare Forest Blocks (500 Acre Forest Blocks)

? Data Unavailable

■ = Most Favorable

□ = Selected Alternative

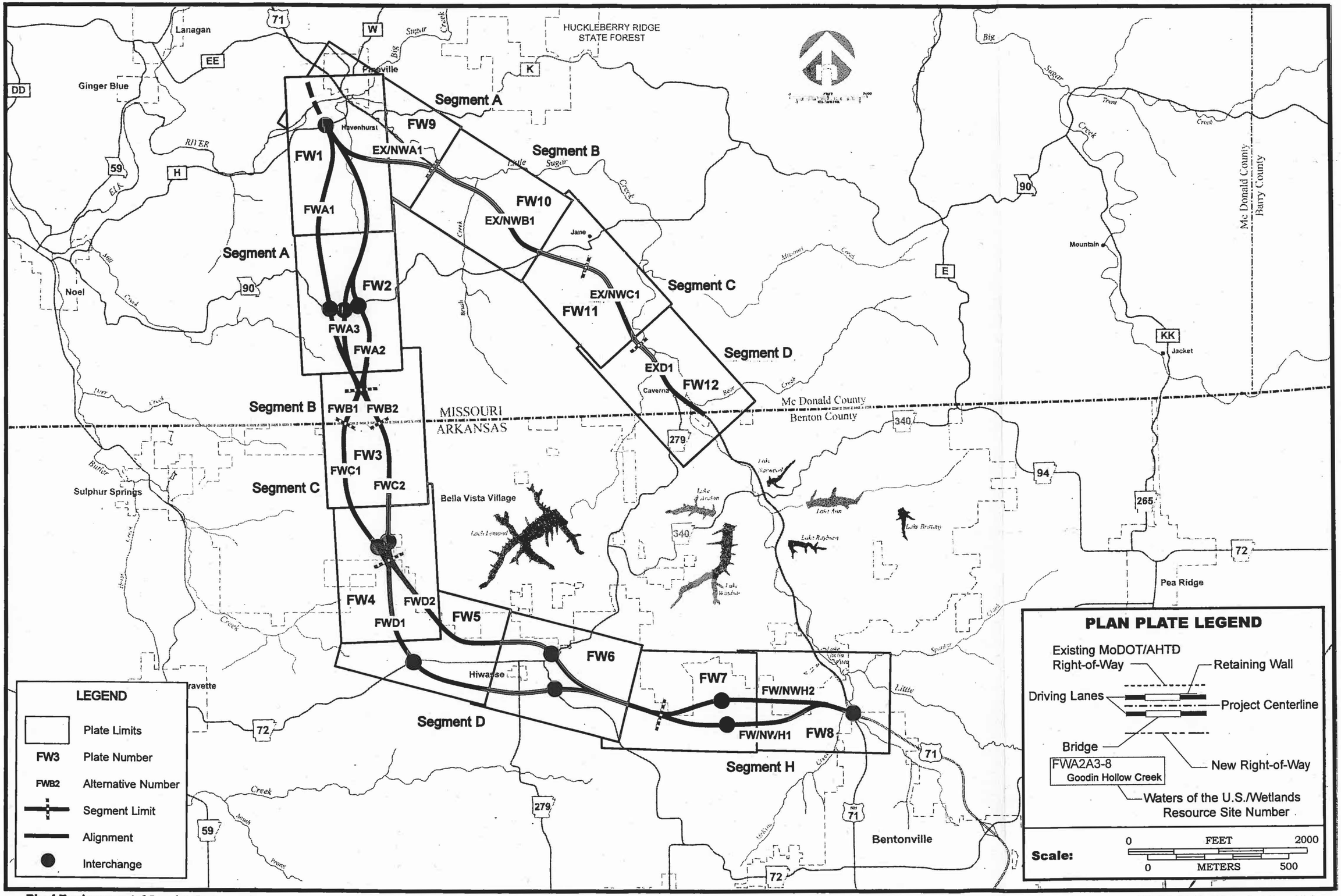
Reasonable Alternatives Evaluation Matrix (May 1997)

EVALUATION FACTOR	UNITS	INTERIM IMPROVEMENTS	FAR WEST A3	FAR WEST B2/C2	FAR WEST D1	FAR WEST H1	FAR WEST SUM	INTERIM IMPROVEMENTS	NEAR WEST A/B/C	NEAR WEST D/E	NEAR WEST F2	NEAR WEST G	NEAR WEST H1	NEAR WEST SUM	EXISTING SUM
ENGINEERING															
Length	Kilometers	15.3	7.2	5.5	11.3	6.5	45.8	3.6	11.6	2.7	6.5	3.4	6.5	34.3	26.4
Construction Cost															
Construction	Dollars (Million)	46.2	38.5	22.0	33.8	29.1	169.6	18.1	43.0	10.0	26.0	13.3	29.1	139.5	124.9
Right-of-Way	Dollars (Million)	0.8	0.4	0.3	2.0	1.4	4.9	2.1	2.1	0.2	2.9	0.6	1.4	9.3	15.5
Total Construction Cost	Dollars (Million)	47.0	38.9	22.3	35.8	30.5	174.5	20.2	45.1	10.2	28.9	13.9	30.5	148.8	140.4
Staged Construction	Rating[1]	NA	NA	NA	NA	NA	2	NA	NA	NA	NA	NA	NA	2	4
Maintenance of Traffic	Rating[1]	NA	NA	NA	NA	NA	4	NA	NA	NA	NA	NA	NA	4	1
TRAFFIC															
Local Access	Rating[1]	NA	NA	NA	NA	NA	3	NA	NA	NA	NA	NA	NA	3	2
Regional MOE's (2020) Change from "No-Build"															
Vehicle Kilometers of Travel Reduced	Kilometers	NA	NA	NA	NA	NA	167,000	NA	NA	NA	NA	NA	NA	131,000	44,000
Vehicle Hours of Travel Reduced	Hours	NA	NA	NA	NA	NA	9,100	NA	NA	NA	NA	NA	NA	8,300	12,300
Projected Reduction in Accidents (2020)															
Fatal Accidents	Number	NA	NA	NA	NA	NA	2	NA	NA	NA	NA	NA	NA	2	2
Personal Injury Accidents	Number	NA	NA	NA	NA	NA	79	NA	NA	NA	NA	NA	NA	71	69
Property Damage Only (PDO) Accidents	Number	NA	NA	NA	NA	NA	175	NA	NA	NA	NA	NA	NA	158	155
ENVIRONMENTAL															
Parkland	Type	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Number	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Waters of the U.S.															
Ponds: High Quality	Number	1	0	0	0	0	1	3	1	2	0	0	0	6	4
	Hectares	0.06	0.00	0.00	0.00	0.00	0.06	0.19	0.06	0.15	0.00	0.00	0.00	0.40	0.25
Ponds: Other	Number	2	1	1	12	2	18	4	2	1	4	1	2	14	7
	Hectares	0.11	0.15	0.01	1.63	0.36	2.26	0.55	0.11	0.01	0.59	0.12	0.36	1.74	0.71
Streams: Intermittent	Number	2	3	1	0	0	6	1	2	0	0	0	0	3	3
	Hectares	0.11	0.29	0.01	0.00	0.00	0.41	0.03	0.11	0.00	0.00	0.00	0.00	0.14	0.14
Streams: Perennial	Number	4	0	0	0	2	6	1	1	1	1	0	2	6	11
	Hectares	0.69	0.00	0.00	0.00	0.33	1.02	0.43	0.06	0.01	0.10	0.00	0.33	0.93	3.45
Floodplain (100 Year)	Hectares	6.5	4.9	2.5	0.0	1.8	15.7	2.9	3.8	1.2	2.0	0.0	1.8	11.7	15.5
Floodplain Crossings	Meters	1700	365	250	0	150	2,465	460	490	0	120	0	150	1220	1220
Threatened and Endangered Species	Number	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Natural Community Impacts															
Dry Limestone-Dolomite Forest	Hectares	11.0	0.0	0.0	0.0	0.0	11.0	6.5	13.2	11.0	0.0	0.0	0.0	30.7	19.7
Dry Mesic Limestone-Dolomite Forest	Hectares	24.7	60.2	50.7	19.9	44.7	200.2	4.9	26.5	0.0	40.2	26.6	44.7	142.9	36.7
Dry Mesic Bottomland Forest	Hectares	0.6	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Woodlot	Hectares	0.0	0.0	0.0	26.1	0.0	26.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unimproved Pasture	Hectares	33.4	35.0	9.5	73.9	15.9	167.7	17.8	59.0	14.4	9.4	8.4	15.9	124.9	78.1
Habitat Fragmentation	Number[2]	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0
Prime Farmlands	Hectares	1.20	?	0.40	15.08	3.25	19.93	4.45	?	?	2.66	0.00	3.25	10.36	9.74
Statewide Important Farmland	Hectares	4.00	?	7.92	33.10	0.34	45.36	8.90	?	?	10.07	0.00	0.34	19.31	17.82
Visual and Aesthetic Considerations	Rating[1]	2	3	2	4	3	3	5	4	3	1	2	3	3	4
Air Quality	Rating[1]	NA	NA	NA	NA	NA	4	NA	NA	NA	NA	NA	NA	4	4
Cultural Resources															
Predictive Archeological Sites (Impact Probability)	Rating[1]	3	1	2	2	2	2	5	3	4	2	1	2	3	4
Previously Recorded Archeological Sites	Number	7	0	0	0	0	7	2	0	1	0	0	0	3	7
Historic Sites	Number	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Architectural Sites	Number	15	1	0	6	4	27	2	11	1	0	2	3	19	19
Hazardous Waste Sites															
High Risk	Number	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Moderate Risk	Number	0	0	0	0	0	0	2	0	0	0	0	0	2	3
Low Risk	Number	0	0	0	0	2	2	0	0	0	0	0	2	2	1
Natural Features and Caves	Number	1	0	0	0	0	1	1	1	0	1	0	0	3	2
SOCIAL AND ECONOMIC															
Impacts to Existing Structures															
Residential															
House	Number	2	1	0	10	2	15	3	3	0	15	3	2	26	12
Mobile Home	Number	1	0	0	1	2	4	1	2	0	1	1	2	7	3
Business															
General	Number	0	0	0	0	2	2	4	0	0	2	0	2	8	15
Poultry	Number	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Public Use	Number	0	0	0	0	0	0	0	0	0	1	0	0	1	3
Noise Impacts															
NAC Receptors	Number	0	0	1	10	0	11	0	23	4	16	1	0	44	122
Additional "Substantial" Increase Receptors	Number	0	6	6	34	12	58	0	0	6	58	1	12	77	15
Total NAC Receptors Along Existing US 71	Number	NA	NA	NA	NA	NA	146	NA	NA	NA	NA	NA	NA	110	319
Compatibility w/ Current Land Use	Rating	NA	NA	NA	NA	NA	4	NA	NA	NA	NA	NA	NA	1	3
Impacts to Businesses During Construction	Rating	NA	NA	NA	NA	NA	5	NA	NA	NA	NA	NA	NA	5	1
Economic Considerations								NA							
Highway User Cost Savings	Dollars (Million)	NA	NA	NA	NA	NA	113.6	NA	NA	NA	NA	NA	NA	92	143.5
O&M Costs	Dollars (Million)	NA	NA	NA	NA	NA	4.2	NA	NA	NA	NA	NA	NA	4.9	2.4
Environmental Justice	Rating[1]	NA	NA	NA	NA	NA	4	NA	NA	NA	NA	NA	NA	4	4

Notes: Data shown in the table represent analysis of the alternatives as of the date shown. Adjustments and updates of the data subsequent to the date shown have occurred and are documented in the EIS.

Rating Scale
5 - Excellent (High), 4 - Good (Medium/High), 3 - Fair (Medium), 2 - Marginally Poor (Low/Medium), 1 - Poor (Low)
Number of 202 Hectare Forest Blocks (500 Acre Forest Blocks)
Data Unavailable

= Selected Alternative



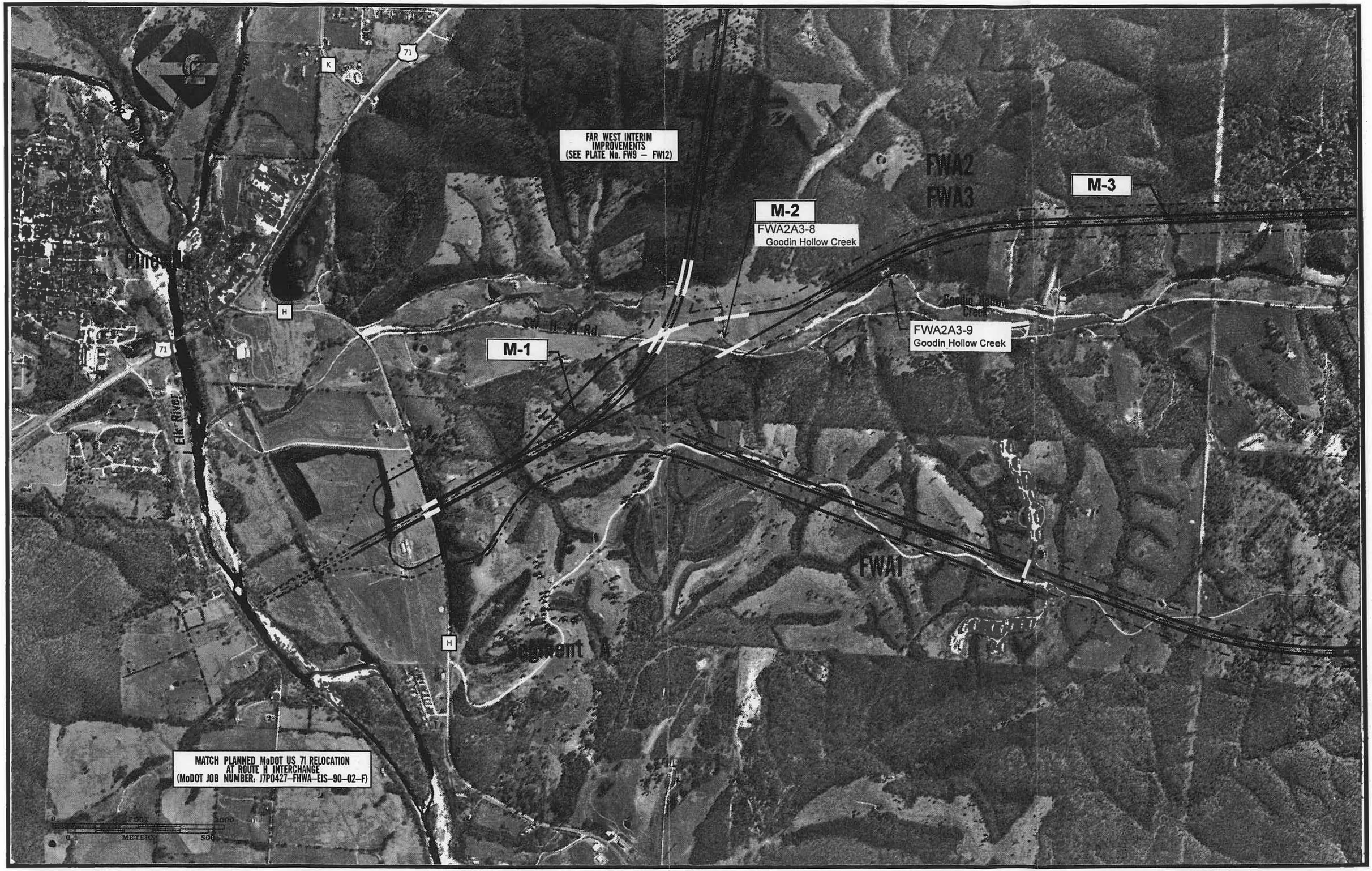
LEGEND

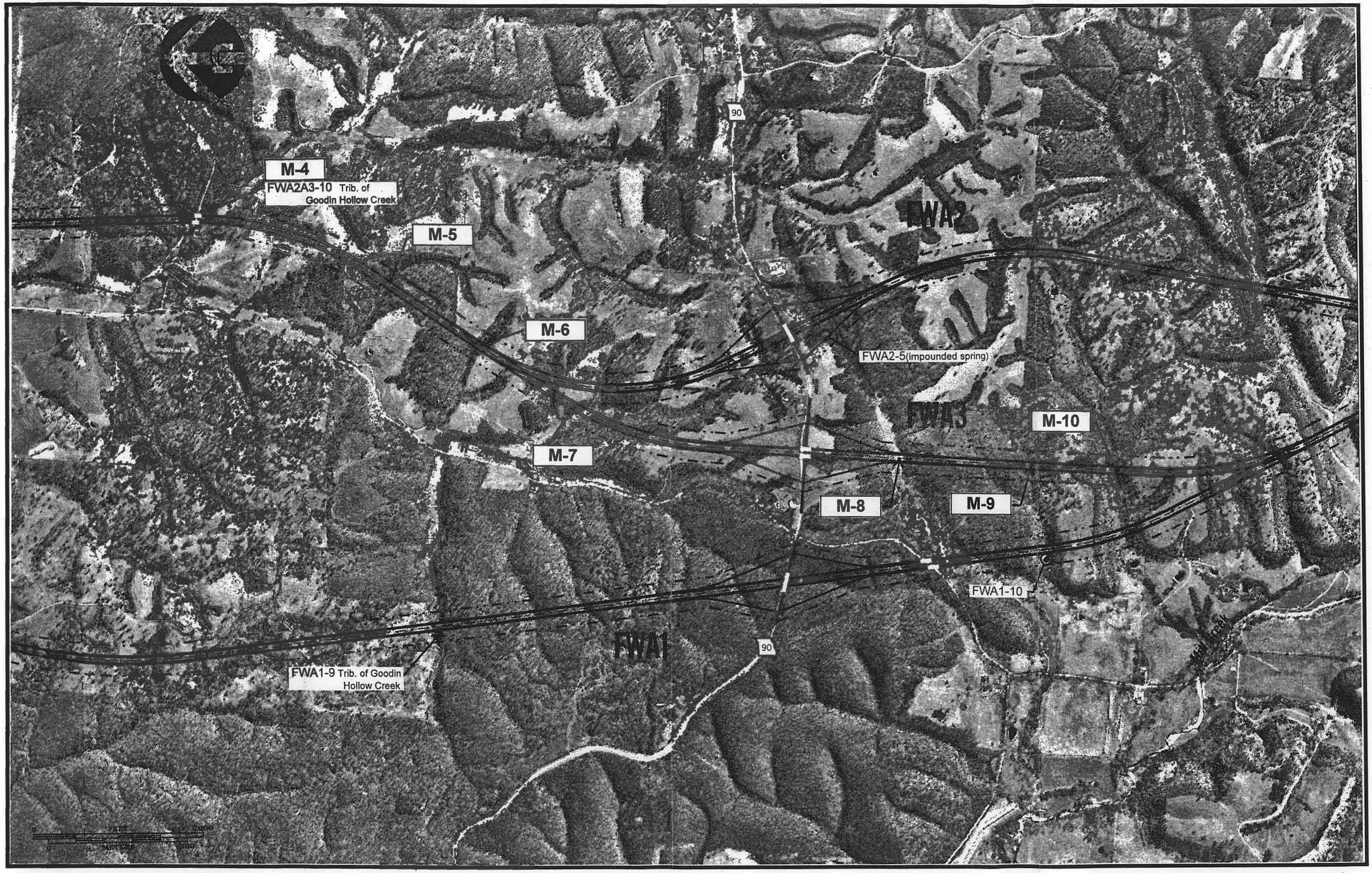
- Plate Limits
- FW3 — Plate Number
- FWB2 — Alternative Number
- Segment Limit
- Alignment
- Interchange

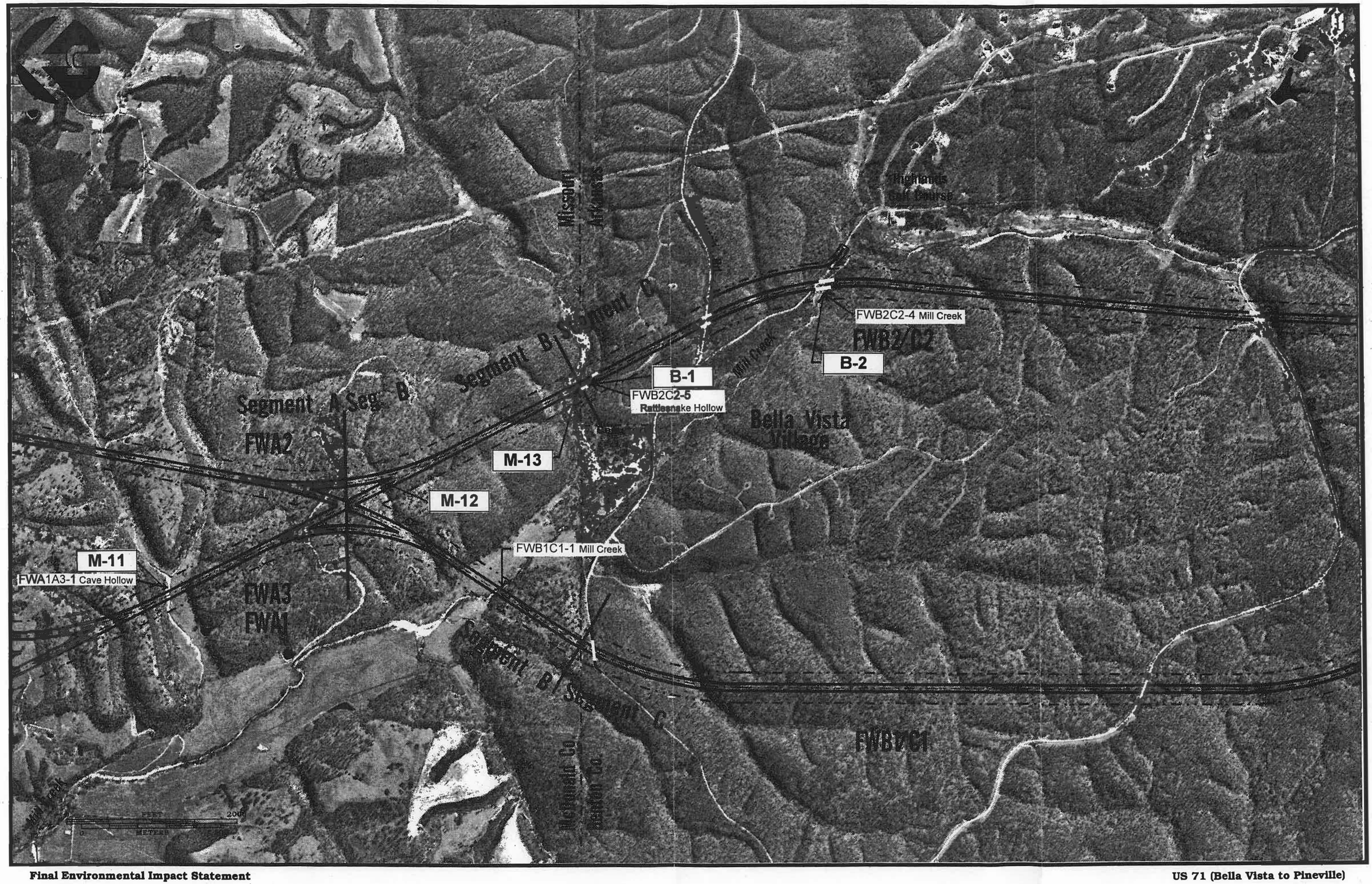
PLAN PLATE LEGEND

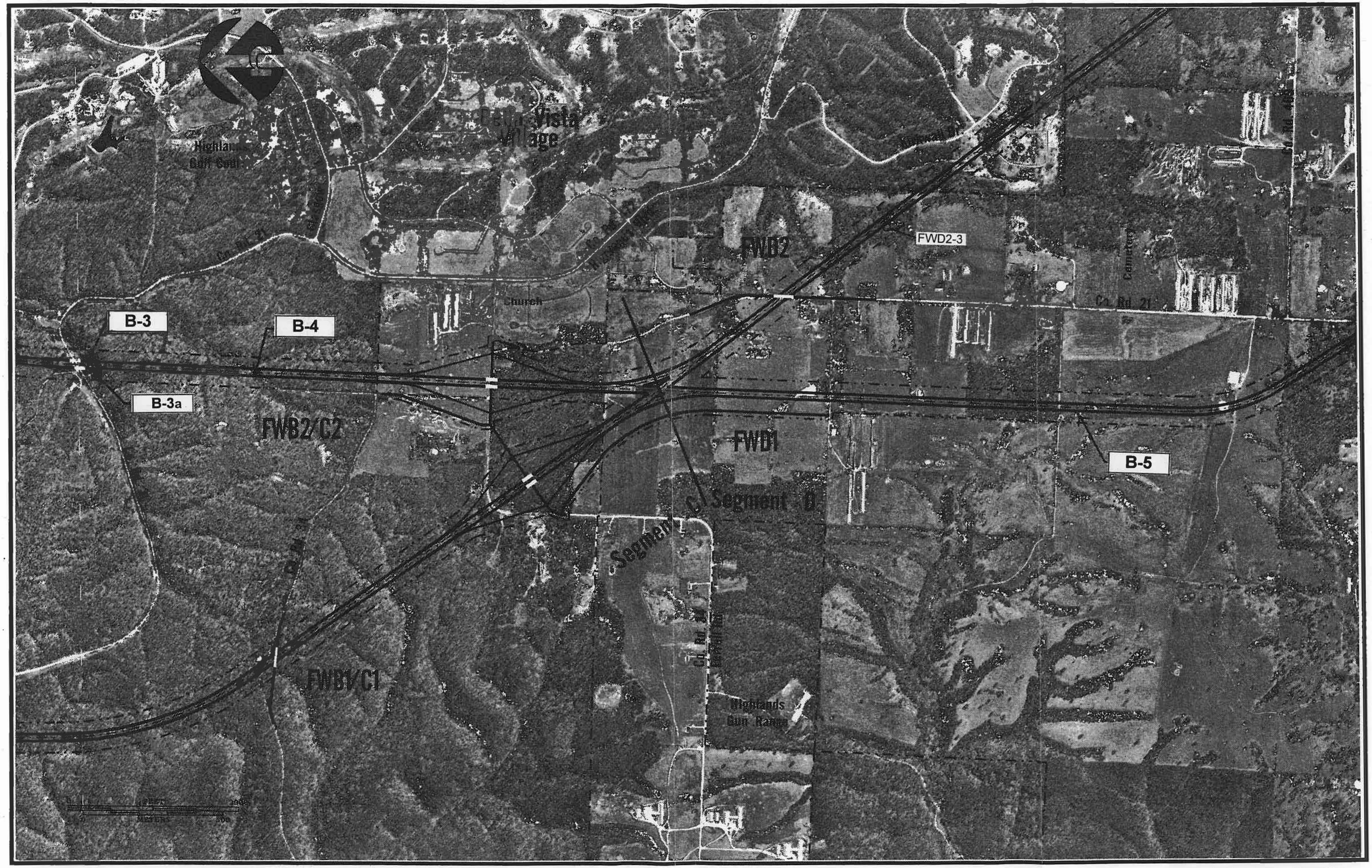
- Existing MoDOT/AHTD Right-of-Way
- Retaining Wall
- Driving Lanes
- Project Centerline
- Bridge
- FWA2A3-8 Goodin Hollow Creek
- New Right-of-Way
- Waters of the U.S./Wetlands Resource Site Number

Scale: 0 FEET 2000 — 0 METERS 500


FAR WEST INTERIM IMPROVEMENTS (SEE PLATE No. FW9 – FW12)
FWA2
FWA3
M-3
M-2
FWA2A3-8
Goodin Hollow Creek
FWA2A3-9
Goodin Hollow Creek
M-1
SW H-21 Rd
Elk River
FWA1
Segment A
MATCH PLANNED MoDOT US 71 RELOCATION AT ROUTE H INTERCHANGE (MoDOT JOB NUMBER: J7P0427–FHWA–EIS–90–02–F)
K
71
H
FEET
METERS


90
M-4
FWA2A3-10 Trib. of Goodin Hollow Creek
M-5
FWA2
M-6
FWA2-5(impounded spring)
FWA3
M-10
M-7
M-8
M-9
FWA1-10
FWA1
90
FWA1-9 Trib. of Goodin Hollow Creek

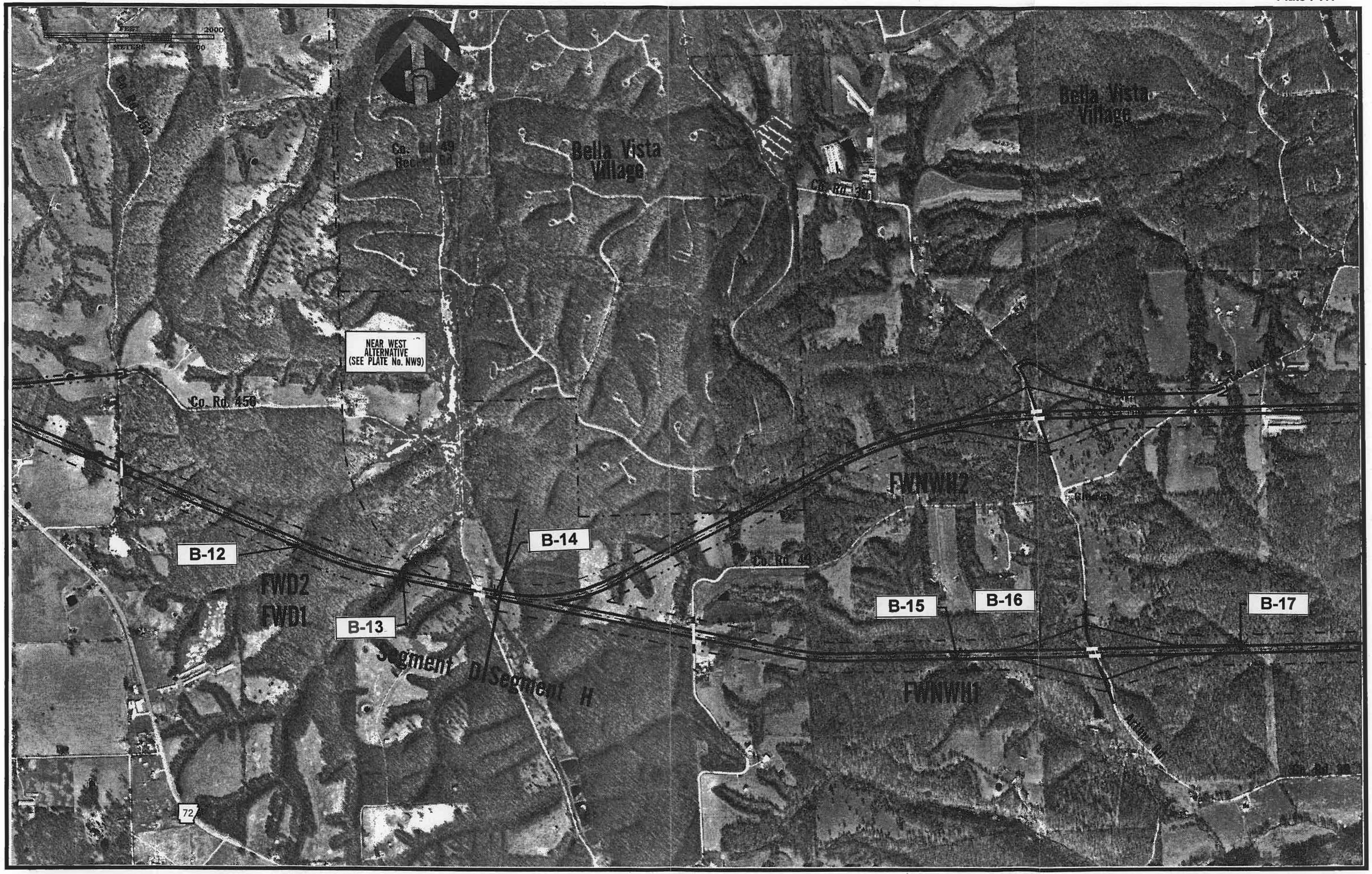

Missouri
Arkansas
Highlands Golf Course
FWB2C2-4 Mill Creek
FWB2/C2
B-2
Mill Creek
B-1
FWB2C2-5
Rattlesnake Hollow
Segment B Segment C
Segment A Seg. B
FWA2
Bella Vista Village
M-13
M-12
FWB1C1-1 Mill Creek
M-11
FWA1A3-1 Cave Hollow
FWA3
FWA1
Segment B Segment C
FWB1/C1
Mill Creek
FEET
METERS

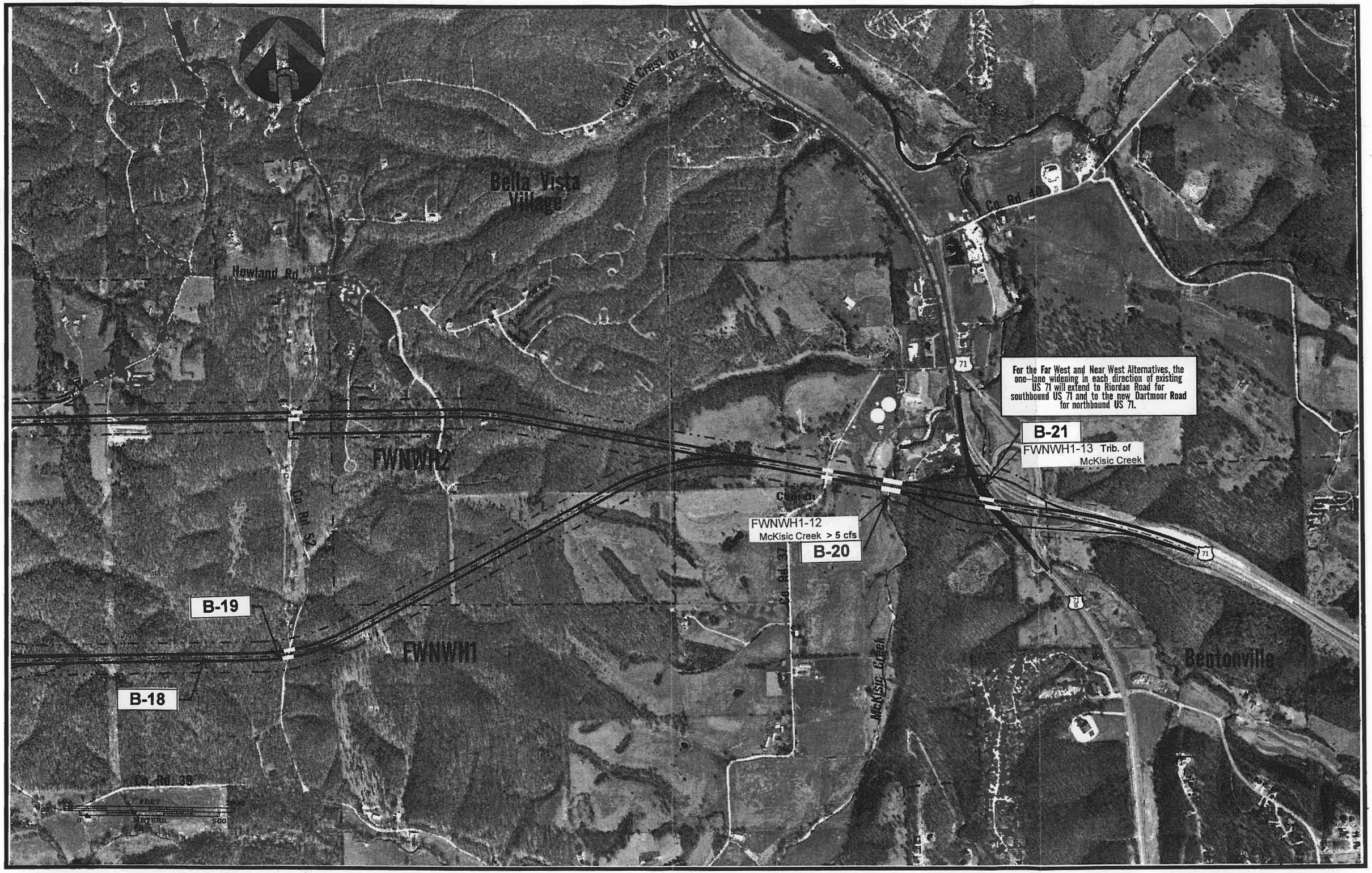

Bella Vista Village
Highlands Golf Course
Church
Cemetery
Co Rd 21
FWD2
FWD2-3
B-3
B-4
B-3a
FWB2/C2
FWD1
B-5
Segment C1
Segment D
FWB1/C1
Highlands Gun Range

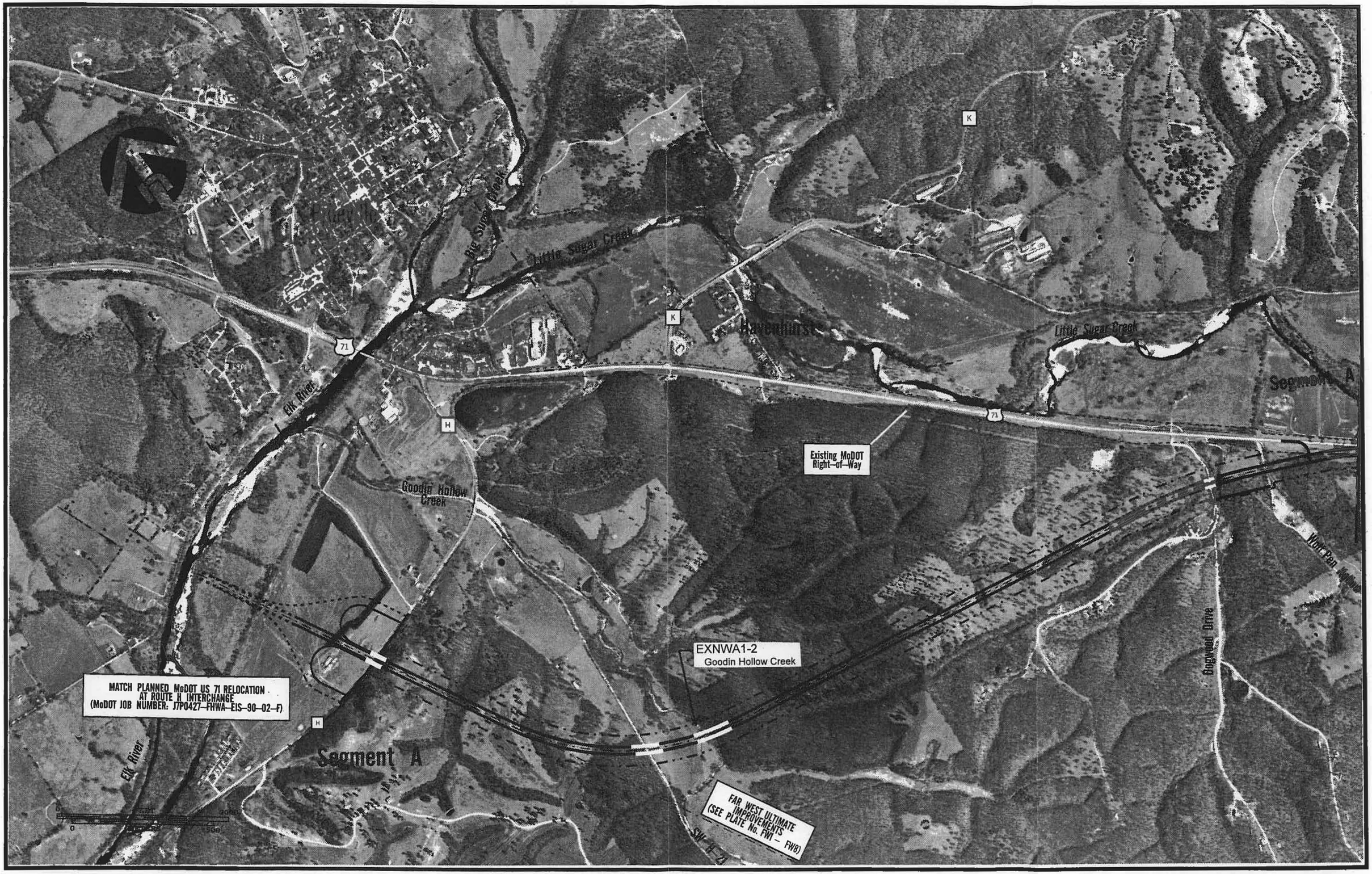

Cemetery
Co. Rd. 405
FWD2
B-6
Co. Rd.
FWD1-5
Church
72
72
B-7
B-8
FWD1

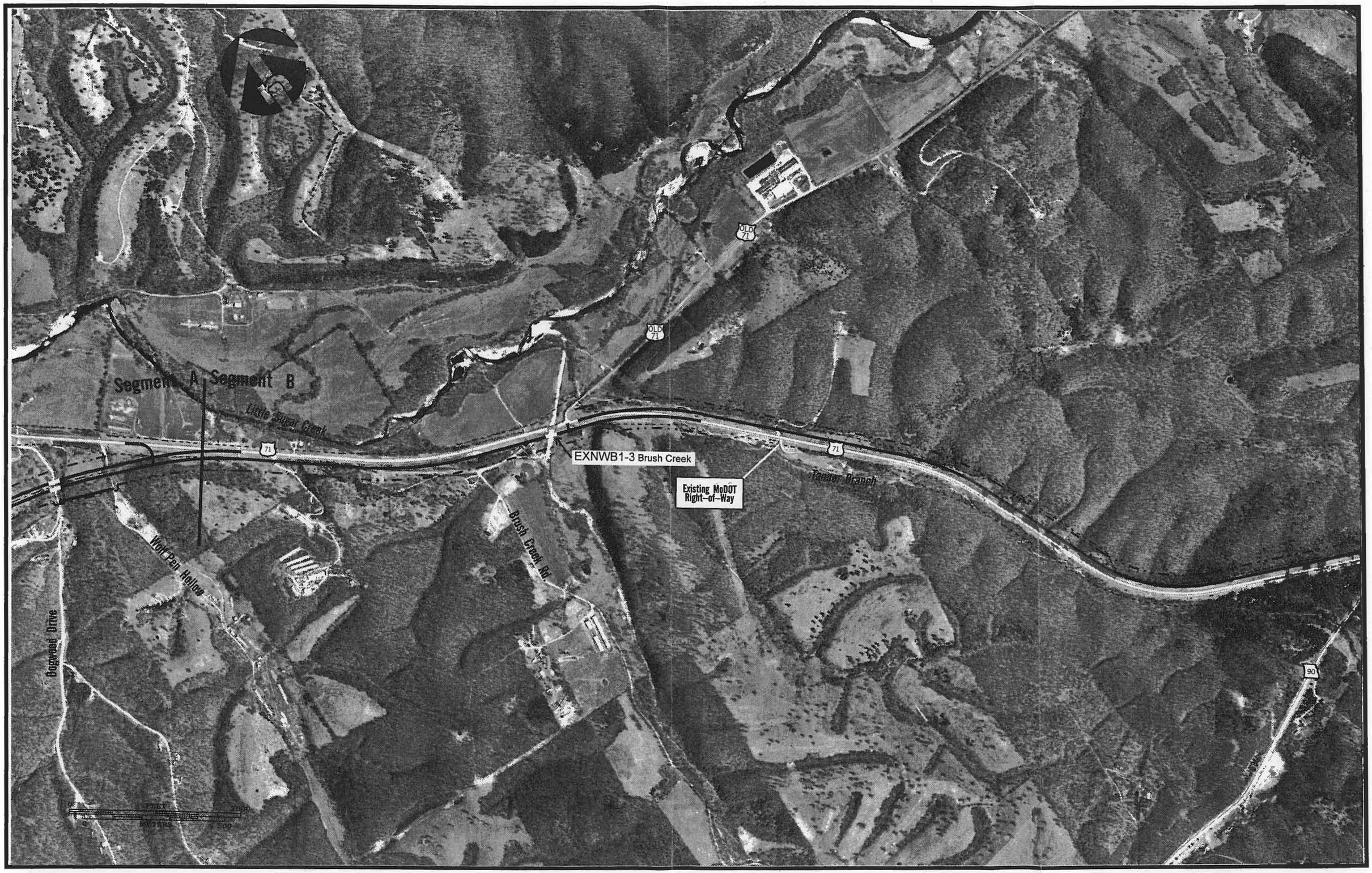
Plate FW6

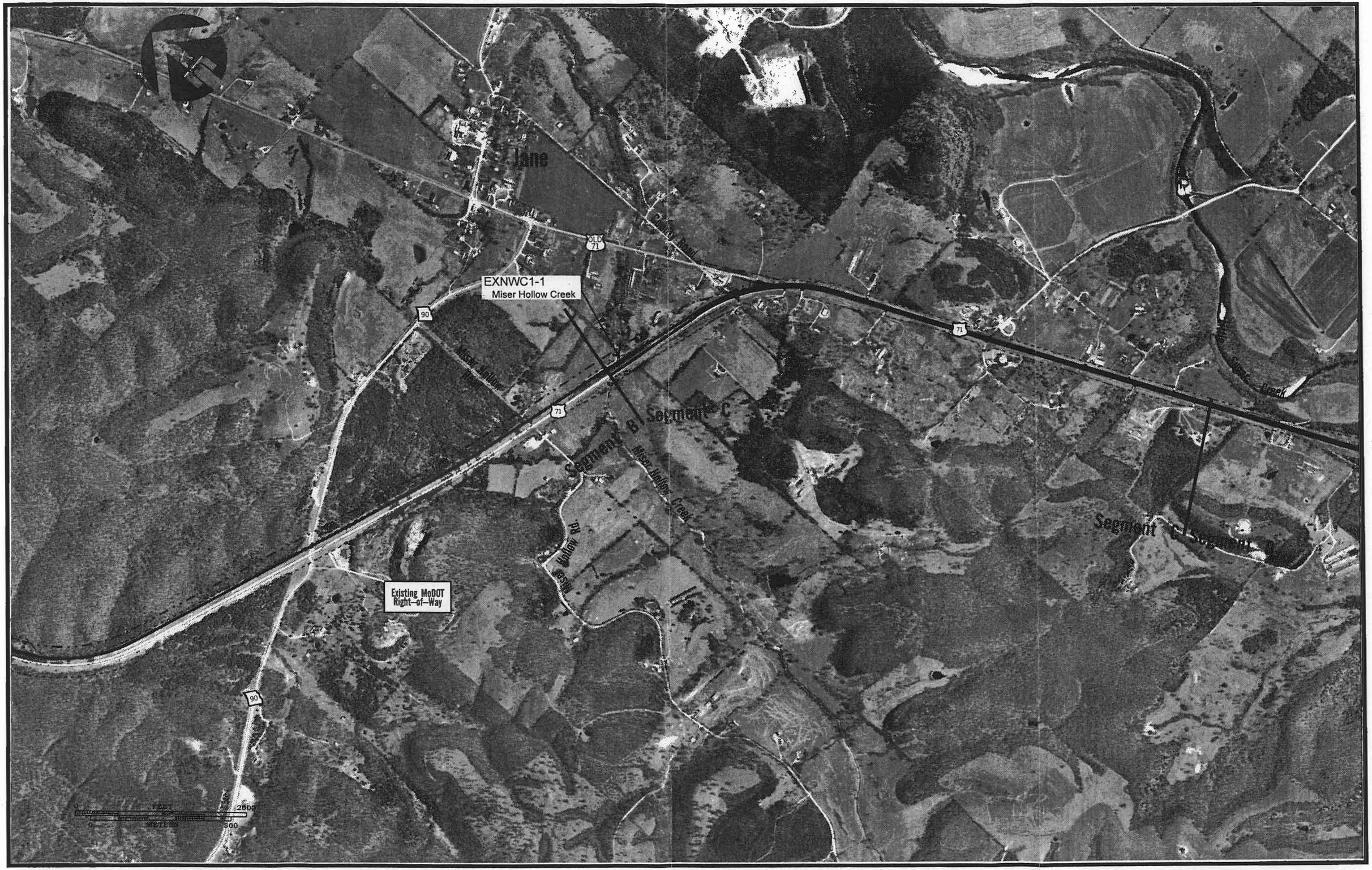

Bella Vista Village
279
FWD2
72
B-11
B-10
Co. Rd. 450
Kiwasse
279
FWD2
FWD1
72
B-9
Co. Rd. 542
FWD1
ALTERNATIVE INTERCHANGE LOCATED AT STATE ROUTE 279

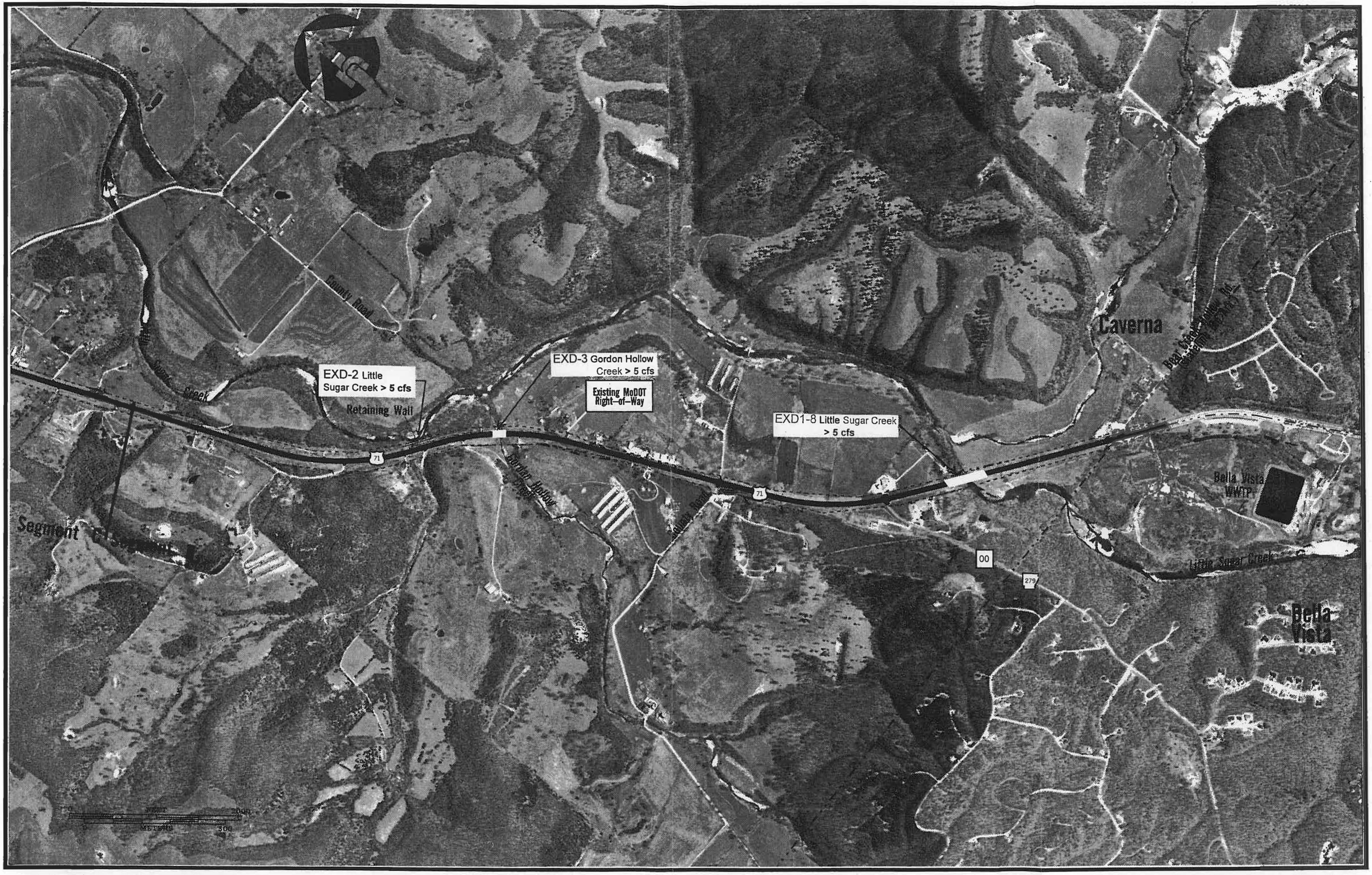

Bella Vista Village
Bella Vista Village
NEAR WEST ALTERNATIVE (SEE PLATE No. NW9)
Co. Rd. 458
B-12
B-13
B-14
B-15
B-16
B-17
FWD2
FWD1
FWNW2
FWNW1
Segment D
Segment H
72

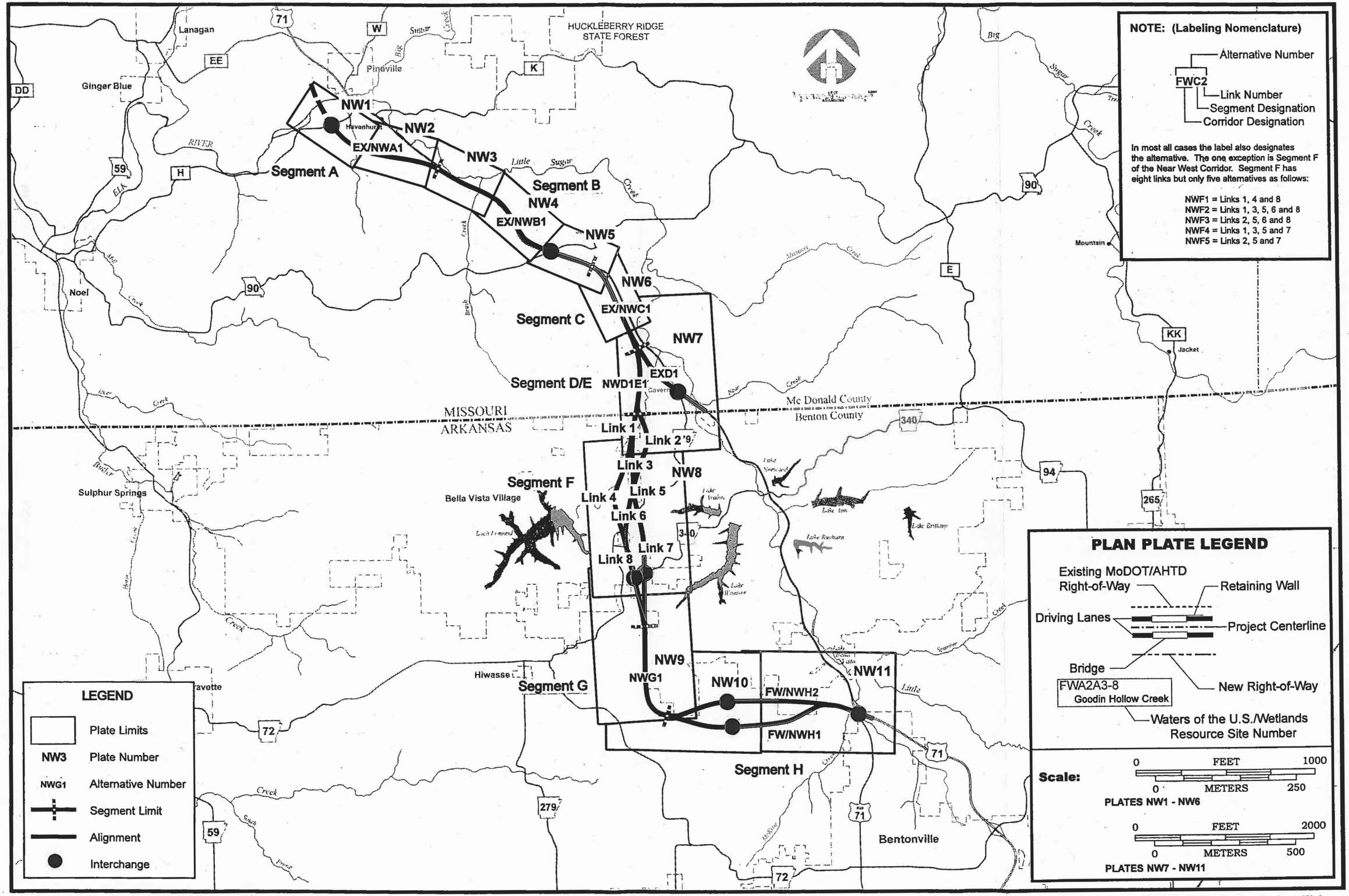

Bella Vista Village
Howland Rd
Co. Rd. 40
71
For the Far West and Near West Alternatives, the one-lane widening in each direction of existing US 71 will extend to Riordan Road for southbound US 71 and to the new Dartmoor Road for northbound US 71.
B-21
FWNWH1-13 Trib. of McKisic Creek
FWNWH2
FWNWH1-12
McKisic Creek > 5 cfs
B-20
B-19
B-18
FWNWH1
McKisic Creek
Bentonville
Co. Rd. 38
FEET
METERS
500

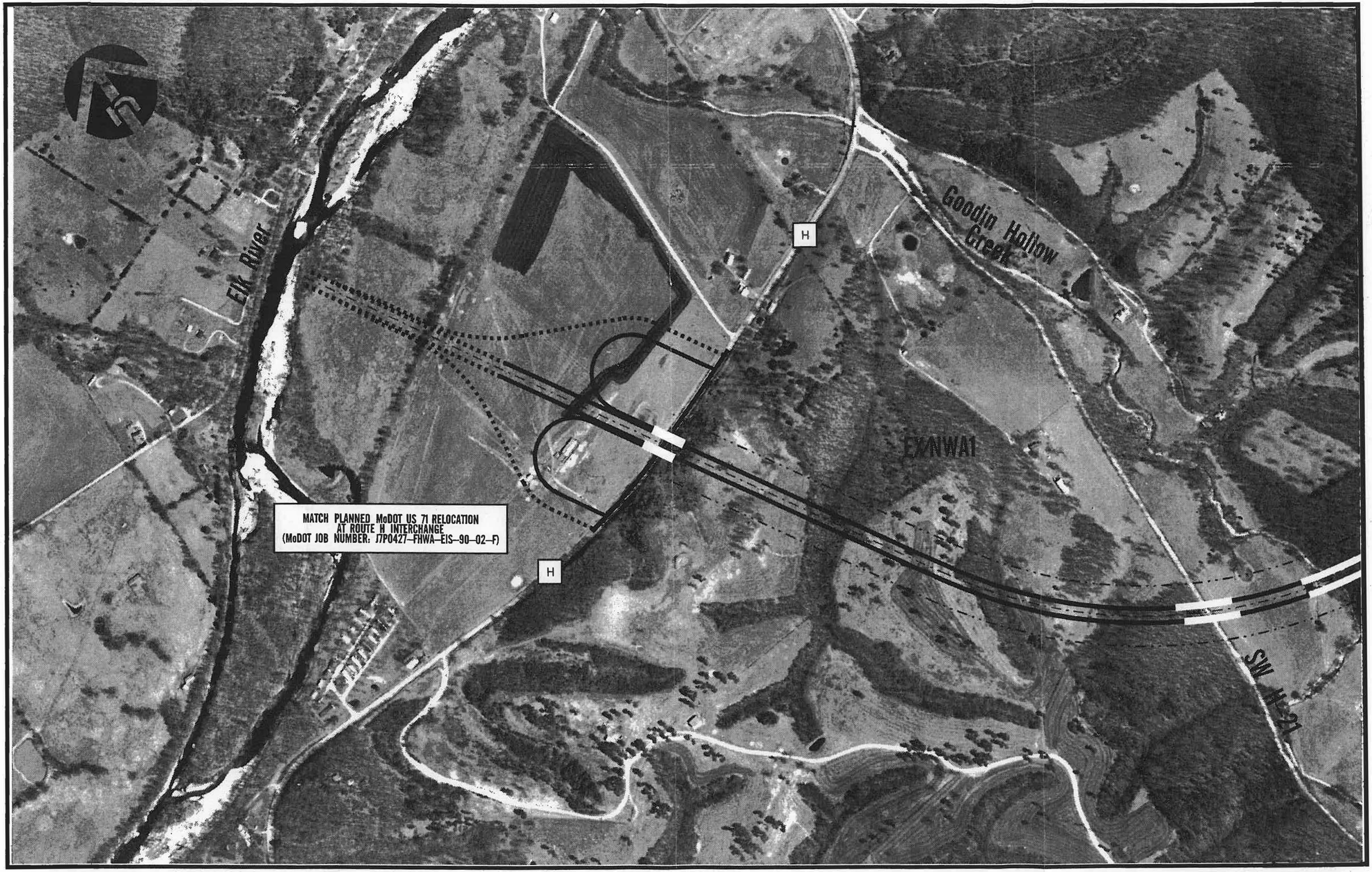

Little Sugar Creek
Big Sugar Creek
Havenhurst
Little Sugar Creek
Segment A
Elk River
71
K
H
Goodin Hollow Creek
Existing MoDOT Right-of-Way
EXNWA1-2
Goodin Hollow Creek
MATCH PLANNED MoDOT US 71 RELOCATION AT ROUTE H INTERCHANGE (MoDOT JOB NUMBER: J7P0427-FHWA-EIS-90-02-F)
Segment A
Elk River
FAR WEST ULTIMATE IMPROVEMENTS (SEE PLATE No. FW1 - FW8)
Dogwood Drive

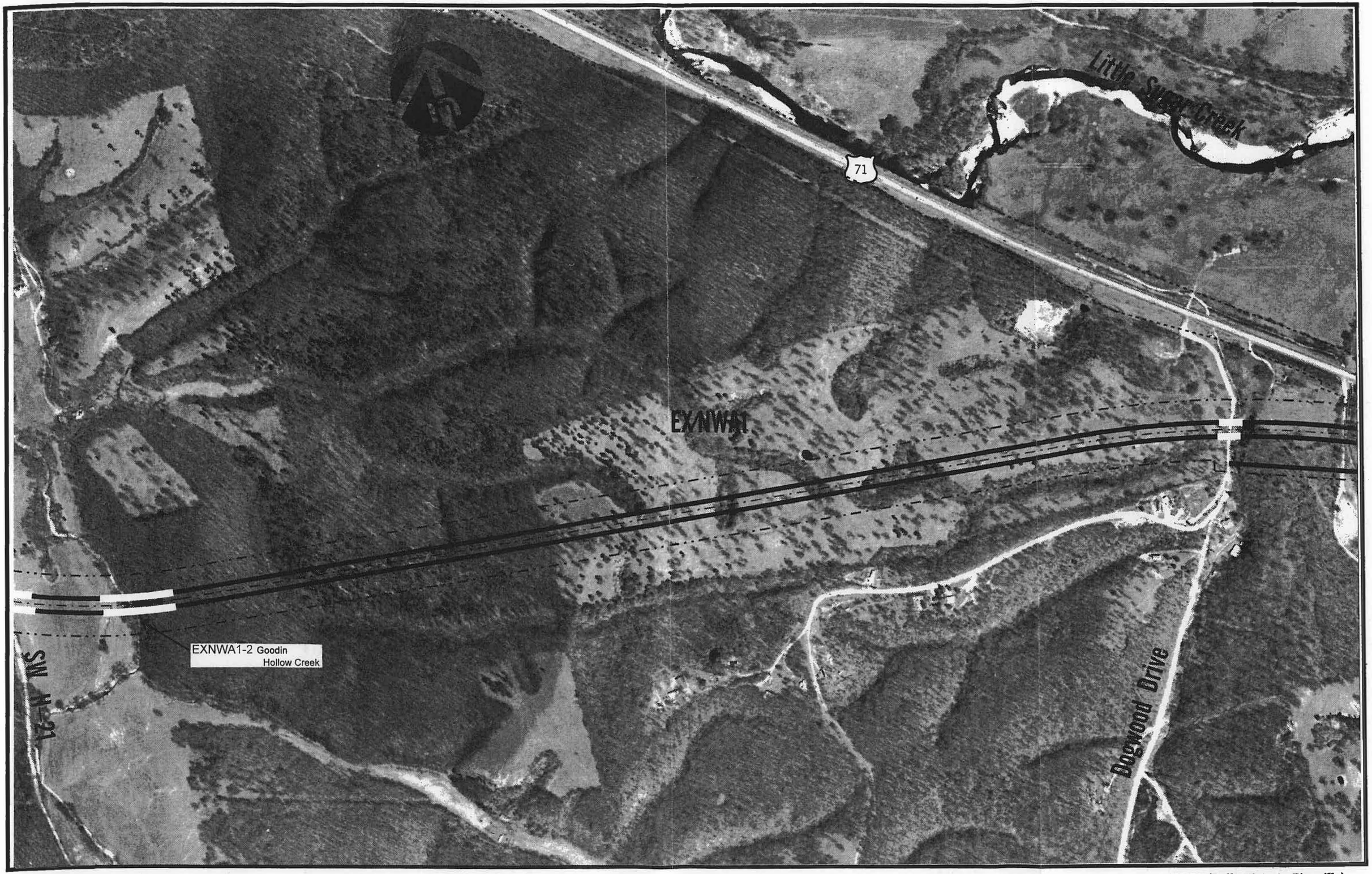

Segment A
Segment B
Little Sugar Creek
71
OLD 71
OLD 71
EXNWB1-3 Brush Creek
Existing MoDOT Right-of-Way
Tanner Branch
Brush Creek Rd.
Wolf Pen Hollow
Bogwood Drive
90


Jane
OLD 71
EXNWC1-1
Miser Hollow Creek
90
71
Segment B
Segment C
Miser Hollow Creek
Miser Hollow Rd.
Existing MoDOT Right-of-Way
Segment C
Segment D
2000
500

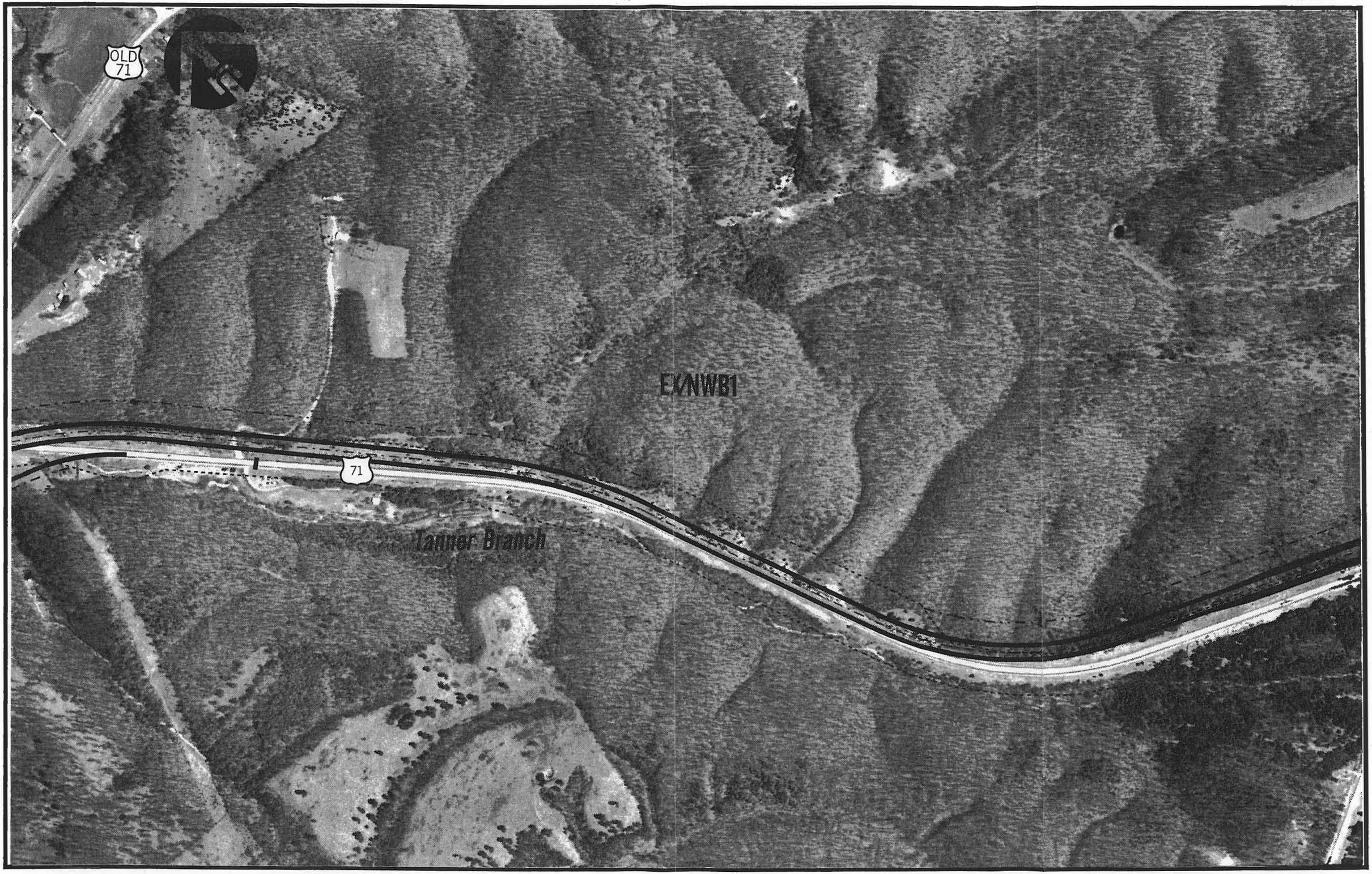

EXD-2 Little Sugar Creek > 5 cfs
Retaining Wall
EXD-3 Gordon Hollow Creek > 5 cfs
Existing MoDOT Right-of-Way
EXD1-8 Little Sugar Creek > 5 cfs
Caverna
Bella Vista WWTP
Little Sugar Creek
Bella Vista
Segment
County Road
71
00
279

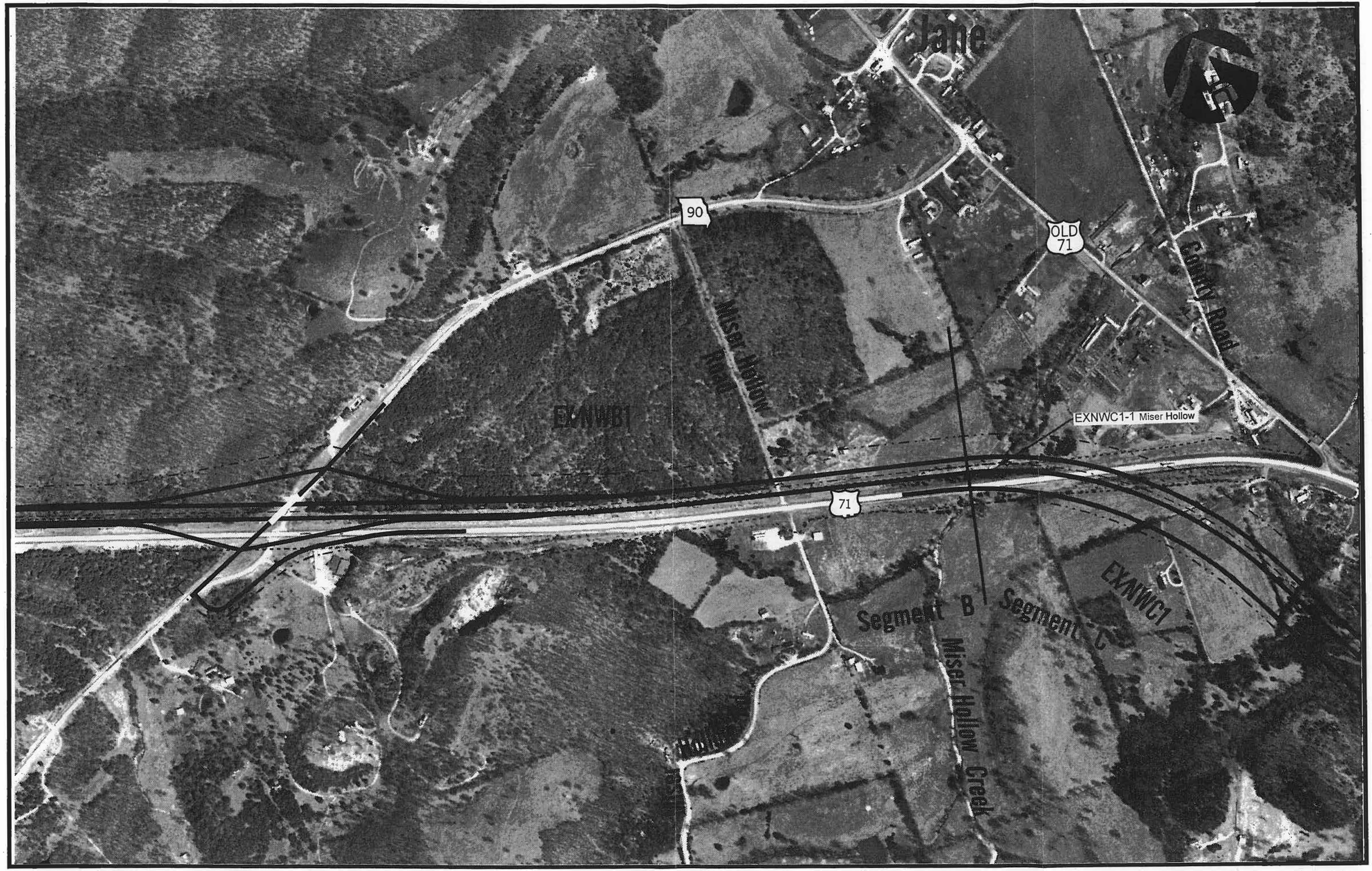

NOTE: (Labeling Nomenclature)
Alternative Number
FWC2
Link Number
Segment Designation
Corridor Designation
In most all cases the label also designates the alternative. The one exception is Segment F of the Near West Corridor. Segment F has eight links but only five alternatives as follows:
NWF1 = Links 1, 4 and 8
NWF2 = Links 1, 3, 5, 6 and 8
NWF3 = Links 2, 5, 6 and 8
NWF4 = Links 1, 3, 5 and 7
NWF5 = Links 2, 5 and 7
HUCKLEBERRY RIDGE STATE FOREST
Lanagan
Pineville
Ginger Blue
Havenhurst
Noel
Sulphur Springs
Bella Vista Village
Hiwasse
Bentonville
Mountain
Jacket
MISSOURI
ARKANSAS
Mc Donald County
Benton County
NW1
NW2
NW3
NW4
NW5
NW6
NW7
NW8
NW9
NW10
NW11
EX/NWA1
EX/NWB1
EX/NWC1
EXD1
NWD1E1
NWG1
FW/NWH1
FW/NWH2
Segment A
Segment B
Segment C
Segment D/E
Segment F
Segment G
Segment H
Link 1
Link 2
Link 3
Link 4
Link 5
Link 6
Link 7
Link 8
LEGEND
Plate Limits
NW3 Plate Number
NWG1 Alternative Number
Segment Limit
Alignment
Interchange
PLAN PLATE LEGEND
Existing MoDOT/AHTD Right-of-Way
Retaining Wall
Driving Lanes
Project Centerline
Bridge
FWA2A3-8
Goodin Hollow Creek
New Right-of-Way
Waters of the U.S./Wetlands Resource Site Number
Scale:
0 FEET 1000
0 METERS 250
PLATES NW1 - NW6
0 FEET 2000
0 METERS 500
PLATES NW7 - NW11

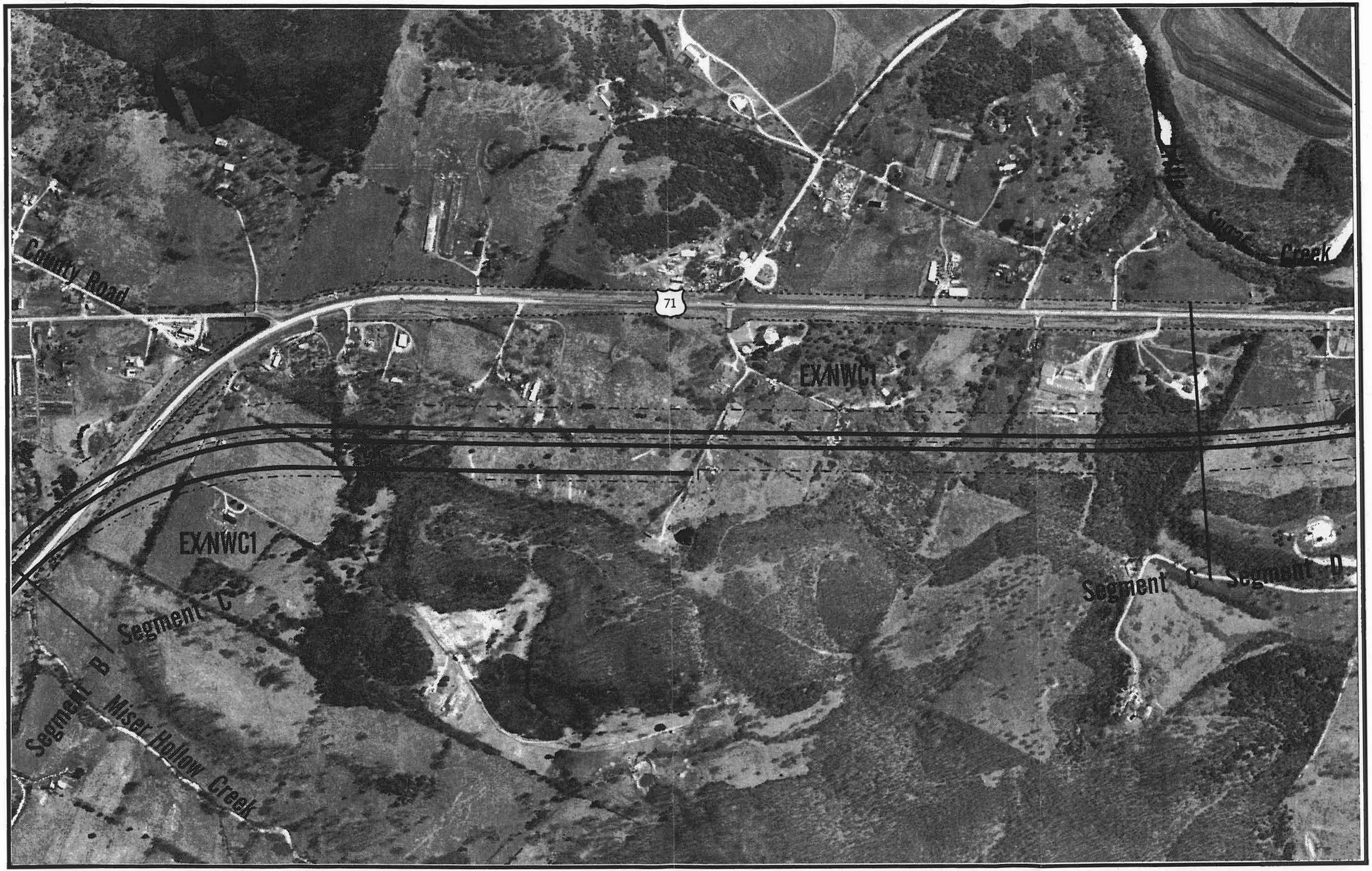

Elk River
Goodin Hollow Creek
H
EXNWA1
MATCH PLANNED MoDOT US 71 RELOCATION
AT ROUTE H INTERCHANGE
(MoDOT JOB NUMBER: J7P0427–FHWA–EIS–90–02–F)
H
SW H 21

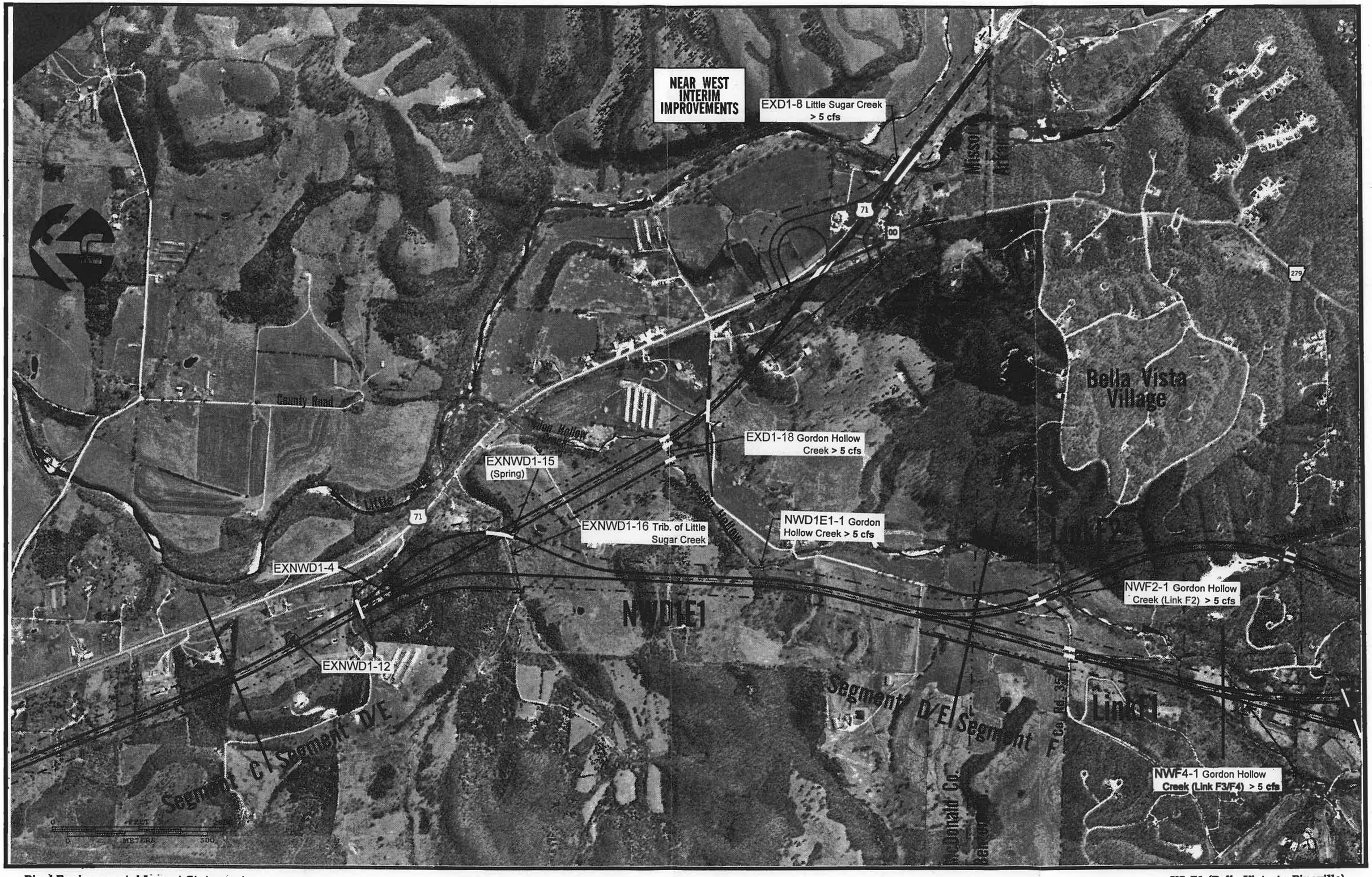

Little Sugar Creek
71
EXNWA1
EXNWA1-2 Goodin Hollow Creek
SW H-21
Dogwood Drive


Segment A
Segment B
Little Sugar Creek
71
OLD 71
EXNWB1
EXNWA1
EXNWB1-3 Brush Creek
Wolf Pen Hollow
Brush Creek Rd.


OLD 71
71
EXNWB1
Tanner Branch

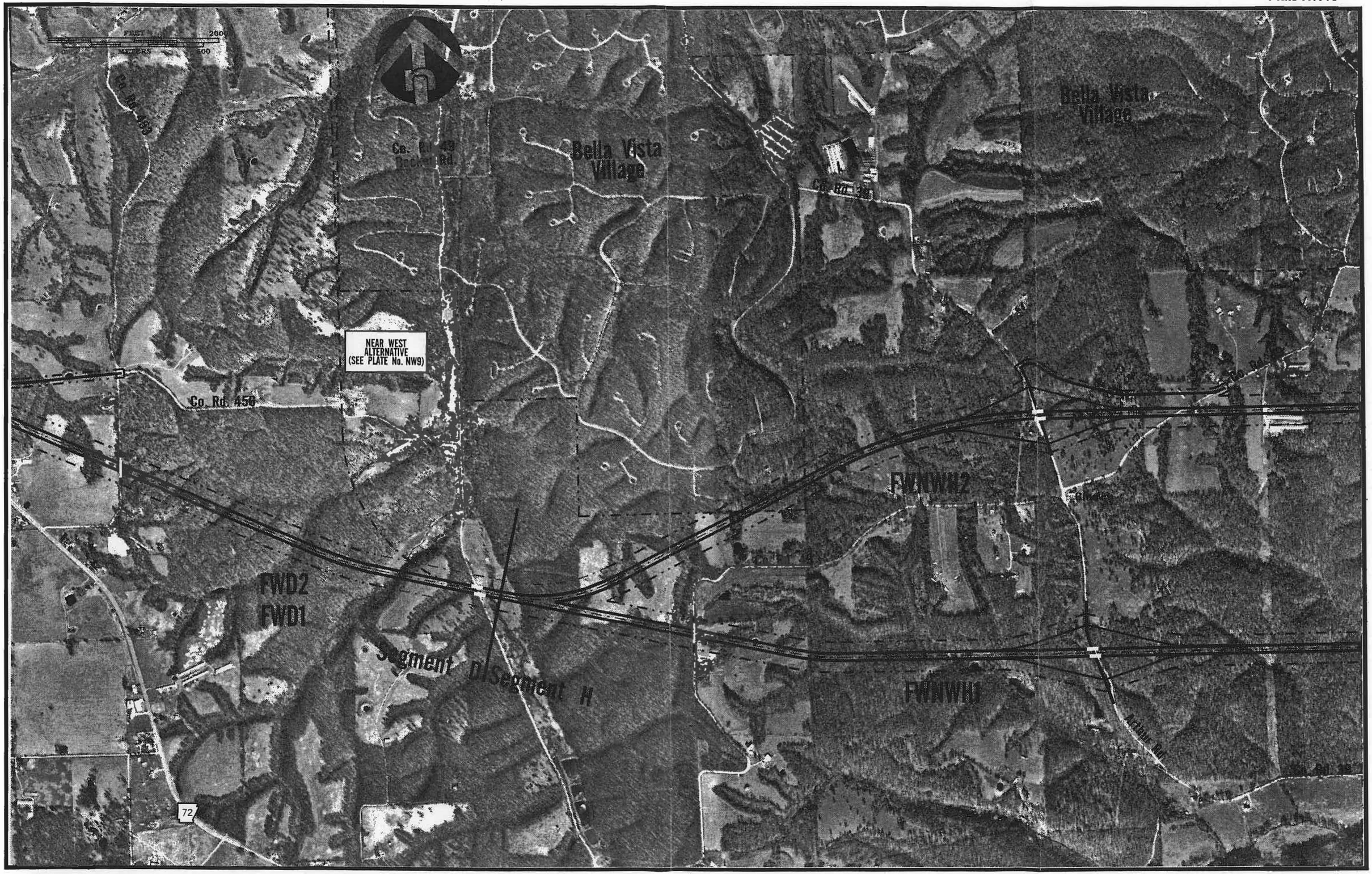

Jane
90
OLD 71
County Road
Miser Hollow Road
EXNWB1
EXNWC1-1 Miser Hollow
71
Segment B
Segment C
EXNWC1
Miser Hollow Creek

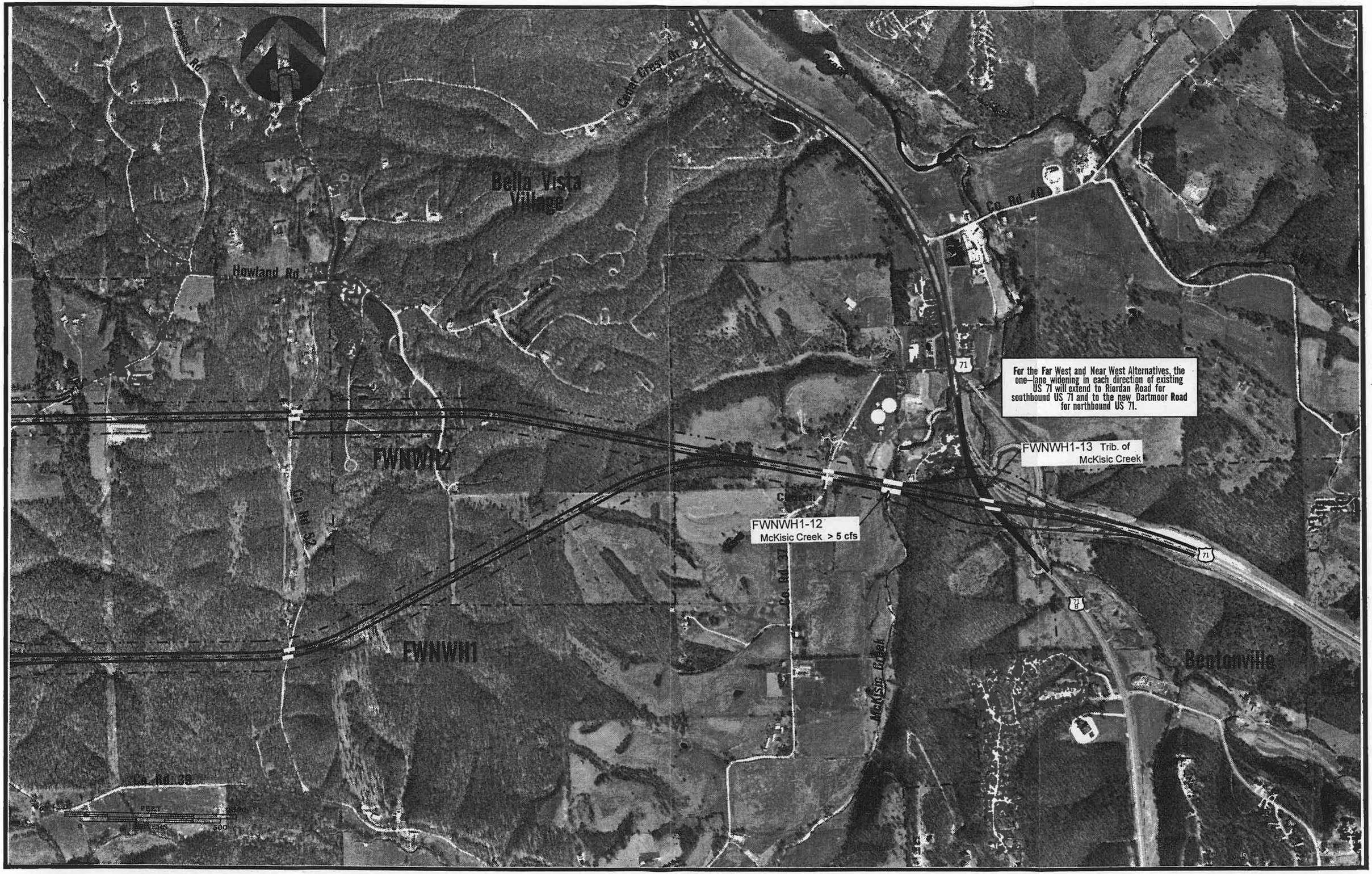

County Road
71
EXNWC1
Sugar Creek
EXNWC1
Segment C
Segment B
Miser Hollow Creek
Segment C
Segment D

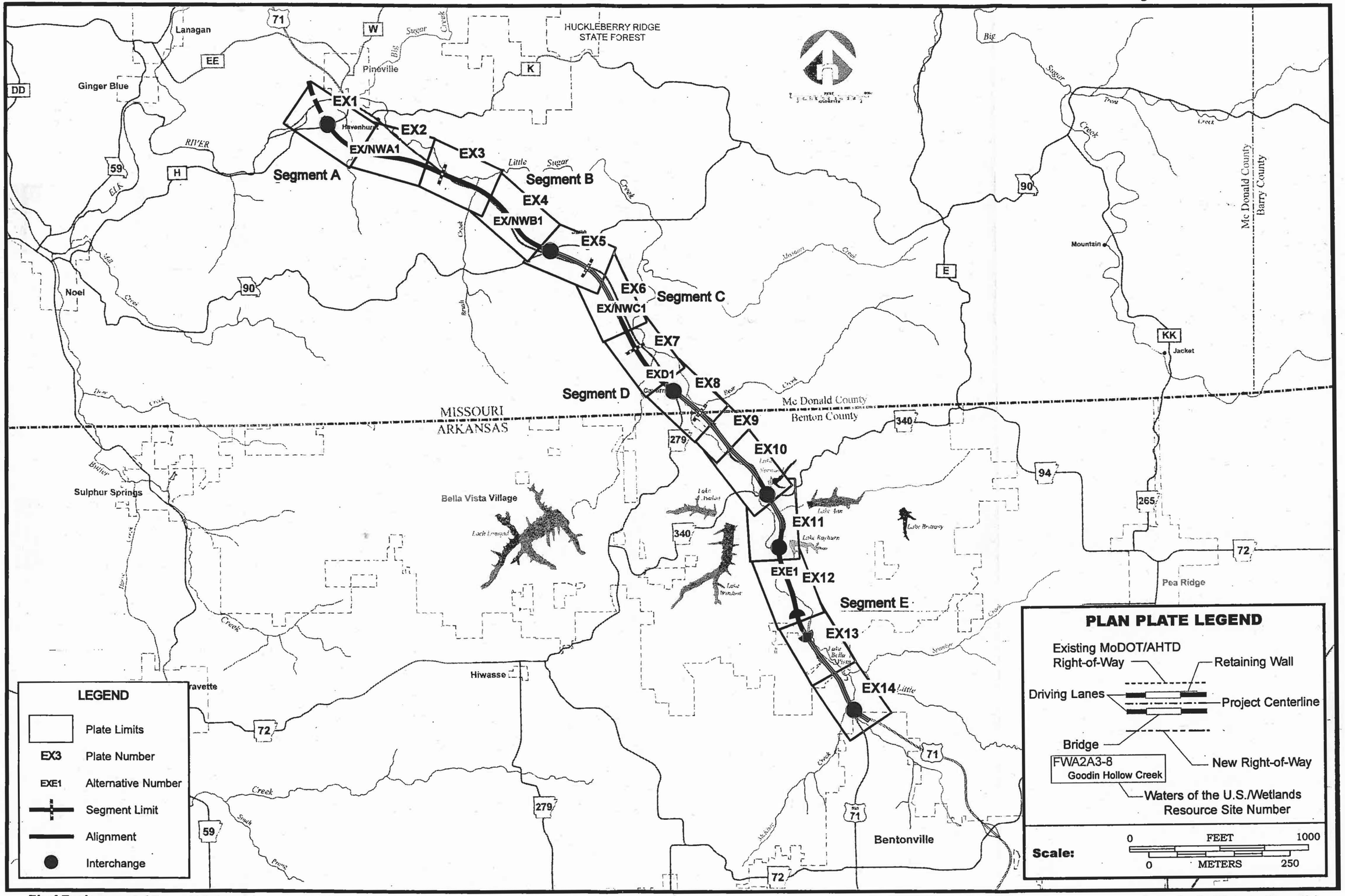

NEAR WEST INTERIM IMPROVEMENTS
EXD1-8 Little Sugar Creek > 5 cfs
71
90
279
Bella Vista Village
County Road
Little
EXNWD1-15 (Spring)
EXD1-18 Gordon Hollow Creek > 5 cfs
71
EXNWD1-16 Trib. of Little Sugar Creek
NWD1E1-1 Gordon Hollow Creek > 5 cfs
EXNWD1-4
NWF2-1 Gordon Hollow Creek (Link F2) > 5 cfs
NWD1E1
EXNWD1-12
Segment D/E
Segment D/E
Segment F
Link
NWF4-1 Gordon Hollow Creek (Link F3/F4) > 5 cfs
0
FEET
0
METERS
300

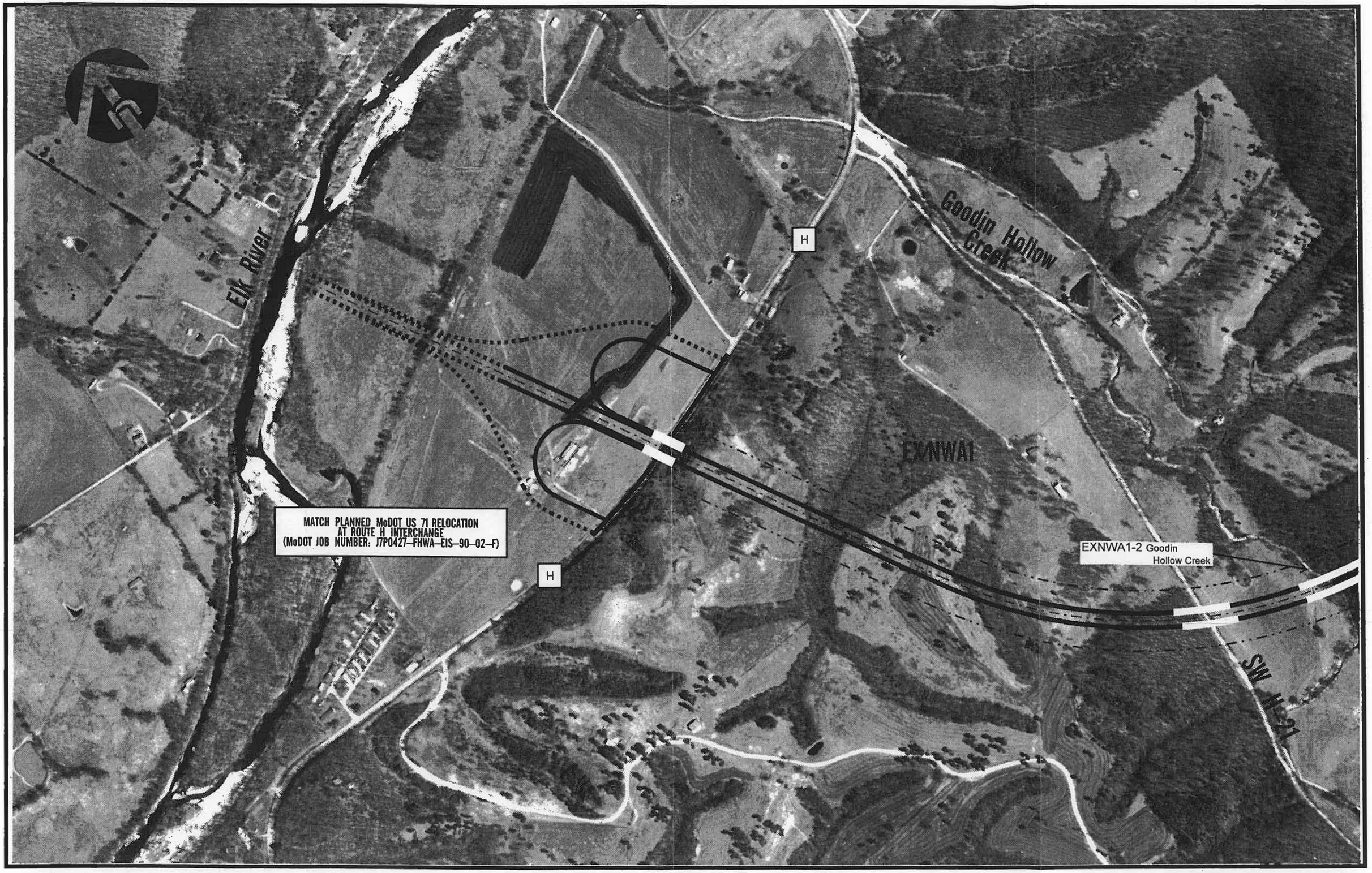

279
279
Bella Vista Village
Camden Road
Co. Rd. 481
LinkF2
LinkF5
LinkF3
LinkF6
LinkF4
LinkF7
LinkF8
NWF7-1 (impounded spring)
NWF4-2 Gordon Hollow Creek (Link 4) > 5 cfs
VV Memorial Gardens
Fordson
NOTE:
Alternative F1 = Links 1, 4, and 8
Alternative F2 = Links 1, 3, 5, 6, and 8
Alternative F3 = Links 2, 5, 6, and 8
Alternative F4 = Links 1, 3, 5, and 7
Alternative F5 = Links 2, 5, and 7

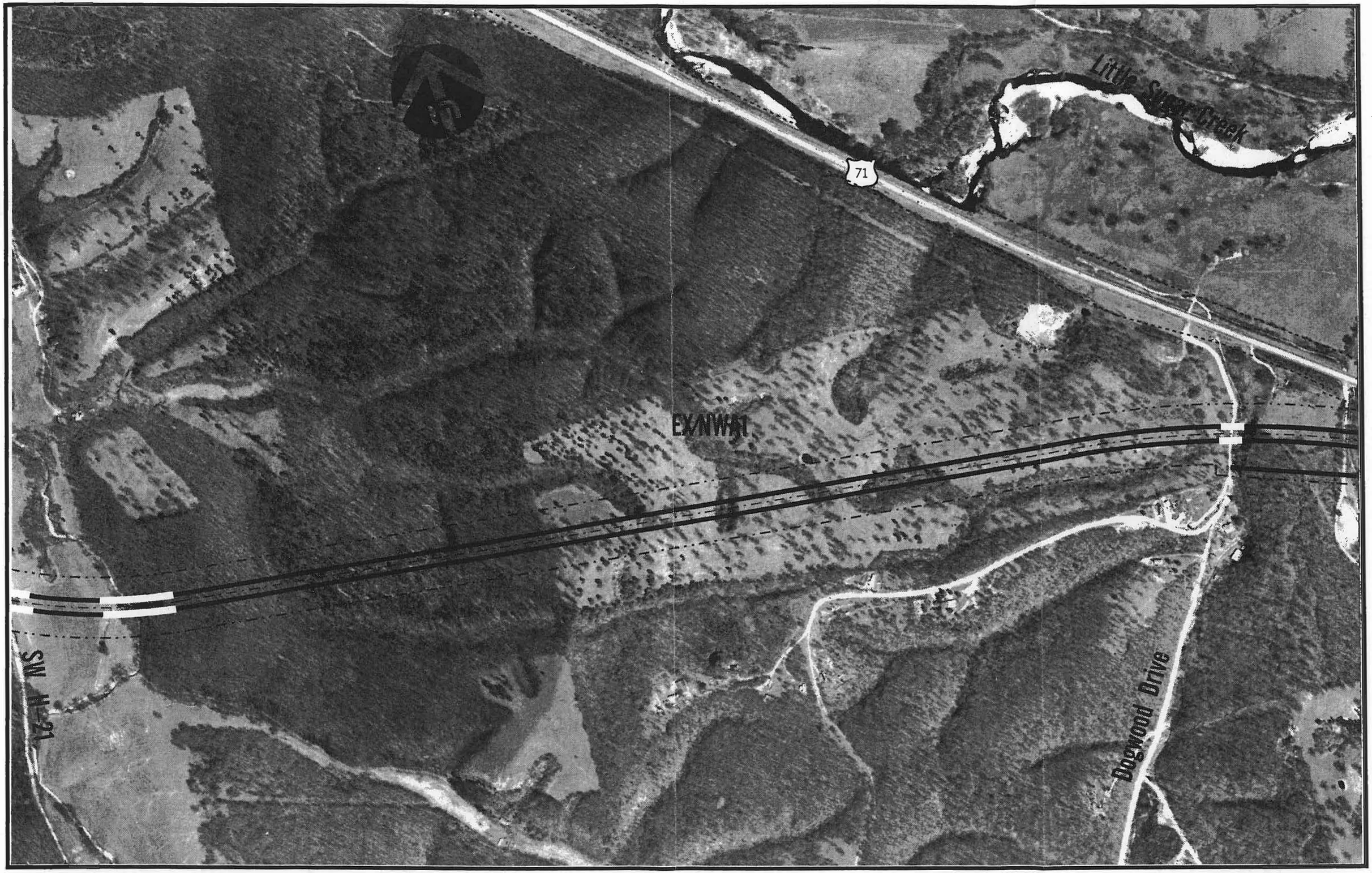

Windsor
Bella Vista Village
Segment F
Segment G
Co. Rd. 49
Decket Rd.
NWF8-1 Trib. of Tanyard Creek (spring fed)
LinkF7
LinkF8
NWG1
Co. Rd. 456
Co. Rd. 458
FAR WEST ALTERNATIVE (SEE PLATE No. FW7)
340
279
72
NOTE:
Alternative F1 = Links 1, 4, and 8
Alternative F2 = Links 1, 3, 5, 6, and 8
Alternative F3 = Links 2, 5, 6, and 8
Alternative F4 = Links 1, 3, 5, and 7
Alternative F5 = Links 2, 5, and 7

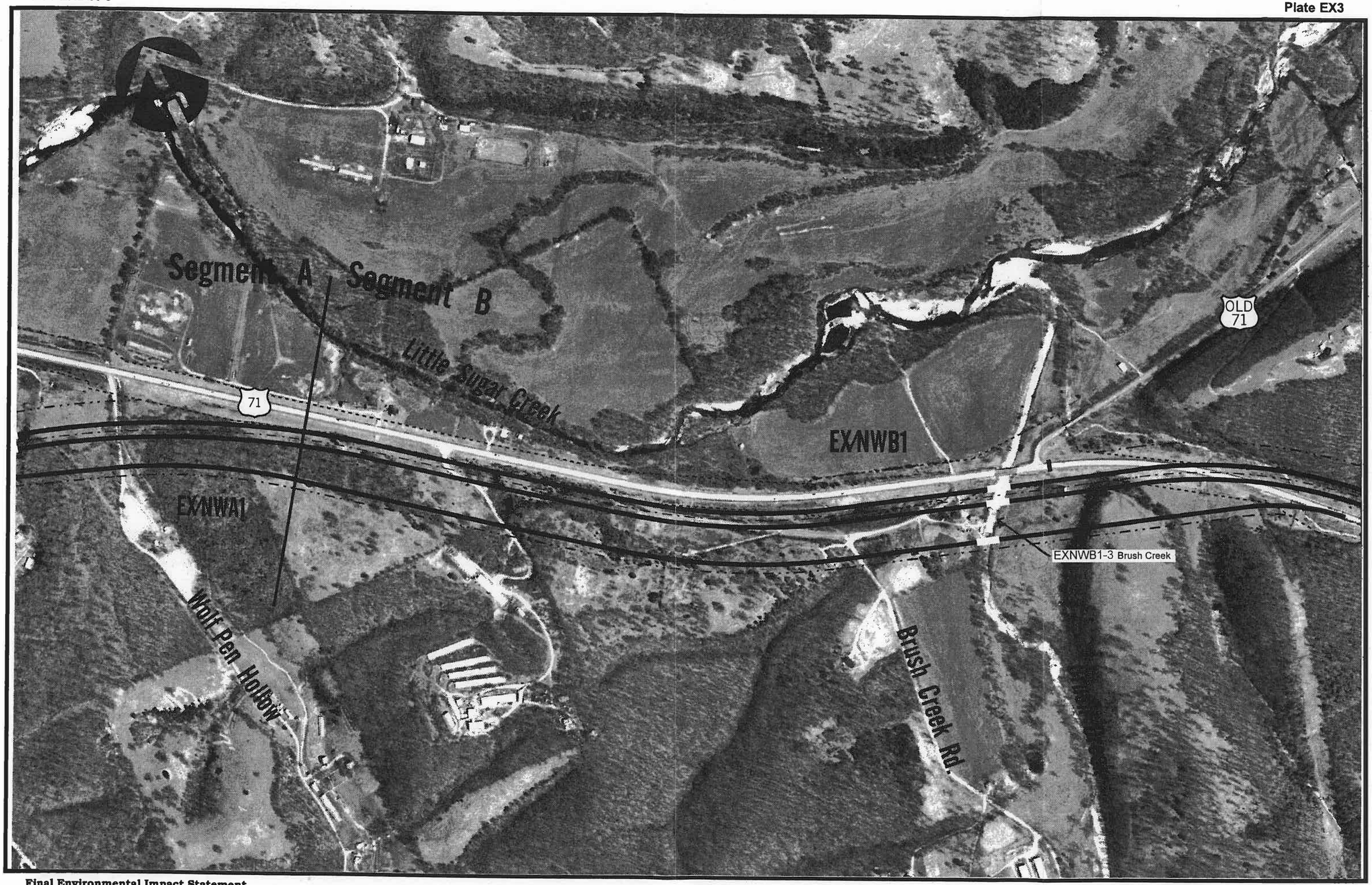

FEET 2800
METERS 500
Co. Rd. 459
Co. Rd. 450
Bella Vista Village
Bella Vista Village
NEAR WEST ALTERNATIVE (SEE PLATE No. NW9)
FWD2
FWD1
FWNWH2
FWNWH1
Segment D
Segment H
72

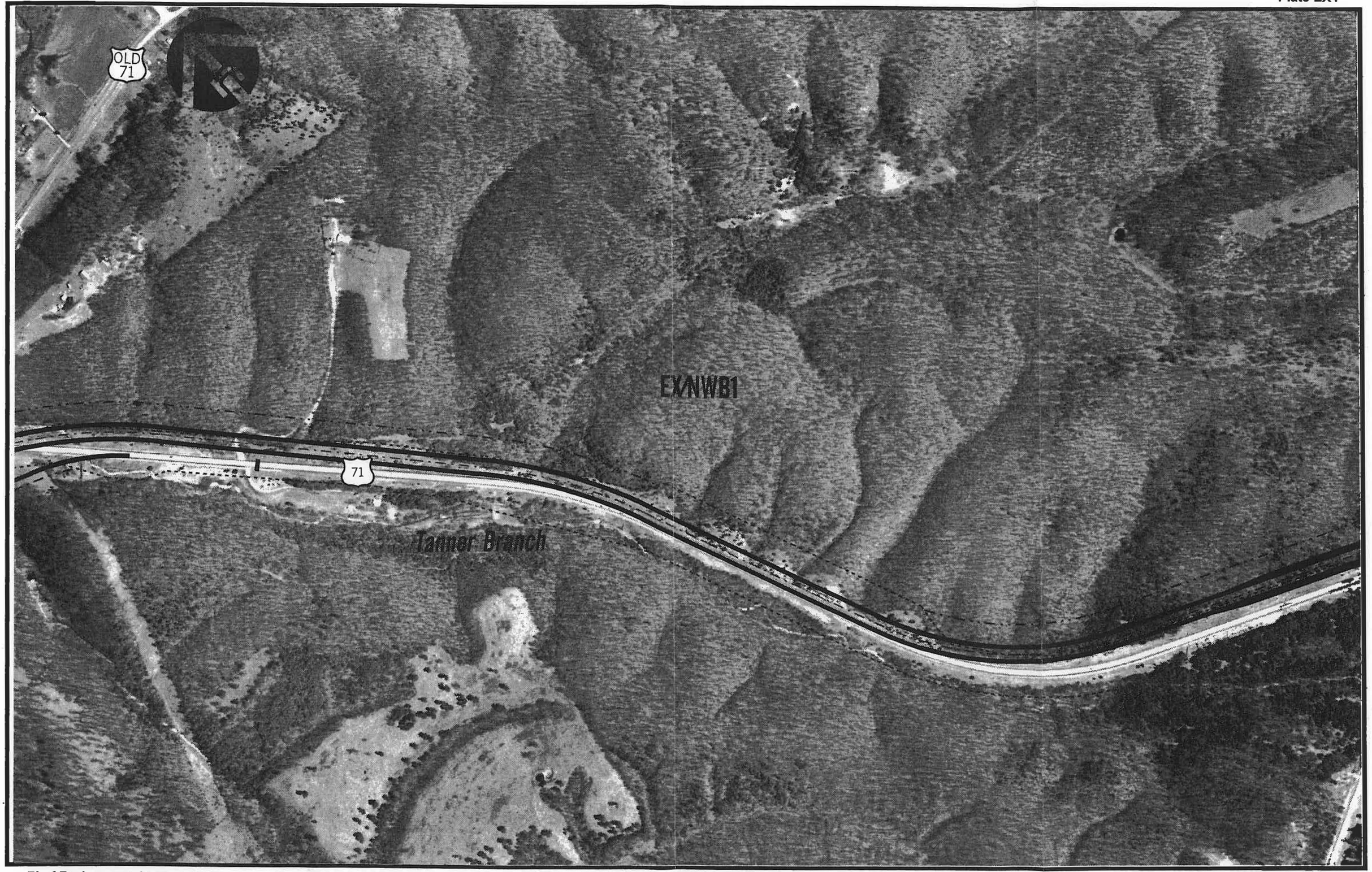

Bella Vista Village
Howland Rd.
Co. Rd. 40
71
For the Far West and Near West Alternatives, the one-lane widening in each direction of existing US 71 will extend to Riordan Road for southbound US 71 and to the new Dartmoor Road for northbound US 71.
FWNWH1-13 Trib. of McKisic Creek
FWNWH2
FWNWH1-12 McKisic Creek > 5 cfs
Co. Rd. 52
Co. Rd. 37
McKisic Creek
FWNWH1
Bentonville
Co. Rd. 39

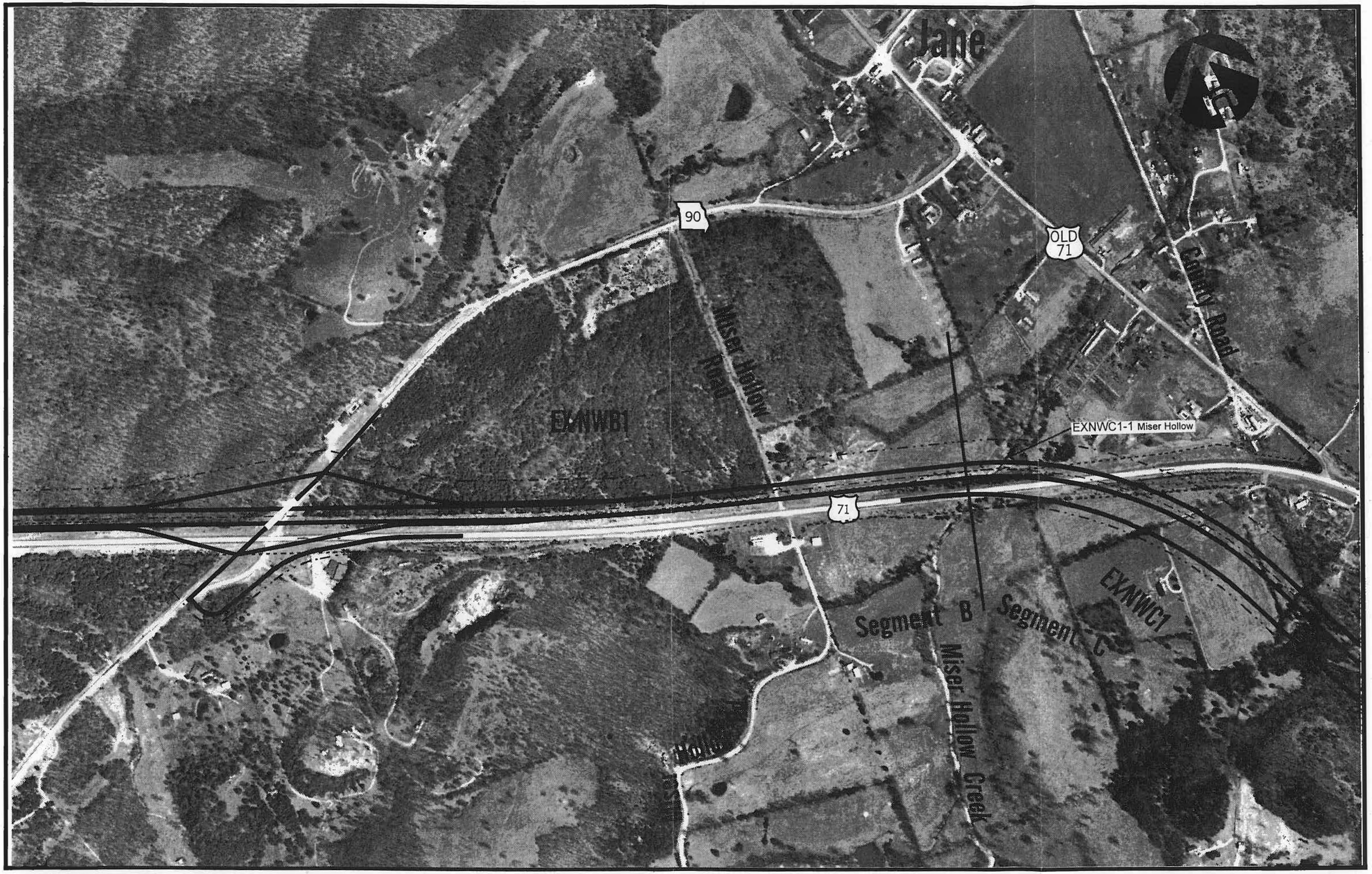

HUCKLEBERRY RIDGE STATE FOREST
Lanagan
Pineville
Ginger Blue
Noel
Sulphur Springs
Bella Vista Village
Hiwasse
Bentonville
Pea Ridge
Mountain
Jacket
MISSOURI
ARKANSAS
Mc Donald County
Benton County
Mc Donald County
Barry County
EX1
EX2
EX3
EX4
EX5
EX6
EX7
EX8
EX9
EX10
EX11
EX12
EX13
EX14
EX/NWA1
EX/NWB1
EX/NWC1
EXD1
EXE1
Segment A
Segment B
Segment C
Segment D
Segment E
LEGEND
Plate Limits
EX3 Plate Number
EXE1 Alternative Number
Segment Limit
Alignment
Interchange
PLAN PLATE LEGEND
Existing MoDOT/AHTD Right-of-Way
Retaining Wall
Driving Lanes
Project Centerline
Bridge
New Right-of-Way
FWA2A3-8
Goodin Hollow Creek
Waters of the U.S./Wetlands Resource Site Number
Scale:
0 FEET 1000
0 METERS 250

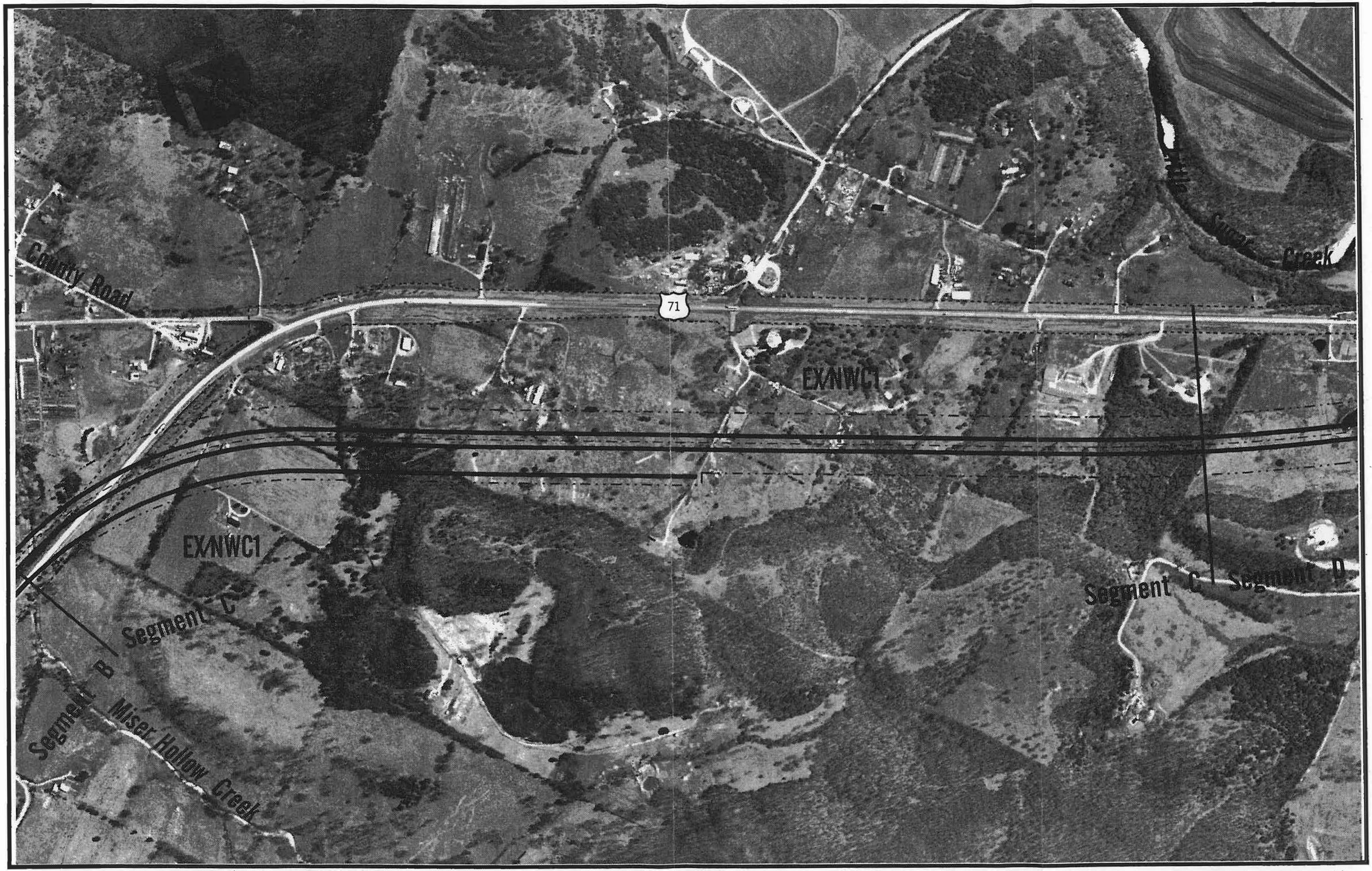

Elk River
H
Goodin Hollow Creek
EXNWA1
MATCH PLANNED MoDOT US 71 RELOCATION
AT ROUTE H INTERCHANGE
(MoDOT JOB NUMBER: J7P0427–FHWA–EIS–90–02–F)
H
EXNWA1-2 Goodin Hollow Creek
SW H-21

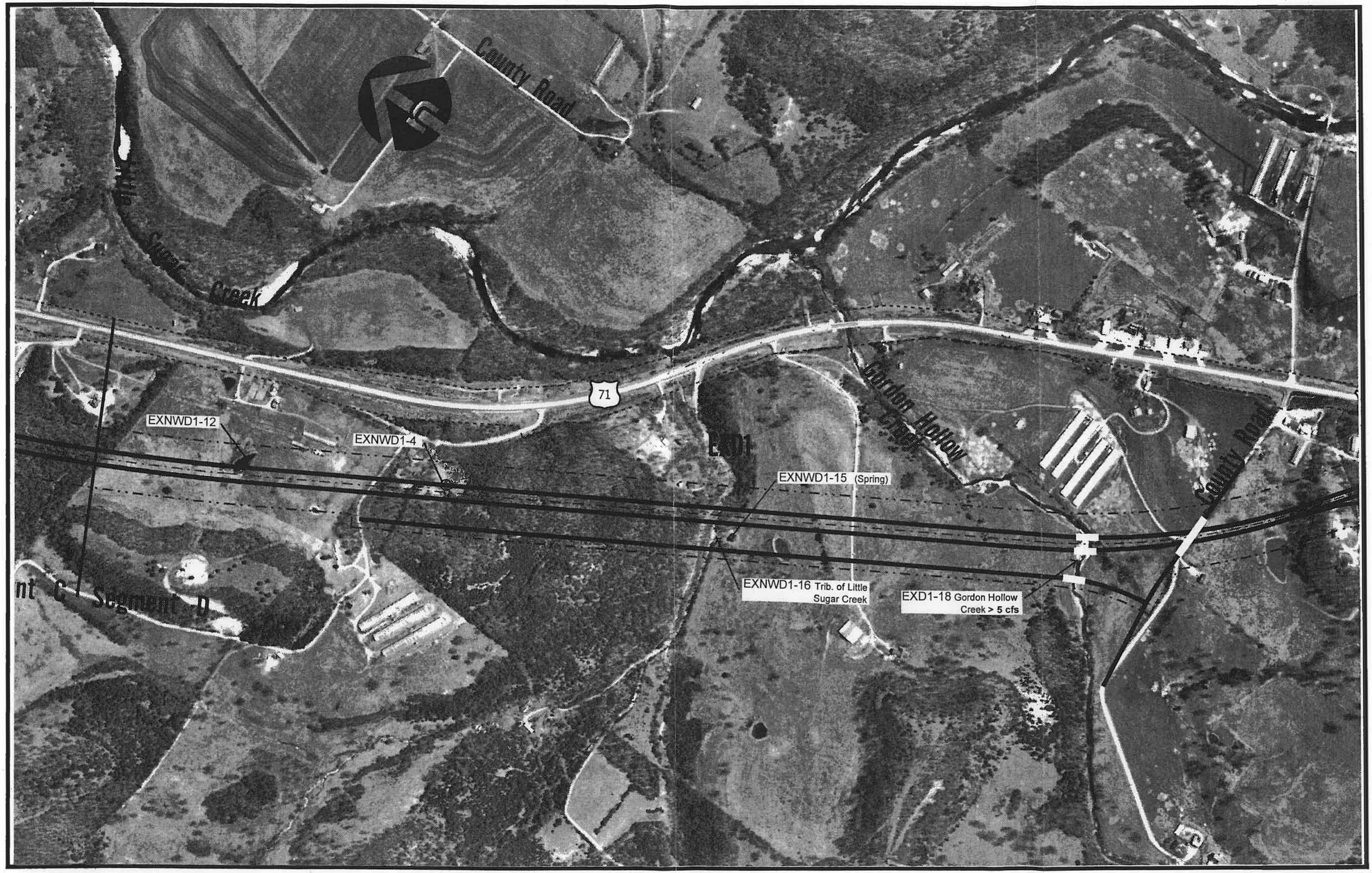

Little Sugar Creek
71
EXNWA1
SW H-21
Dogwood Drive

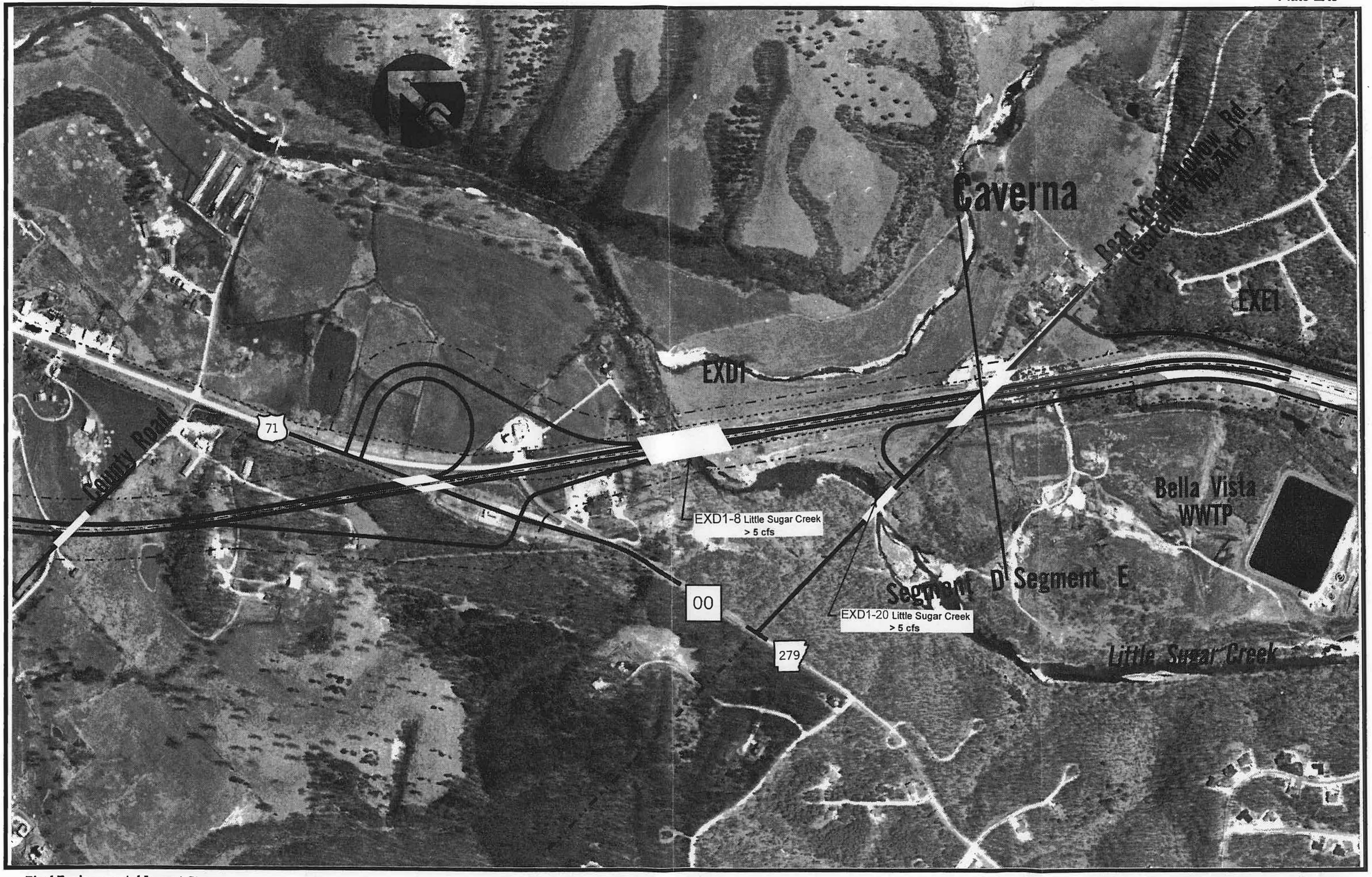

Segment A
Segment B
Little Sugar Creek
71
OLD 71
EXNWB1
EXNWA1
EXNWB1-3 Brush Creek
Wolf Pen Hollow
Brush Creek Rd.

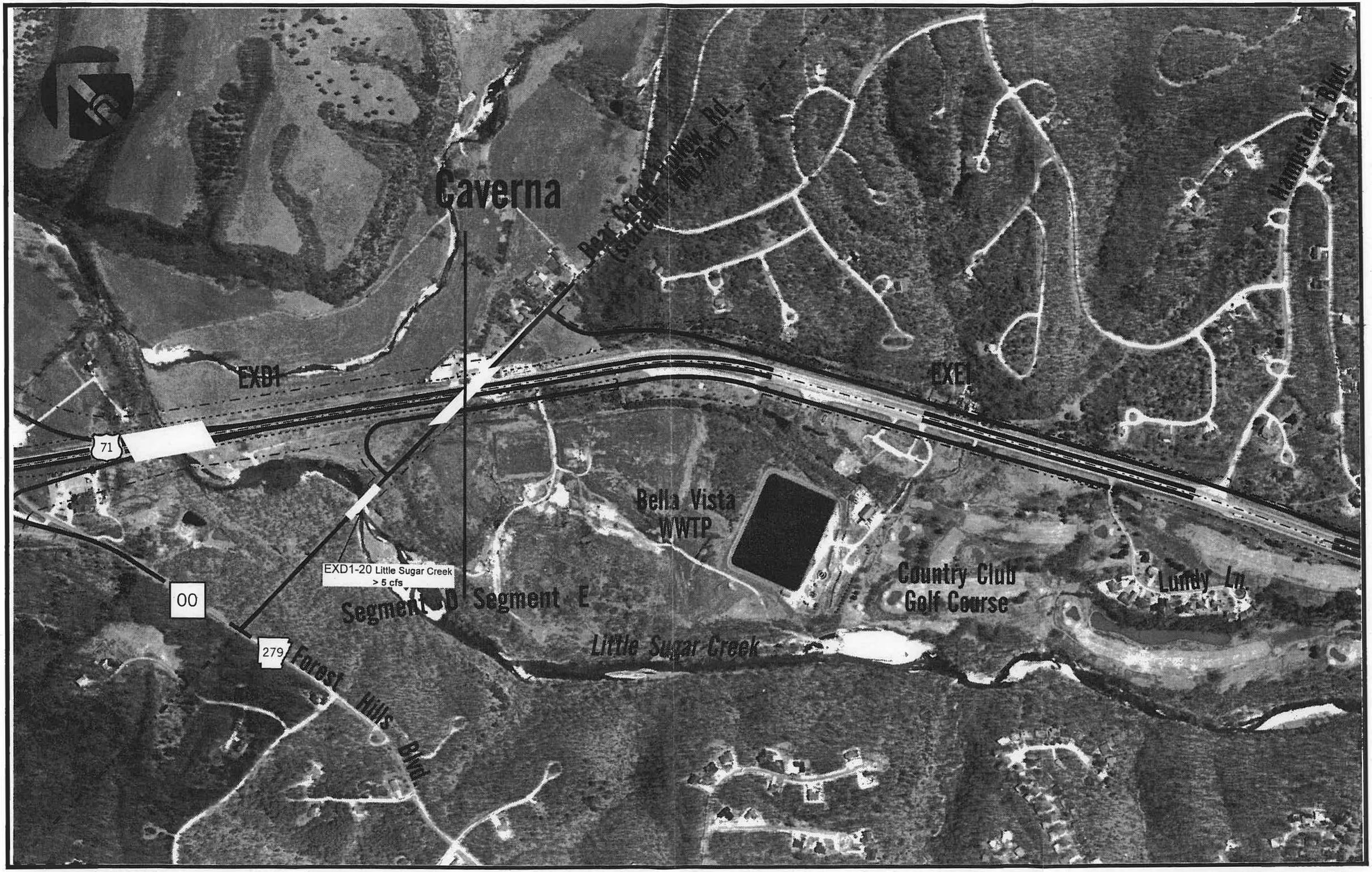

OLD 71
EX/NWB1
71
Tanner Branch


Jane
90
OLD 71
Caudy Road
Miser Hollow Road
EXNWB1
EXNWC1-1 Miser Hollow
71
Segment B
Segment C
EXNWC1
Miser Hollow Creek


County Road
71
EXNWC1
Segment C
Segment B
Miser Hollow Creek
Segment C
Segment D


County Road
Sugar Creek
71
EXNWD1-12
EXNWD1-4
EXNWD1-15 (Spring)
EXNWD1-16 Trib. of Little Sugar Creek
EXD1-18 Gordon Hollow Creek > 5 cfs
Gordon Hollow
County Road


Caverna
Bear Creek (Hollow Rd.)
(Starcline Mo/Ark)
EXE1
EXD1
71
County Road
EXD1-8 Little Sugar Creek
> 5 cfs
Bella Vista
WWTP
Segment D Segment E
00
EXD1-20 Little Sugar Creek
> 5 cfs
279
Little Sugar Creek

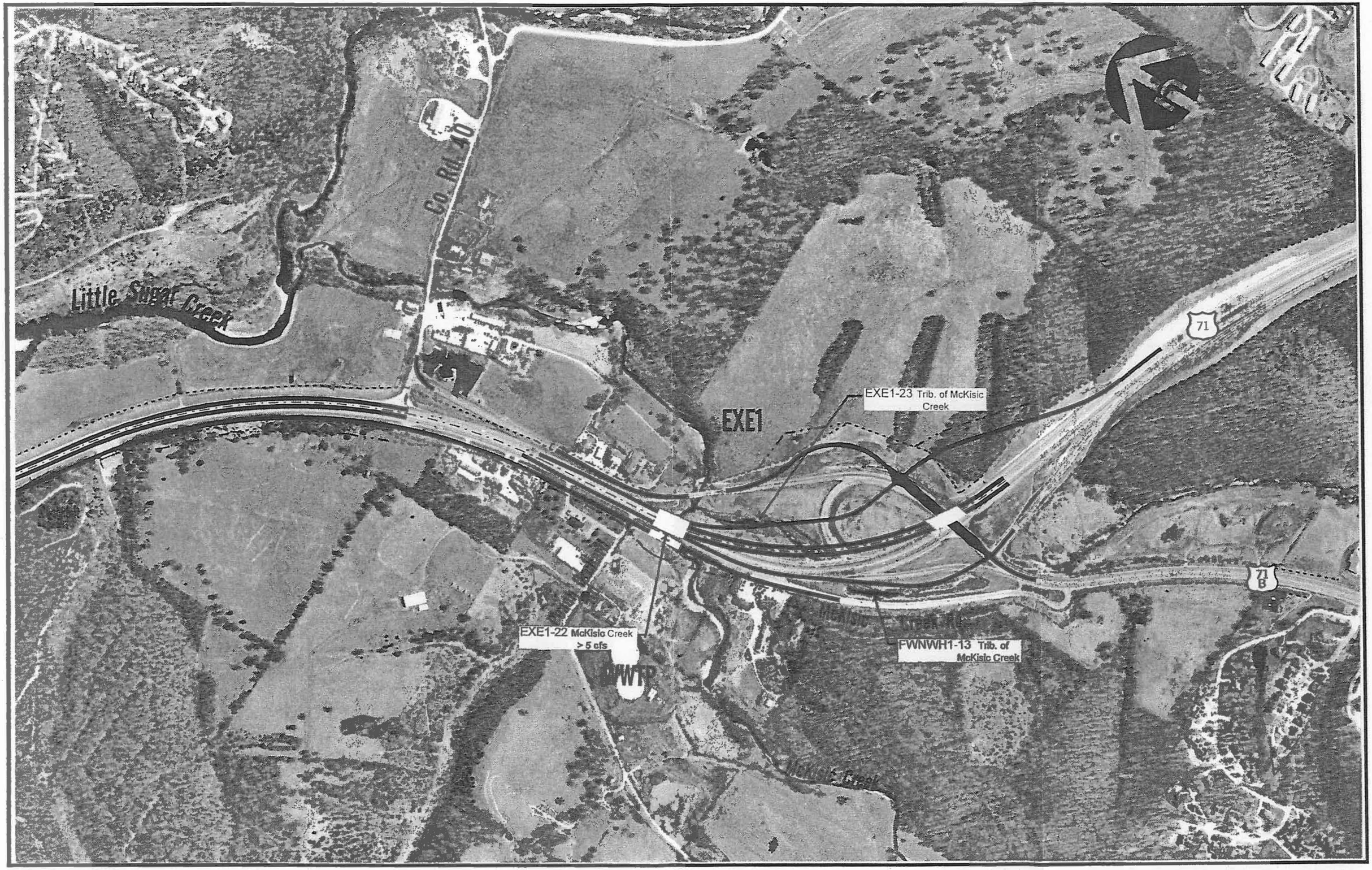

Caverna
Bear Creek Parkway Rd.
(Statehwy. 90/Ark.)
Hampstead Blvd.
EXD1
EXE1
71
Bella Vista
WWTP
EXD1-20 Little Sugar Creek
> 5 cfs
Country Club
Golf Course
Lundy Ln.
00
Segment D
Segment E
279
Little Sugar Creek
Forest Hills Blvd.


Hamstead Blvd.
Overton Dr.
Wellington Rd
EXE1
Retaining Wall
Little Sugar Creek
Town Center
EXE1-2 Little Sugar Creek
> 5 cfs
Lonely Ln.
Country Club
Golf Course
340
Cooper
Lancaster Blvd


340
Pinion Valley Dr
Trailridge Dr
Lake Rayburn
EXE1-5 Pinion Creek
EXE1
Kingswood Golf Course
Pinion Creek
Shakespeare Dr
Town Center
Kingswood Golf Course
Little Sugar Creek
EXE1-8 Structure


Kingsland Dr.
EXE
Little Sugar Creek
Berksdale Golf Course
Sugar Creek Center
EXE1-16 Little Sugar Creek
> 5 cfs
Cunningham Center
EXE1-9
Retaining Wall
Kingswood Golf Course
Berksdale Golf Course
Little Sugar Creek
Riordan Rd.
Riordan Hall
Oldham Dr.


Little Sugar Creek
Lambeth Rd
Dartmoor Rd
Berksdale Golf Course
Sugar Creek Center
Lake Bella Vista
Little Sugar Creek
EXE1-17 Little Sugar Creek
> 5 cfs
EXE1-18
EXE1-19
EXE1
Sunset Dr.
Oldham Dr.
Cedar Crest Dr.
DARTMOOR ROAD IMPROVEMENTS
OVER LITTLE SUGAR CREEK
TO BE CONTSRUCTED BY OTHERS


Little Sugar Creek
Co. Rd. 10
EXE1
EXE1-23 Trib. of McKisic Creek
71
EXE1-22 McKisic Creek
> 5 cfs
WWTP
FWNWH1-13 Trib. of McKisic Creek
71 B

APPENDIX D
1990 COUNTY CENSUS DATA

	Benton County, AR		McDonald County, MO	
PERSONS	97,499		16,938	
GENDER				
Male	47,531	48.75%	8,403	49.61%
Female	49,968	51.25%	8,535	50.39%
RACE				
White	94,968	97.40%	16,313	96.31%
Black	124	0.13%	4	0.02%
American Indian, Eskimo	1,435	1.47%	546	3.22%
Asian, Pacifice	455	0.47%	41	0.24%
Other Race	517	0.53%	34	0.20%
AGE				
17 and under	24,184	24.80%	4,670	27.57%
18 to 24	8,676	8.90%	1,498	8.84%
25 to 34	14,606	14.98%	2,533	14.95%
35 to 44	13,066	13.40%	2,178	12.86%
45 to 54	9,679	9.93%	1,894	11.18%
55 to 64	9,849	10.10%	1,717	10.14%
65 and over	17,439	17.89%	2,448	14.45%
MEDIAN HOUSING VALUE	$58,700		$31,800	
MEDIAN HOUSEHOLD INCOME	$26,021		$17,312	
HOUSING UNITS	41,444		7,327	
Persons per Household Unit		2.35		2.31
WATER SERVICE				
Public Water Supply	31,857	76.87%	3,133	42.76%
Drilled Well	8,086	19.51%	3,579	48.85%
Dug Well	732	1.77%	177	2.42%
Other Source	769	1.86%	438	5.98%
SEWER SERVICE				
Public Sewer	20,661	49.85%	2,112	28.82%
Septic Sewer	20,506	49.48%	5,014	68.43%
Other Sewer	277	0.67%	201	2.74%
HOUSEHOLD LOCATIONS				
Urban in Cities	353	0.85%	0	0.00%
Urban outside Cities	23,413	56.49%	0	0.00%
Rural, Farm	1,341	3.24%	706	9.64%
Rural, Non-farm	16,337	39.42%	6,621	90.36%

APPENDIX D
1990 CITY CENSUS DATA

FIPS.STATE	29		5		5		5		5	
FIPS.PLACE90	57818		4840		5320		28360		54200	
STUB.GEO	**Pineville, MO**		**Bella Vista, AR**		**Bentonville. AR**		**Gravette, AR**		**Pea Ridge, AR**	
PERSONS	590		9,083		11,285		1,412		1,620	
HOUSEHOLDS	247		4,377		4,294		556		602	
RURAL / URBAN POP.										
Urban, inside city	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Urban, outside city	0	0.00%	9,083	100.00%	11,285	100.00%	0	0.00%	0	0.00%
Rural, farm	0	0.00%	0	0.00%	0	0.00%	4	0.28%	0	0.00%
Rural, non-farm	590	100.00%	0	0.00%	0	0.00%	1,408	99.72%	1,620	100.00%
GENDER										
Male	265	44.92%	4,332	47.69%	5,382	47.69%	622	44.05%	783	48.33%
Female	325	55.08%	4,751	52.31%	5,903	52.31%	790	55.95%	837	51.67%
RACE										
White	579	98.14%	9,021	99.32%	10,945	96.99%	1,389	98.37%	1,602	98.89%
Black	0	0.00%	0	0.00%	18	0.16%	0	0.00%	0	0.00%
American Indian, Eskimo	11	1.86%	24	0.26%	198	1.75%	9	0.64%	9	0.56%
Asian, Pacific	0	0.00%	31	0.34%	62	0.55%	3	0.21%	0	0.00%
Other race	0	0.00%	7	0.08%	62	0.55%	11	0.78%	9	0.56%
HISPANIC ORIGIN*	2	0.34%	21	0.23%	131	1.16%	14	0.99%	18	1.11%
EDUCATIONAL ATTAINMENT										
Less than 9th Grade	60	10.17%	193	2.12%	665	5.89%	177	12.54%	145	8.95%
9th to 12th Grade, no diploma	77	13.05%	820	9.03%	1,003	8.89%	149	10.55%	220	13.58%
High School Graduate	117	19.83%	2,749	30.27%	2,575	22.82%	326	23.09%	465	28.70%
Some College, no degree	66	11.19%	1,980	21.80%	1,612	14.28%	126	8.92%	164	10.12%
Associate degree	23	3.90%	426	4.69%	353	3.13%	21	1.49%	28	1.73%
Bachelor's degree	22	3.73%	1,102	12.13%	585	5.18%	80	5.67%	39	2.41%
Graduate/Professional degree	12	2.03%	774	8.52%	296	2.62%	49	3.47%	15	0.93%
INDUSTRY										
Agriculture, forestry, fisheries	8	3.76%	60	2.46%	58	1.09%	16	2.70%	29	4.11%
Mining	0	0.00%	10	0.41%	13	0.25%	2	0.34%	0	0.00%
Construction	14	6.57%	179	7.34%	206	3.89%	33	5.57%	58	8.22%
Manufacturing, nondurable	20	9.39%	194	7.95%	623	11.75%	95	16.05%	140	19.83%
Manufacturing, durable	15	7.04%	130	5.33%	354	6.68%	71	11.99%	104	14.73%
Transportation	2	0.94%	57	2.34%	187	3.53%	10	1.69%	21	2.97%
Communications, Public Utilities	6	2.82%	14	0.57%	100	1.89%	6	1.01%	16	2.27%
Wholesale trade	7	3.29%	88	3.61%	146	2.75%	15	2.53%	23	3.26%
Retail trade	73	34.27%	693	28 41%	1,968	37.13%	130	21.96%	177	25.07%
Finance, insurance, real estate	8	3.76%	381	15.62%	327	6.17%	35	5.91%	26	3.68%
Business & repair services	2	0.94%	85	3 49%	227	4.28%	17	2.87%	17	2.41%
Personal services	7	3.29%	83	3 40%	156	2.94%	21	3.55%	17	2.41%
Entertainment, recreation services	3	1 41%	55	2.26%	38	0.72%	4	0.68%	4	0.57%
Health services	12	5.63%	89	3.65%	258	4.87%	65	10.98%	24	3.40%
Educational services	27	12.68%	161	6.60%	249	4.70%	45	7.60%	18	2.55%
Other professional services	0	0.00%	117	4.80%	284	5.36%	23	3.89%	16	2.27%
Public Administration	9	4.23%	43	1.76%	106	2.00%	4	0.68%	16	2.27%
Total persons employed over 16	213		2,439		5,300		592		706	
OCCUPATION										
Executive, admin, management	10	4.69%	369	15.13%	609	11.49%	37	6.25%	35	4.96%
Professional specialty	31	14.55%	281	11.52%	438	8.26%	71	11.99%	25	3.54%

APPENDIX D
1990 CITY CENSUS DATA

STUB.GEO	Pineville, MO		Bella Vista, AR		Bentonville. AR		Gravette, AR		Pea Ridge, AR	
Technicians and support	0	0.00%	100	4.10%	162	3.06%	30	5.07%	9	1.27%
Sales occupations	24	11.27%	391	16.03%	542	10.23%	77	13.01%	58	8.22%
Admin support, clerical	34	15.96%	422	17.30%	1,041	19.64%	80	13.51%	140	19.83%
Private household occupations	0	0.00%	14	0.57%	7	0.13%	6	1.01%	0	0.00%
Protective service	2	0.94%	46	1.89%	83	1.57%	0	0.00%	7	0.99%
Service occupations	38	17.84%	177	7.26%	540	10.19%	85	14.36%	53	7.51%
Farming, forestry, and fishing	6	2.82%	52	2.13%	58	1.09%	8	1.35%	32	4.53%
Production, craft, repair	26	12.21%	249	10.21%	621	11.72%	94	15.88%	147	20.82%
Mach. oper, assembly, inspectors	23	10.80%	134	5.49%	464	8.75%	63	10.64%	112	15.86%
Transporation, moving	6	2.82%	70	2.87%	262	4.94%	17	2.87%	54	7.65%
Handlers, cleaners, laborers	13	6.10%	134	5.49%	473	8.92%	24	4.05%	34	4.82%
Total persons occupied over 16	213		2,439		5,300		592		706	
HOUSEHOLD INCOME (1989)										
Less than $5,000	35	14.17%	110	2.51%	206	4.80%	42	7.55%	30	4.98%
$5,000 to $9,999	52	21.05%	181	4.14%	354	8.24%	95	17.09%	56	9.30%
$10,000 to $12,499	25	10.12%	151	3.45%	308	7.17%	44	7.91%	43	7.14%
$12,5000 to $14,999	16	6.48%	225	5.14%	245	5.71%	33	5.94%	49	8.14%
$15,000 to $17,499	19	7.69%	253	5.78%	276	6.43%	22	3.96%	35	5.81%
$17,500 to $19,999	15	6.07%	166	3.79%	271	6.31%	26	4.68%	18	2.99%
$20,000 to $22,499	19	7.69%	268	6.12%	296	6.89%	48	8.63%	40	6.64%
$22,500 to $24,999	4	1.62%	253	5.78%	227	5.29%	28	5.04%	55	9.14%
$25,000 to $27,499	12	4.86%	223	5.09%	196	4.56%	32	5.76%	36	5.98%
$27,500 to $29,999	2	0.81%	255	5.83%	208	4.84%	29	5.22%	36	5.98%
$30,000 to $32,499	12	4.86%	279	6.37%	169	3.94%	11	1.98%	25	4.15%
$32,500 to $34,999	2	0.81%	190	4.34%	150	3.49%	24	4.32%	23	3.82%
$35,000 to $37,499	3	1.21%	193	4.41%	168	3.91%	14	2.52%	16	2.66%
$37,500 to $39,999	5	2.02%	151	3.45%	87	2.03%	14	2.52%	30	4.98%
$40,000 to $42,499	4	1.62%	268	6.12%	156	3.63%	8	1.44%	18	2.99%
$42,500 to $44,999	2	0.81%	102	2.33%	110	2.56%	20	3.60%	17	2.82%
$45,000 to $47,499	2	0.81%	153	3.50%	110	2.56%	4	0.72%	11	1.83%
$47,500 to $49,999	2	0.81%	171	3.91%	91	2.12%	4	0.72%	21	3.49%
$50,000 to $54,999	0	0.00%	182	4.16%	160	3.73%	10	1.80%	15	2.49%
$55,000 to $59,999	5	2.02%	90	2.06%	81	1.89%	6	1.08%	10	1.66%
$60,000 to $74,999	2	0.81%	268	6.12%	210	4.89%	22	3.96%	12	1.99%
$75,000 to $99,999	3	1.21%	137	3.13%	105	2.45%	7	1.26%	0	0.00%
$100,000 to $124,999	4	1.62%	49	1.12%	43	1.00%	8	1.44%	3	0.50%
$125,000 to $149,999	0	0.00%	18	0.41%	26	0.61%	0	0.00%	3	0.50%
$150,000 or more	2	0.81%	41	0.94%	41	0.95%	5	0.90%	0	0.00%
MEDIAN HOUSEHOLD INCOME	$14,297		$30,927		$24,604		$20,833		$23,864	
EARNINGS (1989)										
Households with	156	63.16%	2,112	48.25%	3,421	79.67%	377	67.81%	428	71.10%
Households without	91	36.84%	2,265	51.75%	873	20.33%	179	32.19%	174	28.90%
WAGE OR SALARY (1989)										
Households with	148	59.92%	1,970	45.01%	3,327	77.48%	359	64.57%	412	68.44%
Households without	99	40.08%	2,407	54.99%	967	22.52%	197	35.43%	190	31.56%
NON-FARM SELF EMPLOYED										
Households with	23	9.31%	422	9.64%	467	10.88%	68	12.23%	66	10.96%
Households without	224	90.69%	3,955	90.36%	3,827	89.12%	488	87.77%	536	89.04%
FARM SELF EMPLOYMENT										
Households with	8	3.24%	70	1.60%	34	0.79%	3	0.54%	16	2.66%
Households without	239	96.76%	4,307	98.40%	4,260	99.21%	553	99.46%	586	97.34

APPENDIX D
1990 CITY CENSUS DATA

STUB.GEO	Pineville, MO		Bella Vista, AR		Bentonville. AR		Gravette, AR		Pea Ridge, AR	
INT, DIV, or RENTAL INCOME										
Households with	73	29.55%	3,176	72.56%	1,679	39.10%	203	36.51%	221	36.71%
Households without	174	70.45%	1,201	27.44%	2,615	60.90%	353	63.49%	381	63.29%
SOCIAL SECURITY INCOME										
Households iwth	104	42.11%	2,977	68.01%	1,236	28.78%	217	39.03%	228	37.87%
Households without	143	57.89%	1,400	31.99%	3,058	71.22%	339	60.97%	374	62.13%
PUBLIC ASSISTANCE INC										
Households with	32	12.96%	117	2.67%	231	5.38%	56	10.07%	13	2.16%
Households without	215	87.04%	4,260	97.33%	4,063	94.62%	500	89.93%	589	97.84%
RETIREMENT INCOME										
Households with	39	15.79%	2,060	47.06%	565	13.16%	75	13.49%	101	16.78%
Households without	208	84.21%	2,317	52.94%	3,729	86.84%	481	86.51%	501	83.22%
OTHER TYPE OF INCOME										
Households with	29	11.74%	467	10.67%	363	8.45%	42	7.55%	71	11.79%
Households without	218	88.26%	3,910	89.33%	3,931	91.55%	514	92.45%	531	88.21%
PER CAPITA INCOME (1989)	$9,172		$17,525		$12,073		$10,620		$9,960	
HOUSING UNITS	278		5,391		4,490		613		638	
HOUSING OCCUPANCY										
Occupied units	234	84.17%	4,369	81.04%	4,274	95.19%	560	91.35%	604	94.67%
Vacant units	44	15.83%	1,022	18.96%	216	4.81%	53	8.65%	34	5.33%
URBAN / RURAL HSG UNITS										
Urban in cities	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Urban outside cities	0	0.00%	5,391	100.00%	4,490	100.00%	0	0.00%	0	0.00%
Rural, farm	0	0.00%	0	0.00%	0	0.00%	2	0.33%	0	0.00%
Rural, non-farm	278	100.00%	0	0.00%	0	0.00%	611	99.67%	638	100.00%
OWNER / RENTAL UNITS										
Owner occupied	131	55.98%	3,603	82 47%	2,862	66.96%	362	64.64%	509	84.27%
Renter occupied	103	44.02%	766	17.53%	1,412	33.04%	198	35.36%	95	15.73%
SOURCE OF WATER										
Public system or private company	245	88.13%	5,126	95.08%	4,359	97.08%	590	96.25%	623	97.65%
Drilled well	30	10.79%	238	4 41%	125	2.78%	15	2.45%	13	2.04%
Dug well	0	0.00%	19	0.35%	0	0.00%	0	0.00%	2	0.31%
Other source	3	1.08%	8	0 15%	6	0.13%	8	1.31%	0	0.00%
SEWAGE DISPOSAL										
Public sewer	211	75 90%	1,258	23.34%	4,067	90.58%	493	80.42%	550	86.21%
Septic tank or cesspool	67	24 10%	4,113	76.29%	419	9.33%	118	19.25%	88	13.79%
Other means	0	0.00%	20	0.37%	4	0.09%	2	0.33%	0	0.00%
YEAR STRUCTURE BUILT										
1989 to March 1990	6	2.16%	158	2.93%	105	2.34%	6	0.98%	10	1.57%
1985 to 1988	12	4.32%	1,093	20.27%	446	9.93%	77	12.56%	50	7.84%
1980 to 1984	9	3.24%	1,338	24.82%	830	18.49%	29	4.73%	54	8.46%
1970 to 1979	65	23.38%	2,259	41.90%	1,400	31.18%	158	25.77%	208	32.60%
1960 to 1969	60	21.58%	459	8.51%	593	13.21%	101	16.48%	190	29.78%
1950 to 1959	23	8.27%	28	0.52%	481	10.71%	68	11.09%	77	12.07%
1940 to 1949	24	8.63%	23	0.43%	183	4.08%	41	6.69%	11	1.72%
1939 or earlier	79	28.42%	33	0.61%	452	10.07%	133	21.70%	38	5.96%

APPENDIX D
1990 CITY CENSUS DATA

STUB.GEO	Pineville, MO		Bella Vista, AR		Bentonville. AR		Gravette, AR		Pea Ridge, AR	
MEDIAN YEAR HSG BUILT	1962		1980		1974		1966		1970	
VALUE, OWNER OCCUPIED										
Less than $15,000	6	4.58%	10	0.28%	15	0.52%	23	6.35%	7	1.38%
$15,000 to $19,999	13	9.92%	0	0.00%	45	1.57%	12	3.31%	9	1.77%
$20,000 to $24,999	7	5.34%	20	0.56%	39	1.36%	34	9.39%	19	3.73%
$25,000 to $29,999	11	8.40%	9	0.25%	114	3.98%	32	8.84%	19	3.73%
$30,000 to $34,999	8	6.11%	45	1.25%	141	4.93%	56	15.47%	45	8.84%
$35,000 to $39,999	17	12.98%	121	3.36%	238	8.32%	21	5.80%	43	8.45%
$40,000 to $44,999	9	6.87%	185	5.13%	295	10.31%	36	9.94%	96	18.86%
$45,000 to $49,999	12	9.16%	188	5.22%	232	8.11%	41	11.33%	69	13.56%
$50,000 to $59,999	10	7.63%	371	10.30%	405	14.15%	26	7.18%	60	11.79%
$60,000 to $74,999	6	4.58%	540	14.99%	477	16.67%	30	8.29%	47	9.23%
$75,000 to $99,999	5	3.82%	829	23.01%	293	10.24%	19	5.25%	10	1.96%
$100,000 to $124,999	4	3.05%	406	11.27%	91	3.18%	0	0.00%	0	0.00%
$125,000 to $149,999	0	0.00%	170	4.72%	56	1.96%	0	0.00%	2	0.39%
$150,000 to $174,999	0	0.00%	116	3.22%	32	1.12%	0	0.00%	4	0.79%
$175,000 to $199,999	0	0.00%	67	1.86%	20	0.70%	0	0.00%	0	0.00%
$200,000 to $249,999	0	0.00%	37	1.03%	17	0.59%	0	0.00%	0	0.00%
$250,000 to $299,999	0	0.00%	0	0.00%	7	0.24%	0	0.00%	0	0.00%
$300,000 to $399,999	0	0.00%	29	0.80%	18	0.63%	0	0.00%	0	0.00%
$400,000 to $499,999	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
$500,000 and over	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
MEDIAN HOUSING VALUE	$37,600		$77,500		$53,700		$36,900		$43,800	
HOUSEHOLDS W/ PLUMBING										
Lacking complete facilities	278	100.00%	5,391	100.00%	4,486	99.91%	602	98.21%	635	99.53%
Complete facilities	0	0.00%	0	0.00%	4	0.09%	11	1.79%	3	0.47%

* Hispanic is not an official Race category in the 1990 Census. Rather, respondents were asked a seperate question as to whether they consider themselves to be Therefore, the people who responded yes to this Hispanic origin question are also counted within various race categories.

Appendix E
Wetlands Technical Memorandum

INTRODUCTION

The Study Area is located within the Elk River Section of Ozark Natural Division in Missouri and the Springfield Plateau Subdivision of the Ozark Mountain Natural Division in Arkansas. This area is characterized by gently rolling hills from 305 to 457 meters in height and broad uplands and valleys, with a historical vegetation pattern of woodlands and native prairies. Early settlers in the area cleared areas that were suitable for cultivation in the broad uplands and in the valleys that were well-drained.

The study area is strongly dissected by several small streams and a few larger ones (>5 cfs flow) such as the Elk River, Big Sugar Creek, Little Sugar Creek, Butler Creek, Gordon Hollow and McKisic Creek. The most potential for wetland formation exists in small poorly drained areas in the floodplain adjacent to the creeks, at the outflow of springs and seeps, and at the edges of the lakes and ponds.

REGULATORY AUTHORITY

The Clean Water Act regulates discharge of fill or dredged material, unless exempted, into "waters of the United States", which include jurisdictional wetlands and other aquatic habitats. Wetlands are defined for regulatory purposes in the Act, and the exacting definition is used by the EPA and the Corps of Engineers to administer the section 404 permit program:

> (wetlands are) 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. Wetlands generally include swamps, bogs, and similar areas. (EPA, 40 CFR 230.3 and CE, 33 CFR 328.3).

As in definitions by other agencies, such as the U.S. Fish and Wildlife Service, this definition recognizes and emphasizes the fact that wetlands possess three essential characteristics: hydric soils, prevalence of hydrophytic vegetation, and wetland hydrology, which is the driving force creating all wetlands. These three characteristics are the mandatory technical criteria required for wetlands determination. Areas must meet all three of these criteria before being designated as wetlands.

Hydric Soils are soils that are saturated, flooded or ponded for a sufficient duration during the growing season to develop anaerobic conditions in the upper part. Such conditions favor the growth and regeneration of hydrophytic vegetation. Only when a hydric soil supports hydrophytic vegetation and the area has indicators of wetland hydrology may that soil be considered as a "wetland soil." Using the criteria for hydric soils, the National Technical Committee for Hydric Soils has developed a list of hydric soils.

Hydrophytic Vegetation is defined as rooted, macrophytic plant life growing in water, soil, or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content. Emphasis is placed on the assemblage of plant species that exert a controlling influence on the character of the plant community, rather than on the presence of indicator species. Therefore, an area is considered to have hydrophytic vegetation when, under normal circumstances, more than 50 percent of the composition of the dominant species from all strata are indicator species.

Indicator species are known to occur with a greater frequency in wetlands than others. Those species occurring almost always (> 99% probability) in wetlands under natural conditions are classified as obligate wetland plants (OBL). Species that usually (67% to 99% probability) occur in wetlands, but are occasionally found in nonwetlands, are classed as facultative wetland plants (FACW). Those species that are equally likely to occur in wetlands or nonwetlands (34-66% probability) are classified as facultative plants (FAC). Each of these classifications are sometimes further modified to indicate more likely wetland (+) or less likely wetland (-).

An area is said to have wetland hydrology when there exists a condition of permanent or periodic inundation (a week or more) at least seasonally during an average rainfall year. This is the driving force behind wetland formation. It affects the types of plants that can grow and the types of soils that develop.

WETLAND CLASSIFICATION

Wetlands are usually classified according to a system developed by the U.S. Fish and Wildlife Service. This system is often called the Cowardin System after its principle author (Cowardinet al, 1979). Five major wetland systems are defined in the Cowardin classification system: marine, estuarine, riverine, lacustrine, and palustrine. This classification also includes deepwater habitats, or permanently flooded lands lying below the deepwater boundaries of wetlands.

It was determined during field investigations that three of the wetland systems mentioned above are represented in the project area: the palustrine system, the riverine system, and the lacustrine system.

The **Palustrine System** includes all (nontidal) wetlands dominated by trees, shrubs and persistent emergents. It also includes wetlands lacking such vegetation but with all of the following four characteristics:

1) area less than 8 ha (20 acres);
2) lack of active wave-formed or bedrock shoreline features;
3) water depth in the deepest part of the basin less than 2m (6.6 feet) as low water; and
4) salinity due to ocean-derived salts less than 0.5%.

The palustrine system is bounded by upland or by any of the other four systems.

The **Riverine System** includes all wetlands and deepwater habitats contained within a channel, with two exceptions: 1) wetlands dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens and 2) habitats with water containing ocean-derived salts (in excess of 0.5%). The system is bounded on the landward side by upland, by the channel bank, or by wetlands dominated by trees, shrubs, etc. as above. The system terminates at the downstream end where the channel enters a larger body of water.

The **Lacustrine System** includes wetlands and deepwater habitats with all of the following characteristics: 1) situated in a topographic depression or a dammed river channel; 2) lacking trees, shrubs, persistent emergents, emergent mosses, or lichens with greater than 30% areal coverage; and 3) total area exceeds 8 ha (20 acres). The Lacustrine System is bounded by upland or by wetland dominated by trees, shrubs, etc., as above. It includes permanently flooded lakes and reservoirs. Islands of palustrine wetlands may lie within the boundaries of the lacustrine system.

It should be noted that the jurisdictional wetland determinations performed for regulatory purposes are not dependent on this classification system but on three mandatory criteria previously discussed. The classification system discussed here is very important for establishing the type of ecosystem being inventoried. The essential distinction is in the regulatory treatment. For example, a rock-bottom streambed classified as an upper perennial riverine wetland with an intermittent water regime is a functioning wetland system under the Cowardin System. However, the regulatory treatment for this stream under Section 404 would be as a "water of the U.S.", not a wetland, because of the fact that hydric soils may be absent (rock bottom). Remember, all three wetland criteria must exist before an area can be called a wetland.

WETLAND IDENTIFICATION AND MAPPING

In order to identify and map streams and potential jurisdictional wetlands within the project corridor for the purpose of screening alternative alignments, data was gathered using the following **AHTD Wetlands Protocol**:

Proposed Amendments to the 4.1.9. Jurisdictional Wetlands Impact Assessment

4.1.9.1 Develop maps displaying high potential wetlands areas. Using low level aerial photographs, map high potential wetlands-associated with intermittent, perennial and 5 CFS streams. USGS mapping for intermittent and perennial streams, COE LR District mapping for 5 CFS Streams, mapping of springs and recharge areas as records of Arkansas Department of Pollution Control and Ecology (ADPCE). Field check of all 5 CFS streams and high potential areas for wetlands, including springs and significant recharge areas. COE to accompany field investigators for wetlands determinations on borderline cases. Acreage of wetland impacts will be classified by wetlands type (Cowardin) and estimated/measured to the nearest acre using typical sections. Soil samples will be taken by soil probe and classed by Munsell Color Chart at selected sites. Wetlands methodology narrative and photographic summary will be prepared for inclusion in the DEIS.

Field survey work will be done only on those lands for which right of entry is obtained. Reasonable effort and consideration will be undertaken to obtain the relevant property owners permission. Property owners names will be obtained from county plat books. Contact will be by telephone and personal visit, when practical.

Coordinated effort with Threatened and Endangered species study when habitat types overlap with potential wetlands areas. Arkansas Natural Heritage Data Base to be primary source for the Threatened and Endangered Species. Data sources not to be included are the NWI maps and FSA (NRCS) maps. Intermittent streams will not be field checked.

Following the DEIS, the preferred alignment will be more thoroughly studied for potential wetland impacts. COE contact will accompany field investigators for walk through of high probability areas. Field investigators will walk center line to the extent practical for verification of wetland resource impacts. COE KC District Preliminary Jurisdictional Forms will not be prepared. Wetlands areas will be noted on plan sheets and referenced by stationing.

Amendment to 2.2 Data Collection and Study Methods

2.2.5.1 Obtain COE LR District 5 CFS Stream Maps for McDonald and Benton Counties, Obtain Property Ownership Maps for right of entry contacts. (County Plat and Assessors Maps). Obtain Springs Register and Recharge Area Maps from the Arkansas Department of Pollution Control and Environment.

The tables on the following pages provide a list of individual waters of the U.S. sites that were identified in the preliminary phase of field investigations in the study area. As requested by the Corps of Engineers, they are separated by county/state and by corridor. The Special Aquatic Sites include impounded springs and are emergent (herbaceous) wetlands. The Regulated Ponds have a stream flowing in or out and are predominantly emergent (herbaceous) wetlands. Stream Crossings (waters of the U.S.) are separated into two categories: culverted or bridged. Streams located below the headwaters are indicated as **> 5 cfs** flow. All other streams are above the headwaters point (less than 5 cfs flow). The first table in this appendix lists the stream crossings of the far west alternative and indicates whether they are above the headwaters point or below the headwaters point.

According to the AHTD wetlands protocol, the preliminary phase of the study did not require field checks for intermittent streams. However, after the Preferred Alternative was selected, each USGS blue line stream crossing within the Preferred Alternative was photographed and was checked to determine the presence or absence of adjacent wetlands and an Ordinary High Water Mark. Following the "waters of the U.S." tables is the text of eachWaters of the U.S. and Preliminary Jurisdictional Wetland Determinations Summary Report that was prepared for each county. The full reports, which include maps, data sheets and photographs, can be viewed upon request. Following the PJWD Summary Reports is an Exhibit E-1 which diagrams typical profiles of culverted and bridged stream crossings and Exhibit E-2 which shows the locations of the Corps regulated "waters of the U.S." including ponds, wetlands, streams, and the "blue line" streams that were investigated in the PJWD Summary Reports. Following the exhibits are copies of the Section 404 permits that were granted to each county by the Corps of Engineers. At the end of this appendix is a section which discusses the Preliminary 404 (b) (1) Evaluation that was prepared as a part of the DEIS.

SUMMARY OF STREAM CROSSING FLOWS
(Far West Alternative)

STREAMS HAVING >5 cfs FLOW AT CROSSING (Below the Headwaters Point)	**STREAMS HAVING <5 cfs FLOW AT CROSSING (Above the Headwaters Point)**
McDONALD COUNTY, MISSOURI	
Little Sugar Creek *(Bridged)*	Goodin Hollow Creek *(Bridged)*
Gordon Hollow Creek *(Bridged)*	Brush Creek *(Bridged)*
	Miser Hollow Creek *(Culvert)*
	Tributary of Goodin Hollow Creek *(Culvert)*
	Cave Hollow Creek *(Culvert)*
	Rattlesnake Hollow Creek *(Bridged)*
BENTON COUNTY, ARKANSAS	
McKisic Creek *(Bridged)*	Rattlesnake Hollow Creek *(Bridged)*
	Mill Creek *(Bridged)*
	Tributary of McKisic Creek *(Culvert)*

McDONALD COUNTY, MISSOURI
WATERS OF THE U.S.

SEGMENT	RESOURCE NUMBER	SIZE (acres) (& Linear Feet of streams-LF)			
		SPECIAL AQUATIC SITES* (emergent)	REGULATED PONDS** (emergent wetland)	STREAM CROSSING (CULVERT) (waters US)	STREAM CROSSING (BRIDGE) (waters US)
No-Build Alternative (Missouri)					
		0	0	0	0
Far West Alternative (Missouri)					
Interim					
Segment A	EXNWA1-2 Goodin Hollow Creek	0	0	0	0.21*** (360 LF)
Segment B	EXNWB1-3 Brush Creek	0	0	0	0.15 (328 LF)
Segment C	EXNWC1-1 Miser Hollow Creek	0	0	0.12 (328 LF)	0
Segment D	EXD-3 Gordon Hollow Creek **> 5 cfs**	0	0	0	0.14*** (200 LF)
	EXD1-8 Little Sugar Creek **> 5 cfs**	0	0	0	0.37 (200 LF)
D-Subtotal		0	0	0	0.51 (400 LF)
Ultimate (Not including interim resources)					
Segment A1	FWA1-9 Trib. of Goodin Hollow Creek	0	0	0.07 (328 LF)	0
	FWA1-10	0	0.17	0	0
	FWA1A3-1 Cave Hollow	0	0	0.28 (377 LF)	0
A1-Subtotal		0	0.17	0.35 (705 LF)	0
Segment A2	FWA2-5 (impounded spring)	0.05	0	0	0
	FWA2A3-8 Goodin Hollow Creek	0	0	0	0.45 (755 LF)
	FWA2A3-10 Trib. of Goodin Hollow Creek	0	0	0.18 (492 LF)	0
A2-Subtotal		0.05	0	0.18 (492 LF)	0.45 (755 LF)
Segment A3	FWA2A3-8 Goodin Hollow Creek	0	0	0	0.45 (755 LF)
	FWA2A3-10 Trib. of Goodin Hollow Creek	0	0	0.18 (492 LF)	0
	FWA1A3-1 Cave Hollow	0	0	0.28 (377 LF)	0
A3-Subtotal		0	0	0.46 (869 LF)	0.45 (755 LF)
Segment B1/C1	FWB1C1-1 Mill Creek	0	0	0.24 (394 LF)	0
Segment B2/C2	FWB2C2-5 Rattlesnake Hollow	0	0	0	0.18 (300 LF)

NOTE: Streams located below the COE identified headwaters point are indicated as **> 5 cfs**. All other streams are above the headwaters point with less than 5 cfs flow.

* The Special Aquatic Sites include impounded springs and are emergent (herbaceous) wetlands.

** The area of the regulated ponds is predominantly emergent (herbaceous) wetlands.

*** Indicates estimated size.

McDONALD COUNTY, MISSOURI
WATERS OF THE U.S.

SEGMENT	RESOURCE NUMBER	SIZE (acres) (& Linear Feet of streams-LF)			
		SPECIAL AQUATIC SITES* (emergent)	REGULATED PONDS** (emergent wetland)	STREAM CROSSING (CULVERT) (waters US)	STREAM CROSSING (BRIDGE) (waters US)
Near West Alternative (Missouri)					
Interim					
Segment D	EXD1-8 Little Sugar Creek **> 5 cfs**	0	0	0	0.62 (328 LF)
	EXD1-18 Gordon Hollow Creek **> 5 cfs**	0	0	0	0.44 (394 LF)
D-Subtotal		0	0	0	1.06 (722 LF)
Ultimate (Not including interim quantities)					
Segment A/B/C	EXNWA1-2 Goodin Hollow Creek	0	0	0	0.21*** (360 LF)
	EXNWB1-3 Brush Creek	0	0	0	0.23 (500 LF)
	EXNWC1-1 Miser Hollow	0	0	0.20 (550 LF)	0
ABC-Subtotal		0	0	0.20 (550 LF)	0.44 (860 LF)
Segment D1/E1	EXNWD1-4	0	0.10	0	0
	EXNWD1-12	0	0.33	0	0
	EXNWD1-15 (Spring)	0.01	0	0	0
	EXNWD1-16 Trib. of Little Sugar Creek	0	0	0.18 (800 LF)	0
D1E1-Subtotal		0.01	0.43	0.18 (800 LF)	0
Improvement to Existing Alternative (Missouri)					
Segment A/B/C	EXNWA1-2 Goodin Hollow Creek	0	0	0	0.21 (360 LF)
	EXNWB1-3 Brush Creek	0	0	0	0.23 (500 LF)
	EXNWC1-1 Miser Hollow	0	0	0.20 (550 LF)	0
ABC-Subtotal		0	0	0.20 (550 LF)	0.44 (860 LF)
Segment D	EXNWD1-4	0	0.10	0	0
	EXNWD1-12	0	0.33	0	0
	EXNWD1-15 (Spring)	0.01	0	0	0
	EXNWD1-16 Trib. of Little Sugar Creek	0	0	0.07 (328 LF)	0
	EXD1-8 Little Sugar Creek **> 5 cfs**	0	0	0	0.62 (328 LF)
	EXD1-18 Gordon Hollow Creek **> 5 cfs**	0	0	0	0.44 (394 LF)
	EXD1-20 Little Sugar Creek **> 5 cfs**				0.12*** (80 LF)
D-Subtotal		0.01	0.43	0.07 (328 LF)	1.18 (802 LF)

NOTE: Streams located below the COE identified headwaters point are indicated as **> 5 cfs**. All other streams are above the headwaters point with less than 5 cfs flow.

* The Special Aquatic Sites include impounded springs and are emergent (herbaceous) wetlands.

** The area of the regulated ponds is predominantly emergent (herbaceous) wetlands.

*** Indicates estimated size.

BENTON COUNTY, ARKANSAS
WATERS OF THE U.S.

SEGMENT	RESOURCE NUMBER	SIZE (acres) (& Linear Feet of streams-LF)			
		SPECIAL AQUATIC SITES* (emergent)	REGULATED PONDS** (emergent wetland)	STREAM CROSSING (CULVERT) (waters US)	STREAM CROSSING (BRIDGE) (waters US)
No-Build Alternative (Arkansas)					
Dartmoor Rd.	EXE1-17 Little Sugar Creek **> 5 cfs**	0	0	0	0.72 (130 LF)
Far West Alternative (Arkansas)					
Segment B1/C1		0	0	0	0
Segment B2/C2	FWB2C2-5 Rattlesnake Hollow	0	0	0	0.24 (400 LF)
	FWB2C2-4 Mill Creek	0	0	0	0.12 (394 LF)
B2C2-Subtotal		0	0	0	0.36 (794 LF)
Segment D1		0	0	0	0
Segment D2	FWD2-3	0	0.22	0	0
Segment H1	FWNWH1-12 McKisic Creek **> 5 cfs**	0	0	0	0.54 (360 LF)
	FWNWH1-13 Trib. of McKisic Creek	0	0	0.27 (360 LF)	0
H1-Subtotal		0	0	0.27 (360 LF)	0.54 (360 LF)
Segment H2	FWNWH1-12 McKisic Creek **> 5 cfs**	0	0	0	0.54 (360 LF)
	FWNWH1-13 Trib. of McKisic Creek	0	0	0.27 (360 LF)	0
H2-Subtotal		0	0	0.27 (360 LF)	0.54 (360 LF)
Improvement to Existing Alternative (Arkansas)					
Segment E	EXD1-20 Little Sugar Creek **> 5 cfs**	0	0	0	0.12*** (80 LF)
	EXE1-2 Little Sugar Creek **> 5 cfs**	0	0	0	0.30*** (200 LF)
	EXE1-5 Pinion Creek	0	0	0.03 (100 LF)	0
	EXE1-16 Little Sugar Creek **> 5 cfs**	0	0	0	0.27 (200 LF)
	EXE1-22 McKisic Creek **> 5 cfs**	0	0	0	0.12 (270 LF)
	EXE1-23 Trib. of McKisic Creek	0	0	0.24 (650 LF)	0
	FWNWH1-13 Trib. of McKisic Creek	0	0	0.27 (360 LF)	0
E-Subtotal		0	0	0.54 (1110 LF)	0.81 (750 LF)

NOTE: Streams located below the COE identified headwaters point are indicated as **> 5 cfs**. All other streams are above the headwaters point with less than 5 cfs flow.

* The Special Aquatic Sites include impounded springs and are emergent (herbaceous) wetlands.

** The area of the regulated ponds is predominantly emergent (herbaceous) wetlands.

*** Indicates estimated size.

BENTON COUNTY, ARKANSAS
WATERS OF THE U.S.

SEGMENT	RESOURCE NUMBER	SIZE (acres) (& Linear Feet of streams-LF)			
		SPECIAL AQUATIC SITES* (emergent)	REGULATED PONDS** (emergent wetland)	STREAM CROSSING (CULVERT) (waters US)	STREAM CROSSING (BRIDGE) (waters US)
Near West Alternative (Arkansas)					
Segment F1	NWF4-1 Gordon Hollow Creek (Link F3/F4) **> 5 cfs**	0	0	0.24 (394 LF)	0
	NWF4-2 Gordon Hollow Creek (Link 4) **> 5 cfs**	0	0	0.31 (670 LF) (relocated)***	
	NWF8-1 Trib. of Tanyard Creek (with Spring)	0	0	0.03 (394 LF)	0
F1-Subtotal		0	0	0.58 (1458LF)	0
Segment F2	NWF4-1 Gordon Hollow Creek (Link F3/F4) **> 5 cfs**	0	0	0.24 (394 LF)	0
	NWF8-1 Trib. of Tanyard Creek (with Spring)	0	0	0.03 (394 LF)	0
F2-Subtotal		0	0	0.27 (788 LF)	0
Segment F3	NWF2-1 Gordon Hollow Creek (Link F2) **> 5 cfs**	0	0	0.27 (360 LF)	0
	NWF8-1 Trib. of Tanyard Creek (with Spring)	0	0	0.03 (394 LF)	0
F3-Subtotal		0	0	0.30 (754 LF)	0
Segment F4	NWF4-1 Gordon Hollow Creek (Link F3/F4) **> 5 cfs**	0	0	0.24 (394 LF)	0
	NWF7-1(impounded spring)	0.04	0	0	0
	NWF8-1 Trib. of Tanyard Creek (spring fed)	0	0	0.03 (394 LF)	0
F4-Subtotal		0.04	0	0.27 (788 LF)	0
Segment F5	NWF2-1 Gordon Hollow Creek (Link F2) **> 5 cfs**	0	0	0.27 (360 LF)	0
	NWF7-1(impounded spring)	0.04	0	0	0
	NWF8-1 Trib. of Tanyard Creek (spring fed)	0	0	0.03 (394 LF)	0
F5-Subtotal		0.04	0	0.30 (754 LF)	0
Segment G		0	0	0	0
Segment H1	FWNWH1-12 McKisic Creek **> 5 cfs**	0	0	0	0.54 (360 LF)
	FWNWH1-13 Trib. of McKisic Creek	0	0	0.27 (360 LF)	0
H1-Subtotal		0	0	0.27 (360 LF)	0.54 (360 LF)
Segment H2	FWNWH1-12 McKisic Creek **> 5 cfs**	0	0	0	0.54 (360 LF)
	FWNWH1-13 Trib. of McKisic Creek	0	0	0.27 (360 LF)	0
H2-Subtotal		0	0	0.27 (360 LF)	0.54 (360 LF)

NOTE: Streams located below the COE identified headwaters point are indicated as **> 5 cfs**. All other streams are above the headwaters point with less than 5 cfs flow.

* The Special Aquatic Sites include impounded springs and are emergent (herbaceous) wetlands.

** The area of the regulated ponds is predominantly emergent (herbaceous) wetlands.

*** Indicates estimated size

US 71
(Bella Vista to Pineville)
McDONALD COUNTY, MISSOURI

Waters of the U.S. and
Preliminary Jurisdictional Wetland Determinations
SUMMARY REPORT

I. INTRODUCTION

The following overview is a summary of the field investigations performed to assess waters of the U.S. that would be impacted by the construction of the Far West (Preferred) Alternative of the US 71 Highway improvements in McDonald County, Missouri. This information is compiled for the purpose of providing data for a section 404 permit application. The entire project travels from Pineville, Missouri to Bella Vista, Arkansas. This report discusses the potential impacts associated with the portion in McDonald County only. Potential impacts associated with the portion in Benton County, Arkansas, and those associated with interim improvements to US 71 in Missouri are presented in separate reports.

The Preferred Alternative corridor in McDonald County travels through an area of the Ozark Highlands characterized by forested, hilly topography dissected by streams, and narrow winding ridges with steep valleys.

The Project Proponent and the Consultant for the project, and the contact persons, are as follows:

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CONSULTANT
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Mr. Tim Flagler
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(816) 472-1201

A. Purpose Of And Need For The Project

The general purpose of the project is to provide a safe, efficient, environmentally sound and cost-effective transportation facility that responds to the needs of the study area and the region. The specific purpose and needs being addressed by the proposed action are summarized as follows:

- Multi-State Interstate System - Provide a freeway as part of the multi-state, high-priority transportation corridor extending from Shreveport, Louisiana to Kansas City, Missouri, as established in ISTEA.

- Traffic Safety - Reduce the number and severity of traffic-related crashes occurring along US 71 between Bella Vista and Pineville.

- Roadway Design Features - Upgrade current roadway design features along US 71 including roadway alignments and roadway cross-sections.

- Movement of People and Goods - Provide for the efficient transport of people and goods through the region by reducing the total hours of travel through the Study Area.

- Local Access - Provide improved local access to the US 71 facility utilizing interchanges and frontage roads wherever needed while providing efficient through service for non-local trips and truck traffic.

- Roadway Capacity - Increase roadway system capacity in accordance with the projected travel demands to improve the general operating conditions of US 71.

- Recreational Activity Access - Facilitate the usage by motorists of nearby regional recreational facilities through improved accessibility.

B. Regulatory Background

Section 404 of the Clean Water Act prohibits the discharge of dredged or fill material into "waters of the U.S." unless exempted or authorized by the Corps of Engineers (COE). Section 404 is the primary Federal statute that implements federal regulatory policies concerning the protection of wetlands and other waters of the U.S. as specified in various orders and regulations. The Little Rock District COE maintains jurisdiction over the water resources in the area in which the Preferred Alignment corridor is located. A merged Section 404/NEPA process was not formally used for the planning study.

II. METHODS

This project lies within the Little Rock, Arkansas District of the COE, therefore, preliminary investigations concerning potential jurisdictional wetlands and other waters of the U.S. followed the AHTD Jurisdictional Wetlands Impact Assessment Protocol. USGS/NWI maps, aerial photographs, and COE stream maps were studied to determine high potential wetland areas associated with springs, ponds, intermittent streams, perennial streams, and streams having flows greater than 5 cfs. Legible NRCS soil survey maps for McDonald County were not available at the time of this study. (Refer to the Environmental Impact Statement, *Chapter III, Section B.3.c.Soils* for general soil information). In the spring and fall of 1997, field checks within the corridor were performed on all ponds, perennial streams, streams designated as "Riverine" on the NWI maps, and streams having a flow greater than 5 cfs. According to the AHTD wetlands protocol, that preliminary phase of the study did not require field checks for intermittent streams.

Field documentation included photographs of the water resource, vegetative component, adjacent land use, approximate size and generalized assessment of the function and value. The resources inventoried ranged from stock ponds to spring fed ponds, and included stream crossings as noted above.

In addition, COE representatives were consulted at public information meetings held in Bella Vista. Those individuals, along with study team members, also looked at several key areas of concern. A field trip was held November 5th and 6th of 1997 in which representatives from MoDOT, AHTD, the Corps of Engineers, and study team members reviewed several sites in the study area. These included ponds with streams flowing in or out, upland stock ponds, impounded and excavated seeps/springs, and intermittent and perennial streams. For this project, it was concluded by the COE representative on site that ponds located in the uplands, without a stream flowing in or flowing out, are not waters of the U.S. and therefore not regulated. Only those ponds having a stream flowing in or out that are dammed rather than excavated, or seeps/springs that flow into a water of the U.S., or impounded seeps/springs would be regulated.

Based on this information, and through the Draft EIS process, the ponds were evaluated and several were eliminated from further consideration as waters of the U.S. To further reduce impacts, most of the remaining ponds and wetlands were avoided by slightly adjusting the alignment. As a result, it was determined that the Preferred Alternative corridor in McDonald County did not contain any jurisdictional wetland areas nor any ponds that qualified as waters of the U.S. Therefore, the one pond (upland stock pond) within the corridor that did not qualify as a water of the U.S. was not included in this report.

At the north end of the project, a portion of Goodin Hollow Creek lies immediately adjacent to the new corridor right-of-way line. In this case, it is anticipated that the resource is avoided. However, it could be affected if the limits of construction extend past the edge of the corridor. Further engineering as part of the project's design phase would be able to shift the alignment slightly, if needed, to ensure avoidance of this resource. If it is found, in the design phase, that impacts which cannot be avoided occur to Waters of the U.S. resources which were previously out of the corridor limits, MoDOT would reapply for a permit.

The stream crossings evaluated in this report include perennial streams, streams designated as "Riverine" on the NWI maps, streams having a flow greater than 5 cfs, and all USGS blue line streams within the Preferred Alternative corridor. All but the USGS blue line streams were field investigated in the Spring and Fall of 1997. In mid October of 1998, each USGS blue line stream crossing was photographed and was checked to determine the presence or absence of adjacent wetlands. The presence or absence of the Ordinary High Water Mark (OHWM) of each stream was also determined and the width was measured for those with an OHWM. The length of stream lying within the corridor was scaled from the aerial photographs to determine the acreage within the OHWM. A Stream Data Form was filled out on each stream crossing, and includes physical information about the stream. These forms and the corresponding photographs can be found in Appendix B of the full PJWD Summary Report.

III. RESULTS AND DISCUSSION

Within the Preferred Alternative (Far West) corridor in McDonald County, field investigations were performed at 13 mapped streams. Eleven of those had a discernible channel with an OHWM and are therefore regulated, and two of those lacked a channel with an OHWM. The regulated streams in the corridor are intermittent and have either rocky or gravel beds, most of which are very narrow. No jurisdictional wetlands were discovered adjacent to any of these streams within the corridor.

Table 1 presents potential impacts to streams within the Preferred Alignment corridor including stream length within the corridor, OHWM width, area within the OHWM, flow regime (> or < 5

cfs), crossing type (bridge or culvert), and project totals in linear feet (meters) and acres (hectares). A stream data form containing the information in the table, property ownership, and photographs of each stream can be found in Appendix B of the full PJWD Summary Report.

IV. CONCLUSIONS

Within the Preferred Alternative corridor, there is one stream crossing, Goodin Hollow Creek (M-2) which would exceed 500 linear feet and 1/3 acre within the corridor. This crossing would impact 700 linear feet of stream including 0.42 acres within the OHWM. However, it is proposed to be bridged which would avoid impacts to the stream.

Rattlesnake Hollow Creek (M-13) is located on the Missouri/Arkansas state line. The length of this stream within the corridor on the Missouri side is 300 feet including 0.18 acres within the OHWM. This crossing is also proposed to be bridged. The bridge structures would be located on the Arkansas side of the state line, but would nonetheless result in avoidance of impacts to the stream on the Missouri side.

Table 1
McDONALD COUNTY, MISSOURI
Stream Crossings Within Corridor
Summary of Potential Impacts

Stream Crossing	Length Within Corridor (feet)	OHWM Width (feet)	Area Within OHWM (acres)	Flow Regime (cfs)	Crossing Type (Bridge or Culvert)
M-1*	0	0	0	< 5 cfs	Culvert
M-2	(700**)	26	(0.42**)	< 5 cfs	Bridge
M-3*	0	0	0	< 5 cfs	Culvert
M-4	490	4	0.04	< 5 cfs	Culvert
M-5	330	5	0.04	< 5 cfs	Culvert
M-6	330	4	0.03	< 5 cfs	Culvert
M-7	450	8	0.08	< 5 cfs	Culvert
M-8	0	0	0	< 5 cfs	Culvert
M-9	330	1	0.01	< 5 cfs	Culvert
M-10	350	3	0.02	< 5 cfs	Culvert
M-11	377	33	0.28	< 5 cfs	Culvert
M-12	330	6	0.04	< 5 cfs	Culvert
M-13	(300**)	26	(0.18**)	< 5 cfs	Bridge
TOTAL	**2987 ft (910.5 m)**	--	**.54 ac (0.22 ha)**	--	--

* Did not qualify as a Water of the U.S. (not regulated)

** Not included in TOTAL quantity – bridged to avoid impacts

US 71
(Bella Vista to Pineville)
BENTON COUNTY, ARKANSAS

Waters of the U.S. and
Preliminary Jurisdictional Wetland Determinations
SUMMARY REPORT

I. INTRODUCTION

The following overview is a summary of the field investigations performed to assess waters of the U.S. that would be impacted by the construction of the Far West (Preferred) Alternative of the US 71 Highway improvements in Benton County, Arkansas. This information is compiled for the purpose of providing data for a section 404 permit application. The entire project travels from Pineville, Missouri to Bella Vista, Arkansas. This report discusses the potential impacts associated with the portion in Benton County only. Potential impacts associated with the portion in McDonald County, Missouri, and those associated with interim improvements of US 71 in Missouri are presented in separate reports.

The Preferred Alternative corridor in Benton County travels through an area of the Ozark Highlands characterized by forested, hilly topography dissected by streams, and narrow winding ridges with steep valleys. There are also some flatter, broader upland areas in the southwest portion of the corridor, most of which have been cleared for agricultural purposes.

The Project Proponent and the Consultant for the project, and the contact persons, are as follows:

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CONSULTANT
HNTB Corporation
Mr. Dan Van Petten
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(816) 472-1201

A. Purpose Of And Need For The Project

The general purpose of the project is to provide a safe, efficient, environmentally sound and cost-effective transportation facility that responds to the needs of the study area and the region. The specific purpose and needs being addressed by the proposed action are summarized as follows:

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- Traffic Safety - Reduce the number and severity of traffic-related crashes occurring along US 71 between Bella Vista and Pineville.

- Roadway Design Features - Upgrade current roadway design features along US 71 including roadway alignments and roadway cross-sections.

- Movement of People and Goods - Provide for the efficient transport of people and goods through the region by reducing the total hours of travel through the Study Area.

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- Recreational Activity Access - Facilitate the usage by motorists of nearby regional recreational facilities through improved accessibility.

B. Regulatory Background

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II. METHODS

Preliminary investigations concerning potential jurisdictional wetlands and other waters of the U.S. followed the AHTD Jurisdictional Wetlands Impact Assessment Protocol. USGS/NWI maps, aerial photographs, NRCS soil survey maps, and COE stream maps were studied to determine high potential wetland areas associated with springs, ponds, intermittent streams, perennial streams, and streams having flows greater than 5 cfs. In the spring and fall of 1997, field checks were performed within the corridor on all ponds, perennial streams, streams designated as "Riverine" on the NWI maps, and streams having a flow greater than 5 cfs. According to the AHTD wetlands protocol, that preliminary phase of the study did not require field checks for intermittent streams.

Field documentation included photographs of the water resource, vegetative component, adjacent land use, approximate size and generalized assessment of the function and value. The resources inventoried ranged from stock ponds to spring fed ponds, and included stream crossings as noted above.

In addition, COE representatives were consulted at public information meetings held in Bella Vista. Those individuals, along with study team members, also looked at several key areas of concern. A field trip was held November 5th and 6th of 1997 in which representatives from MoDOT, AHTD, the Corps of Engineers, and study team members reviewed several sites in the study area. These included ponds with streams flowing in or out, upland stock ponds, impounded and excavated seeps/springs, and intermittent and perennial streams. For this project, it was concluded by the COE representative on site that ponds located in the uplands, without a stream flowing in or flowing out, are not waters of the U.S. and therefore not regulated. Only those ponds having a stream flowing in or out that are dammed rather than excavated, or seeps/springs that flow into a water of the U.S., or impounded seeps/springs would be regulated.

Based on this information, and through the Draft EIS process, the ponds were evaluated and several were eliminated from further consideration as waters of the U.S. To further reduce impacts, most of the remaining ponds and wetlands were avoided by slightly adjusting the alignment. One of the wetland resources, located at what would be a future interchange with Highway 72 west of Hiwasse, lies immediately adjacent to the new corridor right-of-way line. In this case, it is anticipated that the resource is avoided. However, furtherengineering as part of the project's design phase would be able to shift the alignment slightly, if needed, to ensure avoidance of this resource. If it is found, in the design phase, that impacts which cannot be avoided occur to Waters of the U.S. resources which were previously out of the corridor limits, AHTD would reapply for a permit.

As a result of these measures to reduce impacts, it was determined that the Preferred Alternative corridor in Benton County did not contain any jurisdictional wetland areas nor any ponds that qualified as waters of the U.S. Therefore, the 14 ponds (several were upland stock ponds) within the corridor that did not qualify as waters of the U.S. have not been included in this report. (Recent field investigations discovered one wetland area that was previously unrecorded – see below)

The stream crossings evaluated in this report include perennial streams, streams designated as "Riverine" on the NWI maps, streams having a flow greater than 5 cfs, and all USGS blue line streams within the Preferred Alternative corridor. All but the USGS blue line streams were field investigated in the Spring and Fall of 1997. In mid October of 1998, each USGS blue line stream crossing was photographed and was checked to determine the presence or absence of adjacent wetlands. The presence or absence of the Ordinary High Water Mark (OHWM) of each stream was also determined and the width was measured for those with an OHWM. The length of stream lying within the corridor was scaled from the aerial photographs to determine the acreage within the OHWM. A Stream Data Form was filled out on each stream crossing, and includes physical information about the stream. These forms and the corresponding photographs can be found in Appendix B of the full PJWD Summary Report. During field investigations of the USGS blue line streams, one wetland area was found at a stream crossing. The "Routine Determination" procedures of the 1987 Corps of Engineers Manual were used at this water resource. Information, photographs and a PJWD form for the wetland area can be found in Appendix C of the full PJWD Summary Report.

III. RESULTS AND DISCUSSION

Within the Preferred Alternative (Far West) corridor in Benton County, field investigations were performed at 21 mapped streams. Twelve (12) of those had a discernible channel with an OHWM and are therefore regulated, and 9 of those lacked a channel with an OHWM. Ten (10) of the regulated streams in the corridor are intermittent and have either rocky or gravel beds, most of which are very narrow. One stream, McKisic Creek (B-20), is perennial with a flow greater than 5 cfs. A tributary of McKisic Creek (B-21) is also perennial but with a flow less than 5 cfs. One jurisdictional wetland (B-3a) was discovered at a stream within the corridor.

Table 1 presents potential impacts to streams within the Preferred Alignment corridor including stream length within the corridor, OHWM width, area within the OHWM, flow regime (> or < 5 cfs), crossing type (bridge or culvert), and project totals in linear feet (meters) and acres (hectares). Table 2 presents potential impacts to wetlands within the Preferred Alignment corridor including size and type of wetland.

IV. CONCLUSIONS

Within the Preferred Alternative corridor, there is one stream crossing McKisic Creek (B-20) which is below the headwaters and which would exceed 1/3 acre within the corridor. This crossing would impact 0.54 acres within the OHWM including 360 linear feet of stream. However, it is proposed to be bridged which would avoid impacts to the stream. Two other stream crossings (B-4 and B-16) exceed 500 linear feet within the corridor, and would be culverted.

Rattlesnake Hollow Creek (B-1) is located on the Missouri/Arkansas state line. The length of this stream within the corridor on the Arkansas side is 400 feet including 0.24 acres within the OHWM. However, this crossing is proposed to be bridged which would result in avoidance of impacts to the stream on both sides of the state line. The bridge structures would be located on the Arkansas side of the state line. The stream crossing at Mill Creek (B-2) would also be bridged, thus avoiding impacts to 400 linear feet of stream, including 0.12 acres within the OHWM.

The total linear feet of stream impacted within the corridor would be 3380 (1030.3 meters) including 0.54 acres (0.22 hectares) within the OHWM.

One jurisdictional wetland would potentially be impacted by the Preferred Alignment corridor. It is an "emergent" wetland area covering 0.10 acres (0.04 hectares) with no open water.

(See Tables 1 and 2 on the following page).

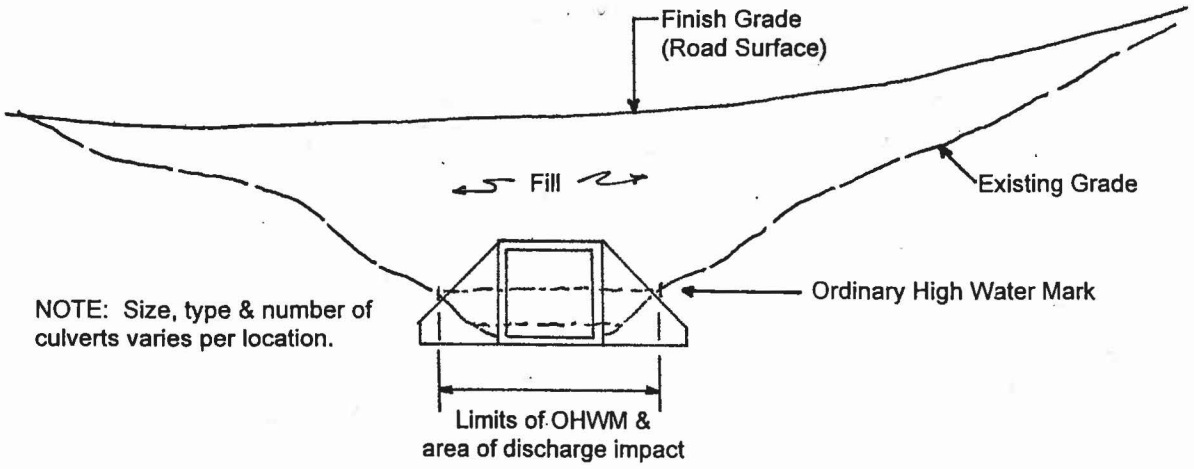
Table 1
BENTON COUNTY, ARKANSAS
Stream Crossings Within Corridor
Summary of Potential Impacts

Stream Crossing	Length Within Corridor (feet)	OHWM Width (feet)	Area Within OHWM (acres)	Flow Regime (cfs)	Crossing Type (Bridge or Culvert)
B-1	(400**)	26	(0.24**)	< 5 cfs	Bridge
B-2	(400**)	13	(0.12**)	< 5 cfs	Bridge
B-3	300	3	0.02	< 5 cfs	Culvert
B-4	650	3	0.04	< 5 cfs	Culvert
B-5*	0	0	0	< 5 cfs	Culvert
B-6*	0	0	0	< 5 cfs	Culvert
B-7*	0	0	0	< 5 cfs	Culvert
B-8	250	3	0.02	< 5 cfs	Culvert
B-9*	0	0	0	< 5 cfs	Culvert
B-10*	0	0	0	< 5 cfs	Culvert
B-11*	0	0	0	< 5 cfs	Culvert
B-12	330	4	0.03	< 5 cfs	Culvert
B-13	330	7	0.05	< 5 cfs	Culvert
B-14	340	5	0.04	< 5 cfs	Culvert
B-15	300	4	0.03	< 5 cfs	Culvert
B-16	520	3	0.04	< 5 cfs	Culvert
B-17*	0	0	0	< 5 cfs	Culvert
B-18*	0	0	0	< 5 cfs	Culvert
B-19*	0	0	0	< 5 cfs	Culvert
B-20	(360**)	65	(0.54**)	**> 5 cfs**	Bridge
B-21	360	33	0.27	< 5 cfs	Culvert
TOTAL	**3380 ft (1030.3 m)**	--	**0.54 ac (0.22 ha)**	--	--

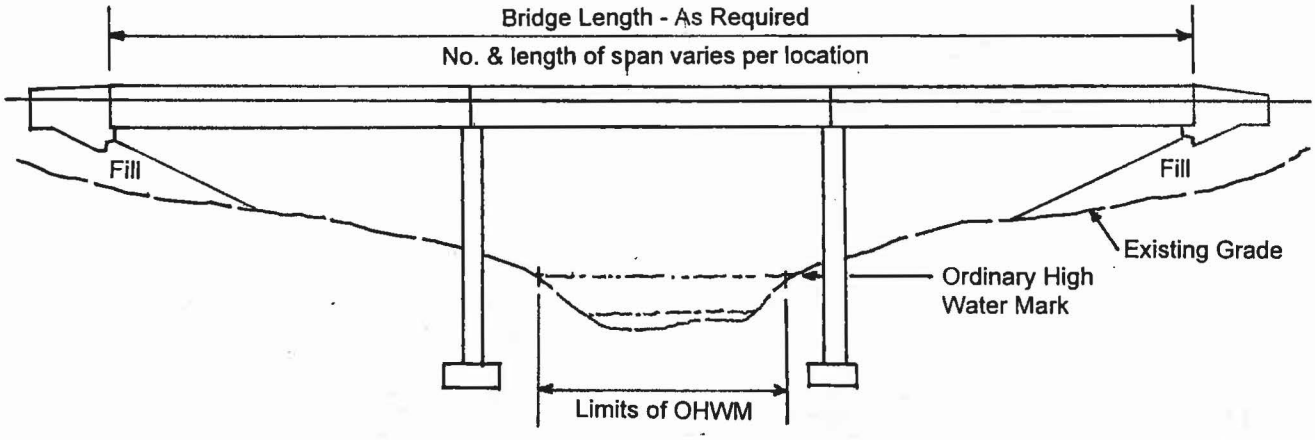
*Did not qualify as a Water of the U.S. (not regulated)
** Not included in TOTAL quantity – bridged to avoid impacts.

Table 2
BENTON COUNTY, ARKANSAS
Potential Wetland Impacts

WATER RESOURCE	WETLAND TYPE – acres (hectares)			OPEN WATER
	Emergent	Scrub-Shrub	Forested	
B-3a	0.10 ac (0.04 ha)	0	0	0



PROFILE
TYPICAL STREAM CROSSING - Culvert



PROFILE
TYPICAL STREAM CROSSING - Bridge

Exhibit E-1 Typical Stream Crossing Profiles

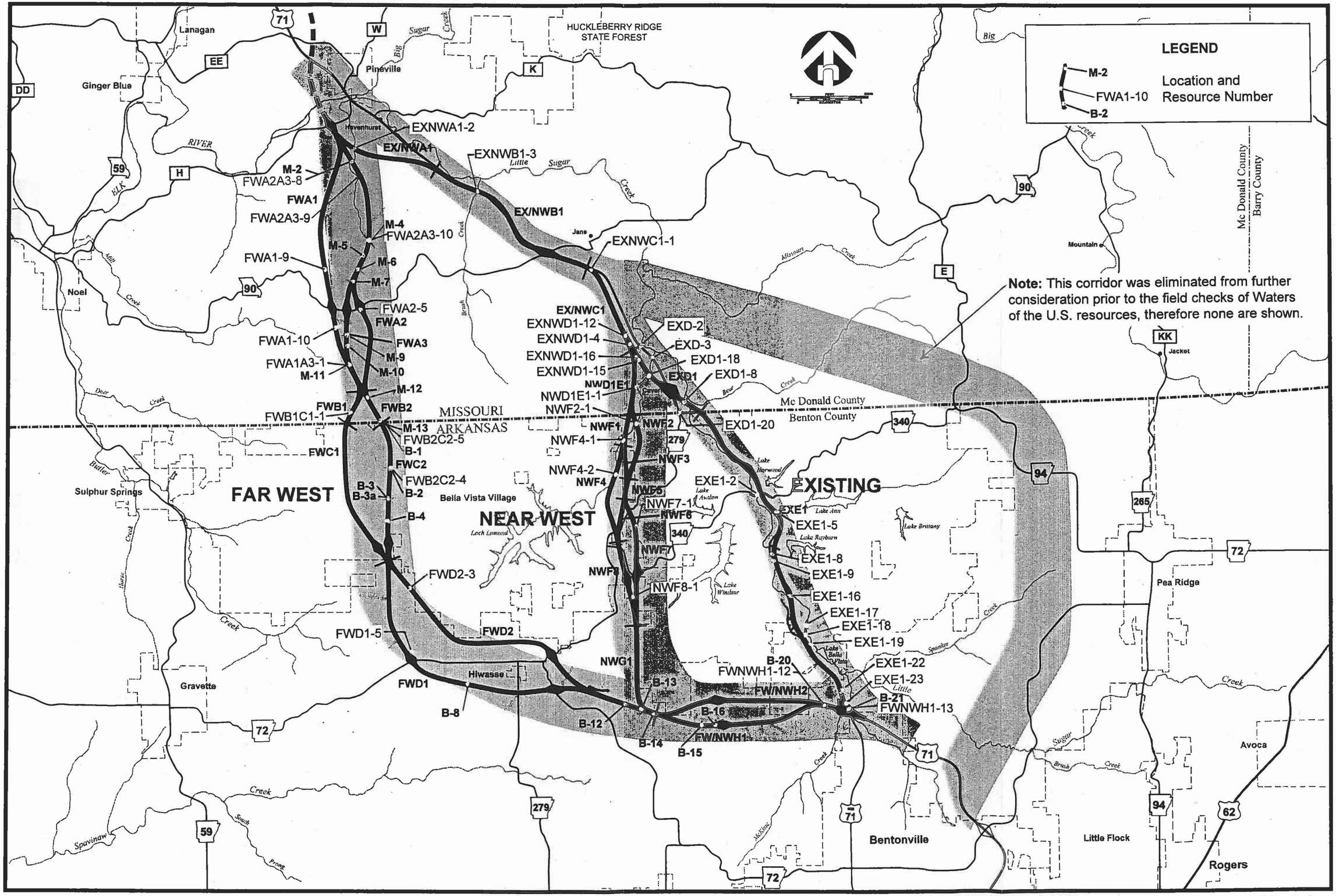


Exhibit E-2 Regulated Waters of the U.S.

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DEC 14 1998

Engineering and Technical Services Division
Regulatory Section

NATIONWIDE PERMIT NO. **13862**

Mr. Jerry Bradley
Missouri Department of Transportation (MDOT)
District 7
3901 East 32nd Street
Joplin, Missouri 64802

Dear Mr. Bradley:

This is in regard to a letter dated November 18, 1998, submitted on your behalf by the Arkansas Highway and Transportation Department, concerning Department of the Army permit requirements pursuant to Section 404 of the Clean Water Act. The letter transmitted a Summary Report of wetland determinations and required crossings of other waters of the United States to upgrade U.S. 71 to interstate standards along a preferred alternative (Far West) corridor from the Arkansas/Missouri State Line to Pineville, in McDonald County, Missouri.

We have reviewed the Report and concur with the findings. The Report indicated that the preferred alignment would not impact any jurisdictional wetlands, but would require 11 crossings of other waters (streams). The discharge of fill material below the ordinary high-water mark of each of these streams for a bridge/culvert crossing, as outlined on the enclosed sheets 1 through 5 of 5, is authorized by Department of the Army Nationwide Permit (NWP) No. 14 (copy enclosed), subject to the following:

a. MDOT shall obtain an individual Section 401 water quality certification (WQC) or a waiver from the state certifying agency. If WQC or a waiver is issued, MDOT must provide a copy to this office before you begin work, and MDOT must then comply with any WQC conditions. To obtain a state WQC or waiver, MDOT should contact:

Missouri Department of Natural Resources
Water Pollution Control Program
Division of Environmental Quality
P.O. Box 176
Jefferson City, Missouri 65102-0176

Telephone Number: (573) 751-7428
Facsimile Number: (573) 526-5797

If MDOT has applied for an individual WQC and the State fails to act within a reasonable period, then MDOT shall furnish a copy of the application for WQC to the Corps. If MDOT provides only an application for WQC rather than the certification or waiver, MDOT may not proceed until further written notification is received from the Corps.

b. MDOT shall notify the Little Rock District of any additional fill proposed in wetlands and other waters of the United States, to construct the highway. This includes all activities associated with the discharge and excavation of material in waters of the United States by any MDOT contractor. Also, all MDOT contractors shall be furnished and required to implement the conditions of the NWP verification and receive additional authorization required for all associated activities.

c. MDOT shall implement the MDOT's Standard Erosion Control Measures during all construction phases of the highway. All disturbed areas along the highway shall be seeded, planted, or given some other type of equivalent protection against subsequent erosion while constructing and upon completion of the project.

d. MDOT shall place all construction debris, including any excess construction debris, on land in such a manner to prevent it from entering or being discharged in any waterway.

e. MDOT shall meet all conditions of the NWP. This permit was published in the Federal Register (Part VII, Vol. 61, No. 241, pages 65874-65922) dated December 13, 1996, and became effective on February 11, 1997. You should become familiar with the conditions and maintain a copy of the permit at the worksite for ready reference. If any future change is proposed to be made in the facilities or their location, you should submit revised plans to this office for approval before construction of the change begins.

Please refer to NWP Condition No. 3, which stipulates that appropriate erosion and siltation controls be used during construction and all exposed soil be permanently stabilized.

In order to fully comply with the conditions of the NWP, you must submit the enclosed compliance certification within 30 days of completion of the project. This is required pursuant to General Condition No. 14 of the permit.

These NWP determinations will be valid for two years unless the NWP is modified, suspended, or revoked within that two-year period. If NWP No. 14 is modified, suspended, or revoked during this period, your project may not be authorized unless you have begun or are under contract to begin the project. If work has started or the work is under contract, you would then have twelve months to complete the work (see 33 CFR 330.6(b)).

If you have any questions about this permit or any of its provisions, please contact Mr. Larry Harrison at (501) 324-5295 and refer to Permit No. **13862**.

Sincerely,

SIGNED

Jerry L. Harris, P.E.
Chief, Regulatory Section

Enclosures

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Copy Furnished:
Mr. Lynn Malbrough, Arkansas Highway and Transportation
Department, P.O. Box 2261, Little Rock, AR 72201-2261,
w/cy dwgs
Mr. Dan Van Petten, Howard, Needles, Tammen and Bergendoff
Company, 1201 Walnut, Suite 700, Kansas City, MO 64106,
w/cy dwgs
Mr. Glen Justis, Regulatory Section,
c/o Upper White River PO, w/cy dwgs
Missouri Department of Natural Resources,
Division of Environmental Quality,
P.O. Box 176, Jefferson City, MO 65102, w/cy dwgs
Missouri Department of Conservation,
2901 West Truman Boulevard, P.O. Box 180,
Jefferson City, MO 65102-0180, w/cy dwgs
Environmental Protection Agency, 404 Section,
726 Minnesota Avenue, Kansas City, Kansas 66101, w/cy dwgs
Ch, Water Resources and Environmental Branch
Regulatory Enf, w/cy dwgs

RECEIVED
DEC 17 1998
HNTB-KCMO

DEC 14 1998

Engineering and Technical Services Division
Regulatory Section

GENERAL PERMIT NO. **13862**

Mr. Lynn Malbrough
Arkansas Highway and Transportation Department
P.O. Box 2261
Little Rock, Arkansas 72201-2261

Dear Mr. Malbrough:

Please refer to your letter dated November 18, 1998, transmitting a Summary Report of wetland determinations and required crossings of other waters of the United States to upgrade U.S. 71 to interstate standards along a preferred alternative (Far West) corridor around Bella Vista to the Arkansas/Missouri State Line, in Benton County, Arkansas.

We have reviewed the Report and concur with the findings. The Report indicated that the preferred alignment would not impact any jurisdictional wetlands, but would require 12 crossings of other waters (streams). Pursuant to 33 Code of Federal Regulations (CFR) 325.5, each of these crossings is authorized by Department of the Army General Permit GB (copy enclosed), provided that the conditions therein are met.

You should become familiar with the conditions and maintain a copy of the permit at the worksite for ready reference. If changes are proposed in the design or location of the facilities, you should submit revised plans to this office for approval before construction of the change begins.

If you have any questions about this permit or any of its provisions, please contact Mr. Larry Harrison at (501) 324-5295 and refer to Permit No. **13862**.

Sincerely,

SIGNED

Jerry L. Harris, P.E.
Chief, Regulatory Section

Enclosures

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Copy Furnished:
Mr. Jerry Bradley, Missouri Department of Transportation, District 7, 3901 East 32nd Street, Joplin, MO 64802, w/cy dwgs
Mr. Dan Van Petten, Howard, Needles, Tammen and Bergendoff Company, 1201 Walnut, Suite 700, Kansas City, MO 64106, w/cy dwgs
Mr. Glen Justis, Regulatory Section, c/o Upper White River PO, w/cy dwgs
Ch, Water Resources and Environmental Branch
Regulatory Enf, w/cy dwgs

Preliminary 404 (b) (1) Evaluation Review and Analysis

This project was reviewed using the criteria established in Section 404 (b) (1) Evaluation (40 CFR 230). During the evaluation process, the alternatives were selected for advancement based on a number of criteria, one of which was the effect of the project on the aquatic environment.

The US 71 Location Study and Environmental Impact Statement has a preferred project: new construction on the Far West Corridor in Missouri and Arkansas and interim improvements on existing US 71 in Missouri. The Interim Improvements portion of the project is covered by an existing environmental impact statement and record of decision. The EIS is for Route 71, Jasper, Newton and McDonald Counties, Interstate 44 to Arkansas State Line Job No. J7P0427 (FHWA-MO-EIS-90-02-F). The Record of Decision was dated 14 September 1992.

The ROD for US 71 from I-44 to the Arkansas State Line noted that the design of the roadway had not progressed far enough to definitively identify the wetlands areas to be impacted by the roadway project. During the field review held November 5 and 6, 1997, the MoDOT wetlands specialist indicated that they would be doing the wetlands delineations for the interim improvements project which presently has the record of decision as soon as practicable.

The preliminary evaluation of the preferred alternative includes the new alignment in the Far West Corridor (segments A3 - B2C2 - D1 - H1) and Interim Improvements along US 71 from Pineville, Missouri to the Arkansas State line.

Throughout the initial reviews of preliminary alternate alignments, segments and links were individually moved or relocated when practical to avoid wetlands resource impacts. The wetlands resources which were not avoidable were actually man-made ponds, usually excavated, in uplands settings. The ponds were not on a stream which had been blocked or had an ordinary high water mark, but tended to gather overland flow and in some cases intercept water from a seep or a spring.

There is presently no engineering design work which can assure the regulatory agencies that impacts to wetlands and special aquatic sites will not occur. At this stage of project development and the engineering work which has been done to date indicate that the preferred alignment will not impact any special aquatic sites (emergent) or regulated ponds (emergent). Some of these resources are near the preferred alignment and should preliminary and final engineering require impacting one of these adjacent yet presently avoided wetlands resources, this analysis will need to be revised in light of the new information and impacts to wetlands and waters of the US. The Little Rock District of the Corps of Engineers would review amendments and modifications to the appropriate permit and indicate which permit would be appropriate for the proposed impact. An individual permit may be necessary.

1. Review of Compliance (40 CFR 230.10 (a) - (d))

a. Practicable Alternatives

40 CFR 230.10 (a) states that "..no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact to aquatic ecosystem.." The basic project purpose is used by the Corps of Engineers in the Clean Water Act permit review of permit applications. This project purpose guides the

reviewer in identifying the practicable alternatives, as required by the Subpart B of the Section 404 (b) (1) guidelines. It should be noted that, except for specific circumstances enumerated in 40 CFR 230.10, if a practicable alternative is available and it is less damaging to the aquatic ecosystem, the original application cannot be approved.

The project basic purpose and need is established by the Corps of Engineers, with input from the applicant or project sponsor. The basic project purpose cannot be defined so narrowly so as to exclude reasonable alternatives to the proposed action. The Corps therefore will provide a reasonable and equitable project purpose for each Section 404 application it receives in a manner suitable to the project at hand.

The DEIS document lists eight separate yet interrelated specific purpose and need statements for the project. **The basic purpose of the project is to provide a safe, efficient and economical transportation facility that responds to the needs of the area between the identified termini near Bentonville, Arkansas and Pineville, Missouri.** The basic purpose statement does not mention the number of lanes, type of facility, design speed, interchange design, intersection design and others except as may be required by traffic analysis, engineering design standards and environmental considerations. Although project cost may be an important consideration, it cannot be the only criteria for elimination of a particular alternative that otherwise would meet the intent of the Section 404 (b) (1). All eight of the individual and specific purposes for the highway project focus on transportation. The designation of US 71 as a multi-state, high-priority transportation corridor was done in 1991 under The Intermodal Surface Transportation Efficiency Act (ISTEA) and in and of itself does not dictate the basic purpose of the project for Clean Water Act purposes. It does however provide the rational basis for pursuing individual projects within the context of ISTEA designated improvements to US 71 from Shreveport LA to Kansas City, Missouri.

The Corps of Engineers must be able to determine if there is a practicable alternative which is less damaging to the aquatic ecosystem. A non-water dependent activity, such as a road construction project with bridges and/or culverts, does not require full access to special aquatic sites and wetlands. Therefore, practicable alternatives to such non-water dependent activities are presumed to be available and will result in less impact to the aquatic ecosystem. It is up to the applicant to clearly demonstrate that there is no practicable alternative.

The project, both the interim improvements along existing US 71 and the newly constructed roadway in the Far West Corridor, is not water dependent. The highways do cross several minor streams and tributaries, the discharge of dredged and fill material into wetlands and other aquatic sites is not required to achieve the basic purpose, as determined previously and stated above.

Preliminary determination of alternatives is based on data which is available at this time and the preferred alternative, both the Interim Improvements and the new alignment in the Far West Corridor, involves no known discharges into special aquatic sites. Therefore, at this time, there is no need to demonstrate that there is an alternative which has less impact on the aquatic environment as noted in 40 CFR 230.10(a)(3). The alternative alignments which are shown in the various corridors, do not have less impact on the aquatic environment.

As the National Environmental Policy Act and Clean Water Act review proceeds and more detailed design data is available, should it become clear that if wetlands or special aquatic sites be impacted, the permit will be modified, an individual permit will be applied for or the impact will be avoided.

b. State Water Quality Standards, Toxic Effluent Standards and the Endangered Species Act.

The proposed discharges of dredged or fill material must conform to the applicable water quality standards of Missouri and Arkansas as well as the Clean Water Act Section 307 Toxic Effluent Standards.

The applicants have consulted with the appropriate wildlife agencies to determine if the US Fish & Wildlife Service, Missouri Department of Conservation, and the Arkansas Fish & Game Commission know of federal or state threatened or endangered species of plants or wildlife. Locations of known populations of threatened and endangered species were noted, mapped and avoided by alternative alignments. Preliminary determination is that the preferred alternative will not affect any known populations of threatened or endangered species. Should any threatened or endangered species be discovered during the design or construction phase of the project, appropriate agencies will be notified and consultation will take place as soon as practical.

c. Significant Degradation of Waters of the U.S.

Chapter four of the Draft EIS describes anticipated impacts on the aquatic ecosystem. It does not appear that the preferred alignment will result in significant degradation of the waters of the U.S. at either site specific locations or cumulatively when viewed on a project basis. The public interest would anticipate adverse effects on human health and welfare, life stages of aquatic life and other wildlife, aquatic ecosystem diversity, productivity and stability and the recreational, aesthetic and economic values of the proposed action.

d. Measures to minimize harm and adverse impacts.

The DEIS indicates the design and construction will include such measures as are required and those which are appropriate for the project. These include but are not limited to the following special conditions. The respective states, Arkansas and Missouri will be consulted during the final design stages of the project to obtain their input on maintaining water quality and biodiversity in the aquatic environment. The EPA Guidelines for the Discharge of Dredged and Fill Material, found in 40 CFR 230 will be followed. Construction activities are to be performed in a manner that is to minimize turbidity in the water of the work area and otherwise avoid adverse effects on the water quality and aquatic life. Dredged material is to be placed on land unless used as backfill. Construction activity will not relocate a stream or creek unnecessarily. Erosion controls will be implemented as discussed in the FHWA program manual, Volume 6, Chapter 7, Section 3; as well as the standard specifications of the AHTD and MoDOT regarding erosion control. The temporary work ramps and haul roads, when necessary will have sufficient culverts or other water way openings to allow for the expected high flows. Temporary fills are to be entirely removed. Off site activities such as borrow pits, staging areas, parking lots etc. may not be located in wetlands areas. Impacts to waters of the U.S. may be avoided by bridging the stream or the requirement of placing no fill riverward of the ordinary high water mark. Impacts to flood plains are to be minimized during the engineering design process by avoiding or minimizing direct impacts to stream channels.

2. Technical Evaluation Factors

The factors listed in Subparts C through F of 40 CFR 230 are generally noted in chapter four of the DEIS and will be more thoroughly reviewed with comments from the reviewing agencies. This initial evaluation does not include information received during the public interest review.

3. Evaluation of Dredged and Fill Material.

The locations of fill materials sources are not known at this time. It is anticipated that much of the fill material will come from within the cut sections of the corridor. There are numerous solid hazardous waste sites located within the two counties. It is anticipated that most, if not all, of the sites will be avoided. Remediation will be employed by either the AHTD or MoDOT on any site which is found to be unavoidable during the design engineering process. The fill material will be clean and uncontaminated. This is especially important where the fill is discharged into or adjacent to the waters of the U.S. within the corridor.

APPENDIX F
SUMMARY OF HAZARDOUS WASTE SITES

Site No.	Site Name	Location	Observation	Waste Potential	Recommendation
B-1	Bella Vista POA	SW1/4, SE1/4, SW1/4, SEC. 23, T 21N, R 31W	3-Usts, aggregate capacity of 2,100 gallon. ***On ADPC&E RST.***	Moderate	**SITE INSPECTION** if on preferred route.
B-2	Village Service Station	NW1/4, SE1/4, SW1/4, SEC. 23, T 21N, R 31W	4-Usts, aggregate capacity of 24,500 gallon. ***On ADPC&E RST.***	Moderate	**SITE INSPECTION** if on preferred route.
B-4	Dalton Golf Cars	SE1/4, SE1/4, NE1/4, SEC. 12, T 20N, R 31W	Old battery storage.	Low	**NONE** - Observation typical of facility type.
B-5	PMI Inc. (hvac contractor)	NE1/4, NE1/4, SE1/4, SEC. 12, T 20N, R 31W	Few drums, miscellaneous scrap materials.	Low	**NONE** - Observation typical of facility type.
B-6	Furniture Shop	NE1/4, NE1/4, SE1/4, SEC. 12, T 20N, R 31W	Rusted tank, 2-drums, scrap remodeling materials.	Low	**NONE** - Located outside any alternative route.
M-11	Don's Stateline Store (gas station)	NE1/4, NE1/4, SE1/4, SEC. 34, T 21N, R 31W	Estimate 3-Usts.	Moderate	**SITE INSPECTION** if on preferred route.
M-12	Jug Store Liquors (gas station)	NE1/4, SE1/4, NW1/4, SEC. 34, T 21N, R 31W	3-Asts	Moderate	**SITE INSPECTION** if on preferred route.
M-13	Chick's (gas station)	NE1/4, SW1/4, SW1/4, SEC. 34, T 21N, R 31W	3-Asts	Moderate	**SITE INSPECTION** if on preferred route.
M-14	Hilltop Liquor (gas station)	NE 1/4, SW1/4, SW1/4, SEC. 27, T 21N, R 31W	4-Asts	Moderate	**SITE INSPECTION** if on preferred route.
M-15	Kare Vel Travel Agency	SE1/4, NE1/4, SW1/4, SEC. 21, T 21N, 31W	Small Ast, few barrels, junk pile, 20 used vehicles. Possible automotive garage/sales.	Moderate	**SITE INSPECTION** if on preferred route.
M-18	Logging Mill	SW1/4, SE1/4, NW1/4, SEC. 21, T 21N, 31W	10s-junk vehicles, 10s-drums, Ast, possible additional tanks.	High	**SITE INSPECTION** if on preferred route.
M-19	B-B Sand & Gravel (maintenance shop)	SW1/4, SW1/4, SW1/4, SEC. 16, T 21N, R 31W	Few junk trucks, obsolete machinery, 10s-tires, abandoned Ast.	Moderate	**SITE INSPECTION** if on preferred route.
M-20	Residence	NE1/4, SE1/4, SE1/4, SEC.17, T 21N, R 31W	10s-junk cars, 100s-rusted drums	High	**SITE INSPECTION** if on preferred route.

APPENDIX F
SUMMARY OF HAZARDOUS WASTE SITES

Site No.	Site Name	Location	Observation	Waste Potential	Recommendation
M-21	Residence	NE1/4, NW1/4, NW1/4, SEC. 11, T 21N, R 31W	Small open dump in back. Few drums; scrap iron, wood, machinery. 10 CY	Low	**NONE** - Located outside any alternate route.
M-24	Residence	NW1/4, NW1/4, NW1/4 SEC. 21, T 21N, R 31W	Junk scattered over large area. Old cars, appliances, debris.	Moderate	**SITE INSPECTION** if on preferred route.
B-25	Closed Sanitary Landfill	SW1/4, SW1/4, NW1/4, SEC. 15, T 21N, R 31W	2-Asts, 100s -tires, burning debris. ***On EPA CERCLIS and ADPC&E SWF***.	High	**AVOIDANCE**
B-26	Concordia Care Center (nursing home)	SW1/4, SW1/4, SW1/4, SEC. 23, T 21N, R 31W	***On EPA RCRA*** as no longer engaged.	Low	**NONE** - Located outside any alternate route.
B-27	Village Dry Cleaners	SW1/4, SE1/4, SE1/4, SEC. 35, T 21N, R 31W	Dry cleaning fluid. ***On EPA RCRA***.	Moderate	**NONE** - Typical of facility type.
B-28	All In One (gas station)	SW1/4, SW1/4, NW1/4, SEC. 1, T 20N, R 31W	4-Usts, 40,000 gallon aggregate capacity. ***On ADPC&E RST***.	Moderate	**SITE INSPECTION** if on preferred route.
B-30	Abandoned Auto Service Facility	SW1/4, NE1/4, SE1/4, SEC. 12, T 20N, R 31W	1-Ast, 2-drums.	Low	**SITE INSPECTION** if on preferred route.
B-31	Village Ship & Shore (boat sales and service)	NW1/4, NE1/4, SE1/4, SEC. 12, T 20N, R 31W	Junk piles in back. Possible solvents, paints, lubricants.	Low	**SITE INSPECTION** if on preferred route.
B-32	Wastewater Pump Station	NE1/4, SW1/4, SE1/4, SEC. 12, T 20N, R 31W	Possible Usts	Low	**NONE** - Located on edge of route. New facility.
B-33	Residence	SW1/4, SW1/4, NE1/4, SEC. 13, T 20N, R 31W	Several junk vehicles, rusted Asts, several drums.	Moderate	**NONE** - Located outside any alternative.
B-34	Jones Golf Cars	SW1/4, SE1/4, SE1/4, SEC. 12, T 20N, R 31W	Possible waste batteries, lubricants, fuel.	Low	**SITE INSPECTION** if on preferred route.
B-36	Warehouse	NW1/4, SE1/4, NW1/4, SEC. 21, T 20N, R 30W	Possible fuel storage.	Low	**SITE INSPECTION** if on preferred route.
B-37	JAC's Ranch	W1/2, NE1/4, SEC.10, T 20N, R 30W	Compost mounds, 2-Asts.	Low	**SITE INSPECTION** if on preferred route.

APPENDIX F
SUMMARY OF HAZARDOUS WASTE SITES

Site No.	Site Name	Location	Observation	Waste Potential	Recommendation
B-41	Fraser Trucking	NW1/4, NW1/4, NE1/4, SEC. 34, T 21N, R 30W	Possible fuel storage.	Low	**NONE** - Located outside any alternative route.
B-42	Residence	NE1/4, NE1/4, SW1/4, SEC. 27, T 21N, R 30W	Junk pile in rear. Several junk cars, scrap metal, few drums.	Moderate	**NONE** - Located outside any alternative route.
B-44	Old dump site	SW1/4, SE1/4, NW1/4, SEC. 22, T 21N, R 30W	Possible old dumpsite. Few junk cars and construction debris. Overgrown with brush.	Moderate	**NONE** - Located outside any alternative route.
B-45	Salvage Yard	NW1/4, SE1/4, NW1/4, SEC. 22, T 21N, R 30W	Minimum 10s-junk vehicles	Moderate	**NONE** - Located outside any alternative route.
M-46	Auto garage, salvage yard	NW1/4, NE1/4, SEC. 33, T 21N, R 30W	100+ junk vehicles, scrap metals, tires, tanks, drums, implements, scattered over approx. 40-acres.	High	**SITE INSPECTION** if on preferred route.
B-47	Residence	SE1/4, NW1/4, NE1/4, SEC. 16, T 20N, R 31W	Few drums, old cars.	Low	**NONE** - Located on edge of alternative.
B-48	Grand Central Station (gas station)	SW1/4, SE1/4, SW1/4, SEC. 29, T 21N, R 31W	3-Usts.	Moderate	**NONE** - Located outside any alternative route.
M-49	Anchor Quarry (limestone quarry)	NW1/4, SW1/4, NE1/4, SEC 35, T 21N, R 31W		Low	**NONE** - Located outside any alternative route.
M-50	Tire dump	SW1/4, SW1/4, NE1/4, SEC. 29, T 21N, R 30W	2,000+ tires.	High	**NONE** - Located outside any alternative route.
M-51	Residence	NW1/4, SE1/4, NW1/4, SEC. 15, T 21N, 32W	Abandoned 10,000 gallon tank, 24-junk cars.	Moderate	**NONE** - Located outside any alternative route.
B-52	Residence	SW1/4, SE1/4, SW1/4, SEC. 8, T 20N, R 31W	10-junk cars, pile of debris.	Low	**NONE** - Located outside any alternative route.
B-53	Residence	SW1/4, SE1/4, SW1/4, SEC. 8, T 20N, R 31W	Several junk cars.	Low	**NONE** - Located outside any alternative route.
B-54	Residence (possible salvage operations)	SW1/4, NW1/4, SW1/4, SEC. 6, T 20N, R 31W	Piles of: auto wheels, window frames, lumber, tires, tanks, machinery, appliances, drums.	High	**SITE INSPECTION** if on preferred route.

APPENDIX F
SUMMARY OF HAZARDOUS WASTE SITES

Site No.	Site Name	Location	Observation	Waste Potential	Recommendation
B-55	Robertson's Body Shop	NE1/4, SE1/4, NW1/4, SEC. 12, T 20N, R 32W	Junk auto bodies, junk cars, drums, grown-up with brush.	Moderate	**NONE** - Located outside any alternative route.
B-56	Stump Dump	SW1/4, SE1/4, SE1/4, SEC. 28, T 21N, R 32W	Municipal dump for clearing debris.	Low	**NONE** - Located outside any alternative route.
B-57	Open dump	NE1/4, SE1/4, NE1/4, SEC. 28, T 21N, R 32W	Drums, tires, household debris.	Low	**SITE INSPECTION** if on preferred route. Rule out entrance to larger dump.

APPENDIX G

Visual Quality Assessment

It is necessary to determine the visual quality of an existing environment in order to rationally assess the probable visual impact of a proposed highway project. The following text describes the methodology used to assess the existing visual quality of the US 71 study area. This determination establishes the baseline conditions from which to compare the result of the proposed project and is based on methodology presented in the federal guideline ***Visual Impact Assessment for Highway Projects*** (U.S. Department of Transportation, Federal Highway Administration, 1990).

The visual impacts of a project may be quite varied in different areas of a project corridor because the areas themselves can be visually distinct and can exhibit unique and consistent visual characteristics. The project corridor can be divided into separate areas within which there are consistent visual characteristics and a uniform visual experience. These areas have direct relationships to physiography, topography, vegetation and land use and can be thought of as "outdoor rooms". The boundaries of these visual environments occur where there is a change in visual character. The strongest determinations of the visual boundaries are *topography* and *landscape components.*

> **Topography** -- Topography influences many natural systems such as drainage, vegetation, geology, aspect, etc. These natural systems often have distinct and variable characteristics with visual consequences.
>
> **Landscape Components** -- Landscape components are distinct elements in the visual environment. Natural land cover elements such as trees, water, rocks, and open areas; developed land uses such as roads, bridges, and buildings; and identifiable patterns such as power line corridors and agricultural crops, constitute landscape components.

Visual environment boundaries were determined by analyzing the topography of the study area; recording the major landscape components; studying aerial photography and ground level corridor photography; and conducting field reconnaissance. The following visual environments were identified:

- Forested Areas
- Creeks and Creek Valleys
- Lakes
- Golf Courses
- Agricultural / Open Land
- Residential Development
- Commercial / Business Development

Visual Quality Assessment Criteria

The evaluative criteria used in this assessment are taken from federal visual impact assessment guidelines and are considered to be comprehensible and meaningful factors to people without specific aesthetic or fine art training. *Vividness*, *Intactness* and *Unity* are attributes which

collectively define the quality of the visual environment and for which there is general agreement when tested among various groups of viewers. These factors are defined as follows:

Vividness -- Vividness is the relative strength of the seen image. It can be thought of as the memorability of landscape components as they combine in striking and distinctive patterns. It is not necessarily correlated with "beauty". The Grand Canyon and Niagara Falls are vivid images which are beautiful; the visual imagery of a vast strip mine can also be vivid even if it is not interpreted to be beautiful.

Intactness -- The visual integrity of the natural or man-made landscape and its freedom from encroaching elements is referred to as intactness.

Unity -- Unity is a factor used to discuss the overall visual harmony of a composition and the degree to which the various elements combine in a coherent way.

The relative existing visual quality of the visual environments within the US 71 study area is presented in the following Table.

VISUAL QUALITY RATING

Visual Environment	Visual Quality Rating
Forested Areas	High
Creeks and Creek Valleys	High
Lakes	High
Golf Courses	High
Agricultural/Open Land	Moderate
Residential Development	Moderate to High
Commercial/Business Development	Low

APPENDIX H

Farmland Assessment

The following corridor assessment criteria is used to determine the score of each alternative on Form SCS-CPA-106, *Farmland Conversion Impact Rating for Corridor Type Projects*.

CORRIDOR-TYPE SITE ASSESSMENT CRITERIA

The following criteria are to be used for projects that have a linear or corridor-type site configuration connecting two distant points, and crossing several different tracts of land. These include utility lines, highways, railroads, stream improvements, and flood control systems. Federal agencies are to assess the suitability of each corridor-type site or design alternative for protection as farmland along with the land evaluation information.

1. How much land is in non-urban use within a radius of 1.0 mile from where the project is intended?

- More than 90 percent - 15 points
- 90 to 20 percent - 14 to 1 point(s)
- Less than 20 percent - 0 points

2. How much of the perimeter of the site borders on land in non-urban use?

- More than 90 percent - 10 points
- 90 to 20 percent - 9 to 1 point(s)
- Less than 20 percent - 0 points

3. How much of the site has been farmed (managed for a scheduled harvest or timber activity) more than five of the last 10 years?

- More than 90 percent - 20 points
- 90 to 20 percent - 19 to 1 point(s)
- Less than 20 percent - 0 points

4. Is the site subject to state or unit of local government policies or programs to protect farmland or covered by private programs to protect farmland?

- Site is protected - 20 points
- Site is not protected - 0 points

5. Is the farms unit(s) containing the size (before the project) as large as the average-size farming unit in the County? (Average farm sizes in each county are available from the NRCS field offices in each state. Data are from the latest available Census of Agriculture, *Acreage of Farm Units in Operation* with $1000 or more in sales).

- As large or larger - 10 points
- Below average - Deduct 1 point for each 5 percent below the average, down to 0 points if 50 percent or more below average - 9 to 0 points

6. If the site is chosen for the project, how much of the remaining land on the farm will become non-farmable because of interference with land patterns?

- Acreage equal to more than 25 percent of acres directly converted by the project - 25 points

- Acreage equal to between 25 percent and 5 percent of the acres directly converted by the project - 24 to 1 point(s)
- Acreage equal to less than 5 percent of the acres directly converted by the project - 0 points

7. Does the site have available adequate supply of farm support services and markets, i.e., farm suppliers, equipment dealers, processing and storage facilities and farmers' markets?

- All required services are available - 5 points
- Some required services are available - 4 to 1 point(s)
- No required services are available - 0 points

8. Does the site have substantial and well-maintained on-farm investments such as barns, other storage buildings, fruit trees and vines, field terraces, drainage, irrigation, waterways, or other soil and water conservation measures?

- High amount of on-farm investment - 20 points
- Moderate amount of on-farm investment - 19 to 1 point(s)
- No on-farm investment - 0 points

9. Would the project at this site, by converting farmland to non-agricultural use, reduce the demand for farm support services so as to jeopardize the continued existence of these support services and thus, the viability of the farms remaining in the area?

- Substantial reduction in demand for support services if the site is converted - 25 points
- Some reduction in demand for support services if the site is converted - 24 to 1 point(s)
- No significant reduction in demand for support services if the site is converted - 0 points

10. Is the kind and intensity of the proposed use of the site sufficiently incompatible with agriculture that it is likely to contribute to the eventual conversion of surrounding farmland to non-agricultural use?

- Proposed project is incompatible to existing agricultural use of surrounding farmland - 10 points
- Proposed project is tolerable to existing agricultural use of surrounding farmland - 9 to 1 point(s)
- Proposed project is fully compatible with existing agricultural use of surrounding farmland - 0 points

U.S. DEPARTMENT OF AGRICULTURE
Soil Conservation Service

SCS-CPA-106
01-91

FARMLAND CONVERSION IMPACT RATING FOR CORRIDOR TYPE PROJECTS

PART I (To be completed by Federal Agency)	3. Date of Land Evaluation Request	4. Sheet 1 of 1
Name of Project: U.S. 71 Location Study	5. Federal Agency Involved: FHWA	
2. Type of Project: 4 Lane Divided Freeway	6. County and State: McDonald County, Missouri	

PART II (To be completed by SCS)	1. Date Request Received By SCS: June 10, 1997	2. Person Completing Form: Tom DeWitt
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form). YES ☒ NO ☐	4. Acres Irrigated: 200	Average Farm Size: 183
5. Major Crop(s): Forage Timber	6. Farmable Land In Government Jurisdiction: Acres: 331,776 % 96	7. Amount Of Farmland As Defined In FPPA: Acres: 83,227 % 24
8. Name Of Land Evaluation System Used: Mc Donald Co.	9. Name Of Local Site Assessment System: None	10. Date Land Evaluation Returned By SCS: 8-8-97

PART III (To be completed by Federal Agency) 100 meter (328 feet) Corridors Except on existing alignment	Alternative Corridor For Segment: FAR WEST	NEAR WEST	EXISTING
A. Total Acres To Be Converted Directly	240	306	321
B. Total Acres To Be Converted Indirectly, Or To Receive Services	-	-	-
C. Total Acres In Corridor	240	306	321
PART IV (To be completed by SCS) Land Evaluation Information			
A. Total Acres Prime And Unique Farmland (Estimates)	5	10	20
B. Total Acres Statewide And Local Important Farmland (Estimates)	20	30	40
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted	.07 %	.09 %	.096 %
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value	50	30	26.0
PART V (To be completed by SCS) Land Evaluation Criterion Relative Value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)	Estimate 50	Estimate 55	Estimate 65

PART VI (To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))	Maximum Points			
1. Area In Nonurban Use	15	15	15	15
2. Perimeter In Nonurban Use	10	10	10	10
3. Percent Of Corridor Being Farmed	20	4	4	4
4. Protection Provided By State And Local Government	20	0	0	0
5. Size Of Present Farm Unit Compared To Average	10	10	10	10
6. Creation Of Nonfarmable Farmland	25	0	0	0
7. Availability Of Farm Support Services	5	0	0	0
8. On-Farm Investments	20	1	2	0
9. Effects Of Conversion On Farm Support Services	25	0	0	0
10. Compatibility With Existing Agricultural Use	10	1	5	5
TOTAL CORRIDOR ASSESSMENT POINTS	160	41	46	44
PART VII (To be completed by Federal Agency)				
Relative Value Of Farmland (From Part V)	100	50	55	65
Total Corridor Assessment (From Part VI above or a local site assessment)	160	41	46	44
TOTAL POINTS (Total of above 2 lines)	260	91	101	109

1. Corridor Selected.	2. Total Acres of Farmlands to be Converted by Project.	3. Date Of Selection	4. Was A Local Site Assessment Used?
Far West	25	June 1998	YES ☐ NO ☒

5. Reason For Selection.

1. **Provides the most improvement in traffic safety and provides the greatest roadway capacity.**
2. **Best for maintenance of traffic during construction.**
3. **Least impact on the aquatic environment.**
4. **Least impact to residential communities and businesses.**
5. **Compatible with current land use/master plan.**

Note: All soils information is a preliminary estimate based on limited field observations.

Signature of Person Completing This Part: Timothy R. Flagler DATE: Jan. 7, 1998

NOTE: Complete a form for each segment with more than one Alternative Corridor

U.S. DEPARTMENT OF AGRICULTURE
Soil Conservation Service

SCS-CPA-106
01-91

FARMLAND CONVERSION IMPACT RATING FOR CORRIDOR TYPE PROJECTS

PART I (To be completed by Federal Agency)		3. Date of Land Evaluation Request	4. Sheet 1 of 1
1. Name of Project	U.S. 71 Location Study	5. Federal Agency Involved	FHWA
2. Type of Project	4 Lane Divided Freeway	6. County and State	Benton County, Arkansas

PART II (To be completed by SCS)			
1. Date Request Received By SCS	6-6-97	2. Person Completing Form	Glen D Laurent
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form)	YES [X] NO [ ]	4. Acres Irrigated	Average Farm Size: 131
5. Major Crop(s)	6. Farmable Land In Government Jurisdiction	7. Amount Of Farmland As Defined in FPPA	
Fescue, Bermuda, Beef & Dairy Cattle	Acres: 361,400 % 66.3	Acres: 200,210 % 36.7	
8. Name Of Land Evaluation System Used	9. Name of Local Site Assessment System	10. Date Land Evaluation Returned By SCS	
LE-SCS		6-30-97	

PART III (To be completed by Federal Agency) 100 meter (328 feet) corridors. Except on existing alignment	Alternative Corridor For Segment		
	FAR WEST	NEAR WEST	EXISTING
A. Total Acres To Be Converted Directly	547	407	50
B. Total Acres To Be Converted Indirectly, Or To Receive Services	-	-	-
C. Total Acres In Corridor	547	407	50
PART IV (To be completed by SCS) Land Evaluation Information			
A. Total Acres Prime And Unique Farmland	54	19	10
B. Total Acres Statewide And Local Important Farmland	83	33	5
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted	0.27	0.20	0.02
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value	66.3	66.3	66.3
PART V (To be completed by SCS) Land Evaluation Criterion Relative Value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)	42	32	44

PART VI (To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))	Maximum Points			
1. Area In Nonurban Use	15	15	12	12
2. Perimeter In Nonurban Use	10	10	10	8
3. Percent Of Corridor Being Farmed	20	10	1	0
4. Protection Provided By State And Local Government	20	0	0	0
5. Size Of Present Farm Unit Compared To Average	10	10	10	0
6. Creation Of Nonfarmable Farmland	25	1	0	0
7. Availability Of Farm Support Services	5	0	0	0
8. On-Farm Investments	20	5	2	0
9. Effects Of Conversion On Farm Support Services	25	0	0	0
10. Compatibility With Existing Agricultural Use	10	2	5	5
TOTAL CORRIDOR ASSESSMENT POINTS	160	53	40	25
PART VII (To be completed by Federal Agency)				
Relative Value Of Farmland (From Part V)	100	42	32	44
Total Corridor Assessment (From Part VI above or a local site assessment)	160	53	40	25
TOTAL POINTS (Total of above 2 lines)	260	95	72	69

1. Corridor Selected.	2. Total Acres of Farmlands to be Converted by Project:	3. Date Of Selection	4. Was A Local Site Assessment Used?
Far West	137	June 1998	YES [ ] NO [X]

5. Reason For Selection:

1. **Provides the most improvement in traffic safety and provides the greatest roadway capacity.**
2. **Best for maintenance of traffic during construction.**
3. **Least impact on the aquatic environment.**
4. **Least impact to residential communities and businesses.**
5. **Compatible with current land use/master plan.**

Signature of Person Completing This Part: Timothy R. Flynn — DATE: Jan. 7, 1999

NOTE: Complete a form for each segment with more than one Alternative Corridor

ARKANSAS
HISTORIC
PRESERVATION
PROGRAM

RECEIVED
JAN 18 1999
HNTB-KCMO

January 13, 1999

Mr. Jerry Mugg
HNTB Corporation
P.O. Box 419299
Kansas City, Missouri 64141

RE: Benton County - General
Section 106 Review - FHwA
Report Entitled "US 71 Corridor Study: Phase I
Cultural Resources Survey, Benton County, AR
and McDonald County, MO"

Dear Mr. Mugg:

My staff has reviewed the above referenced cultural resources survey report. It is thorough, comprehensive, and well written. We also concur with the findings and recommendations presented therein. Specifically, archeological site 3BE634 is potentially significant, and should be evaluated for its eligibility for inclusion in the National Register of Historic Places. The remaining five sites are ineligible, and no further work or protection is needed on these properties.

Thank you for your interest and concern for the cultural heritage of Arkansas. We can proceed with our review upon receipt of the archeological testing report on site 3BE634.

If you have any questions, please contact George McCluskey of my staff at (501) 324-9880.

Sincerely,

Cathy Buford Slater
State Historic Preservation Officer

CBS:GM

cc: Federal Highway Administration
Arkansas State Highway & Transportation Department
Historic Preservation Associates
Arkansas Archeological Survey

1500 Tower Building • 323 Center • Little Rock, Arkansas 72201 • Phone (501) 324-9880
Fax (501) 324-9154
A Division of the Department of Arkansas Heritage

ARKANSAS
HISTORIC
PRESERVATION
PROGRAM

December 1, 1998

Mr. Timothy C. Klinger
Director
Historic Preservation Associates
P.O. Box 1064
90 S. College Avenue
Fayetteville, AR 72702

RE: Benton County – Belle Vista to Pineville
Section 106 Review – FHWA
US 71 Location Study
AHTD Project No. 009969
HNTB Project No. 24456

Dear Mr. Klinger:

My staff concurs that the above referenced project will not have an adverse effect on either the structure listed on the National Register of Historic Places or the structures determined eligible for listing on the National Register that are within view of the project.

We continue to review the archeological report and will provide you with our comments in the next few weeks.

If you should have any questions or comments, please contact Missy McSwain, of my staff.

Yours truly,

Cathy Buford Slater
State Historic Preservation Officer

cc: Ms. Elizabeth Romero, FHWA
Mr. Marion Butler, AHTD

CBS/fm

OFFICES OF
DEC 17 1998
TIMOTHY C KLINGER

1500 Tower Building • 323 Center • Little Rock, Arkansas 72201 • Phone (501) 324-9880
Fax (501) 324-9184 • TDD (501) 324-9811
A Division of the Department of Arkansas Heritage

Missouri
Department
of Transportation

MoDOT

105 West Capitol Avenue
P.O. Box 270
Jefferson City, MO 65102
(573) 751-2551
Fax (573) 751-6555
http://www.modot.state.mo.us/

Joe Mickes, Chief Engineer

December 16, 1998

Mr. Timothy C. Klinger
Historic Preservation Associates
PO Box 1064
Fayetteville, AR 72701

Dear Mr. Klinger:

Subject: Preliminary Studies
Route 71, McDonald County, Missouri
Arkansas Line to Pineville
Job No. J7P0601
Cultural Resources Survey Report

Attached is a copy of a letter from the Historic Preservation Program (HPP) concerning their review of the draft report entitled *US 71 Corridor Study, Phase I Cultural Resources Survey, Benton County, Arkansas and McDonald County, Missouri* by Timothy C. Klinger, Don R. Dickson, and John L. Gray, IV. Also attached are copies of the MoDOT comments and cover letter that were sent to HPP with the review copy of the report. We request that all of the comments be seriously considered when producing the final report.

Please respond to the HPP and MoDOT comments and provide the number of copies of the final report as required by your contract. Following a review of the final report we will forward two copies to the HPP.

If you have any questions or comments, please feel free to contact Larry Ayres, MoDOT archaeologist, at (573) 526-3560.

Sincerely,

Bob Rudin for
Fred A. Martin
Division Engineer, Preliminary Studies

OFFICES OF
DEC 18 1998
TIMOTHY C KLINGER

lla/bw

Attachments

Kary

STATE OF MISSOURI Mel Carnahan, Governor • Stephen M. Mahfood, Director

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF STATE PARKS

P.O. Box 176 Jefferson City, 65102-0176 (573) 751-2479

FAX (573) 751-4656

December 11, 1998

Mr. Fred A. Martin
Missouri Department of Transportation
P. O. Box 270
Jefferson City, Missouri 65102

RE: Cultural Resources Survey Report, Route 71, Arkansas Line to Pineville, McDonald County, Missouri (FHWA/MoDOT, Job #J7P0601)

Dear Mr. Martin:

Thank you for submitting the draft copy of the above-referenced project for our review pursuant to Section 106 of the National Historic Preservation Act (P.L. 89-665, as amended). Staff of the Historic Preservation Program have reviewed the report. We are in full agreement with the MoDOT comments included in the submission. In addition, HPP recommends a comprehensive edit for grammar and spelling. A few such mistakes are present in the draft.

HPP looks forward to reviewing the final report after the above mentioned changes are made.

If you have any questions, please write, or call Cal Rea at (573) 751-7958.

Sincerely,

HISTORIC PRESERVATION PROGRAM

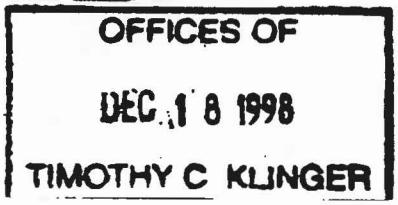
Claire F. Blackwell
Director and Deputy State
Historic Preservation Officer

CFB:rcr

c: Don Neumann
John Howland
Bob Reeder



A1150



CR file

Missouri Department of Transportation

MoDOT

105 West Capitol Avenue
P.O. Box 270
Jefferson City, MO 65102
(573) 751-2551
Fax (573) 751-6555
http://www.modot.state.mo.us/

Joe Mickes, Chief Engineer

November 24, 1998

Mr. Douglas K. Eiken
Director
MDNR/Division of State Parks
P. O. Box 176
Jefferson City, Missouri 65102

Dear Mr. Eiken:

Subject: Preliminary Studies
Route 71, McDonald County, Missouri
Arkansas Line to Pineville
Job No. J7P0601
Cultural Resources Survey Report

We are forwarding to the staff of the Historic Preservation Program (HPP) a draft copy of the report entitled *US 71 Corridor Study, Phase I Cultural Resources Survey, Benton County, Arkansas and McDonald County, Missouri* by Timothy C. Klinger, Don R. Dickson, and John L. Gray, IV of Historic Preservation Associates, Fayetteville, Arkansas (HPA), for the HNTB Corporation and the Missouri Department of Transportation (MoDOT).

We request that the staff of the HPP review this draft copy of the report. This draft has been reviewed by MoDOT cultural resources staff and a copy of their comments are attached. Although there appear to be a few weak areas in the report we believe that following some revisions it will be a high quality product. Having reviewed this report we agree with the consultants recommendations for the Missouri portion of the survey. We request your concurrence with these recommendations.

The project has a high priority and your timely response would be greatly appreciated. Should your staff have any questions concerning this project, please contact Larry Ayres, MoDOT Archaeologist, at (573) 526-3560.

Sincerely,

Fred A. Martin
Division Engineer, Preliminary Studies

la/bw

Copies: Mr. Steve Mahfood-dnr
Ms. Claire Blackwell-hpp (with attachment)
Mr. Richard Walter-7

OFFICES OF
DEC 18 1998
TIMOTHY C KLINGER

MoDOT Comments on : US 71 Corridor Study, Phase I Cultural Resources Survey, Benton County, Arkansas and McDonald County, Missouri,

by Timothy C. Klinger, Don R. Dickson, and John L. Gray, IV
Historic Preservation Associates (HPA)

MoDOT Job No. J7P0601

Overall, this report is put together very well. The report does a good job of combining all of the resources and all of the previous work. Furthermore, earlier portions of the investigation, such as the section on Site Potential in the Study Corridor, fit into the report and complement the whole. In addition, the figures illustrating the location of the preferred alternative overlaying the General Land Office maps are very interesting and a nice complement to the background investigation portion of the report.

The weaknesses of the report are limited to relatively minor areas.

- There are some unusual terms that should be explained. For example, the reference to "98PV05" in the abstract would be easier to understand with an explanation of what it stands for.
- The introductory paragraph to the Archaeological Background on page 21 appears to have little correlation with Table 3 (which it references). The sentence in which Table 3 is referenced refers to Archaic, Woodland, . . . However, the table fails to use these terms.
- In the last paragraph on page 21 (and in several other locations) there are parentheses enclosing a blank. Are these indicating missing data? If so, they need to be filled.
- Unless a previous reference was missed, the reference on page 79 to the "aerial plates" (FW1, . . . FW8), fails to identify where the plates can be found (Appendix C).
- No reference to Figure 9 was found in the text. Please insure that all figures are referenced in the text.

The specific information concerning the Architectural, Bridge, and Archaeological investigations appeared sound and well done. Other than the weakness identified above, the MoDOT reviewers were well satisfied and consider this to be an acceptable report.

OFFICES OF
DEC 18 1998
TIMOTHY C KLINGER

RECEIVED
JUL 29 1999
HNTB-KCMO

HISTORIC PRESERVATION ASSOCIATES

P. O. Box 1064 90 South College Avenue Fayetteville, Arkansas 72702 501-442-3779 FAX 501-582-3779

Ms. Cathy Buford Slater
State Historic Preservation Officer
1500 Tower Building
323 Center
Little Rock, Arkansas 72201

27 July 1999

501-324-9880
501-324-9154 (FAX)

RE: US 71 Location Study - Bella Vista to Pineville
Benton County, Arkansas and McDonald County Missouri
ASHTD Project No. 009969
HNTB Project No. 24456
Phase II Assessment

Dear Ms. Slater:

The Arkansas Highway and Transportation Department (AHTD), the Missouri Department of Transportation (MoDOT) and the Federal Highway Administration (FHWA) are proposing to improve US 71 from south of Bella Vista, Arkansas to near Pineville, Missouri. In compliance with the appropriate provisions of the National Environmental Policy Act (NEPA), an environmental impact statement (EIS) has been prepared to aid in the decision-making process for the proposed undertaking.

FHWA, through AHTD and MoDOT, requested the views of the Arkansas and Missouri State Historic Preservation Office (SHPO) regarding historic properties that may be affected by the proposed undertaking in accordance with 36 C.F.R. § 800.4(a)(1)(ii). In accordance with the Arkansas *State Plan* and MoDOT standard protocol for the investigation of potential impacts to cultural resources those resources that would be affected by the proposed preferred alternative have been identified. These resources have been grouped based on the various investigations - archaeological, architectural, historical bridge and historical. All of the potentially affected resources for the preferred alternatives were reviewed by your office to determine the eligibility of each site for inclusion in the National Register of Historic Places (NRHP).

A full Phase I survey of the preferred alignment was conducted in the last quarter of 1998. Six newly recorded archaeological sites (23MD136, 23MD137, 3BE633, 3BE634, 98PV05 and 98PV06) were identified within the preferred alignment. Three archaeological sites are prehistoric (23MD136, 23MD137 and 3BE364) and three sites are historic (3BE633, 98PV05 and 98PV06).

Ms. Cathy Buford Slater
State Historic Preservation Officer

RE: US 71 Location Study - Bella Vista to Pineville
Benton County, Arkansas and McDonald County Missouri
ASHTD Project No. 009969
HNTB Project No. 24456
Phase II Assessment

Of these six sites, only 3BE634 represented a resource that had the potential of containing significant information that can contribute to prehistory and history. Phase II assessment was recommended to determine site function, integrity and National Register of Historic Places eligibility and that work has been documented in the present report. The remaining five new archaeological sites recorded during the Phase I cultural resource survey did not contain significant characteristics and were not considered eligible for the National Register. These resources were represented by surface scatters of historic and/or prehistoric artifacts. None of these sites were believed to contain intact subsurface cultural features or deposits. No further work was recommended for this group of resources.

AHPP requested a Phase II assessment effort for 3BE634 because this resource was considered to have the potential for containing significant information that could contribute to our knowledge of prehistory. Phase II assessment was conducted at 3BE634 and it was not considered to contain intact subsurface cultural features or deposits or otherwise have the potential to contain information important in prehistory [36 C.F.R. § 60.4(d)]. No further work is recommended for this resource.

In consultation with SHPO staff, the FHWA, through AHTD and MoDOT, has made a reasonable and good faith effort to identify historic properties that may be affected by the undertaking [36 C.F.R. § 800.4(b)]. The FHWA, through AHTD and MoDOT, has determined in accordance with 36 C.F.R. §.800.4(a) - (c) that there are potential historic properties that may be affected by the undertaking, and through the present report, is providing documentation of this finding to your office.

If changes are made in the APE beyond the boundaries of the APE surveyed or if intact cultural deposits are discovered during construction, the SHPO should be contacted immediately [36 C.F.R. § 800.11(b)(2)] and the provisions of 36 C.F.R. § 800.6 should be implemented. The FHWA, through AHTD and MoDOT, is not required to take further steps in the Section 106 process [36 C.F.R. § 800.4(d)] except as recommended in the enclosed report.

Ms. Cathy Buford Slater
State Historic Preservation Officer

RE: US 71 Location Study - Bella Vista to Pineville
Benton County, Arkansas and McDonald County Missouri
ASHTD Project No. 009969
HNTB Project No. 24456
Phase II Assessment

Thank you for your continued assistance in the Section 106 process. Please don't hesitate to contact us if you have any questions.

Sincerely,

Timothy C. Klinger
Director

TCK:rtv
enclosed as stated
Bella Vista Correspondence

cc:

Mr. Jerry Mugg, P.E.
HNTB
1201 Walnut, Suite 700
Kansas City, Missouri 64106

816-472-1201
816-472-4086 FAX

Mr. Lynn P. Malbrough
Arkansas State Highway and Trans. Dept.
Environmental Division
P. O. Box 2261
Little Rock, Arkansas 72203

501-569-2301
501-569-2009 FAX

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Bishop Henry Whipple Federal Building
1 Federal Drive
Fort Snelling, MN 55111-4056

IN REPLY REFER TO:
ER-96/482

AUG 30 1996

SEP 0[illegible] 1996

M.S H.D. JOPLIN, MO

DIST. ENGR.
MAINT & TR.
CONST.
DESIGN
R.W.
F/S
RISK MGT.
MAT. & RES.
EQ & P.
H/R
LEGAL
CIRCULATE
COPY ALL
C—ME
COPY D.E.

Mr. Gerald J. Reihsen
Division Administrator
Federal Highway Administration
P.O. Box 1787
Jefferson City, Missouri 65102

Dear Mr. Reihsen:

The U.S. Fish and Wildlife Service (Service) has reviewed the Federal Highway Administration Notice of Intent to Prepare an Environmental Impact Statement for US-71 Improvements from Bella Vista in Benton County, Arkansas, to Pineville in McDonald County, Missouri. The Service offers the following comments and recommendations, which are specific to the Missouri portion of the study area, for your consideration.

Comments Concerning Missouri Portion of Study Area

No designated critical habitat occurs in the study area and the occurrence of federally listed species is unlikely based on existing inventory information.

No Federal or state Section 4(f) fish and wildlife properties occur in the study area.

The principal concerns of the Service are the impacts of the project on floodplain wetlands, other aquatic habitats, and migratory birds.

Three perennial streams, with use designations for Protection of Warmwater Aquatic Life and Cool Water Fishery in the Missouri Water Quality Standards, occur in the study area. These streams are Elk River, Big Sugar Creek, and Little Sugar Creek. Direct and indirect impacts to these important aquatic habitats should be thoroughly disclosed in the Draft Environmental Impact Statement (DEIS). Issues to be addressed should include the type and likelihood of temporary and permanent in-channel fills, temporary and permanent channel relocations, changes to channel morphology, and the potential for runoff of sediment and toxic substances. The Neosho mucket, a state-listed rare mussel, has been reported from the Elk River downstream of Pineville.

Important migratory bird habitats in the study area include a great blue heron rookery on Little Sugar Creek, southeast of Pineville (Section 2, T21N, R32W), and upland forests which support neotropical migrant birds. Ozark forests provide most of the remaining large, contiguous blocks of habitat for neotropical forest interior birds in the Midwest. For the less area-sensitive species, forest blocks of at least 500 acres seem to be the minimum size of unfragmented habitat that does not result in substantial losses due to predation and nest parasitism. The impact of the project on neotropical forest interior birds is relevant to relocation alternatives which may cause additional fragmentation of forest blocks. For these alternatives, the number of such blocks fragmented by the project would be a simple method for evaluating alternatives and should be disclosed in the DEIS.

For further coordination with the Service concerning the Missouri portion of this project, please contact the Field Supervisor, Columbia, Missouri, Field Office, 608 E. Cherry St., Columbia, Missouri 65201, Telephone: (573) 876-1911.

Thank you for the opportunity to provide these comments.

Sincerely,

Matthias A. Kerschbaum
Deputy Assistant Regional Director
IL,IN,MO (Ecological Services)

cc: Mr. Donald Neumann
District Engineer
Federal Highway Administration
209 Adams Street, P.O. Box 1787
Jefferson City, Missouri 65102

✓Mr. Richard Walter
District Engineer
Missouri Highway and Transportation Department
3901 East 32nd Street, P.O. Box 1445
Joplin, Missouri 64802

Arkansas Game & Fish Commission
2 Natural Resources Drive Little Rock, Arkansas 72205

Steve N. Wilson
Director

Scott Henderson
Assistant Director

August 30, 1996

Mr. John Harris
Environmental Division
Arkansas Hwy. and Transportation Department
P.O. Box 2261
Little Rock, Ar. 72203

Dear John:

This letter is in reference to the U.S. Highway 71 project between Bella Vista, Arkansas and Pineville, Missouri and preliminary information pertaining to Federal-endangered and / or threatened fish and wildlife species that may be affected by this proposal.

Attached is a list of endangered and threatened species which are known to occur in the Benton County area as well as a general map of Northwest Arkansas indicating locations of caves that could be helpful in your environmental review processes. As I had mentioned at the recent scoping meeting, our records indicate that the cave crayfish (*Cambarus aculabrum*), gray bat (*Myotis grisescens*) and the Ozark cavefish (*Amblyopsis rosae*) do occur in the project area.

I don't recall mentioning two other caves in the area, therefore, enclosed is a map indicating two (2) caves; Crystal Cave which is in a residential area and houses a maternity colony of gray bats and an un-named cave southwest of Lake Windsor. We feel this watershed should receive further field investigations.

Your attention to this matter is appreciated and we shall look forward to providing additional specific comments as the planning processes continue.

Yours very truly,

CRAIG

Craig K. Uyeda, Chief
River Basins Section

RECEIVED
A.H.T.D.

SEP 03 1996

ENVIRONMENTAL
DIVISION

CKU:kkh
enclosures

c.c. HNTB - Scott Smith w/attachments
U.S. Fish & Wildlife Services
b.c.c. Director's Office
Billy E. White
Craig K. Uyeda
Bob K. Leonard
File

BENTON COUNTY
SPECIES SUMMARY
(Endangered & Threatened Species only)

1. Cave Crayfish (Cambarus aculabrum)

Township	Range	Section	ANHC Occ.#	Map Leg.#
18N	32W	33	001	7
21N	30W	18	002	30

2. Gray Bat (Myotis grisescens)

Township	Range	Section	ANHC Occ.#	Map Leg.#
19N	28W	22	020	1
19N	28W	24	004	2
18N	32W	33	002	7
18N	31W	01	009	15
21N	31W	34	001	22

3. Indiana Bat (Myotis sodalis)

Township	Range	Section	ANHC Occ.#	Map Leg.#
19N	28W	24	001	2

4. Ozark Cavefish (Amblyopsis rosae)

Township	Range	Section	ANHC Occ.#	Map Leg.#
18N	32W	33	001	7
19N	29W	24	006	13
19N	31W	36	004	16
18N	31W	01	002	15
18N	32W	07	005	18
20N	34W	36	007	19
20N	31W	27	003	21
19N	29W	27	008	24
19N	31W	34	010	25
20N	33W	29	009	31

Dan VanPetten

To: Michelle Graham
Subject: US 71 EIS-Contacts

As requested, the following agencies and individuals were contacted by myself or Kimberly Ranshaw requesting and providing information:

Mr. Dennis Figg, Endangered Species Coordinator, Missouri Department of Conservation; Jefferson City MO. (08-13-96)

Ms. Cindy Osborne, Data Manager, Arkansas Natural Heritage Commission; Little Rock, AR.(08-13-96) (07-22-96)

Mr. Gene Gardner, Biological Specialist, Preliminary Studies, MoDOT, Jefferson City, MO. (bat expert) (08-05-96)

Mr. Gary Christoff, Environmental Coordinator, Missouri Department of Conservation, Jefferson City MO. (07-19-96)

Ms. Marge Harney, US Fish and Wildlife Service. Vicksburg, MS. (07-22-96)

Mr. Gene Gunn, Environmental Review, US Environmental Protection Agency, Kansas City, KS. (06-21-96)

Mr. Gary Frazier, US Fish and Wildlife Service, Columbia, MO. (06-21-96)

M.r David Schorr, MO Department of Natural Resources, Jefferson City, MO (06-21-96)

Mr. Dan Dickeite, Planning Division, Mo. Department of Conservation, Jefferson City, MO. (06-21-96).

Missouri Natural Heritage Database, Missouri Department of Conservation

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
Arkansas Division
700 West Capitol Avenue, Room 3130
Little Rock, AR 72201-3298

August 26, 1996

IN REPLY REFER TO:
DPR-0051(001)
State Job 009969
Environmental Impact
Statement
Benton County, Arkansas
McDonald County, Missouri
HFO-AR

Mr. Dan Flowers, Director
Arkansas State Highway and
Transportation Department
Little Rock, Arkansas

Dear Mr. Flowers:

The U.S. Department of the Interior, National Park Service, have indicated they have no comments on the notice published in the Federal Register of July 12, 1996. A copy of its August 5, 1996 letter is enclosed for consideration as your consultant develops the Draft Environmental Impact Statement.

If you have any questions, please call me at 501-324-6430.

RECEIVED
A.H.T.D.
AUG 29 1996
ENVIRONMENTAL
DIVISION

Sincerely yours,

Wendall L. Meyer
Environment/Design Specialist

C: Director
Dep Dir + Ch Engr
Asst Ch Engr - Planning
Asst Ch Engr - Design
Env.
Rdwy.
RIW
Public Affairs
District 4

Enclosure

Job A file

RECEIVED
AUG 27 1996
PROGRAMS & CONTRACTS

Inter-Office Correspondence

MISSOURI HIGHWAY AND TRANSPORTATION DEPARTMENT

DATE: August 5, 1996

TO: Memorandum to File

FROM: Gene Gardner
Biological Specialist, Preliminary Studies

SUBJECT: Preliminary Studies
Route 71, McDonald County, Missouri and Benton County, Arkansas
Bella Vista, Arkansas to Pineville, Missouri (Location Study)
Job No. J7P0427
Endangered Species Coordination
Environmental Scoping Meeting

On July 11, 1996, Jerry Bradley (D7) contacted me and requested information related to the occurrence and biological significance of a potential gray bat (*Myotis grisescens*) maternity cave located along existing Route 71, McDonald County. Jerry had heard about the cave's existence from Dan Van Petten (HNTB) at a previous meeting. I called Jim Vandike (DGLS, MDNR) and requested information on the cave, known as Henson Cave, from the cave files. Several written reports, a reprinted article from the Daily News, Springfield, Missouri, newsletters from caving clubs, and a small map of Henson Cave (1993) were sent to me.

With permission from MHTD, the Missouri State Highway Patrol and McDonald County Sheriff's Department attempted to close the main entrance to Henson Cave (located on MHTD right of way) on September 7, 1977, by depositing earthen fill in the opening. However, erosion by the cave's stream and subsidence of the fill since that time has resulted in an obvious opening easily negotiated by people. Further, a second entrance on MHTD right of way (approximately 100 feet east of the main entrance) and a sinkhole entrance on private land (approximately 900 ft. east of the main entrance) were never closed.

Written reports from cave explorers in 1957, 1969, and 1977 document the cave's past use by "large numbers of bats." Colonies of bats in Missouri caves during summer are usually those of the gray bat. Even when not present, past use of caves by gray bat populations are obvious because gray bat clusters leave stained areas on the ceiling and guano accumulations on the cave floor below. I visited this cave on July 12, 1978, while conducting a statewide study of gray bat maternity caves and found only one male Indiana bat (*Myotis sodalis*) and no recent signs of use by large numbers of bats. According to the Species Management Plan for the Indiana Bat and the Gray Bat in Missouri (Missouri Department of Conservation, 1988), Henson Cave is considered an "abandoned" gray bat maternity cave with an estimated past population of 100 individuals. Sealing the main (highway entrance) to Henson Cave in 1977 probably forced the large number of bats which once occupied this cave to begin using another cave (No Name Cave) now known as an active maternity cave, which lies 1.5 miles south of Henson Cave.

Due to the development of an Environmental Impact Statement for this project, it became necessary to investigate Henson Cave and determine its present status as a maternity site for the gray bat. At the request of Jerry Bradley and Dan Van Petten, a visit to the cave was scheduled. On July 29, 1996, Bob Ziehmer, Erica Groshens, Anica Stuckenschneider, and I examined the cave's three entrances and explored the passageways. We were accompanied by Dan Van Petten, Kimberly Shaw and Bo Brown. Our initial intention was to trap bats as they exited the cave in the evening in order to minimize disturbance to any potential maternity colony. However, there was no fresh guano accumulation or other signs of recent use by large numbers of bats evident from examinations of the three entrances.

Upon entering the cave, the only bats that were encountered were two eastern pipistrelles (*Pipistrellus subflavus*) and four little brown bats (*Myotis lucifugus*). Use (abuse) of the cave by human visitors, as evidenced by a beaten path to the cave's back (sinkhole) entrance, and graffiti, discarded clothing and accumulations of trash inside the cave precludes any potential recolonization of this cave by gray bats. The cave should continue to be considered an abandoned gray bat cave and will undoubtedly remain unsuitable as maternity habitat for the gray bat, given the high level of human disturbance. Further, this cave is not a suitable hibernaculum for either gray or Indiana bats.

On July 30, 1996, we attended the environmental scoping meeting held at the Bella Vista Country Club Clubhouse from 10:00 a.m. to noon. I discussed our findings at Henson Cave and other aspects of cave/bat resource issues related to this project with representatives from the Arkansas State Highway and Transportation Department (ASHTD), Arkansas Game and Fish Commission (AGFC), Arkansas Natural Heritage Commission (ANHC), HNTB and FHWA.

During the meeting, I learned that the resource agencies are concerned about potential water quality impacts to Bear Hollow Cave (Benton County, Arkansas) and its population of cave (troglobitic) crayfish (*Cambarus aculabrum*). This species was listed as federally endangered on April 27, 1993; no critical habitat has been designated and no recovery plan has been developed. However, hydrology studies to determine the groundwater recharge area of Bear Hollow Cave have been developed through a proposal by Mr. Tom Aley (Ozark Underground Laboratory); his proposal has been approved by the ASHTD, AGFC and ANHC, pending an allocation of funding from ANHC. Additional investigations could be required to determine if Bear Hollow Cave or any of the other caves within the study area are inhabited by additional threatened or endangered species, particularly gray or Indiana bats.

gg/sw

Copies: Mr. Jerry Bradley-7
Mr. Dan Van Petten-HNTB
Mr. Dennis Figg-MDC
Mr. Rick Clawson-MDC

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

RECEIVED
AUG -7 1996
HNTB-KCMO

SMS

August 5, 1996

Scott Smith, P.E.
Project Manager
HNTB Corporation
1201 Walnut, Suite 700
Kansas City, Mo 64106

Dear Mr. Smith:

This is in response to your letter dated July 23, 1996, requesting our participation in the U.S. 71 Corridor Study as a Cooperating Agency. We appreciate the offer; however, limited personnel and travel funds do not permit our agency to participate at the level that a formal cooperating agency agreement would require. Our role to review and coordinate is already provided for under Section 309 of the Clean Air Act.

At this time we must decline your request. Please keep us informed of the project progress and any issues that may be interest to our agency. If you have any questions, please contact me at (214) 665-7451 or fax me at (214) 665-7446.

Sincerely yours,

Michael P. Jansky, P.E.

Michael P. Jansky, P.E.
Regional Environmental Review
Coordinator

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United States Department of the Interior

NATIONAL PARK SERVICE
Great Plains Systems Office
1709 Jackson Street
Omaha, Nebraska 68102-2571

IN REPLY REFER TO:
ER96/0482(GPSO)

AUG 05 1996

Mr. Wendall Meyer
Environmental Design Specialist
Federal Highway Administration
3128 Federal Office Building
Little Rock, Arkansas 72201-3298

Dear Mr. Meyer:

We have reviewed the notice, published in the "Federal Register" of July 12, that an environmental impact statement (EIS) will be prepared for the proposal to improve U.S. Highway 71 in McDonald County, Missouri, and Benton County, Arkansas. We have no comments on the notice. We do, however, look forward to reviewing the EIS.

Sincerely,

James M. Grasso
Outdoor Recreation Planner
Stewardship and Partnerships Team

HNTB ARCHITECTS ENGINEERS PLANNERS

1201 Walnut
Suite 700
Kansas City, Missouri
64106

P.O. Box 412197
Kansas City, Missouri
64141
(816) 472-1201
(816) 472-1206

July 23, 1996

RECEIVED
JUL 25 1996
2nd COAST GUARD DISTRICT
BRIDGE BRANCH

Pursuant to the Coast Guard Authorization Act of 1982, it has been determined this is not a waterway over which the Coast Guard exercises jurisdiction for bridge administration purposes. A Coast Guard bridge permit is not required.

ROGER K. WIEBUSCH
Chief, Bridge Branch
Second Coast Guard District

8/13/96
(Date)

Mr. Dave Sulouff
U.S. Coast Guard
Eighth Coast Guard District
1222 Spruce
St. Louis, MO 63103-2832

Re: U.S. 71 Corridor Study (Bella Vista, Arkansas to Pineville, Missouri)
Scoping Meeting (July 30, 1996)

Dear Mr. Sulouff:

The Arkansas State Highway and Transportation Department and the Federal Highway Administration (FHWA), in cooperation with the Missouri Department of Transportation, will prepare an Environmental Impact Statement (EIS) for a proposed improvement to U.S. 71 in Benton County, Arkansas and McDonald County, Missouri. The proposed improvement may involve the reconstruction or relocation on new alignment of U.S. 71 from Bella Vista, Arkansas to Pineville, Missouri, a total distance of approximately 26 kilometers (16 miles). (See enclosed project area map.)

The purpose of this letter is to request your assistance and participation in a project scoping meeting for the EIS to be prepared for this project. The scoping meeting is to be held on Tuesday, July 30, from 10:00 a.m. to noon at the Bella Vista Country Club Clubhouse (see enclosed map for directions). A business box lunch will be provided and field tours of the study area are planned in the afternoon. Please indicate your interest in the lunch or field tour in your response.

Improvements to the corridor include improving U.S. 71 to a four-lane, fully controlled access facility with Interstate standards to meet anticipated traffic demands and to improve roadway safety. Alternatives under consideration include the relocation of U.S. 71 on new alignment, improving the existing facility and the "No-Build" alternative.

It is important that each agency have a representative present at this meeting to ensure that each agency's perspective is considered. If your agency will have a representative present at the meeting, please contact one of the following by July 26 at:

Mr. Scott Smith, P.E., Project Manager
HNTB Corporation
1201 Walnut, Suite 700
Kansas City, Missouri 64106
(816) 472-7000 X2425

Jerry Mugg, P.E., Project Coordinator
HNTB Corporation
1201 Walnut, Suite 700
Kansas City, Missouri 64106
(816) 472-7000 X2426

If someone from your agency is unable to attend this meeting, meeting minutes will be compiled and sent to you. *Your written comments are also welcome.* If you have any questions or concerns about this meeting, please feel free to contact me or Jerry Mugg at the above telephone number. Thank you for your assistance.

Very truly yours,

HNTB CORPORATION

Scott Smith, P.E.
Project Manager

Enclosures

cc: Reid Beckel, ASHTD - Little Rock
Jerry Bradley, MHTD - Joplin

Dan VanPetten

From: Scott Smith
Sent: Monday, July 22, 1996 11:46 AM
To: Dan VanPetten
Cc: Jerry Mugg
Subject: Call from U.S. Fish & Wildlife

Marge Harney, from the Vicksburg office of U.S. F&W ((601) 629-6613),called regarding the U.S. 71 -- Bella Vista scoping meeting. (I tried to conference you in, but you're line was busy.) She will not be able to attend, but is familiar with Benton Co. and will be there the week after our scoping meeting.

She said that we probably are already familiar with most of the issues she would identify. They include Bear Hollow Cave -- 1 of 2 locations with blind cave fish. Also, Logan Cave which may have big-eared gray bats. In general, other cave fish and cave crayfish which may live in springs and other features of the Karst formations.

I told Marge that we would send her minutes of the scoping meeting. Also, I indicated that you would call her if you wanted more specific information on her concerns.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

July 19, 1996

Scott Smith, P.E.
Project Manager
HNTB Corporation
1201 Walnut, Suite 700
Kansas City, Mo 64106

Dear Mr. Smith:

In accordance with Section 309 of the Clean Air Act and the National Environmental Policy Act (NEPA), the U.S. Environmental Protection Agency (EPA), Region 6 office, has reviewed your solicitation for comments for preparing an Environmental Impact Statement (EIS) for the proposed improvements to U.S. 71 from Bella Vista, Arkansas to Pineville, Missouri, a total distance of approximately 16 miles.

We have completed our review of the project description and would like to take this opportunity to submit basic recommendations on the scope of the EIS you are preparing. Our comments, which are enclosed, are based upon the Council on Environmental Quality regulations 40 CFR (Parts 1500-1508) and our authority under Section 309 of the Clean Air Act.

We appreciate the opportunity to comment. Please send our office five copies of the Draft EIS at the same time that it is sent to the Office of Federal Activities, (2251A), EPA, 1200 Pennsylvania Avenue, N.W., Washington, D.C. 20044. If you have any questions, please contact me at (214) 665-7451 or fax me at (214) 665-7446.

Sincerely yours,

Michael P. Jansky, P.E.

Michael P. Jansky, P.E.
Regional Environmental Review
Coordinator

Enclosure

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SCOPING COMMENTS
FOR THE
ARKANSAS STATE HIGHWAY
AND
TRANSPORTATION DEPARTMENT (ASHATD)
US 71 CORRIDOR STUDY
ARKANSAS AND MISSOURI

FEDERAL REGULATORY PROGRAMS

EPA federal programs, authorities and special interests include but are not limited to:

A. Water Quality Management Program - Sections 106, 205, 208, and 303 of the Clean Water Act.

B. National Pollutant Discharge Elimination System (NPDES) Permit Program - Section 402 of the Clean Water Act.

C. Drinking Water Programs - Surface Public Water Supply and Underground Water Source Programs - Safe Drinking Water Act.

D. Section 404 Permit Program Coordination - Section 404 of the Clean Water Act.

E. Environmental Impact Statement (EIS) Coordination - EIS Preparation and Review Programs - National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act.

F. Executive Orders 11988 (Floodplain Management) and 11990 (Wetland Protection).

G. Section 7 of the Endangered Species Act - Protection of threatened or endangered species of flora or fauna.

H. 36 CFR Part 800 of the Historic Preservation Act - Protection of archeological or historical elements eligible for nomination to the National Register.

Description and requirements of these programs:

A. The Environmental Protection Agency (EPA) established the Water Quality Management (WQM) Program under the authority of Sections 106, 205, 208 and 303 of the Clean Water Act to develop and implement programs to control point and non-point sources of water pollution. Specific program activities include identifying water pollution problems; assigning the responsibility for problem solving to state and local agencies; and then coordinating with these agencies in developing and implementing solutions to the problems. The state agencies establish their water quality goals and standards, and develop programs to meet these goals. To establish water quality standards, states designate uses for stream segments, and set numerical and general water quality criteria to

attain these uses.

B. Wastewater discharges are considered point sources subject to a National Pollutant Discharge Elimination System (NPDES) permit under Section 402 of the Clean Water Act.

C. The EPA developed primary drinking water regulations to protect public health, and established requirements for state programs to implement the public water supply supervisor program and underground injection control program under authority of the Safe Drinking Water Act.

D. Under Section 404, the U.S. Army Corps of Engineers is authorized to issue permits for discharge of dredged or fill material into waters of the U.S., subject to an EPA "veto" if the discharge has certain unacceptable impacts. Thus, in general, the Corps is the primary permitting agency for the federal 404 program. EPA has the authority to review each permit application and to submit comments. Pursuant to the 404(b)(1) Guidelines for evaluating discharge of dredged or fill material, an EPA permit review focuses on evaluating practicable alternatives, minimizing impacts, and mitigating for unavoidable impacts to the aquatic ecosystem, including wetlands.

E. Section 309 of the Clean Air Act and the Council on Environmental Quality (CEQ) regulations require EPA to review and comment on projects that may significantly impact the quality of the human environment.

F. Executive Orders 11988 (Floodplain Management) and 11990 (Wetland Protection) require federal agencies to evaluate the potential effects of their actions in floodplains and to avoid adverse floodplain impacts wherever possible, as well as taking action to avoid adversely impacting wetlands wherever possible and minimizing wetlands destruction and preserving the values of wetlands.

G. Section 7 of the Endangered Species Act requires federal agencies to insure that any agency action does not jeopardize the continued existence of any endangered or threatened species or result in the destruction of adverse modification of such critical habitat.

H. 30 CFR Part 800 of the Historic Preservation Act requires federal agencies to identify and determine the effect of the action on any district site, building, structure, or object listed in or eligible for listing in the National Register of Historic Places.

GENERAL COMMENTS:

The Draft Environmental Impact Statement (DEIS) should rigorously explore and objectively evaluate all reasonable

alternatives and, for alternatives which were eliminated from detailed study, adequately discuss the reasons for their having been eliminated (40 CFR 1502.14).

The DEIS should clearly explain the relationship between the program's cost benefit analysis and any analyses of unquantified environmental impacts, values, and amenities (40 CFR 1502.23).

Length of analysis of environmental impacts varies. If the environmental impact is determined to be slight, the assessment of the impact can be short. If a particular impact, or the impact of the total proposed action is determined to be significant, the assessment should include a detailed analysis of the impact addressed over the life of the project.

SCOPE OF ENVIRONMENTAL ANALYSIS

Section 1502.4 of the Council on Environmental Quality (CEQ) Regulations for Implementing NEPA states that agencies shall make sure the proposal which is subject of an environmental impact statement is properly defined. Agencies shall use the criteria for scope as defined at Section 1508.25 of the CEQ Regulations to determine which proposals shall be the subject of a particular statement. Proposals or parts of proposals which are related to each other closely enough to be, in effect, a single course of action shall be evaluated in a single impact statement.

Section 1508.25 of the CEQ Regulations identifies "scope" as a range of actions, alternatives, and impacts to be considered in an environmental impact statement. To determine the scope of an environmental impact statement agencies shall consider three types of actions, three types of alternatives, and three types of impacts. These include:

(a) Actions (other than unconnected single actions) which may be:

(1) Connected actions, which means that they are closely related and therefore should be discussed in the same impact statement. Actions are connected if they:

(i) Automatically trigger other actions which may require environmental impact statements.

(ii) Cannot or will not proceed unless other actions are taken previously or simultaneously.

(iii) Are interdependent parts of a larger action and depend on the larger action for their justification.

(2) Cumulative actions, which when viewed with other proposed actions have cumulatively significant impacts and should therefore be discussed in the same impact statement.

(3) Similar actions, which when viewed with other reasonably foreseeable or proposed agency actions, have similarities that provide a basis for evaluating their environmental consequences together, such as common timing or geography.

An agency may wish to analyze these actions in the same statement. The agency should do so when the best way to assess adequately the combined impacts of similar actions or reasonable alternatives to such actions is to treat them in a single impact statement.

(b) Alternatives, which include:
(1) No action alternative.
(2) Other reasonable courses of action.
(3) Mitigation measures not in the proposed action.

(c) Impacts, which may be:
(1) Direct
(2) Indirect
(3) Cumulative

The above identifies the requirements of proper scope of environmental impact analysis for preparation of an environmental impact statement as defined in the CEQ Regulations.

ENVIRONMENTAL JUSTICE

All Federal agencies should be aware that on February 11, 1994, Executive Order 12898 (E.O.) on "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," and an accompanying Presidential Memorandum was issued. The E.O. directs Federal agencies to analyze "the environmental effects, including human health, economic and social effects, of federal actions...." The Presidential Memorandum directs EPA to ensure that Federal agencies analyze the environmental effects of Federal actions on minority and low-income communities when such analysis is required by the National Environmental Policy Act of 1969 (NEPA, 42 U.S.C. Section 4321 et seq.)

Although social and economic impacts have always been a consideration in EPA's Section 309 reviews, the Presidential Memorandum highlights the necessity to better integrate the consideration of human health, social and economic effects into the Section 309 review process. The E.O. calls for collection and analysis of information on race, national origin, income level and other appropriate information for areas surrounding projects that have expected environmental, health and economic effect on those populations.

POLLUTION PREVENTION

In accordance with the Pollution Prevention Act of 1990, EPA has launched a significant initiative to incorporate pollution prevention throughout all federal sector activities. One of the principles is a pollution prevention/waste minimization directive for ASHATD to minimize the use of hazardous materials and the number and size of waste streams. We suggest that ASHATD describe pollution prevention and waste minimization policies and practices through the DEIS.

WATER QUALITY

For each alternative under consideration, we request that the DEIS adopt a process to ensure that the following water quality concerns are assessed. The discussion in the DEIS should be of sufficient detail to determine which sites are environmentally preferable. Site-specific water quality problems need to be assessed in greater detail, if applicable, including the adoption of site-specific mitigation measures to protect water quality and beneficial uses.

- Discuss potential impacts to water quality, beneficial uses and biological resources. Water quality and beneficial uses may be adversely impacted by construction and operation. Evaluate the potential of all program activities to cause adverse impacts to water quality, protected uses and biological resources.

Water quality may be adversely affected by the placement of fill materials in wetlands and other waters of the United States; increased sedimentation, erosion, or turbidity; the runoff of hydrocarbons, heavy metals, toxic materials or other pollutants; the accidental release of hazardous waste; and the accidental discharge of fuels or toxic materials.

- Identify all surface waters that may be affected by the proposed program. Identify the existing and potential beneficial uses of these surface waters. Protected beneficial uses for streams, creeks, lagoons, tidal areas and other surface waters may include one or more of the following: cold and warm freshwater habitat; marine habitat; fish spawning and migration; shellfish habitat; wildlife habitat; preservation of rare, threatened or endangered species; groundwater recharge; freshwater replenishment; public drinking water supplies; agricultural supply; and water contact and non-contact recreation.

Protecting water quality ensures the protection of its beneficial uses. Especially critical is the protection of several sensitive uses. It is important to protect water quality in order to maintain freshwater and wildlife habitats, since many species

are sensitive to the introduction of pollutants or the adverse modification of their habitats. It is also important to protect groundwater recharge and freshwater replenishment, particularly if public drinking water supplies could be adversely affected. These sensitive beneficial uses should be carefully considered when evaluating potential impacts caused by the placement of fill, erosion, sedimentation, the runoff of pollutants, and the accidental discharge of hazardous waste or toxic substances.

- Discuss how the project will comply with state and local water quality management plans, state water quality objectives; and state-adopted, EPA-approved water quality standards. Under Section 313 of the CWA, the ASHATD must meet state water quality standards regardless of the proposed activity and manage in a manner to protect or improve water quality where standards are not established.

In 1987, Congress amended the CWA by adding Section 319. Section 319 requires states to assess nonpoint source water pollution problems, develop nonpoint source pollution management programs,and implement controls to protect and improve water quality and beneficial uses. We ask that the ASHATD work closely with appropriate state water pollution control agencies to determine what pollution control measures should be adopted to implement the state's nonpoint source management plans.

- Identify critical habitat areas (wildlife feeding and drinking areas; fishery migration, spawning or rearing areas; sensitive aquatic habitats such as wetlands; riparian resources; critical habitat for threatened and endangered species. Describe the existing beneficial uses and resource values of these critical areas, and potential impacts to them from the proposed program.

- Discuss what mitigation measures (e.g., best management practices; nonpoint source controls will be implemented to protect or improve water quality, beneficial uses, and biological resources.

- Describe current drainage patterns in the program areas. Assess how altering drainage patterns and characteristics will affect drainage hydrology, surface runoff, erosion potential, soils vegetation, and water quality.

- Discuss affects on the floodplain. This includes using maps prepared by the Federal Insurance Administration and other appropriate agencies to determine whether the proposed action is located in or will likely affect a floodplain. If affected, the applicant should discuss these impacts and also describe the alternatives considered. Document compliance with E.O. 11988 on floodplain management.

We suggest that the ASHATD work closely with state water pollution control agencies, state fish and game agencies, the U.S. Fish and Wildlife Service, on water quality standards; the protection of water quality, beneficial uses and biological resources; mitigation and monitoring for adverse impacts.

GROUNDWATER COMMENTS

For each alternative under consideration, we request that the DEIS adopt a process to ensure that the following groundwater concerns are assessed. The discussion in the DEIS should be of sufficient detail to determine which site is environmentally preferable.

- Describe current groundwater conditions in the program areas. Assess any likely impact to groundwater quality and quantity from program activities.

- Identify mitigation measures to prevent or reduce adverse impacts to groundwater quality and discuss their effectiveness. We recommend that ASHATD work closely with state and local agencies which regulate the protection of groundwater resources (i.e., state health departments and water pollution control agencies.)

WETLANDS - CLEAN WATER ACT (CWA)

The DEIS should determine whether the project will require the placement of dredged or fill material into waters of the United States, including wetlands, an activity regulated under Section 404(b)(1) of the Clean Water Act (CWA). We recommend that the ASHATD work closely the appropriate district of the U.S. Army Corps of Engineers to determine if Section 404 is applicable. We recommend the preservation and enhancement of existing wetland resources.

It is essential that ASDATD undertake every practicable effort to first avoid and then reduce the amount of fill placed into waters of the United States. It would be useful for the DEIS to make an initial determination whether the proposed project may require the placement of fill material in waters of the United States. If so, the DEIS should substantiate that appropriate and practicable steps have been taken to avoid and minimize the adverse impacts on aquatic ecosystems. Finally, the DEIS must describe appropriate and practicable measures to compensate for the unavoidable loss of wetlands and other waters of the United States.

If wetlands or waters of the United States may be impacted by activities regulated by Section 404, we strongly recommend that the DEIS contain a thorough discussion of the proposed program's consistency with Federal Guidelines for specification of disposal sites for dredged or fill materials [the 404(b)(1) Guidelines,

found at 40 CFR Part 230]. For each alternative under consideration, we request that the DEIS adopt a process to ensure that the following Section 404 concerns are assessed. The discussion in the DEIS should be of sufficient detail to determine which site is environmentally preferable in terms of compliance with the Section 404(b)(1) Guidelines. Site-specific EAs or EISs will need to assess these issues in greater detail, if applicable.

In order to demonstrate compliance with the 404(b)(1) Guidelines, the DEIS should meet the following criteria to the extent possible:

- The proposed discharge must be the practicable alternative which would have the least adverse impact on the aquatic ecosystem [40 CFR 230.10(a)]. If wetlands would be filled, then the DEIS should explain why there are no practicable alternatives to locating the project within wetlands and show how the project has been designed to minimize harm to existing wetlands.

- The proposed action must not cause or contribute to significant degradation of waters of the United States including wetlands and other special aquatic sites [40 CFR 230.10(c)]. Significant degradation includes the loss of fish and wildlife habitat and the loss of other wetland habitat values and functions. Significant degradation also includes cumulative impacts.

- The proposed project does not violate state-adopted, EPA-approved water quality standards or jeopardize the continued existence of any species listed as threatened or endangered under the Endangered Species Act [40 CFR 230.10(b)].

- Minimize the number of acres subject to Section 404 jurisdiction that would be permanently lost or degraded due to impacts other than the placement of fill (e.g., the impacts of erosion, sedimentation and runoff of pollutants on wetland habitats; diversion of water from wetland habitats).

- Characterize baseline conditions. Include maps, text, and tables that feature areas occupied by wetlands, aquatic systems, and non-wetland riparian habitat. Direct, indirect and cumulative impacts to these resources should be fully described.

- Provide a programmatic mitigation proposal to fully compensate for the loss or degradation of wetland habitats, including the proposed mitigation replacement ratio, the habitat value and proposed location of replacement habitats, general grading and revegetation plans and a biological maintenance and monitoring program.

AIR QUALITY COMMENTS - CLEAN AIR ACT

For each alternative under consideration, we request that the DEIS adopt a process to ensure that the air quality concerns identified below are assessed. The discussion in the DEIS should be of sufficient detail to determine which site is environmentally preferable.

Discuss existing air quality conditions in terms of National Ambient Air Quality Standards (NAAQS), Federal Prevention of Significant Deterioration (PSD) increments, and state air quality standards. State air quality laws should also be discussed.

Identify whether program activities could adversely affect air quality in terms of ambient concentrations and the numbers of federal/state standards and increment violations.

Discuss the types and effectiveness of mitigation measures that will be used to protect air quality (e.g., vapor recovery systems, fumes incinerators, and dust control measures during construction phase). Identify parties other than the ASHATD which will be responsible for implementing air quality mitigation measures.

Coordinate with state/local/regional air pollution control agencies on air quality planning, air quality modeling, compliance with federal/state air quality standards, the need for air permits, air quality monitoring, and mitigation for adverse impacts.

PESTICIDES

The DEIS should state whether or not any pesticides (e.g., herbicides, insecticides, rodenticide, fungicides, etc.) will be used for vegetation clearance or control, maintenance and harvest operations, or the control of rat, mosquito or other vector populations. If so, the types of pesticides, application rates, and application procedures should be addressed. Any pesticides used must be registered with the EPA and the state, and label directors and instructions followed. All applicable state regulations must also be followed. In addition, because the regulatory status of chemicals is constantly changing, EPA recommends that a periodic review of the chemical's current regulatory status be done prior to application. Should pesticides be used, EPA recommends that a specific section of the DEIS be devoted to the subject.

AGRICULTURAL LAND

The DEIS should clarify if any agricultural land would be impacted by the program. If so, the DEIS should use the U.S. Department of Agriculture classification scheme to describe the present use of agricultural land which would be affected. If this

acreage is prime agricultural land (Class 2), consideration should be given to the Council on Environmental Quality (CEQ) (August 30, 1976 and August 11, 1980) which urge the protection of prime agricultural land. Mitigation measures should be developed to avoid loss of any such valuable resources.

MITIGATION

Section 1502.14(f) of the CEQ regulations state what an EIS must address for each alternative appropriate mitigation measures not included in the proposed action or alternatives. Section 1508.20 defines mitigation to include: a) avoiding the impact altogether by not taking a certain action or parts of an action; b) minimizing impacts by limiting the degree or magnitude of the action and its implementation; c) rectifying the impact by repairing, rehabilitating or restoring the affected environment; d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and e) compensating for the impact by replacing or providing substitute resources or environment. Mitigation should be fully addressed in the DEIS.

ENDANGERED SPECIES

The DEIS should demonstrate adequate coordination with the U.S. Fish and Wildlife Service to identify any adverse effects, determine the effect and take measures to eliminate it and fully comply with the requirements under Section 7 of the Endangered Species Act.

HISTORIC PRESERVATION

36 CFR Part 800 of the Historic Preservation Act requires federal agencies to identify and determine the effect of the action on any district, site, building, structure, or object listed in or eligible for listing in the National Register of Historic Places. The DEIS should demonstrate proper coordination with the state historical preservation officer. If adverse impacts are identified, the Federal agency should request formal consultation with the Advisory Council on Historic Preservation (36 CFR, Part 00).

MISSOURI DEPARTMENT OF CONSERVATION

Headquarters
2901 West Truman Boulevard, P.O. Box 180, Jefferson City, Missouri 65102-0180
Telephone: 573/751-4115 ◆ Missouri Relay Center: 1-800-735-2966 (TDD)

JERRY J. PRESLEY, Director

July 3, 1996

Mr. H. "Bo" Brown
The Ozark Center for Wildlife Research, Inc.
P.O. Box 83
Reeds Spring, Missouri 65737

Re: Highway 71

Dear Mr. Brown:

Thank you for your letter of June 11, 1996 regarding threatened and endangered species within the proposed project area.

Department staff examined map and computer files for federal and state rare, threatened and endangered species and determined that sensitive species or communities are known to occur on the immediate site or surrounding area. Please refer to the enclosed Heritage Database report for details.

This report reflects information we currently have in our database. We provide this information for planning purposes only; it should not be regarded as a definitive statement as to the presence or absence of rare/endangered species or high-quality natural communities. You may need to conduct additional on-site inspections to verify the presence or absence of such species or communities. In this instance it is recommended that the gray bat cave be surveyed to determine if it is presently occupied.

Thank you for the opportunity to review and comment.

Sincerely,

DAN F. DICKNEITE
PLANNING DIVISION CHIEF

Enclosure

COMMISSION

ANITA B. GORMAN, Kansas City
RANDY HERZOG, St. Joseph
JOHN POWELL, Rolla
RONALD J. STITES, Plattsburg

The Ozark Center for Wildlife Research, Inc.
Hwy 71 Improvement
Bella Vista, AR - Pineville, MO

The following species and/or natural communities are known to occur on the project site.

Scientific Name	Common Name	Fed Status	State Status	Date	Town/Range	Sec	Managed Area	Map #
ARDEA HERODIAS	GREAT BLUE HERON ROOKERY			1995	021N032W	02		1
VALERIANELLA OZARKANA	OZARK CORN SALAD		R	1988	021N031W	27		2
CHEILANTHES ALABAMENSIS	ALABAMA LIP-FERN		E	1988	021N031W	23		3
MYOTIS GRISESCENS	GRAY BAT	E	E	1978	022N031W	18		4

FEDERAL STATUS - The federal status is derived from the provisions of the federal Endangered Species Act, which is administered by the U.S. Fish and Wildlife Service. The Endangered Species Act provides federal protection for plants and animals listed as Endangered or Threatened. E = Endangered T = Threatened A,B,C = Candidate for Federal listing.

MISSOURI STATUS - The state status is determined by the Department of Conservation under Constitutional authority. Rule 3CSR10-4.111 of the Wildlife Code of Missouri and certain state statutes apply to state listed species. E = Endangered R = Rare SU = Status Undetermined WL = Watch List EXT = Extirpated XTN = Extinct.
Great blue heron rookeries, natural communities and geologic features may also occur on this printout. The status given these elements is provided for informational purposes only. C = Common, - = No status. These elements are not necessarily afforded protection through endangered species law or statute.

ARKANSAS NATURAL HERITAGE COMMISSION
1500 TOWER BUILDING
323 CENTER STREET
LITTLE ROCK, ARKANSAS 72201

Harold K. Grimmett
Director

Jim Guy Tucker
Governor

Date: June 28, 1996
Subject: U.S. Hwy. 71 Improvement Proj.
Bella Vista to AR State Line
ANHC No.: P-NFPO-96-002

Mr. H. "Bo" Brown
The Ozark Center for Wildlife Research, Inc.
P.O. Box 83
Reeds Spring, MO 65737

Dear Mr. Brown,

Staff members of the Arkansas Natural Heritage Commission have reviewed our files for records indicating the occurrence of rare plants and animals, outstanding natural communities or other elements of special concern within or near the study boundaries marked on the maps provided. Our records show twelve occurrences of sensitive species in this general area. Dots have been placed on your maps to show the locations of these occurrences. A data print-out detailing each occurrence and a legend interpreting the codes on the print-out are enclosed. Please pay close attention to the precision codes on the print-out as these codes indicate the accuracy of the mapped location.

You will note, three species listed as Endangered or Threatened by the U.S. Fish and Wildlife Service fall within the study area: a cave crayfish (Cambarus aculabrum), gray bat (Myotis grisescens), and Ozark cavefish (Amblyopsis rosae). Additionally, four other species that are considered rare throughout their ranges (species with a GRANK of G3 - G1) also occur here: Oklahoma salamander (Eurycea tynerensis), royal catchfly (Silene regia), an isopod (Caecidotea steevesi), a corn salad (Valerianella ozarkana) and Ozark chinquapin (Castanea pumila var. ozarkensis). Because of the concentration of rare species in this locality, careful inventory will be necessary for any route selected in order to avoid and minimize project impacts. Studies identifying cave recharge areas may also be needed to fully evaluate impacts to the cave species.

Preliminary inventory work has identified several potential glades of interest to this agency. These glades were noted in an area west of the western-most alignment drawn on your map in Sections 24, 25, and 36 in Township 21 North, Range 33 West and in Section 30 in Township 21 North, Range 32 West. Further field survey is needed to determine the natural quality of these areas.

Please keep in mind that the project area may contain important natural features of which we are unaware. Staff members of the Arkansas Natural Heritage Commission have not conducted a field survey of the project site. Our review is based on data available to the program at the time of the request. It should not be regarded as a final statement on the elements or areas under consideration, nor should it be substituted for on-site surveys required for environmental assessments. Because our files are updated constantly, you may want to check with us again at a later time. Due to the sensitive nature of some of this information, we appreciate your keeping exact locations confidential. If the information presented here is used in any publication, please cite the Arkansas Natural Heritage Commission, an agency of the Department of Arkansas Heritage as the Source.

Our agency would be interested in receiving any information collected on sensitive species in this area. I have enclosed copies of our inventory plant and animal lists for your reference. If you have questions on any of the material provided or need additional information, please feel free to contact me.

Sincerely,

Cindy Osborne

Cindy Osborne
Data Manager

Enclosures: Your Maps, enriched
Data Print-out
Legend & Info. Sheet
Inventory Plant & Animal Lists
Agency & User Brochure

JUNE 28, 1996

ARKANSAS NATURAL HERITAGE COMMISSION
DEPARTMENT OF ARKANSAS HERITAGE
INVENTORY RESEARCH PROGRAM
ELEMENTS OF SPECIAL CONCERN
VICINITY OF HWY. 71 IMPROVEMENT PROJECT: BELLA VISTA TO ARKANSAS STATE LINE

MAP NO.	T/R/S	T/R/S COMM.	COUNTY	DIRECTIONS	PRECIS.	NAME	ELEMENT DATA	DATE LAST OBSERVED	BEST SOURCE	GLOBAL RANK	STATE RANK	FED. STAT.	STATE STAT.	ANHC NO.
* PEA RIDGE 7.5														
1	T21N/R30W/S36		BENT	PEA RIDGE.	G	AMMODRAMUS SAVANNARUM, GRASSHOPPER SPARROW	Ammodramus Savannarum		JAMES 1974.	G5	S3	-	INV	005
* BENTONVILLE NORTH 7.5														
2	T20N/R31W/S12		BENT	ARK. HWY. 71, BELLA VISTA, ARK., JUST NORTH OF BELLA VIST VILLAGE HALL ON WEST SIDE FO ARK. HWY. 71.	M	EURYCEA TYNERENSIS, OKLAHOMA SALAMANDER	7 SPECIMENS COLLECTED FROM A SMALL, EXTREMELY COLD SPRING FLOWING EAST IN A SMALL HOLLOW. SUBSTRATE COMPOSED OF CHERT GRAVEL AND ROCK.	1978-03-27	BONATI, R. 1978. SPECIMEN AT UNIVERSITY OF ARKANSAS AT FAYETTEVILLE MUSEUM (RLB 74.7).	G3	S2	3C	INV	002
3	T21N/R30W/S18	NW4NW4	BENT	BEAR HOLLOW CAVE. FIVE MILES NNE OF BELLA VISTA ON AR/MO STATE LINE.	S	CAMBARUS ACULABRUM, A CRAYFISH	AS MANY AS 9 CRAYFISH HAVE BEEN COUNTED DURING A SINGLE SURVEY. 7 PARATYPES HAVE BEEN COLLECTED FROM THE CAVE (3 MALES-I, 3 MALES-II, AND 1 FEMALE).		HOBBS, H.H., JR. AND A.V. BROWN. 1987. A NEW TROGLOBITIC CRAYFISH FROM NORTHWESTERN ARKANSAS (DECAPODA: CAMBARIDAE). PROC. BIOL. SOC. WASH. 100(4), PP. 1040-1048.	G1	S1	LE	INV	002
* NIWASSE 7.5														
4	T21N/R31W/S34	NE4NE4	BENT	CRYSTAL CAVE.	S	MYOTIS GRISESCENS, GRAY MYOTIS	BACHELOR COLONY. THIS CAVE SERVED AS A TRANSIENT CAVE PREVIOUS TO 1988. DURING THE 1989-90 FIELD SEASONS, 3,530 GRAY BATS WERE COUNTED IN THE CAVE. A MAXIMUM NUMBER OF CA. 12,000 BATS OCCUPIED THE CAVE IN 1979-80. BATS HAVE BEEN OBSERVED EVERY YEAR IN THIS CAVE SINCE 1978, EXCEPT FOR THE FOLLOWING FIELD SEASONS: 1980-81, 1984-85, 1990-91.	1990	HARVEY, M. 1991. ENDANGERED BATS OF ARKANSAS: DISTRIBUTION, STATUS AND ECOLOGY. ANNUAL REPORT TO THE ARKANSAS GAME & FISH COMMISSION, LITTLE ROCK, AR. 24 PP.	G2G3	S2	LE	INV	001
5	T20N/R31W/S27	NE4SW4	BENT	CIVIL WAR CAVE. APPROX. 4 MILES WEST OF BENTONVILLE.	S	ANBLYOPSIS ROSAE, OZARK CAVEFISH	2 FISH WERE COUNTED IN 1990-91 STUDY. 5 WERE COUNTED IN 1985-87 STUDY AND 4 IN 1980-83 STUDY.	1991	BROWN, A.V. 1991. STATUS SURVEY OF ANBLYOPSIS ROSAE IN ARKANSAS. A FINAL REPORT SUBMITTED TO THE ARKANSAS GAME AND FISH COMMISSION, LITTLE ROCK, AR. 13PP.	G2	S1	LT	INV	003
6	T20N/R32W/S12		BENT	NEAR NIWASSIE.	G	SILENE REGIA, ROYAL CATCHFLY	ROCKY OPEN WOODS.	1933-08-33	PALMER, E. 1933. SPECIMEN AT HARVARD HERBARIUM.	G3	S2	3C	ST	011

MAP NO.	T/R/S	T/R/S COMM.	COUNTY	DIRECTIONS	PRE-CIS.	NAME	ELEMENT DATA	DATE LAST OBSERVED	BEST SOURCE	GLOBAL RANK	STATE RANK	FED. STAT.	STATE STAT.	ANHC NO.
* GRAVETTE 7.5														
7	T20N/R33W/S01		BENT	SPANISH TREASURE CAVE, CA. 1.6 MILES (2.5 KM) NORTH OF GRAVETTE.	S	CAECIDOTEA STEEVESI, AN ISOPOD	3 FEMALES COLLECTED.	1978-03-28	SCHRAM, W.D. 1980. THE TROGLOBITIC ASELLIDAE (CRUSTACEA:ISOPODA) OF NORTHWEST ARKANSAS. UNIVERSITY OF ARKANSAS AT FAYETTEVILLE. 51 PG.	G1?	S1?	-	INV	001
8	T21N/R33W/S36		BENT	2 MILES SOUTH OF SULFUR SPRINGS.	N	SONORA SEMIANNULATA, GROUND SNAKE		1958-07-07	DOWLING, H. 1958. SPECIMEN AT UNIVERSITY OF ARKANSAS AT FAYETTEVILLE MUSEUM (68-735-367).	G5	S1?	-	INV	001
9	T21N/R33W/S24	SE4SE4	BENT	FROM SULPHUR SPRGS, GO E ON GRAVEL RD UP E SIDE OF BUTLER CRK VALLEY. TURN LFT ON 1ST RD. UP INTO HIGHLANDS. AFTER CA. 1 MI. STOP AT JCT., WALK SW 0.5 MI ON RIDGE & DOWN E SLOPE	S	VALERIANELLA OZARKANA, A CORN-SALAD	>100 PLANTS ON EXTENSIVE SANDSTONE GLADE ATOP BLUFFLINE.	1995-05-04	LOGAN, J. 1995. SURVEY OF BENTON COUNTY PNA SITES, 4 MAY 1995.	G3	S3	-	-	007
10	T21N/R32W/S18		BENT	2 1/2 MILES NE OF SULPHUR SPRINGS.	G	EUMECES OBSOLETUS, GREAT PLAINS SKINK	1 SPECIMEN COLLECTED.	1924-09-02	JONES, J. 1924. SPECIMEN AT UNIVERSITY OF MICHIGAN MUSEUM OF ZOOLOGY (60112).	G5	S1?	-	INV	002
11	T21N/R33W/S24		BENT		G	CASTANEA PUMILA VAR OZARKENSIS, OZARK CHINQUAPIN	6-8.	1929-06	DEHAREE, O. 1929. UNIVERSITY OF ARKANSAS FAYETTEVILLE HERBAR IUM SPECIMEN.	G5T3	S3S4	-	INV	035
12	T20N/R32W/S20	SE4NW4	BENT	TWO MILES SE OF GRAVETTE ON SPAVINAW CREEK.	S	EURYCEA TYNERENSIS, OKLAHOMA SALAMANDER	ONE SALAMANDER WAS COLLECTED.	1987-05-27	POLECHLA, P.J. 1987. DISTRIBUTION OF THE OKLAHOMA SALAMANDER(EURYCEA TYNERENSIS) IN ARKANSAS. ANHC	G3	S2	3C	INV	009

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

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Job No. 7-P-427

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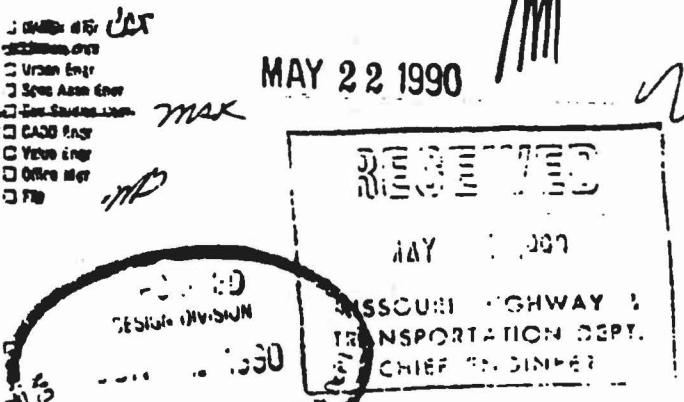


Mr. Gerald J. Reinsen
Division Administrator
Federal Highway Administration
P.O. Box 1787
Jefferson City, Missouri 65102

Dear Mr. Reinsen:

This is in response to the request for the Department of the Interior's comments on the Draft Environmental Statement for US-71 (I-44 South to State Line), Jasper, Newton, and McDonald Counties, Missouri.

POTENTIAL SECTION 4(f) COMMENTS

It is indicated in the draft statement that there will be no use of Section 4(f) lands for implementation of Alternative 1, which is the preferred alternative. This Department also strongly prefers Alternative 1, with modifications to minimize harm as noted below, and we would concur that implementation of Alternative 1 will not use any Section 4(f) resources except for the potential use of properties on or eligible for inclusion on the National Register of Historic Places.

We cannot concur at this time that all design considerations have been given to avoidance of resources on or eligible for inclusion on the National Register of Historic Places. The Final Environmental Statement (FES) should include sufficient data, fully demonstrating that there are no feasible and prudent alternatives to any taking from such resources. This Department will be willing to provide expeditious review of the FES/Section 4(f) document.

It is stated on page 103 that "once the new Route 71 alignment is decided upon and the design process is sufficiently advanced, an intensive cultural resources survey of the project will be conducted" and that a "Programmatic Agreement" "outlining" Section 106 compliance responsibilities will be executed by the State Historic Preservation Officer, the Advisory Council on Historic Preservation, and the Federal Highway Administration.

e recommend that the following National Park Service Office be a ignatory party to any Section 106 agreement(s), and that easures to minimize harm to any Section 4(f) property be eveloped in consultation with and as agreed upon by this Office:

Mr. Rodd Wheaton
Chief, Cultural Resources
National Park Service
Rocky Mountain Regional Office
15795 West Alameda Parkway
Lakewood, Colorado 80225-0287
Telephone 303-969-2875/FTS 327-2875

NVIRONMENTAL STATEMENT COMMENTS

le believe the following considerations should be incorporated nto the proposed project design and construction.

George Washington Carver National Monument
Impact Comparison, Alternatives 1 and 2

f Alternative 1 or 2 should be selected for rerouting US-71, the ost immediate effect on the George Washington Carver National onument would be a marked increase in visitation. However, hould Alternative 2 be selected, visitation would probably soon xceed the park's ability to handle both vehicular demands and isitor use. The roads, parking lots, picnic area, visitor enter, trail system, interpretive media, and the maintenance, isitor protection, and natural and cultural resources management rograms would all be very negatively impacted as they are not esigned for the level of visitation that would be expected with that alternative. In addition, the very reasons why many people ow visit--quiet, solitude, meditation, etc.,--would probably be lost with a dramatic increase in noise and in visitors.

Implementation of Alternative 1, the preferred alternative, would probably have no other major impact than increased visitation. However, implementation of Alternative 2 would have other probable impacts both during and after construction. Its proposed route would bring it to within three-fourths of a mile to a mile east of the park. This would take it through the area drained by Carver Branch, a losing stream, and the recharge area for Carver Spring. Water quality could be adversely affected during and after construction by the presence of the highway, i.e., drainage, hazardous substances, etc.

Perhaps the greatest potential adverse impact, other than dramatically increased visitation, is development around the proposed Diamond interchange. It is realistic to expect that

developments like filling stations, quick stops, restaurants, motels, recreational vehicle parks, etc., could appear around the interchange. These would be built in the recharge areas for Carver and William Springs and potentially in the recharge area for Harkins Branch. Should these developments not hook up to the sewage treatment facility now being built in Diamond, their septic systems could adversely affect the park's water resources. In addition, problems with drainage, runoff, storm water management, etc., would be heightened by the developments.

The rural setting of the park could change significantly with any development. Area roads are not designed for the increased traffic they would experience with Alternative 2. This would bring increased noise, pollution, delays, deterioration of roads, and exposure of visitors to accidents. Also, the park would face more pressure on its developments, resources, and personnel brought on not only by increased visitation but also by the change in the composition of the area around the park. Based on these considerations, it appears that Alternative 1 will have less impacts on George Washington Carver National Monument than Alternative 2.

The above issues should be addressed in the FES subsequent to continued consultation with the Superintendent of George Washington Carver.

Mineral Resources Impacts

Impacts on mineral resources are inadequately addressed in the draft statement. Active and inactive limestone quarries near proposed highway routes are mentioned in the "Land Use Impacts" chapter with potential project impacts thereupon. Not mentioned are many inactive zinc-lead mines near the proposed alternate highway routes. These mines are in the southern Tri State District, formerly an important source of U.S. zinc, and still a major zinc resource. Direct construction impacts to the mines, to mine access, and to future mine development should be discussed in the FES. All alternate interstate routes would cross several gas, oil, and products pipelines and plans for pipeline protection or relocation should be noted in the FES.

FISH AND WILDLIFE COORDINATION ACT COMMENTS

Construction and operational activities should avoid wetlands, streams, and riparian zones to the maximum extent possible. Streams and riparian woodlands that may occur along the proposed

project are extremely important to fish and wildlife resources and constitute a significant habitat in the project area. Therefore, disturbances within all riparian corridors should be kept to the absolute minimum necessary to complete the work.

If impact to these areas is unavoidable, a permit may be required from the U.S. Army Corps of Engineers and/or the Missouri Department of Natural Resources. If a Federal permit is required, the U.S. Fish and Wildlife Service (FWS) would review the application and provide recommendations to ensure that adequate mitigative measures for fish and wildlife habitat losses, including wetland habitat losses, have been incorporated into the proposed project's final plans.

ENDANGERED SPECIES ACT COMMENTS

As indicated in the July 26, 1989, letter to the Missouri Highway and Transportation Department (MHTD) (copy enclosed) and within the draft statement, (pages 94-98), the FWS has concerns for threatened and endangered species and for three springs that service the Neosho National Fish Hatchery (NFH) located in the vicinity of the proposed highway alternatives.

Recently FWS personnel from the NFH discovered a previously unknown population of the Ozark Cavefish (Amblyopsis rosae) in Hearrell Spring, which supplies water at various times throughout the year for the hatchery. In addition, the albino crayfish is also found in Elm Spring; although not a threatened or endangered species, it occupies a very sensitive habitat type associated with this spring. The NFH utilizes Elm, McMahon, and Hearrell Springs during various stages throughout the year and could be potentially impacted by Alternate Route 2. Even though the three springs are located on federal land, they would remain vulnerable to chemical pollution from roadway runoff and potential vehicle accidents which would contaminate the hatchery water supply and their stock.

To reiterate the July 26, 1989, letter to the MHTD, the FWS believes that Alternate 1 would be the best alternative for the construction of the proposed Highway 71, provided MHTD consult with the Department of Natural Resources, Division of Geology and Land Survey, Missouri Department of Conservation, and the FWS to delineate known and potential recharge areas of Ben Lassiter Cave and the potential effects siltation and toxic contamination may have on the species that utilize this unique habitat.

Alternate 1 routing should be designed to minimize or eliminate potential impacts to the Ben Lassiter Cave, its recharge area,

and the species associated with this unique habitat. This should be accomplished in close consultation with the FWS office referenced below and should be clearly delineated in the FES.

SUMMARY COMMENTS

The Department of the Interior would offer no objection to Section 4(f) approval of any use of cultural resources for this project providing Alternative 1 is selected for implementation and the final Section 4(f) statement(s) describes satisfactory completion of the Section 4(f) procedures defined above.

As this Department has a direct and continuing interest in the proposed project, we are willing to provide technical assistance in further project planning and development. For technical assistance concerning minimizing impacts on George Washington Carver, please contact the Superintendent, George Washington Carver National Monument, P.O. Box 38, Diamond, Missouri 64840 (telephone 417-325-4151). For technical assistance pertaining to the identification and protection of other cultural resources, please contact the Chief, Cultural Resources, Rocky Mountain Regional Office, National Park Service, as previously referenced. For technical assistance pertaining to the Fish and Wildlife Coordination Act, and the Endangered Species Act, please contact the Field Supervisor, U.S. Fish and Wildlife Service (ES), P.O. Box 1506, Columbia, Missouri 65201 (telephone 314-876-1911 or FTS 276-1911).

Thank you for the opportunity to provide these comments.

Sincerely,

Jonathan P. Deason, Director
Office of Environmental Affairs

Enclosure

cc:
Mr. Wayne Muri
Chief Engineer
Missouri Highway and
Transportation Department
P.O.Box 270
Jefferson City, Missouri 65101 w/c enc.

Mr. Johnny D. Neal
Superintendent
George Washington Carver National Monument
P.O. Box 38
Diamond, Missouri 64840 w/c enc.

Mr. Rodd Wheaton
Chief, Cultural Resources
National Park Service
Rocky Mountain Regional Office
15795 West Alameda Parkway
Lakewood, Colorado 80225-0287 w/c enc.

HNTB
The HNTB Companies

Project Correspondence

To: Jerry Mugg

Date: 02-09-99

From: Dan Van Petten

Subject: **US Fish & Wildlife Service Comments**
Henson Cave, McDonald County, MO
US 71 Corridor Location and EIS
Pineville MO to Bentonville AR
HNTB Project NO. 24456

The US Fish and Wildlife Service, Columbia MO Field Office, was again contacted regarding comments received for the Henson Cave, located on Route 71. The contact person would review the file and get back to us. I had previously faxed the field memo to them. The field inspection of the cave for threatened and endangered species was accomplished under the direction of Gene Gardner, MoDOT Support Service and documented in a field memorandum. The condition of cave due to debris and garbage and apparent periodic reuse as a party site minimizes the potential for the bats reestablishing their colony. Neither the Mississippi nor the Missouri Field Offices provided comments to the DEIS for Route 71. The Regional Office of USFWS did provide comments. Resolution of outstanding comments, especially Henson Cave, previously noted in years past as gray bat cave were pending from USFWS Columbia MO office.

Contacted USFWS project representative, Ms. Kelly Striley Werner, and discussed the issue of bats in Henson Cave. The field memorandum was faxed to Striley Werner for her comments. Striley Werner said she would contact USFWS Vicksburg MS for their comments on the Arkansas portion of the Route 71 Corridor Location and EIS. Comments from the Columbia MO office of USFWS have not been received as of this date.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Columbia Field Office
608 East Cherry Street, Room 200
Columbia, Missouri 65201
Tel: 573/876-1911 Fax: 573/876-1914

IN REPLY REFER TO:

FWS/AES-CMFO

FEB 18 1999

Dan Van Petten
HNTB
1201 Walnut
Kansas City, Missouri 64106

Dear Mr. Van Petten:

This letter is in response to your request for the U.S. Fish and Wildlife Service (Service) to concur with highway construction plans which will affect Henson Cave as outlined in the March 13, 1998, Draft Environmental Impact Statement (DEIS) for U.S. 71 Improvements from Bella Vista, Benton County, Arkansas, to Pineville, McDonald County, Missouri. This response is provided by the Service under the authority of the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.), the National Environmental Policy Act of 1969 (42 U.S.C. 4321-4327), and the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543).

It is our understanding that you are primarily interested in whether the Service concurs with HNTB, as the Federal Highway Administration's non-federal representative, regarding alterations to Henson Cave in McDonald County, Missouri, as a result of the highway project, and whether the impacts will adversely affect the federally-listed endangered gray bat (*Myotis grisescens).*

As stated in the DEIS, all of the "Freeway-build" alternatives will directly affect Henson Cave. This cave historically supported a large maternity colony of gray bats (*Myotis grisescens*). However, it is now considered an abandoned gray bat cave due to previous human disturbance and alteration, and is not recognized as a priority cave habitat for gray or Indiana bats (*Myotis sodalis*). In addition, we understand that a field investigation was conducted in 1996, and no gray bats or sign of maternity colonies were found in Henson Cave. Therefore, we concur with your determination that the "Freeway-build" alternatives will not adversely affect the gray bat in Henson Cave.

While it is stated on page IV-45 of the DEIS that Henson Cave will be directly affected by the "Freeway-build" alternatives, these effects are not identified or discussed. In addition, it is not clear if it is necessary to backfill and cap the entrance to the cave. We recommend that the impacts to Henson Cave be clearly identified and the need to close the entrance be discussed in the final EIS. Filling the entrance should be avoided if possible. Although gray bats will not be adversely affected by the highway project, other bat species may continue to use the cave. Closing the entrance could prevent air exchange and alter the microclimate of the cave, which can adversely affect the cave ecosystem.

Thank you for the opportunity to provide these comments. Please contact Mr. Andy Roberts or Ms. Kelly Srigley Werner of my staff at (573) 876-1911 extensions 110 and 112 respectively if you have further questions or need additional assistance.

Sincerely,

Kelly Srigley Werner

for R. Mark Wilson
Field Supervisor

US 71
Bella Vista to Pineville

VOLUME 3 APRIL 1998

Far West is Preferred Alternative for US 71

After extensive study and review, the location of an improved US 71 between Bella Vista, Arkansas and Pineville, Missouri has been recommended. The proposed new US 71 will bypass the community of Bella Vista on the far western side. Additionally, some more immediate safety improvements have been recommended for the existing route including additional lanes in Missouri and traffic signals and turn lanes in Arkansas.

The recommendation comes after more than a year of extensive traffic and environmental studies, field investigations and public involvement activities. While no single factor was key in the decision, several elements of the far western route made it more attractive than either a near western bypass or improvement of the existing route.

Construction was a central issue. The existing route is the only north-south roadway for most traffic in the area. If updated to a freeway, traffic would be seriously impaired during the many years of construction. An improvement to the existing route would also continue to mix some local trips with higher speed through-traffic – a situation identified by many residents as a source of concern.

Furthermore, even if the existing route were improved to a freeway, it would likely reach its capacity within 20 years and the entire process of finding an improved route would begin again. By choosing a far western bypass route with additional improvements on existing US 71, the Arkansas and Missouri highway departments can begin to ensure that both immediate and future capacity demands will be met, and that more pressing local concerns regarding safety on the existing roadways will be addressed.

Missouri's Perspective

The more immediate safety improvements proposed for existing US 71 in Missouri will provide a four-lane facility from just southwest of Pineville to the state line. While the improvement will not provide a freeway it will provide a facility that better serves local traffic, while the far western bypass will eventually serve through-trips. The safety improvements will be made once funds are available.

In a previous study of US 71 from Carthage to the state line, Missouri Department of Transportation (MoDOT) selected a preferred alternative that would provide a freeway generally along the existing route. The safety improvements recommended for existing US 71 are consistent with that decision in terms of the number of lanes provided (four) and general location of the alignment. The only difference from the previous decision is that from Pineville to the state line, driveways and cross roads will have direct access to US 71. On a freeway, access would be provided only at interchanges.

US 71
Bella Vista to Pineville

Existing Route to See Safety Improvements

The highway departments in Arkansas and Missouri are aware that construction of a new bypass is not foreseen in the immediate future. For that reason, the preferred alternative for US 71 includes some more immediate solutions that would improve safety on the existing route until the long-term bypass improvement can be completed. These improvements focus on safety and consist of some new roadway construction, as well as the addition of traffic signals and turn lanes. The safety improvements will be made once funds are available.

In Missouri, safety improvements would generally consist of providing a four-lane facility along the existing US 71 roadway with varying degrees of access control. These improvements would extend from Route H to the state line and would transition from a freeway type facility just southwest of Pineville (to be consistent with MoDOT's planned improvements to the north), to an expressway facility with limited access for driveways and cross streets, and finally to a five-lane urban arterial facility (as currently exists through Bella Vista) immediately south of Jane to the state line. Within the expressway segment, the improvements would consist of constructing two new travel lanes adjacent to the existing two roadway lanes.

Turn lanes and traffic signals for several existing intersections at major cross streets will be studied and implemented as warranted in both Arkansas and Missouri. Additionally, on some side streets, a separate left turn lane with a through right lane or a separate right turn lane with a through left lane may be necessary. The type of side street configuration needed would be related to the traffic demands at each specific intersection.

DEIS Available

Details about the study, preferred alternative and existing route safety improvements are available in a Draft Environmental Impact Statement (DEIS). The DEIS is the disclosure document for the study that details the known and anticipated impacts of all the different improvement alternatives the study considered.

The DEIS describes the changes the area might experience as a result of a particular highway improvement. In that way, it helps people make well-informed decisions about which improvement alternative they prefer and helps people see the basis on which recommendations are made.

The public is given 45 days to review the DEIS and submit comments. Comments can be given over the telephone, in writing, or at a public hearing (see green box on right.)

The DEIS is available for public review at the following locations:

- McDonald County Public Library
- Pineville City Hall
- Bella Vista Public Library
- Bella Vista Village Property Owners Association
- Bella Vista Townhouse Association
- Bentonville/Bella Vista Chamber of Commerce
- Hiwasse Country Store

To provide your comments about the DEIS, or for other questions or comments about the US 71 study, contact the US 71 Project Office, P.O. Box 1064, Fayetteville, Arkansas 72702, 1-800-315-5422.



A public hearing to gather citizen input on the Draft Environmental Impact Statement will be held on:

Thursday
May 21
3:00 p.m. to 8:00 p.m.
Riordan Hall
Bella Vista

You will receive a postcard meeting notice with additional details.

Q & A about the Environmental Impact Statement

What is an Environmental Impact Statement?

An Environmental Impact Statement (EIS) is a document used to make sound decisions about transportation improvements. It provides in-depth analysis and information and is required by the federal government if federal funds will be involved in building a transportation project.

The purpose of the EIS is to identify the costs, benefits and impacts of building a project. It focuses on the changes anticipated to occur as a result of building and operating the project. In this way, it assists decision-makers and the public to make well-informed judgments about the best course of action.

It is important to note that while the EIS includes information about the natural environment, such as wetlands and endangered species, it also documents impacts to the cultural and social environments as well - things like historical and archaeological sites, family cemetery plots, public recreation lands such as state parks, access to jobs, school, shopping and other services, the local economy, and community cohesion. The EIS serves as the disclosure document that details the known and anticipated impacts of any transportation improvement on all these "environments."

The EIS provides an evaluation of all the reasonable options for achieving the goal of the project. In the case of the US 71 project, the goal is to provide a freeway with fully-controlled access connecting the existing US 71 freeway south of Bella Vista to the improvements planned for US 71 near Pineville, Missouri.

What is a DEIS and a FEIS?

There are two versions of an EIS: the draft version and the final version. A Draft Environmental Impact Statement (DEIS) is the study team's draft of the document which identifies reasonable alternatives and their potential impacts and is shared with the public and reviewing agencies for comment. The DEIS is generally the subject of a public hearing to gather comments in reaction to the document. Those comments are responded to and incorporated in the Final Environmental Impact Statement (FEIS), which identifies the selected alternative. The FEIS goes through another agency review before being approved by the Federal Highway Administration.

Why is the DEIS provided to the public?

The DEIS describes all the ways your community might change as a result of a particular highway improvement. In that way, it helps you make well-informed decisions about which improvement alternative you prefer. Additionally, the DEIS is made public to give you information used by decision makers in choosing a preferred alternative for US 71. This full disclosure helps you see the basis on which decisions are made.

Can I get a copy of the DEIS?

Because the DEIS is a large document that contains a number of specialized exhibits, providing copies on request would be cost and time prohibitive. Therefore, multiple copies of the DEIS are made available at a variety of public locations in the study area. You may make copies of any pages you would like, provided you are viewing the document at a location where copy facilities are available. For the convenience of others, it is requested that the documents not be taken or borrowed from their viewing location.

How and when may I make a comment about the DEIS?

Members of the public will have until June 5, 1998 to review the DEIS and submit comments. You may send your comments to the study team in writing or over the telephone. Additionally, a public hearing will be held on May 21,1998 (see green box on page 2) to collect public input on the DEIS. At the hearing, you may put your comments in writing, or use a professional transcriber who will be available to record your comments. All comments made during the review period will be responded to appropriately and included in the study's official record.

What if I have questions about information in the DEIS?

Questions about information included in the DEIS should be directed to a member of the study team at the address and phone number listed below. The telephone line is answered Monday through Friday from 8:30 a.m. to 5:00 p.m. If you call at other times, you may leave a message and a member of the study team will contact you within 24 hours.

US 71 Project Office
P.O. Box 1064
Fayetteville, AR 72702
1-800-315-5422

What Happens Next?

The DEIS is just the first step in making the recommendation for US 71 become a reality.

After the DEIS review period and public hearing, the study team will gather all the comments submitted by the public and government review agencies, consider the comments, and begin work on the Final Environmental Impact Statement (FEIS).

The FEIS is basically an update of the DEIS which includes the results of any additional evaluations or analyses performed in response to the comments gathered. The FEIS will be made available to the public for review. The Federal Highway Administration (FHWA) will also review the document to ensure that the project complies with all laws and regulations.

When the FEIS is approved by the FHWA, the agency will publish a Record of Decision announcing that the selected alternative can proceed to the next phase of development. Other state and federal environmental approvals are obtained during this time.

Once a Record of Decision has been reached and the proper approvals are obtained, the highway departments may proceed with highway design and will conduct a design public hearing. After the hearing, the departments may begin right-of-way acquisition and construction. Each phase of the process depends heavily on the availability of funding and the priority the project takes among the states' other projects and needs.

The US 71 Study is being conducted by HNTB Corporation on behalf of the Arkansas Highway and Transportation Department, in cooperation with the Missouri Department of Transportation and the Federal Highway Administration.

US 71
Bella Vista to Pineville

US 71 PROJECT OFFICE
P.O. Box 1064
Fayetteville, Arkansas 72702

US 71
Bella Vista to Pineville

VOLUME 1 JULY 1996

Study Begins on US 71

A study has begun to determine the best way of improving or relocating US 71 between Bella Vista, Arkansas and Pineville, Missouri.

The Arkansas Highway and Transportation Department (AHTD), in cooperation with the Missouri Highway and Transportation Department (MHTD) and the Federal Highway Administration (FHWA), has authorized the study which will be conducted by HNTB Corporation of Kansas City, Missouri.

The HNTB study team began working on the study in May, and anticipate the process will take approximately 16 months to complete. The team will arrive at a recommendation for improving or relocating the route only after extensive review of a number of factors including: engineering, traffic, economic development, land use, environmental and cultural.

During the study process, the study team will provide interested residents, groups and government agencies with opportunities to learn more about the study and offer input into the decision-making process.

This public involvement program will include meetings with residents and civic groups, surveys of residents and business interests in the study area, and will culminate in a public hearing.

The first public meeting scheduled for the US 71 study process will take place on **Tuesday, July 9 from 5:00 p.m. to 8:00 p.m. at the Kingsdale Recreation Center (Riordan Hall) in Bella Vista.**

(Continued on page 2)

A New Look at US 71

Improving the US 71 corridor in the Bella Vista area has been the subject of discussion for a number of years. Several possible alternatives have been widely circulated in the community. From the Missouri state line through Pineville to I-44 in Joplin, US 71 has been the subject of a Missouri Highway and Transportation Department study which resulted in a recommended alignment in 1992.

As required by federal regulation, however, the current study will take a fresh look at the corridor on both sides of the state line. It will look at all reasonable options, including improvement of US 71's existing location. It also will gather all relevant information and integrate previous examinations of each side of the state line into a single study which will propose the best solution for the area.

From an engineering standpoint, the study will consider the Ozark topography which limits the number of alternative routes that can reasonably be considered. The numerous caves, sinkholes, wetlands, wildlife areas and historic locations will be considered, as well as man-made features such as residential and commercial developments and recreational facilities.

Additionally, traffic safety will be a prime consideration in selection of the proposed alternative.

By completing this segment of highway, a major regional corridor will be created to better serve the transportation needs of this multi-state area. These travel improvements will further enhance the economic boom in northwest Arkansas while significantly improving transportation for area residents.

Take Part in Shaping Your Community

Finding the best solution for improving or relocating US 71 can't be accomplished without effective public input.

Input from the public will help the US 71 study team understand locally important or sensitive areas within the study corridor. That information will be incorporated in the team's assessment of potential improvement options.

The AHTD, MHTD and HNTB study team encourage the public to become involved in the US 71 study process. If you'd like to get involved, there are a number of options open to you including:

Public Meetings

These meetings are designed to provide residents with a forum for discussing US 71-related issues. Each meeting will include informational displays to help you understand the options being considered for US 71, and study team members will be on hand to answer your questions and hear your comments and concerns.

Questionnaires

The US 71 study team may ask residents and business owners to fill out project questionnaires. The results from these questionnaires will help planners identify the issues and concerns of most importance to the public. All of this information will be evaluated and incorporated into the development of improvement alternatives for US 71.

Corridor Advisory Council (CAC)

An advisory council of area citizens will be assembled to provide guidance to the study. Members of the CAC will represent many localities, organizations, businesses, and interests in the area. The council will be established this summer and will serve as the eyes and ears of the US 71 study - advising about local concerns, conferring with members of the community and helping to build consensus.

Newsletter

This newsletter is also a part of the US 71 public involvement effort. It will be used to inform area residents about the latest developments in the study and the many opportunities for public participation. A series of four newsletters is planned over the 16 month study period.

US 71
Bella Vista to Pineville

Written or Verbal Comments

Comments about the US 71 study can be sent directly to the study team by writing to **US 71 Project Office, P.O. Box 1064, Fayetteville, Arkansas, 72702**, or by calling **1-800-315-5422**.

By taking part in the planning and decision-making process, area residents can take an active role in helping to choose the best location for US 71. This close coordination between the study team and area residents, businesses and local officials will be an essential part of the process.

Study Begins

(Continued from page 1)

At the meeting, study team members will be on hand to answer questions and explain the study process and the criteria by which potential improvement options will be analyzed.

The second meeting will likely be held near the end of the year; the third and final meeting, an official public hearing, will be held in the spring of 1997. The time and location of all public information meetings will be advertised in local newspapers and on local radio stations.

Questions about upcoming public meetings or securing reasonable accommodations for disabled persons should be directed to the **US 71 Project Office, P.O. Box 1064, Fayetteville, Arkansas, 72702**. The Project Office phone number is **800/315-5422**.

The Study Process

The US 71 study began in May and will continue on July 9 with the first of a planned series of three public meetings. At the meeting, the US 71 study team will inform the public of the project and seek input concerning its impact on the community and environment.

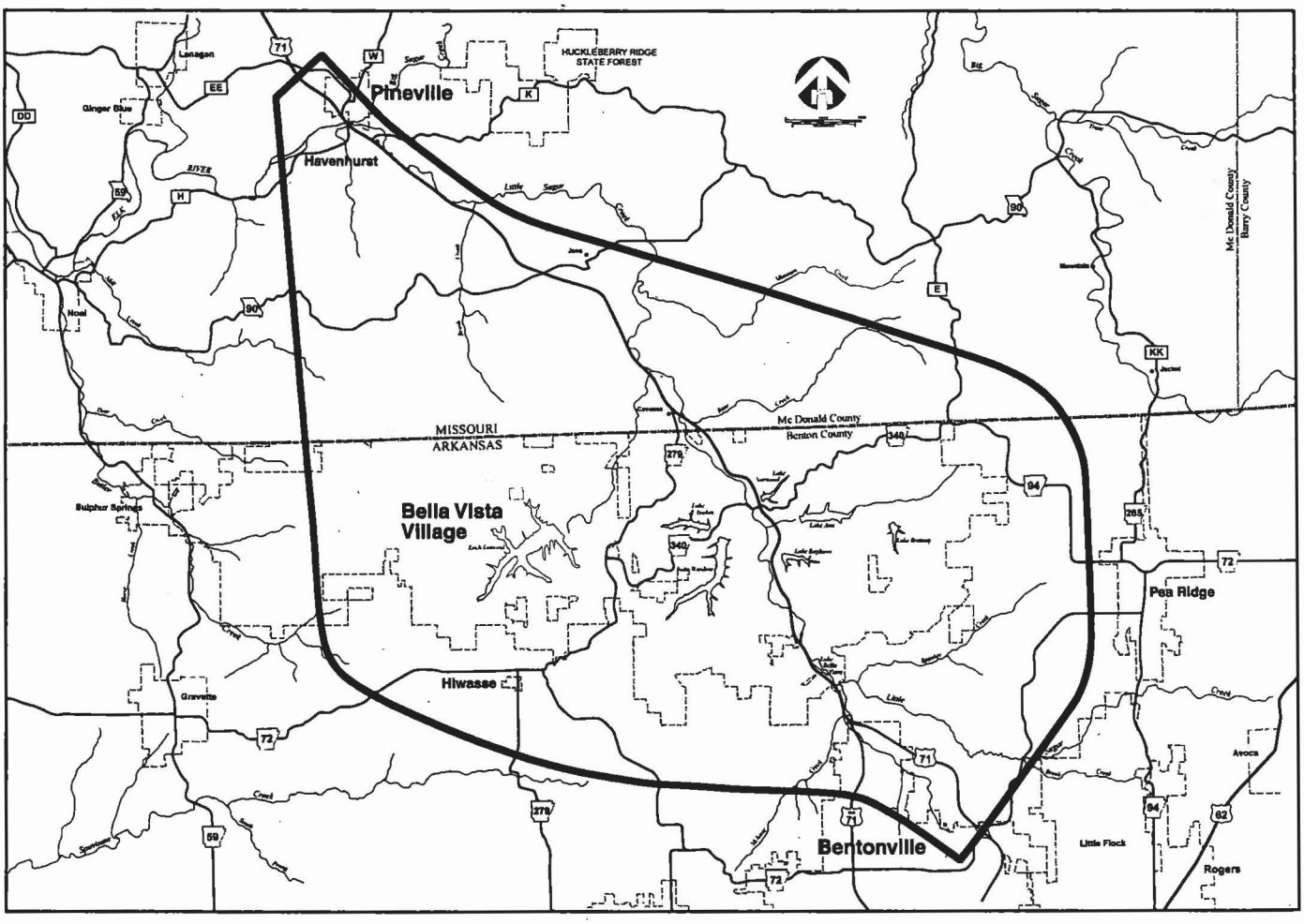
Using this public input, the study team will identify a number of different alternatives for the improvement of US 71. Throughout the summer and fall of 1996, each alternative will be analyzed for its effect on the surrounding area. Near the end of the year, a second public meeting will be held to gather citizen input on the various alternatives.

Over the next several months, taking into account both the results of the study and public input, the study team will evaluate the alternatives and select one "preferred" alternative for the improvement or relocation of US 71.

The analysis and evaluation of the alternatives and a description of the preferred alternative will be compiled in a document called a Draft Environmental Impact Statement (DEIS) which will be available for review by government agencies and the public.

By the spring of 1997, the preferred alternative will be presented for public review at an official public hearing. All comments from the hearing will be considered and incorporated in the Final Environmental Impact Statement (FEIS). If approved by reviewing agencies, the FEIS will serve as the basis for the location of the selected alternative for US 71's improvement.

US 71 Study Area



US 71 Study Team Looks for a Solution

Any highway location and environmental study is a complex project, one that requires the skills of many different groups to find the most effective solution. The US 71 study is no exception.

The Arkansas Highway and Transportation Department has hired Kansas City-based HNTB Corporation, one of the nation's top engineering and environmental consulting firms, to lead the US 71 study team in determining the best way of improving or relocating US 71.

Working with HNTB on the study team are Wilbur Smith Associates of Columbia, South Carolina; McClelland Consulting Engineers and Historic Preservation Associates of Fayetteville, Arkansas; CM Research of Little Rock, Arkansas; Aerial Data Services of Tulsa, Oklahoma; and Ozark Center for Wildlife Research of Reed Springs, Missouri.

How to Contact the Study Team

If you have information or concerns to share with us, or if someone you know would like to receive this newsletter and project information, please contact the US 71 study team at

US 71 PROJECT OFFICE
P.O. Box 1064
Fayetteville, Arkansas 72702
800/315-5422

All comments received will be made part of the official project record.

US71
Bella Vista to Pineville

US 71 PROJECT OFFICE
P.O. Box 1064
Fayetteville, Arkansas 72702

US 71
Bella Vista to Pineville

VOLUME 2 DECEMBER 1996

Options for Improving US 71 Identified, Narrowed

A number of possible ways to improve or relocate US 71 have been developed and further refined. The improvement alternatives are a result of HNTB Corporation's study of US 71, which seeks to find the best way to improve or relocate the route between Bella Vista, Arkansas and Pineville, Missouri.

The study is being conducted on behalf of the Arkansas Highway and Transportation Department, the Missouri Department of Transportation and the Federal Highway Administration. Since May, the HNTB study team has been looking at how potential highway improvements might affect the area's residents and environment.

After a July public meeting, attended by nearly 800 area residents, the study team gathered engineering, traffic and environmental information which resulted in a number of preliminary improvement alternatives. Those alternatives have been considered over the past months and were shared with the public through large maps displayed in several locations in the study corridor.

All of the preliminary alternatives fall within the four corridors previously discussed in the area including: a western bypass around Bella Vista (far west), a near-western bypass through the Village (near west), an improvement to the existing route (existing), and an eastern bypass near Pea Ridge (eastern).

Options Narrowed

While none of the alternatives are perfect, the study team found that some had clear advantages over others.

Alternatives in the far west corridor provide the lowest displacement of homes and businesses,

Continued on p. 2

Local Group Assists in Study

An advisory group of local representatives has been assembled to assist HNTB Corporation in its study of US 71. The Corridor Advisory Council (CAC) consists of a small group of citizens who will help the study team better understand locally important or sensitive issues, and will also provide a communications link to the public at large.

The CAC is currently comprised of representatives from 17 jurisdictions in the study area including: the cities of Anderson, Noel and Pineville, Missouri; the cities of Bentonville, Centerton, Gravette, Hiwasse, Pea Ridge and Sulphur Springs, Arkansas; Bella Vista Village, Arkansas; McDonald County, Missouri; and Benton County, Arkansas.

"CAC members are like ambassadors for the US 71 study," said Scott Smith, project manager for the US 71 study. "By attending meetings and keeping informed, CAC members will serve as a valuable resource to the members of their community, and to the study team."

The Council will meet approximately six times over the course of the study. During those meetings, the group will review study information to find any areas of local importance or sensitivity. They will also advise the team as to how its activities are perceived within the community and suggest how the study's communications activities can be enhanced. The CAC is not a decision-making body.

Continued from p. 1

avoid neighborhood and community impacts by bypassing Bella Vista, avoid potential hazardous waste sites, and cross few streams and potential wetlands. However, compared to the existing highway, the far west alternatives are considerably longer, not as efficient for local traffic patterns, and have high construction, operating and maintenance costs.

Alternatives in the near west corridor would serve the traffic needs of the community and have the advantage of using portions of the existing alignment. They are also shorter in length than alternatives in both the far west and east corridors. However, the near west alternatives potenially displace many homes and businesses, create community division, impact known potential hazardous material sites, and have a high number of potential wetland impacts.

Alternatives in the existing US 71 corridor are the shortest in length and offer the most direct route from north to south. By utilizing the existing infrastructure, alternatives in the existing corridor preserve community cohesion. They also displace comparatively few homes and businesses. However, the alternatives may have some slight impact to Bella Vista golf courses, some changes to local freeway access, potential impacts to wetlands along Little Sugar Creek and impacts to hazardous material sites.

Alternatives in the east corridor avoid neighborhood and community impacts and utilize some of the existing US 71 alignment. However, traffic studies indicate east corridor alignments will not meet the primary purpose of the study: to improve the flow of traffic on existing US 71. In addition, the east corridor alternatives are the longest, most expensive, and least cost-effective. These alternatives would also displace more homes and businesses than the far west alternative. For these reasons, alternatives in the east corridor have been removed from further consideration.

The preliminary and retained alternatives are the subject of a second public information meeting to be held from 2-8 p.m. Monday, December 9 at Riordan Hall in Bella Vista. Study team members will be on hand to answer questions, as well as explain the study process and the criteria used to analyze each improvement alternative. Maps and other visual aids will also be available.

Over the next several months, taking into consideration both the results of detailed study and public input, the study team will select a "preferred" alternative for US 71. A final decision on the selected alternative will not be made until after a formal public hearing, expected to take place in the spring of 1997.

For more information about the improvement alternatives being considered, contact the US 71 Project Office by phone at 1-800-315-5422, or by mail at P.O. Box 1064, Fayetteville, Arkansas 72702.

The map (opposite) displays the four improvement corridors, the preliminary alternatives established within each corridor, and those alternatives retained for further consideration.

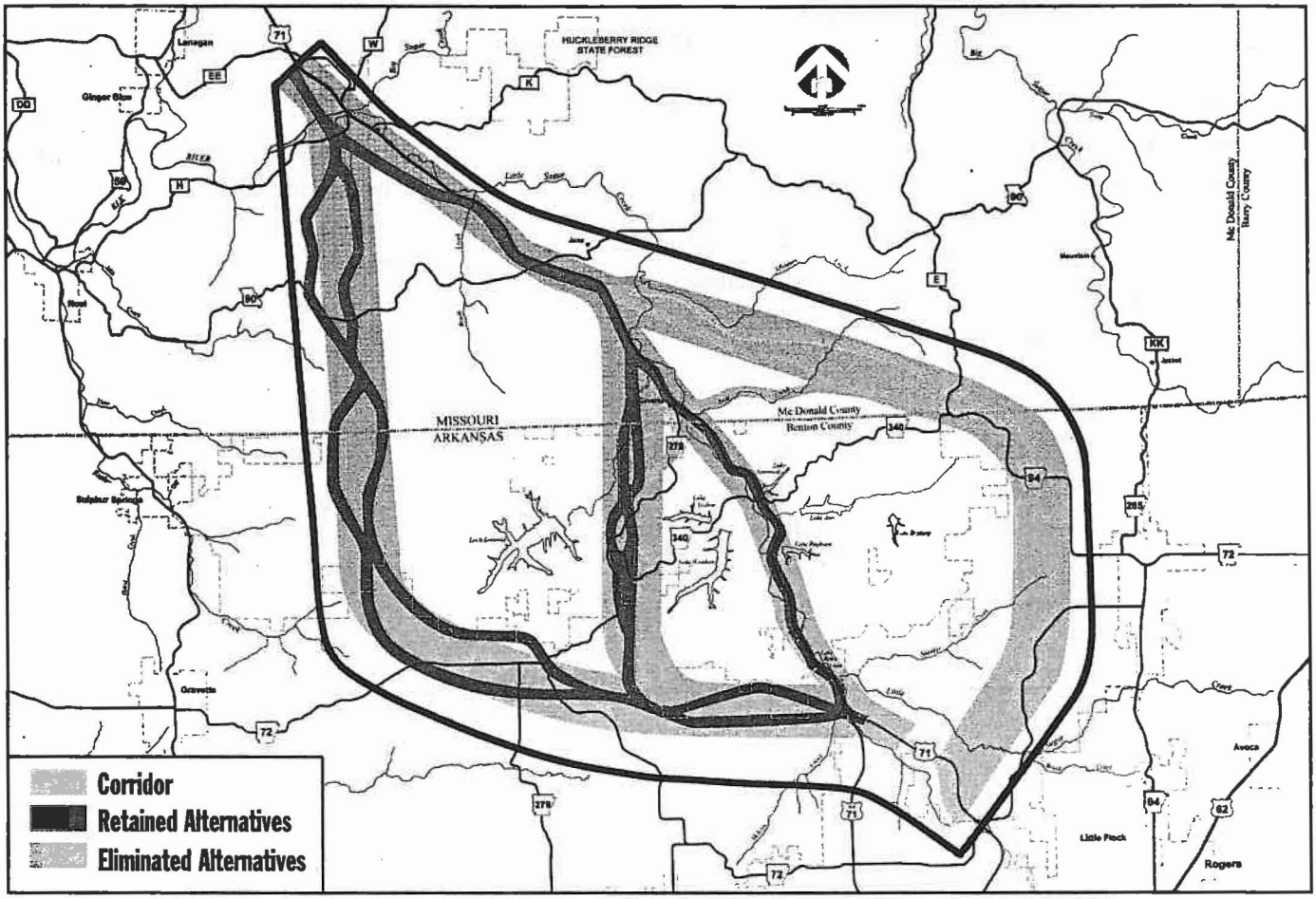
Environmental Impact Statement

Striking a balance between nature and man

In 1969, The National Environmental Policy Act (NEPA) established guidelines for the consideration of the environment in projects like the improvement of US 71. These guidelines mandate finding the best balance between the benefits of an improvement alternative, and the impacts on the environment. Once the most beneficial alternative is chosen, guidelines further mandate that steps be taken to minimize environmental impacts.

As you would expect, some of the environmental factors that must be considered include natural resources like wetlands, designated critical habitats, and threatened or endangered species. But federal regulations also mandate consideration of the man-made or cultural environment — things like historical and archaeological sites,

US 71 PRELIMINARY ALTERNATIVES



family cemetery plots and public recreation lands like state parks. In addition, the US 71 study must evaluate the impacts of any potential change to the highway on social and economic factors like access to jobs, school, shopping and other services, the local economy, and community cohesion.

So while it is the impacts to the natural environment (blind cave fish, for example) that often grab the headlines, there is a wide range of other environmental issues that receive similar attention.

What may be confusing, however, is that all of the considerations listed above are detailed in a document called an Environmental Impact Statement (EIS); the end product of the US 71 study. The EIS serves as the disclosure document that details the known and anticipated impacts of any proposed action on these environments.

The EIS Process

The EIS is shared with the public and various government agencies, and goes through several processes before being finalized. The Draft Environmental Impact Statement (DEIS), which will be made available early next year, will provide details on all of the improvement alternatives considered for US 71. It will also give a description of the study team's recommendation of a preferred alternative for US 71.

The public will have the opportunity to comment on the preferred alternative at a public hearing in the spring of 1997. All comments from the hearing, and responses, will be incorporated in

Continued on p. 4

Continued from p. 3

the Final Environmental Impact Statement (FEIS) which will be submitted to various government agencies for their review and approval. Following approval of the FEIS, the highway and transportation department will be able to consider a schedule for engineering design work, right-of-way acquisition and construction.

If you have questions about the EIS process, or the environmental factors being considered in the US 71 study, please contact our project office. We'll be happy to address your concerns.

For More Information

There are several options open to you for more information about the US 71 study.

- NEWSLETTERS - mailed to those on our mailing list. (If you attended a public meeting or have written or phoned the project office, you are already on the mailing list.)
- VIDEOS - available for viewing or check-out at a variety of locations. The first video explains the study process and goals, the second details the alternatives under consideration for improving or relocating US 71.
- POST OFFICE BOX - to field your questions and comments.

To get your name on our mailing list, receive a list of video locations, or to speak directly to a study team member, contact our project office.

Please direct your comments to:

US 71 PROJECT OFFICE
P.O. Box 1064
Fayetteville, AR 72702

1-800-315-5422

US 71
Bella Vista to Pineville

US 71 PROJECT OFFICE
P.O. Box 1064
Fayetteville, Arkansas 72702

RECORD OF DECISION

Route 71, Jasper, Newton, and McDonald Counties
Interstate 44 to Arkansas State Line
Job No. J7P0427

(FHWA-MO-EIS-90-02-F)

14 SEP 1992
Date of Approval

Kenneth W. Bartlett Env. Specialist
For FHWA Title

Route 71 is planned as a four-lane facility built to interstate standards including a 60-foot median and 10-foot outside shoulders. Fully limited access right of way with a minimum width of 250 feet will be acquired. Additional widths will be required at interchanges, deep cuts, high fills and where service roads or outer roads are to be built. Outer roads and grade separations for county roads and minor state route crossings will be built where necessary. Right of way on major cross roads and minor side roads will be acquired as necessary for construction.

B. Alternates Considered.

Other than the selected alternate, three additional build alternates were considered. Also, a no build alternate was evaluated.

Alternate 2 begins at the I-44/U. S. Route 71 Alternate (71A) interchange south of the city of Carthage, then proceeds south along Route 71A corridor to a point east of Neosho where existing U. S. Route 60/71A curves west, then on relocation south to the Arkansas state line. Alternate 3 connects Alternate 2 to Alternate 1 via Route 60/71A corridor south of the city of Neosho. Alternate 4 connects Alternate 2 to Alternate 1 via relocation just south of Missouri Route D (Newton County) to a point near Kelly Springs north of the city of Anderson. All alternates continue to the Arkansas state line.

The selected alternate is the environmentally preferred alternate. The other alternates impacted specific values to a greater or lesser degree. However, total impacts of each alternate considered, but not selected, are greater than that for the selected alternate. The No Build Alternate would fail to realize benefits of the proposed action such as safety, increased capacity, regional economic development and energy savings in travel over the currently existing facility.

C. Section 4(f).

The selected alternate had no Section 4(f) involvement. Alternate 2 and Alternate 4 cross a designated wildlife refuge at the Neosho School Farm and near public land within the watershed of the springs supplying water to the Neosho Fish Hatchery operated by the U. S. Fish and Wildlife Service. Those alternates would have had an impact on Section 4(f) properties.

D. Measures to Minimize Harm.

All practicable measures to minimize harm have been incorporated into the decision for the selected alternative. Farmland impacts have been addressed by locating the alignment near property lines to reduce farm severance.

The acquisition and relocation program will be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended.

Erosion control measures will be required by job construction specifications to prevent sedimentation. Measures also will be used to prevent pollution caused by construction activities through MHTD's Sediment and Erosion Control Program approved by DNR.

Wetlands have been avoided to the extent possible. The position of the selected alternative has been chosen to minimize impacts to wetlands. To mitigate the loss of wetlands, non-wetland areas adjoining existing wetlands will be purchased and converted to functional wetlands. Final mitigation measures will be decided in coordination with the Corps of Engineers with the assistance of the Environmental Protection Agency, the U. S. Fish and Wildlife Service, and the Missouri Department of Conservation. Resolution is expected prior to completion of the final construction contract near the Arkansas state line in the future.

Floodplain impacts have been reduced by holding right of way requirements to a minimum. Measures such as selective clearing and grading will preserve natural and beneficial floodplain values to the extent possible. Vegetation will be established on disturbed areas.

Historic and archaeological resources which are significant and which may be impacted by the selected alternative are addressed in the Memorandum of Agreement signed by FHWA, the MHTD, and the Missouri State Historic Preservation Officer (SHPO). Unexpected cultural resources discovered during construction are handled by construction specifications; the SHPO will be contacted to assess those resources, if any are discovered.

A Memorandum of Understanding (MOU) addresses possible impacts to the Ozark cavefish, a federally - listed threatened species, and details measures which will be employed to minimize harm to that species. Signatories to the MOU include the U. S. Fish and Wildlife Service, the Federal Highway Administration, the Missouri Department of Conservation, the Missouri Department of Natural Resources, and the Missouri Highway and Transportation Department. The MOU contains nine (9) stipulations including roadway construction on fill material through the recharge area, the collection and

conveyance of runoff out of the recharge area, special ditches continuously parallel to the roadway to convey roadway runoff, systems to handle surface drainage crossing the roadway that are separate from the roadway runoff, the construction of detention basins, use of best management practices, an emergency response plan and appropriate signage. The MOU stipulations will publicize groundwater issues, concern for threatened and endangered species, and prudent practices to preserve both.

E. Monitoring or Enforcement Program.

The MHTD intends to abide by the stipulations of the MOU on the threatened Ozark cavefish and work with the U. S. Fish and Wildlife Service, the Missouri Department of Conservation and the Missouri Department of Natural Resources in an ongoing manner to assure the completion and maintenance of measures through the recharge area of Ben Lassiter Cave.

Mitigation measures for wetland impacts will be completed in coordination with the U. S. Army Corps of Engineers and other agencies through the Section 404 permit process as detailed design continues.

F. Comments on Final EIS.

The Final EIS was approved for circulation on August 3, 1992. It was supplied to the agencies and individuals noted in that document. Comments were requested within 30 days of receipt of that document. The notice of availability of the Final EIS was published in the Federal Register on August 14, 1992. Comments were received from the following entities and written responses are attached.

1. United States Coast Guard (CG).

The CG responded on August 11, 1992 and indicated that no CG jurisdiction was required on waterways within the project area. No CG permits were required.

2. United States Department of Housing and Urban Development (HUD).

HUD responded on behalf of the U. S. Public Health Service on August 25, 1992 and indicated that their concerns had been addressed satisfactorily in the FEIS. HUD had no further comments.

3. United States Army Corps of Engineers (COE).

Staff of the COE contacted the MHTD on August 28, 1992 concerning the "possible wetlands" discussed in the FEIS. Discussion regarded making another field trip to delineate those "possible wetlands". However, the areas that the COE had identified as "possible wetlands" occur south of the corridor where detailed location and design has been decided. The MHTD will coordinate with the COE as project development advances in these areas to address avoidance and/or minimization alternatives relative to any delineated wetlands there. The COE indicated it had no problem with this approach nor the intent of the MHTD to mitigate wetlands impacted from I-44 to Arkansas prior to final construction near the state line. Project development and construction will progress from north to south.

4. U. S. Environmental Protection Agency (EPA).

EPA responded on September 4, 1992 and indicated that concerns expressed on the Draft EIS dated April 16, 1990 were addressed adequately.

However, EPA requested reconsideration of the preferred alternative, indicating consideration of a combination of the east and west route. EPA noted that consideration of Alternate 2 from I-44 south to U. S. Route 60 would reduce a number of impacts and avoid impacts to the Boy Scouts of America Frank Childress Scout Reservation.

Alternate 1, the selected alternate, has been relocated since the Draft EIS was circulated, to reduce impacts to the reservation. This was done in coordination with scouting officials.

The combination of the east and west alternates suggested by EPA has been addressed in the Final EIS as Alternate 3 and Alternate 4. These alternates do avoid the scout reservation, lessen the impact to privately owned property and likely reduce wetland impacts. However, Alternate 1 has lower project costs, homes displaced, tax revenue loss, noise impacts and employee displacement than one or both of these combination alternates. Alternate 4 has Section 4(f) impacts, also.

In weighing all factors, Alternate 1 also ties the established cities of the area together. Traffic studies continue to indicate that a high volume of traffic within the corridor is destined for or originating from Joplin and those other cities. The desires of the traveling public must be considered.

EPA also expressed concern that the Final EIS failed to respond to some of the concerns raised at the March 29, 1990 public hearing and to all written comments presented in the document. FHWA requirements indicate that an appropriate response should be provided to each substantive comment. Not all comments received through the project development process require an individual response. The substantive comments received and responses to them have been incorporated into the text of the Final EIS.

5. Helen Pearman.

On August 31, 1992, Mrs. Helen Pearman of Neosho, Missouri wrote to MHTD to address issues concerning selection of the east alternate (Alternate 2) rather than the west alternate (Alternate 1 - the selected alternate). She noted that the comments at the public hearings favored the east line. As noted in the Final EIS comments of all types were considered by the MHTD and the selection of the alternate also incorporated environmental considerations, information obtained from origin and destination studies, accident records, capacity studies and cost/benefit analyses. Mrs. Pearman also addresses funding of the project. The MHTD had no funding available for the portion of the proposed action south of Anderson to the Arkansas state line until the Missouri State Legislature and the Governor approved a fuel tax increase which became effective in April 1992.

Mrs. Pearman also expressed concern that an interstate through the Ozarks will impact lands, homes, parks, recreational areas and pure air. Her preference, the east alternate, has greater environmental impacts especially to parks, recreational areas and to other areas of pristine habitat than the selected alternate.

6. L. C. Marsh.

Mr. L. C. March of Joplin, Missouri wrote to the MHTD on August 23, 1992 and raised questions about responses to hearing comments and written comments not appearing in the Final EIS. The Final EIS addresses substantive comments within the text of the document. These reflect revisions of or addition to the text of the Draft EIS. Regarding mileage figures, Alternate 1 requires the construction of 42 miles of dual-lane highway as stated on page 8 of the Final EIS. On page 78 of the Final EIS, the mileage given for Alternate 1 (48.7 miles) is the length of travel from a common point.

Near the Arkansas state line, Alternate 1 will have 4800 more vehicles per day than Alternate 2. Also, the lowest traffic projections for these two alternates indicate that Alternate 1 will carry 10,600 more vehicles per day. Construction of Alternate 2 would mean that those persons would not benefit from the new highway and would be using other roadways within the corridor requiring additional construction, maintenance, and operation costs.

The Rangeline Bypass is a separate project with independent utility from the proposed action.

The transcripts of public hearings are not incorporated into Final EIS's by the Federal Highway Administration.

7. Paul Davis.

On August 11, 1992 Mr. Paul Davis wrote to express his views on the Final EIS. Many of Mr. Davis' comments are reiterations of information presented in the Final EIS and his opinions regarding the proposed action. Discussion of the Rangeline Bypass is not germane because that is a project that has independent utility, as does the proposed action. Regarding claims that I-44 will be overloaded with the introduction of U. S. Route 71 traffic between Fidelity and Joplin, this does not stand because the present I-44 facility can handle traffic for at least 5 years at an acceptable level of service. Also the additional fuel tax package has allowed the MHTD to program the addition of 2 lanes on I-44 from Illinois to Oklahoma within 15 years; this includes Mr. Davis' area of concern.

Mr. Davis is concerned with Alternate 1 taking prime farmland; in turn, Mrs. Pearman discussed impacts to pristine areas, which are greatest on Alternate 2. As noted above, many factors play a part in the choice of a preferred alternate. Alternate 1 is the least environmentally damaging alternative and it serves the traveling public best.

Existing U. S. Route 71 will need upgrading between Joplin and Neosho whichever alternate is selected because of the volume of traffic it is projected to carry when the new facility is constructed. Development within this area has continued, further justifying the need for upgrading the roadway, not minor repair work as Mr. Davis states.

The Missouri Department of Conservation (MDC) was contacted regarding reputed Ozark cavefish in the vicinity of Ozark Trout Farm and the Frank Cope property an Alternate 1. Preliminary indications from MDC are that their Heritage Database indicates no such occurrences, but we intend to continue coordination with the MDC as the project develops further.

None of the alternates impact the Pineville archaeological site although Mr. Davis indicates that only Alternate 2 misses it. Predictions of the presence of archaeological sites to be impacted by each alternate are based on sound professional archaeological judgment given cultural and geographical parameters. Prohibition of access to private properties on all proposed alternates affected the coverage of field surveys. All archaeological and historical properties will be addressed with the Missouri State Historic Preservation Officer and the Advisory Council on Historic Preservation.

Mr. Davis notes that the Final EIS contains no responses to comments made at the public hearing or to written letters submitted to the MHTD and FHWA. FHWA requires that an appropriate response be provided to each substantive comment. The Draft EIS was revised to address substantive comments and circulated as the Final EIS. FHWA does not require a response to each comment received.

Other comments regarding the integrity of government employees associated with the proposed action warrant no response.

G. Summary.

The selected alternate is the least environmentally damaging alternative for the proposed action and the one which serves the traveling public most effectively. Written responses to the Final EIS are attached. Table 1 of the Final EIS has been revised to correct errors in the section on relocations and to reflect information presented in the Final EIS; it also is attached.

TABLE 1
SUMMARY OF IMPACTS

	ALTERNATE 1	ALTERNATE 2	ALTERNATE 3	ALTERNATE 4
LENGTH (MILES)	42	40.9	46.7	45.3
CONSTRUCTION COSTS ($) (Millions)	215.9	259.6	239.2	244.3
LAND USE (ACRES) Taken	2,005	1,727	1,762	1,900
RELOCATION				
Families	82	88	142	86
Persons	287	280	458	297
Units	78	71	135	83
Business	18	18	29	23
Employees	93	75	120	116
Nonprofit/Schools	0	0	0	0
ECONOMIC				
Tax Loss ($)	32,300	29,950	49,280	33,870
NOISE IMPACTS				
(receptors $\geq$65dBA)	41	25	44	31
POSSIBLE WETLANDS				
Impacted (acres)	3.30	4.74	2.87	3.59
FLOODPLAIN IMPACTS				
Newton Co. (Linear ft.)	6,000	4,700	4,250	4,700
McDonald Co.(Linear ft.)	8,400	8,400	8,400	8,000
WILD AND SCENIC RIVERS	None	None	None	None
ENDANGERED SPECIES	Mitigated	Possible	Mitigated	Possible
PUBLIC LANDS	None	Yes	None	Yes
KNOWN CULTURAL RESOURCES	Yes	Yes	Yes	Yes
HAZARDOUS WASTE SITES				
Reported (#)				
Impacted	0	0	0	0
Near	0	1	0	0
ENERGY IMPACTS				
Time Savings/Day(hrs)				
(71A/71) Design Year 2009	3486/6384	5298/7605	4152/7168	4857/7755
CONSTRUCTION IMPACTS	No	No	No	No

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
Arkansas Division
700 West Capitol Avenue, Room 3130
Little Rock, AR 72201-3298

April 19, 2000

IN REPLY REFER TO:
Record of Decision
FHWA-AR-EIS-98-01-F
DPR-0051(1)
State Job 009969
U.S. Highway 71
Bella Vista, Arkansas to
Pineville, MO
Benton County, Arkansas
McDonald County, Missouri
HDA-AR

Mr. Dan Flowers, Director
Arkansas State Highway and
Transportation Department
Little Rock, Arkansas

Dear Mr. ~~Flowers~~ Dan:

In accordance with prescribed procedures, the 30 day period since the Final Environmental Impact Statement (FEIS) Notice appeared in the Federal Register has ended. The FEIS Notice was published in the Federal Register on January 7, 2000. All comments received on the subject FEIS were addressed in the Record of Decision (ROD). Therefore, I have signed the ROD which provides approval of project location and major design features. The ROD also documents compliance with the FHWA-NEPA environmental process. The project may now proceed to final design, property acquisition, and project construction as described in 23 CFR 771.113.

C: Ch. Engr.
Asst. Ch. Engr. - Planning
Env.
P&R
Job A File

Sincerely yours,

Kenneth A. Perret
Division Administrator

RECEIVED
APR 21 2000
Programs & Contracts
AHTD

Enclosure

cc:
Mr. Gene Cleckley, SRC Atlanta
Mr. Alan Masuda, Missouri Division
Mr. Henry Hungerbeeler, Missouri DOT
Mr. Fred Skaer, HEPE-1

RECEIVED
APR 20 2000
DIRECTOR'S OFFICE
ARKANSAS STATE HIGHWAY AND
TRANSPORTATION DEPARTMENT

RECORD OF DECISION
FEDERAL HIGHWAY ADMINISTRATION – Arkansas Division

US 71 – Bella Vista to Pineville
Benton County Arkansas and McDonald County Missouri

FHWA-AR-EIS-98-01-F
State Project: 009969
Federal Project: DPR-0051(1)

A. Decision

The Arkansas Highway and Transportation Department (AHTD), Missouri Department of Transportation (MoDOT) and the Federal Highway Administration (FHWA) are proposing to improve US 71 from south of Bella Vista, Arkansas to near Pineville, Missouri. Exhibit 1 shows the location and extent of the US 71 improvements.

Based on environmental and engineering studies, agency coordination and public input, a new freeway facility on new location, that will be located west of existing US 71 was identified as the Selected Alternative in the Final Environmental Impact Statement (FEIS), along with the interim improvements on existing US 71. The Selected Alternative on new location is referred to as the Far West Alternative. The length of the ultimate improvements within the US 71 Study Area measure approximately 30.5 km (19.0 mi.) from Route H in Missouri to the existing US 71/US 71 Business Interchange in Arkansas. Associated with the ultimate improvements, the interim improvements measure approximately 15.3 km (9.5 mi.)

The US 71 ultimate freeway improvements will consist of two traffic lanes in each direction separated by an 18.3-meter (60-foot) depressed median. Full-width, 3.6-meter (12-foot) paved shoulders will be provided on each side of the traveled way. The roadway line and grade will be efficiently adapted to the topography of the area to provide a facility that will be safe, efficient, and aesthetically pleasing. The US 71 interim improvements in Missouri and any permits or mitigation associated with these improvements are supported by the evaluation previously completed for the 1992 MoDOT EIS and Record of Decision.

The US 71 freeway improvements for this study will be consistent with the extent and character of the planned US 71 MoDOT improvements that were defined in a Final EIS completed in 1992 which considered US 71 improvements north of the state line (MoDOT Job Number J7P0427-FHWA-EIS-90-02-F).

The basic purpose of the project is to provide a safe, efficient, environmentally sound and economical transportation facility that responds to the identified needs. The specific needs being addressed by the proposed action are summarized as follows:

- Multi-State Interstate System - Provide a freeway as part of the multi-state, high-priority transportation corridor extending from Shreveport, Louisiana to Kansas City, Missouri, as established in the Intermodal Surface Transportation Efficiency Act (ISTEA).

- Traffic Safety - Reduce the number and severity of traffic-related cashes occurring along US 71 between Bella Vista and Pineville.

- Roadway Design Features - Upgrade current roadway design features in the US 71 Corridor including roadway alignments and roadway cross-sections.

- Movement of People and Goods - Provide for the efficient transport of people and goods through the region by reducing the total hours of travel through the Study Area.

- Local Access – Provide improved local access to the US 71 facility utilizing interchanges and frontage roads wherever needed while providing efficient through service for non-local trips and truck traffic.

- Roadway Capacity – Increase roadway system capacity in accordance with the projected travel demands to improve the general operating conditions of US 71.

- Recreational Activity Access - Facilitate the usage by motorists of nearby regional recreational facilities through improved accessibility.

The Far West Alternative is generally defined as a four-lane freeway relocation improvement of US 71 around the western side of the built-up area of Bella Vista Village with a southern terminus at the US 71/US 71 Business Interchange and a northern terminus at the planned MoDOT freeway improvements southwest of Pineville at Route H. Table 1 presents a general summary of costs of the Selected Alternative. Ultimate construction represents a newly constructed freeway section on new alignment. Interim construction generally consists of upgrading the existing US 71 roadway by providing a four-lane facility with varying degrees of access control during the interim period or until the ultimate improvement is completed. These interim improvements will extend from the connection with the planned four-lane freeway improvement by MoDOT at Route H, southwest of Pineville, to a connection with the existing US 71 roadway at the state line. In Arkansas the interim improvements consist mainly of signal improvements along with minor intersection upgrades to improve safety and operational features.

Table 1
Summary of Costs
"Far West" Preferred Alternative
(US 71 Improvements)

	"Ultimate" Length km (mi.)	"Ultimate" Construction and R.O.W. Cost ($ - M)	"Interim" Construction and R.O.W. Cost ($ - M)	Existing US 71 Widening Cost ($ - M)	Operations and Maintenance Cost ($ - M)[1]	Total Capital Cost ($ - M)
Missouri	8.2 (5.1)	43.6	47.4	0.0	0.9	91.9
Arkansas	22.0(13.7)	83.9	1.0	3.6	3.5	92.0
Total Project	30.2 (18.7)	127.5	48.4	3.6	4.4	183.9

[1]Additional costs for O&M based on 1997-2020 project life and 7% discount rate.
Based on 1996 Unit Costs

The Far West Alternative will meet the project purpose and need more efficiently than the "No-Build" Alternative. In addition to improving traffic safety within the US 71 corridor, the implementation of these improvements will eliminate current roadway deficiencies, relieve traffic congestion, and provide for the efficient movement of people and goods. Therefore, economic development opportunities would be provided for the various communities to build upon and grow. With the freeway improvements, better continuity for the regional highway system would be provided, resulting also in improved access to recreational facilities located near the Study Area.

Additional advantages offered by the Far West Alternative, when compared to other alignment alternatives, are:

- Least adverse construction impacts on traffic during construction,
- Provides measurably better long-term capacity,
- Provides superior travel efficiencies, resulting in reduced crashes,
- Least impact on identified wetlands,
- Least impact on sites of historic or archeological significance,
- Least adverse impacts to high-risk or moderate-risk hazardous waste sites, and
- Most compatible with existing and future community land use plans.

Compared to the other alignment alternatives, the Far West Alternative will meet the project purpose and need most efficiently. Each of the alternatives will equally provide a multi-state Interstate facility, upgrade the US 71 design features, improve the efficiency of the system for the movement of people and goods, and facilitate access to nearby regional recreational activities. However, the Far West Alternative has distinguished itself from the other alternatives because of its superior effectiveness in improving traffic safety and its overall roadway capacity.

B. Summary of Future Actions

As a result of the environmental evaluation of the Far West Alternative, a number of identified actions were found to be necessary during the design development and construction phases of the project. The following is a list of these actions:

- Continue coordination with the Bentonville/Bella Vista Trailblazers Association, Inc. during design development and construction to coordinate the planning of a pedestrian/ bicycle trail that will connect the two communities of Bentonville and Bella Vista with the US 71 improvements.

- Coordinate the design development and construction activities with the US Fish & Wildlife Service.

- Continue coordination of mitigation measures for impacts to the surrounding environment which address environmental and social impacts including:

    - Continued consideration of reducing noise levels associated with the "New Home" Church and the Highlands Golf Course as part of the design development phase of the project.

    - Continued refinement to the highway final alignment within the evaluated corridor to avoid impacts. During design development,

alignment refinements will be investigated so that impacts to existing water resources in the vicinity of McKisic Creek will be minimized. In an attempt to minimize the proximal impacts to residences located within the Highlands, alignment refinements will be investigated during the design development phase of the project. Refinements to the final alignment will be investigated during design development to avoid impacts to Wetland B-3a.

- Continue investigation of residential displacements during design development.

- Continue coordination of the Section 404 Permits for compliance with the provisions of the Clean Water Act. Coordination with the US Army Corps of Engineers (USACE) as part of design development activities will entail fulfillment of the requirements of the permits.

- Continue coordination with Missouri Department of Natural Resources (MDNR) and Arkansas Department of Environmental Quality to ensure that a proper construction water pollution control program is implemented during the design development and construction phases of the project.

    - Make sure "State of the Art" Erosion Protection Plans are followed with proper inspection and maintenance.

    - Identify and monitor any wells that will be impacted by the alignment.

    - Ensure that "Best Management Practices" are being used by contractors during design and construction.

- Continue coordination with Missouri Department of Natural Resources (MDNR), in Missouri, to ensure that a proper construction water pollution control program is implemented during the design development and construction phases of the project. This includes ensuring that Stream Channel Modification Guidelines are followed when modifying channels or relocating streams.

- Develop a "Construction Management Plan" for the improvements through the Bella Vista Community, as part of detailed design.

- Continue coordination with Missouri Speleological Survey (MSS) or Arkansas Association of Cave Studies (AACS) to document any new caves discovered during final design or construction.

C. Alternatives Considered

In compliance with federal regulations requiring the consideration of all reasonable alternatives, a full set of improvement alternatives was considered for US 71. The alternatives were defined in accordance with the needs of the Study Area and traffic considerations.

1. OVERVIEW OF IMPROVEMENT CONCEPTS

The following types of improvement concepts were considered:

- **"No-Build" Concept** - This concept consists of maintaining the existing roadway system plus any committed street and highway improvements within the Study Area. Committed improvements include Transportation System Management (TSM) measures applied to the existing US 71 roadway. This concept provides a basis of comparison for the determination of the benefits and adverse impacts of the other improvement alternatives.

- **Non-Freeway Improvement to Existing Roadway Concept** - This concept will involve retrofitting the existing US 71 roadway to the fullest extent reasonable to meet future travel demands and safety needs. This concept will not provide a freeway improvement. These retrofits will entail a combination of roadway widening, improved access control and TSM improvements. Because this concept will not provide a freeway improvement, it would not comply with the high-priority corridor Interstate standard. Consequently, this concept was not considered further.

- **"Freeway-Build" Concept** - This concept will involve the construction of a freeway facility either on new location or along the existing US 71 alignment. Based on current land use and the built-up environment of the Bella Vista area, several preliminary corridors have been identified – Far West, Near West, Existing and East. Exhibit S-2 in the FEIS, shows the locations of the Study Corridors.

- **Other Concepts** - Public transportation alternatives, such as bus systems and rail transit, were considered as multi-modal options to the roadway alternatives. Due to the lack of land use and population densities and due to the highly dispersed trip origin/destination distributions of the Study Area, public transportation alternatives were not considered a reasonable alternative to the proposed action.

2. PRELIMINARY "FREEWAY-BUILD" STUDY CORRIDORS

For the US 71 project, four preliminary 1,600 meter-wide (one mile-wide) Study Corridors were identified – Far West Corridor, Near West Corridor, Existing Corridor and East Corridor. The locations of these corridors were defined to minimize the potential adverse impacts to the built environment, to minimize the length of the freeway improvements, and to provide the most direct connections to the existing US 71 bypass east of Bentonville and the planned MoDOT improvements to the north. For further details of the previously planned MoDOT improvements north of Route H, please refer to the FEIS, Appendix L, Record of Decision.

For the purpose of identifying the corridors that are reasonable and meet the stated purpose and need for the proposed action, a preliminary assessment, evaluation, and screening were conducted. The goals of this screening were to eliminate from further consideration those corridors with any "fatal flaws" or those that wouldn't comply with the stated purpose and need of the project. Based on a total-project assessment of the Study Corridors' potential impacts on the social, environmental and engineering/traffic issues of the Study Area, it was determined that the East Corridor would not accomplish the goals of the project, primarily relating to traffic. Consequently, freeway improvements within the East Corridor were not considered further. No "fatal flaws" were identified in the other Study Corridors.

3. SUMMARY OF REASONABLE ALTERNATIVES

Based on the stated purpose and need for the proposed action, alternative alignments within the Far West, Near West, and Existing Corridors were identified and evaluated. Based on the assessment of the potential social, economic and environmental consequences of the competing alternative alignments, in combination with input provided by the community involvement process, a Selected Alternative for the US 71 improvements was identified. As part of this evaluation process, a wide range of alternative actions (potential alternatives) was initially considered in order to provide the basis for determining the reasonable alternatives. Exhibit 2 illustrates the wide range of alternatives within each corridor for the US 71 Corridor Study. In accordance with the preliminary screening of the "Freeway-Build" Study Corridors, the following group of reasonable alternatives was defined within each remaining preliminary corridor, and then evaluated:

- "No-Build" Alternative
- "Freeway-Build" Alternative
  - Freeway Alternatives Within the **Far West Corridor**
  - Freeway Alternatives Within the **Near West Corridor**
  - Freeway Alternatives Within the **Existing Corridor**

Due to the need to provide short-term improvements to the existing US 71 roadway for safety considerations, AHTD and MoDOT agreed that both interim and ultimate improvements should be defined for each corridor. The interim improvements consists of short-term investments to address the safety and capacity concerns of US 71 until the ultimate freeway improvements can be constructed throughout the entire Study Area. For the Near West and Existing Alternatives, the interim improvements represent a staging of the ultimate freeway improvements such that little or no additional construction would be necessary. Table 2 summarizes the extent of the interim improvements and provides a description of the improvements for each of the "Freeway-Build" Alternatives. Exhibit 3 represents the best alternative within each of the "Freeway-Build" Alternative Corridors.

Table 2
Summary Descriptions of Interim and Ultimate Improvements
"Freeway-Build" Alternatives

Far West Alternative
• **Ultimate Freeway Improvements** – Construct a four-lane freeway on new location extending from a connection with the planned MoDOT improvements at Route H located southwest of Pineville to the existing US 71/US 71B Interchange south of Bella Vista on an alignment around the western edge of Bella Vista.
• **Short-Term (Interim) Improvements** – Construct a combination of four-lane expressway and five-lane urban arterial improvements from a connection with the planned MoDOT improvements at Route H to a connection with existing US 71 at the state line on an alignment concurrent with the existing US 71 roadway. Roadway approach and signal improvements would be provided at several existing intersections in Arkansas and Missouri, as warranted. The combination four-lane expressway and five-lane urban arterial improvements along the existing US 71 Corridor would be additional to the ultimate improvements.
Near West Alternative
• **Ultimate Freeway Improvements** - Construct a four-lane freeway extending from a connection with the planned MoDOT improvements at Route H located southwest of Pineville to the existing US 71/US 71B Interchange south of Bella Vista on an alignment along existing US 71 in Missouri and through the west-central area of Bella Vista in Arkansas. Roadway approach and signal improvements would be provided at several existing intersections in Arkansas and Missouri.

- **Short-Term (Interim) Improvements** - Construct the four-lane ultimate freeway improvements in Missouri from Route H to a point just north of the state line at which the ultimate freeway improvements diverge from the existing US 71 Corridor, and construct a four-lane improvement from this point to a connection with the existing US 71 roadway at the state line. Roadway approach and signal improvements would be provided at several existing intersections in Arkansas and Missouri, as warranted. The four-lane improvements from the divergence point (3.6 km north of the state line) to the state line would be additional to the ultimate improvements.

Existing Alternative

- **Ultimate Freeway Improvements** - Construct a four-lane freeway extending from a connection with the planned MoDOT improvements at Route H located southwest of Pineville to the existing US 71/US 71B Interchange south of Bella Vista on an alignment along the existing US 71 Corridor.
- **Short-Term (Interim) Improvements** - Construct the four-lane ultimate freeway improvements in Missouri from Route H to a connection with the existing US 71 roadway at the state line. Roadway approach and signal improvements would be provided at several existing intersections in Arkansas and Missouri, as warranted. No additional construction would be required.

For each of the "Freeway-Build" Alternatives, the interim improvements are consistent with the Selected Alternative from the MoDOT Final EIS (MoDOT Job Number J7P0427-FHWA-EIS-90-02-F). As such, commitments for the continued study and mitigation of adverse impacts from the interim improvements in Missouri will be fulfilled in compliance with and under the auspices of the documented MoDOT Final EIS and ROD. However, though the adverse impacts of the interim improvements are adjudicated by the previous MoDOT EIS, the total, cumulative impacts of the combined interim and ultimate improvements have been evaluated in this EIS.

Table 3 presents a summary of the Environmental and Social-Economic impacts that were quantified for the comparison of the Selected Alternative (i.e., Far West Alternative) versus the other reasonable "Freeway-Build" Alternatives. The data shown in the table reflect the total impacts of the alternatives including the ultimate improvements and the short-term improvements necessary for the interim construction.

Table 3
Summary of Social, Economic and Environmental Factors
Selected Alternative: Far West Alternative

EVALUATION FACTOR	UNITS	FAR WEST	NEAR WEST	EXISTING
ENVIRONMENTAL				
Parkland	Type / Number	0 / 0	0 / 0	0 / 0
Waters of the U.S.				
Special Aquatic Sites:	Number / Hectares	0 / 0.00	1 / 0.01	1 / 0.01
Regulated Ponds:	Number / Hectares	0 / 0.00	2 / 0.17	2 / 0.17
Streams (Culverted):	Number / Hectares	4 / 0.34	5 / 0.37	5 / 0.33
Streams (Bridged):	Number / Hectares	8 / 0.95	5 / 0.83	8 / 0.98

EVALUATION FACTOR	UNITS	FAR WEST	NEAR WEST	EXISTING
Floodplain (100 Year)	Hectares	15.7	11.7	15.5
Floodplain Crossings	Meters	2,465	1,220	1220
Threatened and Endangered Species	Number	0	0	0
Natural Community Impacts				
Dry Limestone-Dolomite Forest	Hectares	11.0	30.7	19.7
Dry Mesic Limestone-Dolomite Forest	Hectares	200.2	142.9	36.7
Dry Mesic Bottomland Forest	Hectares	0.6	0.0	0.0
Woodlot	Hectares	26.1	0.0	0.0
Unimproved Pasture	Hectares	167.7	124.9	78.1
Habitat Fragmentation	Number(2)	1	1	0
Prime Farmlands	Hectares	21.36	14.4	9.74
Statewide Important Farmland	Hectares	55.65	31.44	17.63
Visual and Aesthetic Considerations	Rating(1)	3	3	4
Air Quality	Rating(1)	4	4	4
Cultural Resources				
Predictive Archeological Sites (Impact Probability)	Rating(1)	3	3	4
Previously Recorded Archeological Sites	Number	8	8	13
Historic Sites	Number	0	0	0
Architectural Sites	Number	5	4	1
Hazardous Waste Sites				
High Risk	Number	0	0	1
Moderate Risk	Number	0	2	3
Low Risk	Number	2	2	1
Natural Features and Caves	Number	1	3	2
SOCIAL AND ECONOMIC				
Impacts to Existing Structures (Relocations)				
Residential				
House	Number	15	26	12
Mobile Home	Number	4	7	3
Business				
General	Number	2	8	15
Poultry	Number	0	0	0
Public Use	Number	0	1	3
Noise Impacts (2020)				
NAC Receptors	Number	11	44	122
Additional "Substantial" Increase Receptors	Number	58	77	15
Total NAC Receptors Along Existing US 71	Number	146	110	319
Compatibility w/ Current Land Use/Master Plan	Rating	4	1	3
Adverse Construction Impacts to Businesses	Rating	5	5	1
Economic Considerations				
Highway User Cost Savings	Dollars (Million)	113.6	92	143.5
O&M Costs	Dollars (Million)	4.2	4.9	2.4
Environmental Justice	Rating(1)	4	4	4

Notes:

(1) Rating Scale

5 - Excellent (High), 4 - Good (Medium/High), 3 - Fair (Medium), 2 - Marginally Poor (Low/Medium), 1 - Poor (Low)

(2) Number of 202 Hectare Forest Blocks (500 Acre Forest Blocks)

4. SELECTED ALTERNATIVE

The identification of the Selected Alternative is based on three primary considerations -- the effectiveness of the alternatives in accomplishing the goals of the proposed action (i.e. Purpose and Need), the comparison of the alternatives' overall impacts and benefits, and input from the public and review agencies, including the public hearing. Based on these three considerations, **the Far West Alternative is the Selected Alternative** for the US 71 improvements between Bella Vista, Arkansas and Pineville, Missouri (see Exhibit 4).

The process of evaluating the improvement alternatives involves a balancing of the benefit/impact tradeoffs with regard to the engineering, traffic, environmental and social considerations, with the concerns and interests of the commenting public and review agencies. Particular issues and concerns may be important to some, but may in fact conflict with the concerns of others. It is therefore the overall total-project comparison of the "Freeway-Build" Alternatives which helps guide the selection of the best alternative.

Each of the alternatives has varying degrees of adverse impacts and benefits, and for a number of the impact issues, none of the alternatives differentiate themselves (see Table 3). Considering solely the potential impacts to the natural environment, as shown in Table 3, the Existing Alternative could be considered the environmentally preferred alternative since it would be the least environmentally damaging alternative for some issues. But from an overall perspective, the Far West Alternative presents the best alignment based on the overall comparison of the benefits and adverse impacts. As shown in Table 4, there are several issues which support the Far West Alternative as the Selected Alternative. From engineering, traffic and social/economic perspectives, the Far West Alternative would best meet the needs of the Study Area while minimizing long-term construction costs and overall adverse impacts. Furthermore, the Far West Alternative is most consistent with the community's values as expressed and articulated though the study's public involvement program. Further detail of these issues is provided in the FEIS in the Summary, Section E, Selected Alternative.

TABLE 4
REASONABLE "FREEWAY-BUILD"ALTERNATIVES
OVERALL IMPACT COMPARISON SUMMARY

Major Categories (Evaluation Factors)	Far West	Near West	Existing	Distinguishing Factors or Issues
• Engineering	+	+	-	✓ Long-range Costs ✓ Maintenance of Traffic
• Traffic	++		-	✓ Safety (Traffic Mix) ✓ Long-term Corridor Capacity ✓ Incident Management ✓ Crash Reduction
• Environmental	-		+	✓ MoDOT EIS/ROD ✓ Secondary Impacts ✓ Waters of the U.S.
• Social/Economic	++	--	-	✓ Adverse Impacts to Businesses During Construction ✓ Impacts to Existing Structures (Relocations) ✓ Noise Impacts ✓ Compatibility with Current Land Use/Master Plan

Rating Scale:
++ Benefits >> Adverse Impacts
+ Benefits > Adverse Impacts
Benefits = Adverse Impacts
- Benefits < Adverse Impacts
-- Benefits << Adverse Impacts

D. Section 4(f)

After extensive studies and coordination with Missouri Department of Natural Resources (MDNR) and the Arkansas State Historic Preservation Officer (SHPO) of the possible impacts to both public lands and architectural and cultural resources potentially eligible for the National Register of Historic Places, it was found that no Section 4(f) sites or properties will be impacted by construction of the US 71 improvement.

E. Measures to Minimize Harm

All practical measures to minimize harm have been incorporated into the identification of the Selected Alternative. All such minimization measures that were considered in determination of the Selected Alternative will be incorporated into all appropriate construction specifications and contracts.

Land Use Impacts

Nearly one-tenth of Bella Vista Village is unplatted and lies generally west of the Far West Corridor. The Selected Alternative for the US 71 improvements will be very compatible with Bella Vista's general development plan. Considering the general development plan of Bella Vista, constructing this alternative provides the opportunity to open the western portion of the Bella Vista development. Opening up the western portion of the Bella Vista for new platting before the existing areas mature more fully, and assuming current levels of development, would have the net effect of spreading public and private investments over a much greater area. This would have the potential to generate a higher level of development in the area as a whole.

Farmland Impacts

Throughout the alignment selection process, a major consideration was the minimization of farmstead severance. Alignments were located adjacent to property lines as much as possible and diagonal crossings of cultivated fields were avoided. Frontage roads will be constructed as needed to maintain access to private property. Due to the access control criteria property owners that desire to cross the new facility will incur some adverse travel distance. By location of the Selected Alternative adjacent to established transportation corridors, impacts to prime farmland has been minimized.

Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* was the result of a recognition that some Federal Actions were having a disproportional adverse effect on certain designated population segments. The implementation of Executive Order 12898 was accomplished through the development of demographic baseline conditions within the affected environment and through the consideration of social impacts. The baseline demographic analysis is discussed in the FEIS, Chapter III, Section A. This analysis showed that minority populations, as well as low-income individuals and families, are virtually absent from the Study Area. As a result, impacts to minority populations, and low income individuals and families was minimized by alignment adjustments and modifications. The adverse impact of the El Toro Restaurant was unavoidable due to its close proximity to the US 71/ US 71B Interchange improvements.

Relocation Impacts

Property that is required for the construction of US 71 improvements will be subject to the provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (42 U.S. C. 4601). This program provides that no person will have to move from their dwelling until they are provided comparable replacement housing that is within their financial means. Similar to the relocation procedures for residences, AHTD and MoDOT will utilize all possible sources of funding or other sources that may be available to businesses. Details of the program which covers process, benefits, and rights are discussed in the FEIS in Chapter IV, Environmental Consequences, Section E, Relocation Impacts.

Air Quality Impacts

During construction of any of the "Freeway-Build" Alternatives, all materials resulting from the clearing, grubbing, demolition or other operations will be removed from the project, burned or otherwise disposed of by the contractor. Any batch plant operations, clearing and grubbing functions, or debris burning will be performed in accordance with MoDOT and AHTD regulations and procedures. Detailed air quality studies were limited to a regional pollutant burden analysis as the present year as well as the design year average daily traffic volumes were well below the minimum thresholds. Regional emissions of HC, CO and NOx can be expected to be reduced for any "Freeway-Build" alternative, when compared to the "No-Build" condition.

Noise Impacts

The number of NAC noise receptors near the Far West Alternative is estimated to be 11 for the Selected Alternative (i.e., Far West Alternative). The number of noise receptors that would hear a "substantial" increase is estimated to be 58 (refer FEIS, Table IV-15). As before, these receptors include both existing and known planned receptors.

The Far West Alternative will reduce the volume of traffic on existing US 71, therefore a beneficiary reduction in the number of NAC noise receptors near the existing US 71 alignment would occur. It is estimated that there would be 149 fewer receptors than with the 2020 "No-Build" Alternative, (refer FEIS, Table IV-16).

Water Quality, Geology and Cave Impacts

MoDOT, in coordination with MDNR, and AHTD have developed a construction water pollution control program to protect the adjacent environment from sedimentation and construction pollutants discharged from construction activities. These procedures and specifications are utilized during preliminary design, final design and construction. Both, MoDOT and AHTD are committed to assuring that "Best Management Practices" or BMP's are implemented.

For the "Freeway-Build" Alternatives, the roadway alignments have been defined to avoid, to the fullest extent possible, any known caves. The Selected Alternative (i.e., Far West Alternative) avoids all known caves within the Study Area. However, during mass excavations in the St. Joe Formation for the construction of the improvements, it is likely that other caves of unknown magnitude could be discovered. If during final design or construction additional caves are located, coordination with Missouri Speleological Survey (MSS) or Arkansas Association of Cave Studies (AACS) will be provided and will utilize a process of evaluation, minimization of impacts, and mitigation as necessary.

Wetlands and "Waters of the US"

The Selected Alternative for the US 71 improvements will impact one jurisdictional wetland area (Site B-3a from the Summary Report, as also shown on Plate FW4 of the FEIS, in Appendix C). It is an "emergent" wetland area covering 0.04 hectares (0.10 acres). There would be no regulated ponds impacted by the Selected Alternative. Five (5) regulated streams would be bridged, and 17 regulated streams would be culverted resulting in total impacts of 1940.8-meters (6,367-foot) of channel including 0.44 hectares (1.08 acres) of Waters of the U.S. within the Ordinary High Water Mark (OHWM).

MoDOT and AHTD are committed to the study of the avoidance of potential impacts to wetlands or other Waters of the U.S. during the design phase of this project. Each resource will be individually examined and the construction limits of the roadway improvements will be reevaluated to see if the wetlands resource can reasonably be avoided. When impacts are unavoidable, they will be minimized and the impacted wetlands resource will be mitigated and enhanced to the extent practical to achieve a "no net loss" of wetland surface area.

The US Army Corps of Engineers has authorized the construction of the Far West Alternative pursuant to the requirements of the Department of the Army Nationwide Permit No. 14 (Nationwide Permit No. 13862) for McDonald County and Department of the Army General Permit GB (General Permit No. 13862) for Benton County. Copies of these permits are included in FEIS, Appendix E. Subsequent design development and construction activities for the Far West Alternative ultimate improvements will need to be performed in accordance with these permits.

For the interim improvements in Missouri (i.e. improvements along the existing US 71 Corridor in Missouri), the Section 404 permit prepared in association with the 1992 Final EIS (FHWA-EIS-90-02-F) by MoDOT will govern the compliance of Section 404.

Water Body Modifications and Wildlife Impacts

The location of the Selected Alternative (i.e., Far West Alternative) will fragment one 200 hectare (500 acre) block, and seventeen 16 hectare (40 acre) blocks of upland forest. Also, the Far West alternative would impact 2.45 hectares (6.0 acres) of riparian forest.

The Selected Alternative would cross 12 streams impacting 1.43 hectares (3.43 acres) and would impact 19 ponds totaling 2.32 hectares (5.77 acres).

Minimizing habitat fragmentation is one of the considerations of the alternative evaluation process. Other potential remedies include tree replacement programs, bridging streams rather than installing culverts, and installing artificial wildlife corridors where such corridors can be shown to be effective for reducing mortality in existing wildlife populations. Commitments have been made as part of the Section 404 Permits regarding the clear spanning with bridges or the construction of drainage culverts for stream crossings. Specific commitments for tree replacement and the installation of wildlife corridors are not included with the project beyond the standard provisions or procedures of MoDOT and AHTD regarding these particular issues.

Floodplain Impacts

In defining the roadway alignments for the "Freeway-Build" Alternatives, all practical care was taken to minimize impacts to floodplains. Generally, the roadway grade of the "Freeway-Build" Alternatives will be set above the predicted 100-year flood levels and opportunities to

incorporate remedial measures into the facility would be possible. Bridge and roadway design will be consistent with local, state and federal water resources and floodplain management programs. Though construction will be required in some unavoidable floodplain areas, impacts to base flood elevations will be in compliance with National Flood Insurance Program (NFIP) regulations.

Impacts to Terrestrial Communities

Although alignment alternatives within each Study Corridor attempted to avoid all of the endangered, threatened, and rare species sites, the interim improvements of the Far West Alternative, (EX/NWB1), in McDonald County directly impact Site #71 (Henson Cave) of the Missouri Natural Features Inventory. Prior to the investigation completed in 1996, the issue of impacts to Henson Cave was addressed by MoDOT's EIS for US 71 (I-44 to State Line). Coordination with the U.S. Department of Interior (USDOI) was completed as part of this earlier EIS, including issues relating to caves, water quality, and threatened and endangered species impacts. USDOI offered no comments regarding Henson Cave in its review of the earlier EIS. The Record of Decision for the US-71 improvements (I-44 to State Line) was executed on September 14, 1992, and authorized MoDOT to proceed with design development. It was determined that there were no impacts to Henson Cave, thus measures to minimize harm were not required.

Henson Cave is listed as an endangered animal site providing habitat for the Gray Bat (*Myotis grisescens*). The Gray Bat is federally listed as endangered, and listed in Missouri as undetermined. However, a 1996 investigation by Project Team ecologists found that no bats were present in Henson Cave, mainly due to previous human intrusion. In a memorandum dated August 5, 1996 (see FEIS, Appendix J), the Project Team's Biological Specialist stated that "The cave should continue to be considered an abandoned gray bat cave and will undoubtedly remain unsuitable as maternity habitat for the gray bat, given the high level of human disturbance.

Historic and Archeological Preservation

In accordance with AHTD procedures and the MoDOT Protocol for Cultural Resources "Investigations Associated with Environmental Assessment or Environmental Impact Statements", those cultural resources affected by any of the US 71 improvement alternatives have been identified. These resources have been considered based on the various investigations – archaeological, architectural, historical bridges, and historical sites.

- ***Results of Determination of Effect*** – Potential impacts to several of these sites were eliminated due to the selection of the best alternative alignment within each Study Corridor, and then by the selection of the Far West Alternative as the Selected Alternative. Consequently, the Selected Alternative (i.e., Far West Alternative) will not directly impact any NRHP-eligible architectural structures. Furthermore, it was determined by the Arkansas SHPO after the issuance of the Draft EIS that none of the potentially NRHP-eligible structures in the vicinity of the Far West Alternative will be adversely affected by the project. No additional work is required regarding architectural resources in Missouri or Arkansas for the Far West Alternative. Documentation to this effect is included in the FEIS, Appendix I.

  The Selected Alternative will not impact any known archeological sites in Arkansas. Similarly in Missouri, the ultimate improvements for the Far West Alternative will also

not impact any known archeological sites. However, the interim improvements impact seven known sites along the existing US 71 roadway. The mitigation of these impacts will be governed by the MOA executed as part of the US 71 EIS (I-44 to state line) completed by MoDOT.

The AR-SHPO concurred that the Selected Alternative will have no adverse effect on resource BE2177 (New Home Church) listed in the NRHP or the structures determined eligible for listing in the NRHP (review letter dated 1 December 1998, see FEIS, Appendix I). Though mitigation measures are not required for the New Home Church, pursuant to the findings of the AR-SHPO, AHTD is committed to the continued consideration of design refinements to the Far West Alternative during the design phase to minimize the effects of the US 71 improvements on the church site.

- ***Results of the Phase II Investigations*** - Phase I field investigations of archeological, bridge and historic sites along the Far West Alternative, in accordance with AR-SHPO and MoDOT protocol, have been completed and reports submitted for review by the AR-SHPO and MO-SHPO. Each review concurred that, with the exception of a Phase II assessment program for the prehistoric site recorded as 3BE634, no further archeological, bridge or historic site investigations are necessary or required (AR-SHPO review letter dated January 14, 1999 and MO-SHPO letter dated December 11, 1998, see FEIS, Appendix I). Following the selection of the Far West Alternative as the Selected Alternative, a Phase II assessment was conducted at 3BE634 and the AR-SHPO has determined that no further work is necessary at this site (FEIS, Appendix I). Investigations of archeological, bridge and historic sites along the interim improvements for the Far West Alternative will be governed by the MOA executed in association with the previous MoDOT EIS for US 71.

  Documentation of architectural resources in accordance with AR-SHPO and MoDOT protocol have been completed and reports submitted for review by the AR-SHPO and MO-SHPO. No architectural resources will be affected in Missouri by the Far West Alternative and the MO-SHPO concurred (review letter dated 11 December 1998, see FEIS, Appendix I) that no further investigations are necessary or required.

Hazardous Waste Sites

Phase II assessments will be performed by MoDOT and AHTD during the design phase of the project and prior to construction in the US 71 Corridor.

Two sites of low potential risk are located in the vicinity of the Selected Alternative. Further site delineation is recommended during final design with avoidance as the desired location solution. The two sites of low potential risk are a residence, and Jones Golf Cars. Avoidance of these known sites will be provided to the extent possible. These impacts will be remedied prior to or as part of construction of the roadway improvements. If an unknown site is encountered during construction, measures will be taken as necessary to eliminate or minimize any adverse environmental consequences.

Construction Impacts

For the portion of the US 71 improvements located in Missouri, MoDOT construction standards will be utilized. MoDOT has developed a series of Standard Specifications for Highway Construction. These specifications include, but are not limited to, air, noise and water pollution

control measures to minimize impacts to the surrounding areas during construction. Pollution control measures, both temporary and permanent, would be enacted under the project construction specifications.

In Arkansas, to the extent available, AHTD pollution control standards and specifications will be utilized for the construction of the "Freeway-Build" Alternatives. As necessary, project-specific details would be developed to augment the available standards. These measures will be implemented to minimize adverse impacts to adjacent areas including noise, air, and water quality.

Public Lands

The Selected Alternative (i.e., Far West Alternative) for the US 71 improvements will not impact any public lands since there are no public lands located within the Far West Corridor.

F. Monitoring Program

The proposed project will be subject to review by MoDOT, AHTD and other State, Federal and local agencies. Some permits will need to be obtained from all levels of government. Numerous measures to minimize harm were considered during identification of the Selected Alternative. Detailed discussions of actions required to minimize harm are located in the FEIS, Summary, and this ROD, Section B, Summary of Future Actions. Also, within this ROD, Section E, Measures to Minimize Harm, there are brief discussions which focus on individual issues and mitigation measures associated with the selection of the Far West Alternative. Those measures will be implemented and monitored by FHWA, MoDOT, and AHTD.

G. Comments on the FEIS

The 30-day public comment period for the FEIS began January 7, 2000, with a published notification in the Federal Register. Additionally, copies of the FEIS were sent to various parties of interest, as listed in Chapter VI of the FEIS.

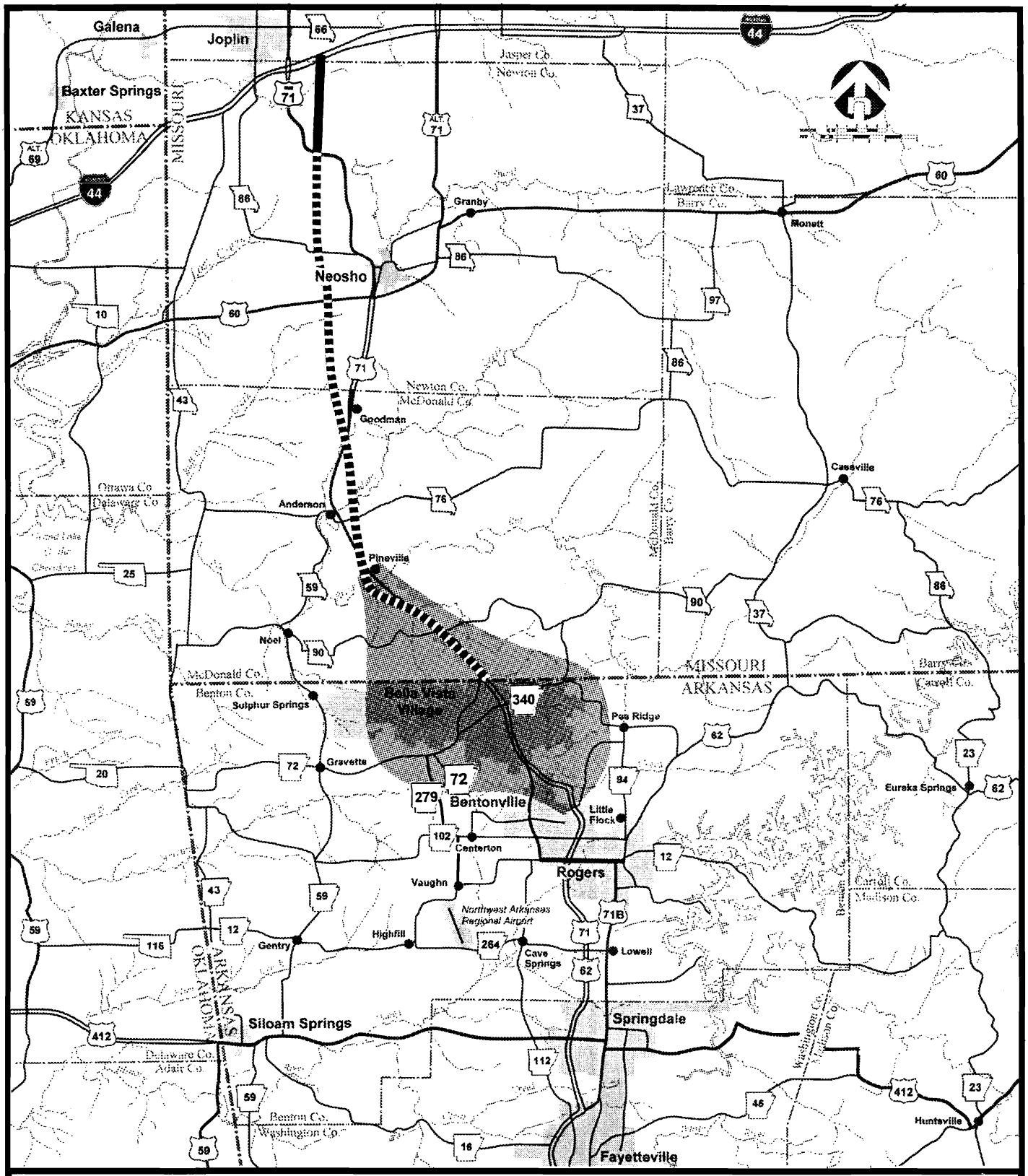
Comments received on the FEIS during the comment period ending February 4, 2000 were reviewed and reflected in this Record of Decision. The comments received had no impact on the identification of the Selected Alternative (i.e., Far West Alternative).

H. Summary

The identification of the Selected Alternative (i.e., Far West Alternative), as documented in the FEIS, is made following thorough consideration of all social, economic and environmental factors and after an extensive program of agency coordination and public involvement. The US 71 Improvements and the environmental consequences associated with its construction are accurately presented in the FEIS.

I. Approval of Record of Decision

Approving Official: Kenneth A. Genet Date: 4/19/2000
Federal Highway Administration



LEGEND

Study Area

MoDOT Completed Freeway Improvements

MoDOT Proposed Freeway Improvements

Exhibit 1 Study Area Map

NOTE: (Labeling Nomenclature)

FWC2
- Alternative Number
- Link Number
- Segment Designation
- Corridor Designation

In most all cases the label also designates the alternative. The one exception is Segment F of the Near West Corridor. Segment F has eight links but only five alternatives as follows:

NWF1 = Links 1, 4 and 8
NWF2 = Links 1, 3, 5, 6 and 8
NWF3 = Links 2, 5, 6 and 8
NWF4 = Links 1, 3, 5 and 7
NWF5 = Links 2, 5 and 7

LEGEND

FWC2 Alternative Number

Segment Limit

Alignment

Segment A
EX/NWA1
FWA1
FWA2
FWA3
Segment B
EX/NWB1
Segment C
EX/NWC1
Segment D
EXD1
NWD1E1
Segment D/E
Segment B
FWB1
FWB2
Link 1
Link 2
Link 3
Link 4
Link 5
Link 6
Link 7
Link 8
Segment F
FWC1
FWC2
Segment C
FAR WEST
NEAR WEST
EXISTING
EXE1
Segment E
FWD2
Segment D
FWD1
NWG1
Segment G
FW/NWH2
FW/NWH1
Segment H

HUCKLEBERRY RIDGE STATE FOREST
MISSOURI
ARKANSAS
Mc Donald County
Benton County

Lanagan
Pineville
Ginger Blue
Ravenhurst
Noel
Jane
Mountain
Jacket
Sulphur Springs
Bella Vista Village
Gravette
Hiwasse
Pea Ridge
Avoca
Bentonville
Little Flock
Rogers

Exhibit 2 Reasonable Alternatives

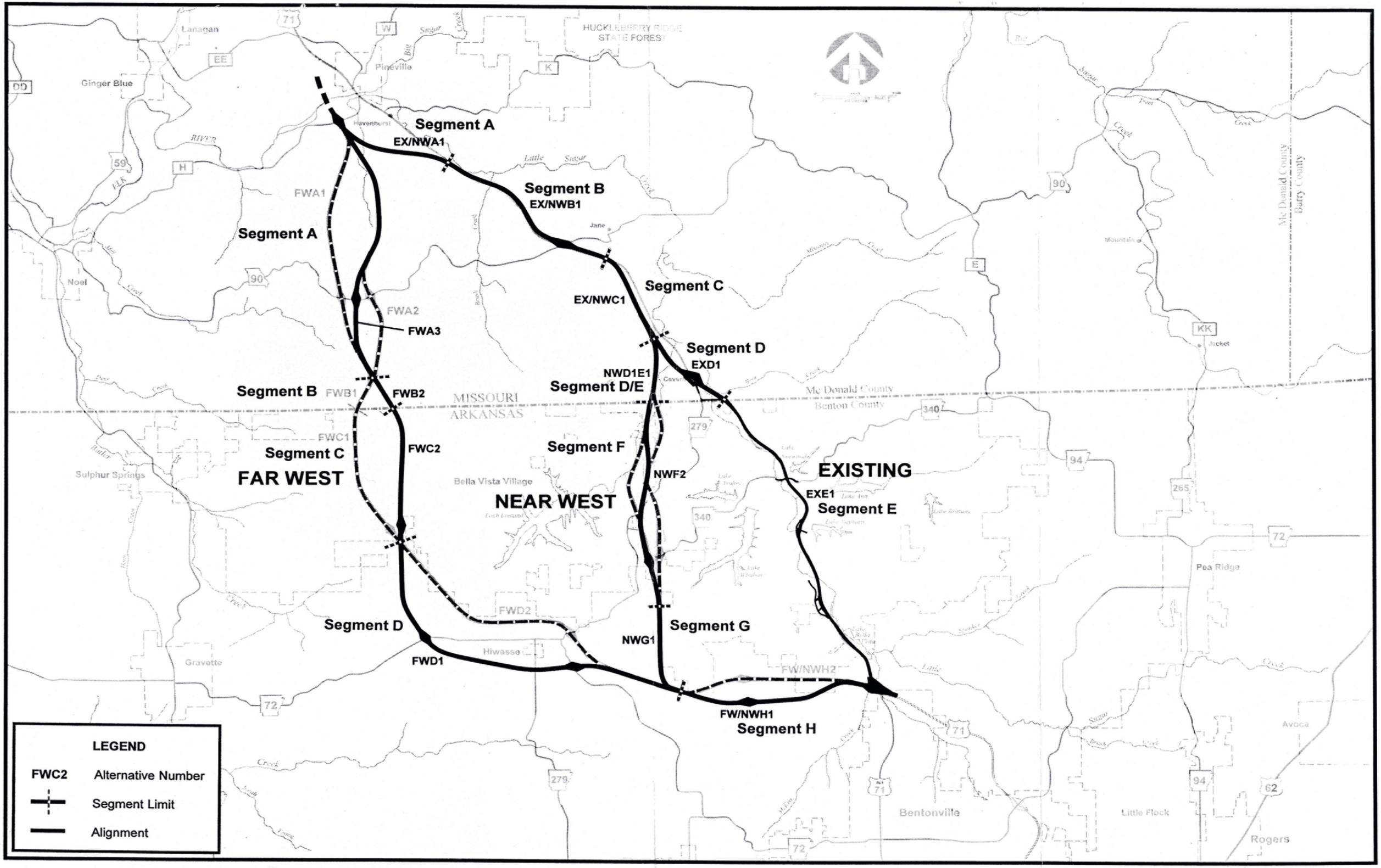


Exhibit 3 Best Alternatives
Within Each Study Corridor

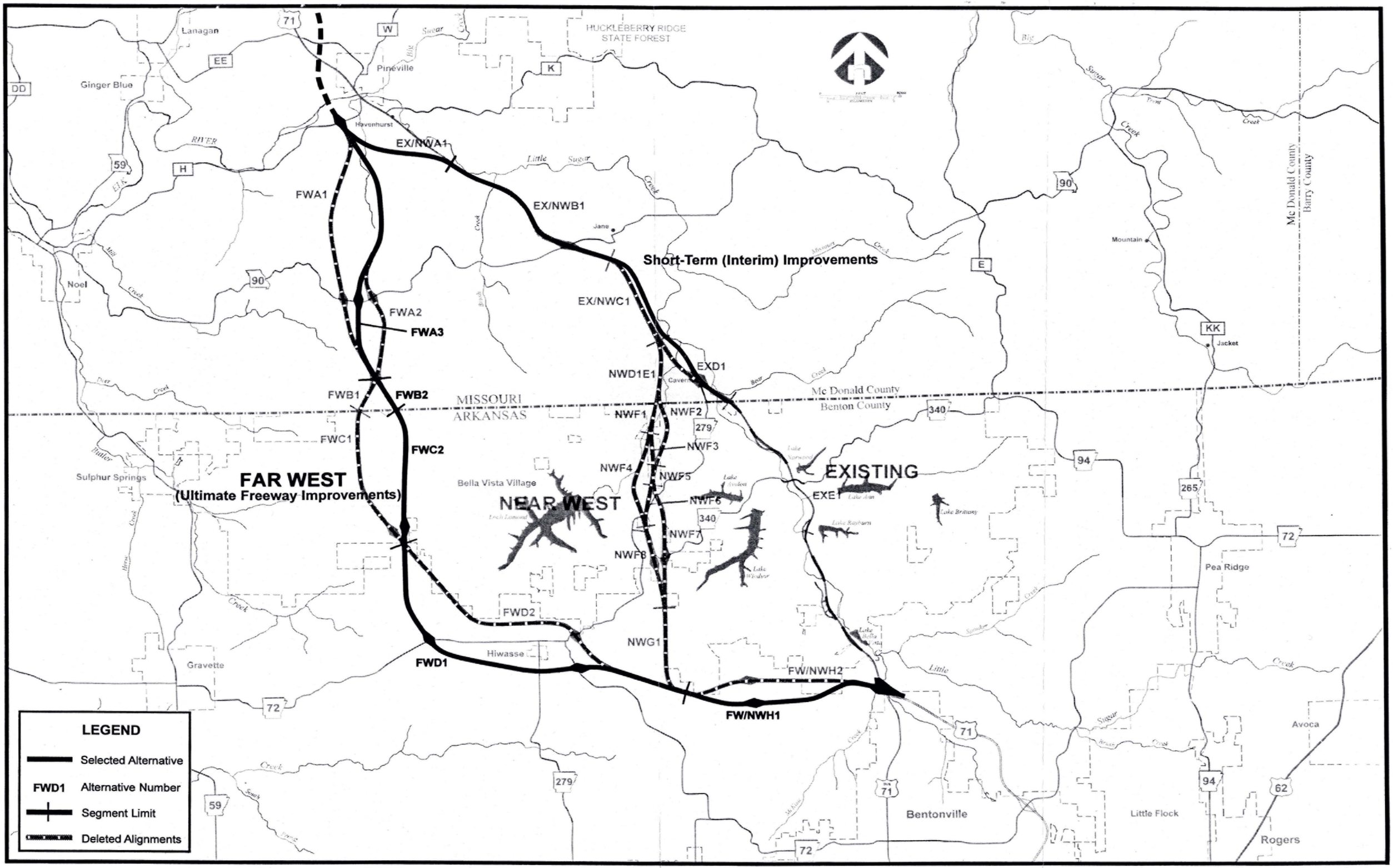


Exhibit 4 Selected Alternative

DESIGN REASSESSMENT OF

BELLA VISTA-PINEVILLE, MO

ENVIRONMENTAL IMPACT STATEMENT

HIGHWAY 71 IN BENTON COUNTY, ARKANSAS

FROM BELLA VISTA, ARKANSAS TO THE

ARKANSAS/MISSOURI STATE LINE

Federal Highway Administration-Arkansas Division

FHWA-AR-EIS-98-01-F

Federal Project: DPR-00551(1)

State Project: 009969

June 2007

This project was initially evaluated as part of FAP DRP-0051(1), Arkansas State Highway and Transportation Department (AHTD) Job Number 009969, U.S. 71, Bella Vista to Pineville, Missouri (see Figure 1), for which a Final Environmental Impact Statement (FEIS) was prepared by HNTB Corporation. The FEIS was approved by the Federal Highway Administration (FHWA) on December 22, 1999, and the Record of Decision was issued April 19, 2000.

The AHTD and the Missouri Department of Transportation (MoDOT) have different design teams working on the portions of the project that fall within their respective states and are each submitting a Design Reassessment to FHWA for their portion. Changes made by the AHTD near the Missouri/Arkansas state line were coordinated with MoDOT. The reassessment of the FEIS is necessary due to changes in the 1998 Conceptual Design that occurred following the Location Public Hearing (LPH) held May 21, 1998 in Bella Vista, Arkansas.

In July 2004, HNTB Corporation conducted a *Traffic, Revenue and Toll Feasibility Study,* (2004 Study) for the US 71 Bella Vista Bypass Project. In the 2004 Study, the AHTD and MoDOT considered the feasibility of constructing the bypass facility using toll financing. The 2004 Study was conducted as an investment-grade toll study to determine the potential toll financing feasibility of the bypass project.

In 2005, the MoDOT was able to secure funding for their share of the project through the passage of the Amendment 3 ballot initiative, which provided MoDOT the ability to create the *Smoother Safer Sooner* program and allocate funding to construct Missouri's portion of the Bella Vista Bypass without using toll financing.

In April 2006 a *Bella Vista Bypass Toll Study Update* (2006 Study) was conducted by HNTB Corporation to examine the feasibility of tolling only the Arkansas portion of the project, from the Arkansas-Missouri state line to the Highway 71/Highway 71 Business interchange north of Bentonville.

The 2006 Study determined the estimated capital cost of the bypass project and recommended an appropriate tolling solution that would require a commitment by the AHTD for road operation and maintenance but would fully fund the construction costs of the project with no additional funds necessary.

Based on the combined findings of the 2004 Study and 2006 Study, on April 12, 2006 the Arkansas State Highway Commission authorized the AHTD to develop the bypass as a toll facility. Carter & Burgess Inc, an engineering consulting firm, has been hired to design the toll facility. After the design related to the toll facility is complete, analytical results of the toll facility's potential environmental impacts will be included in a separate reevaluation.

Design work within Arkansas was initiated with HNTB Corporation in August 2001 under AHTD Job Number 090115. Due to funding conflicts and transportation priorities, work on the project was suspended between April 2004 and May 2005. Design modifications that have

occurred since the LPH were presented to the public at Design Public Hearings (DPH) held in Gravette and Bella Vista on November 15 and November 16, 2006, respectively.

APPROVED

Environmental Specialist
Federal Highway Administration
Date: 6/7/07

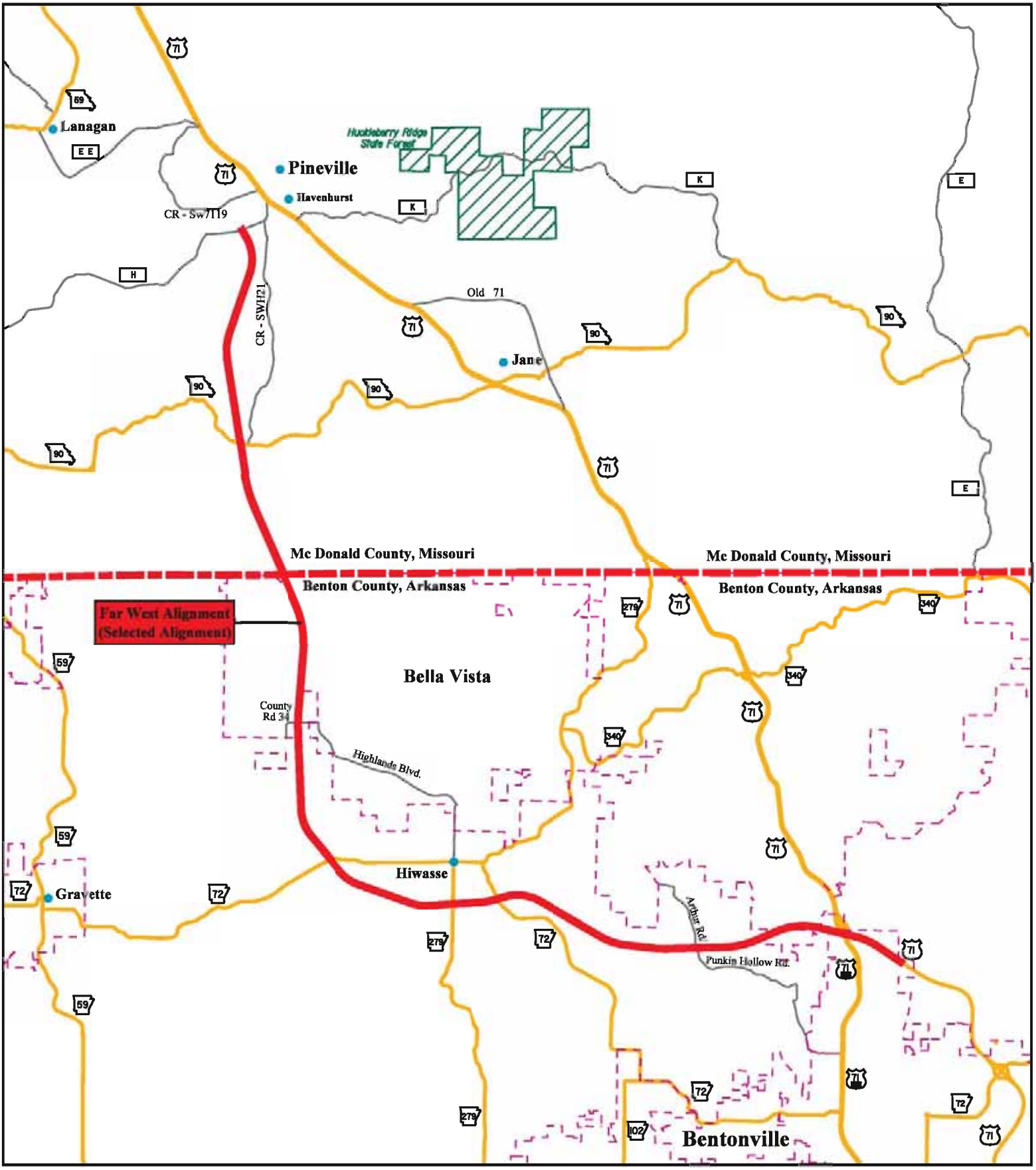


Figure 1
Project Location Map
Highway 71 Relocation
Bella Vista, Arkansas to Pineville, Missouri
AHTD Job No. 009969

The design modifications resulted in the following changes in project length and right of way to be acquired.

Design Year	Length in Miles (Kilometers)	Right of Way in Acres (Hectares)
1998	13.8 (22.2)	501.8 (203.0)
2006	14.1 (22.7)	665.1 (269.2)

The 1998 Conceptual Design and 2006 Modified Design include four 12-foot (3.6-meter) wide paved travel lanes, a 60-foot (18.3-meter) wide depressed median, and open shoulder design. The 1998 Conceptual Design included a 12-foot (3.6-meter) wide outside shoulder, whereas the 2006 Modified Design has 10-foot (3.0-meter) wide outside shoulders, and six-foot (1.8-meter) wide inside shoulders. Right of way widths and design speed were not designated in the1998 Conceptual Design. Right of way widths will average 325 feet (99 meters), and the proposed design speed is 70 miles per hour (120 kilometers per hour) for the 2006 Modified Design.

The changes in estimated costs are shown in Table 1.

Table 1
Estimated Cost Analysis

	1998 Conceptual Design (Million $)	2006 Modified Design (Million $)
Construction	82.4	141.1*
Right of Way	3.6	29.3**
Design	4.0	4.7***
Totals	90.0	175.1

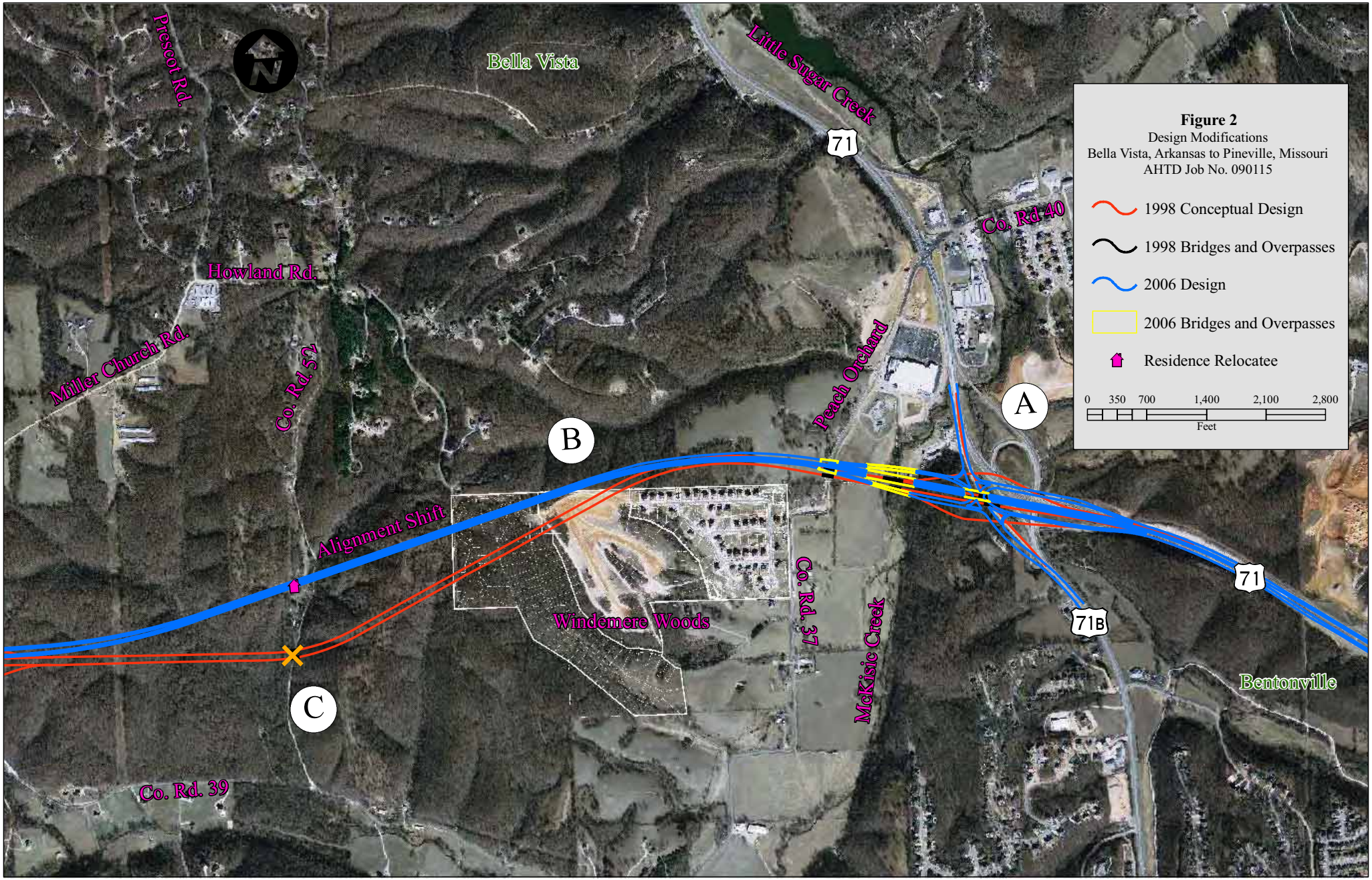
*Reflects a Construction Cost Index increase of approximately 90% since 1998

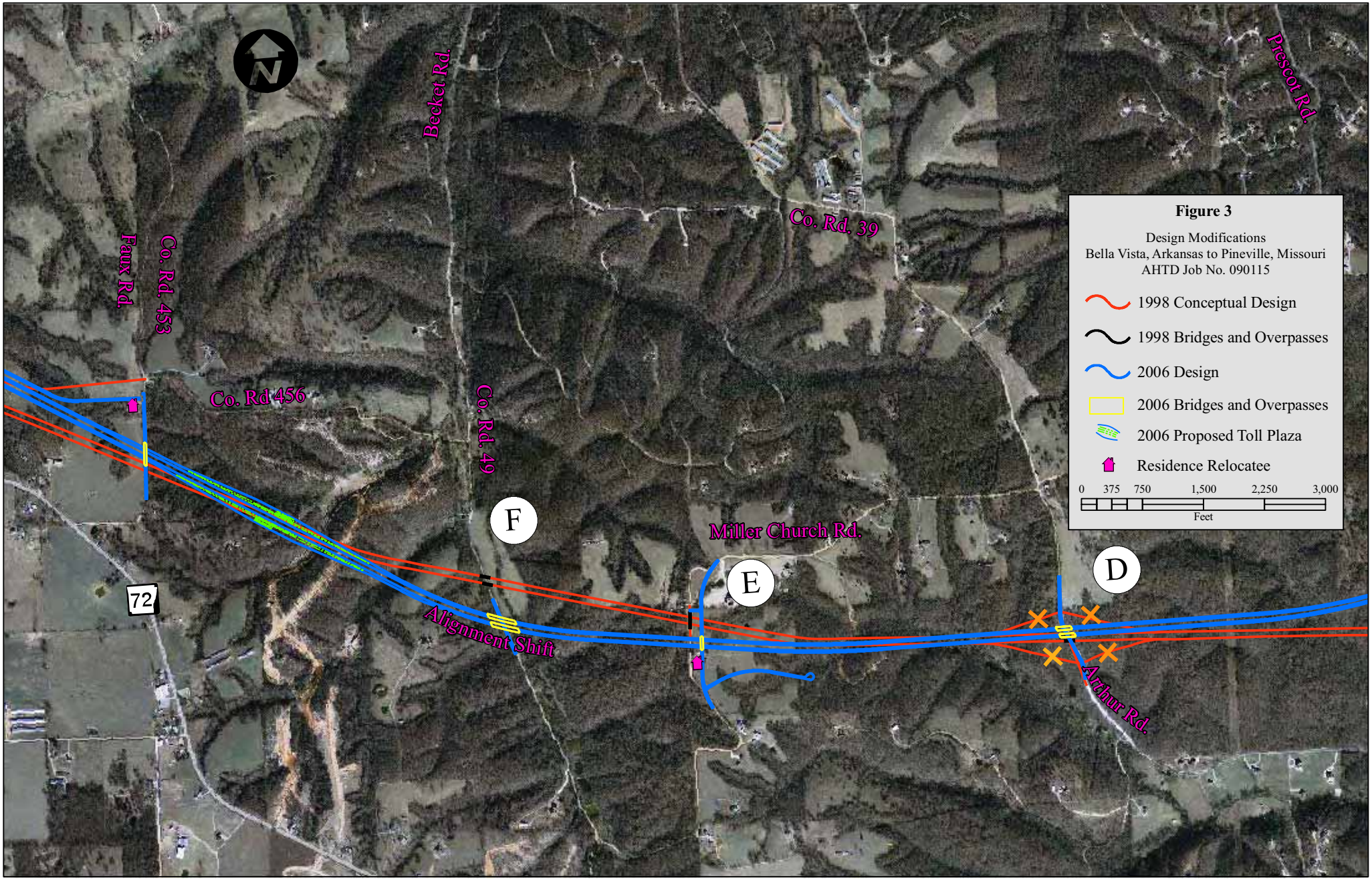
**Reflects both increased property values and a low 1998 estimate of required right of way

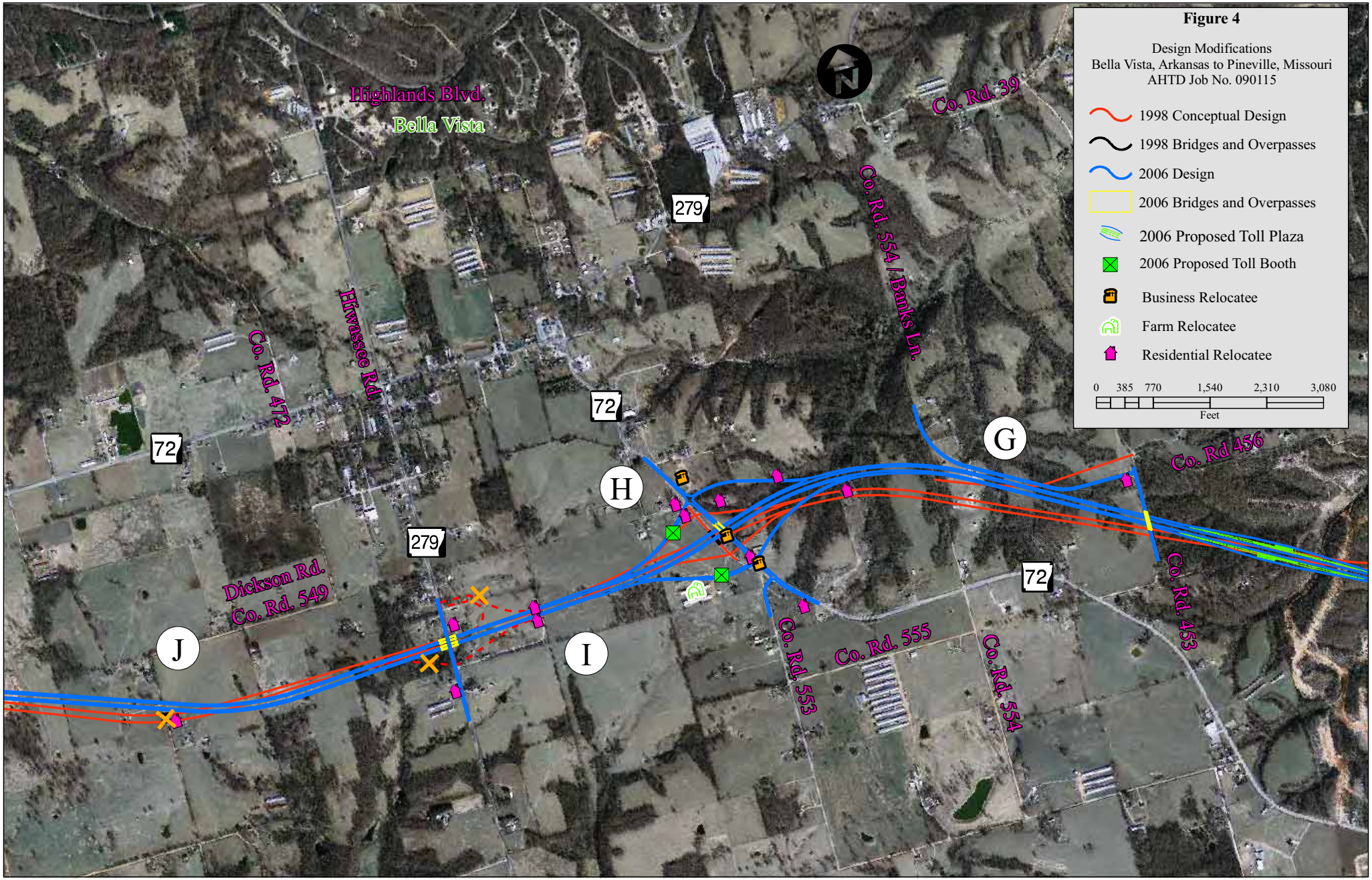
*** Reflects annual inflation rates

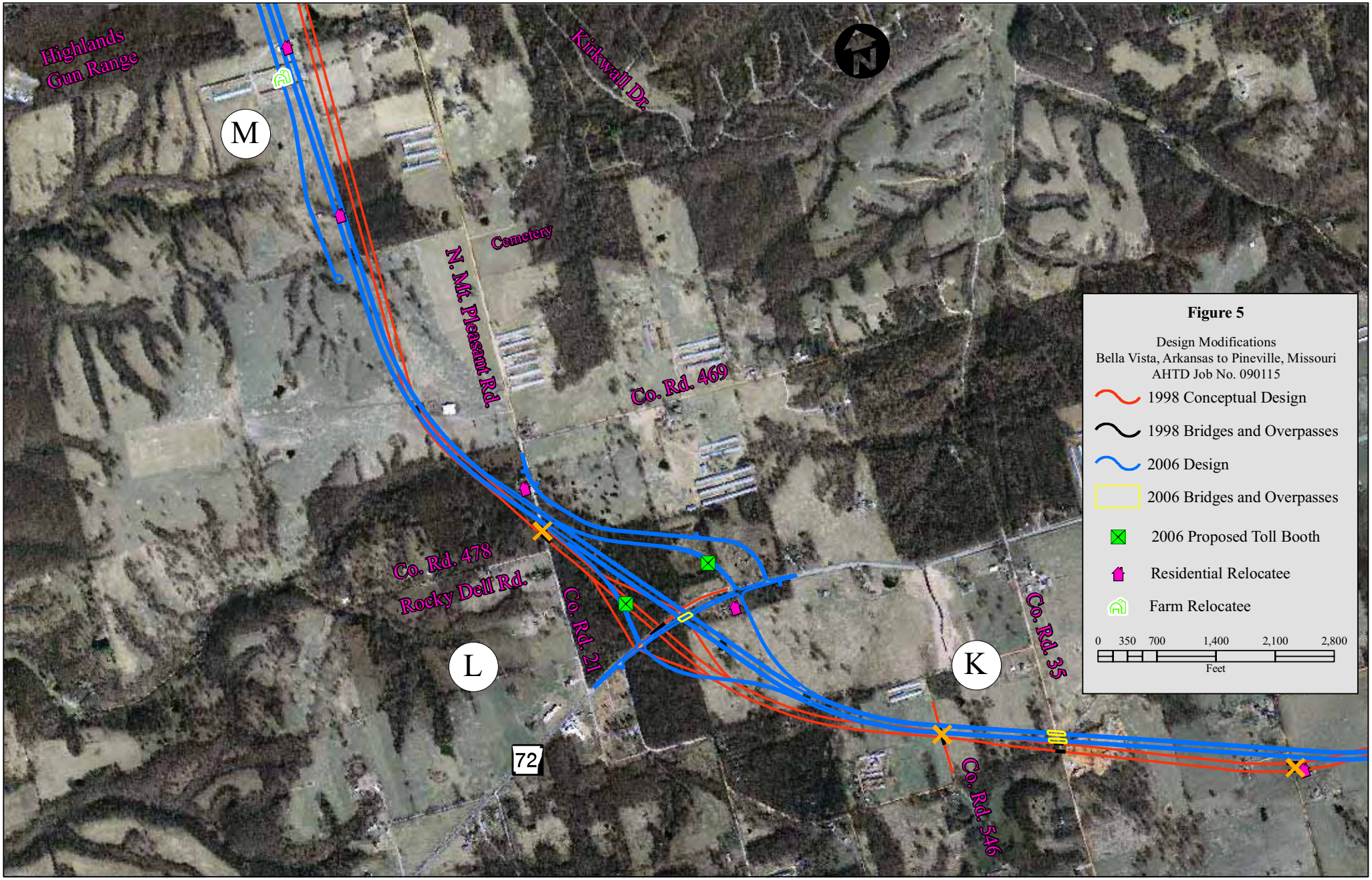
The proposed design modifications are shown on Figures 2 through 7 and are summarized in Table 2. Each modification has been assigned a letter on the figure, which also corresponds to an explanation of the proposed modifications provided in Table 2.

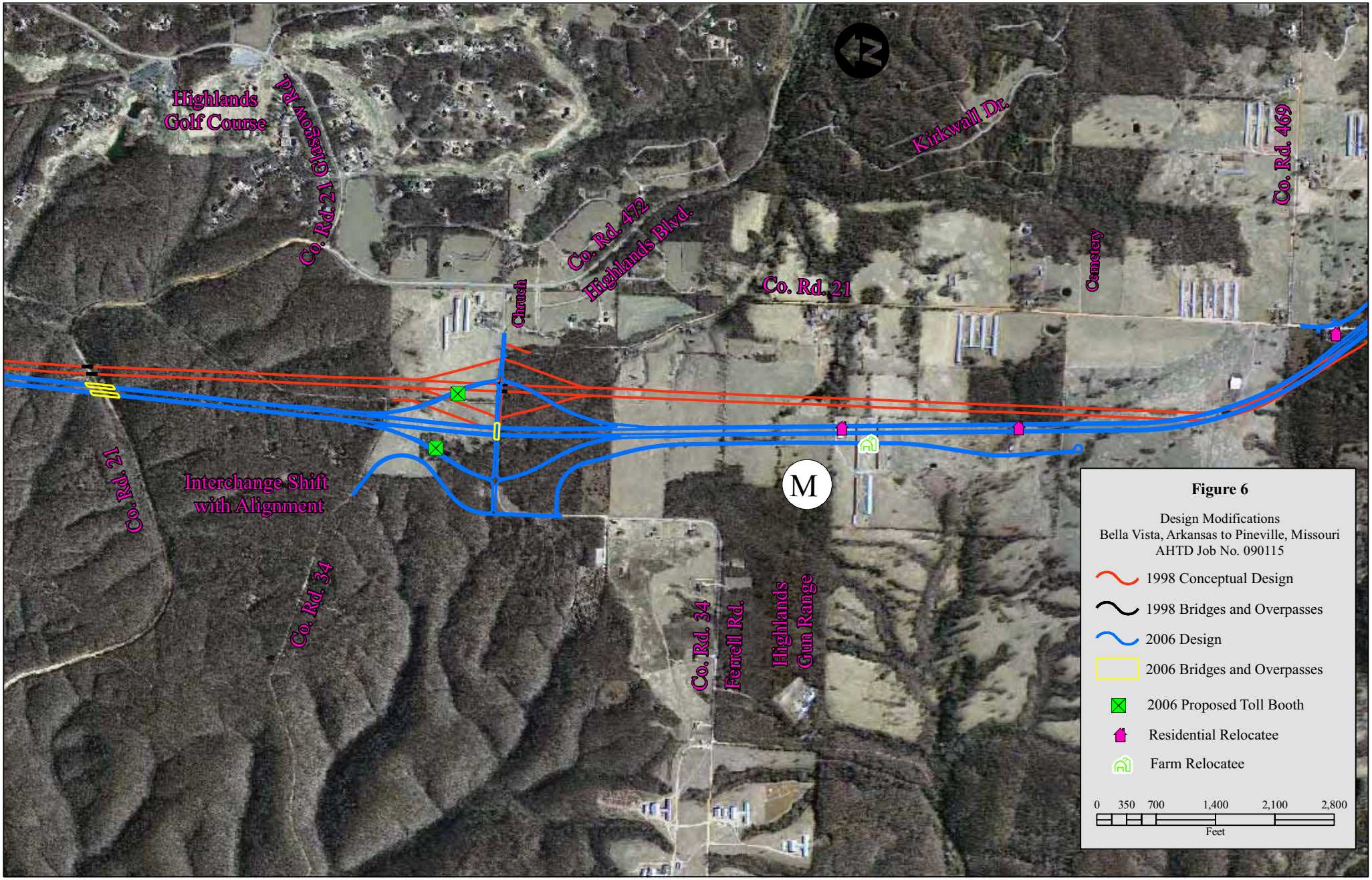
There are no endangered species associated with this project. Field inspections found no evidence of existing underground storage tanks or hazardous waste deposits.


Prescot Rd.
Bella Vista
Little Sugar Creek
71
Co. Rd 40
Howland Rd.
Miller Church Rd.
Co. Rd. 52
Peach Orchard
A
B
Alignment Shift
Windemere Woods
Co. Rd. 37
McKisic Creek
71
71B
Bentonville
C
Co. Rd. 39
Figure 2
Design Modifications
Bella Vista, Arkansas to Pineville, Missouri
AHTD Job No. 090115
1998 Conceptual Design
1998 Bridges and Overpasses
2006 Design
2006 Bridges and Overpasses
Residence Relocatee
0 350 700 1,400 2,100 2,800
Feet


Becket Rd.
Prescot Rd.
Faux Rd.
Co. Rd. 453
Co. Rd. 39
Co. Rd 456
Co. Rd. 49
F
Miller Church Rd.
E
D
72
Alignment Shift
Arthur Rd.
Figure 3
Design Modifications
Bella Vista, Arkansas to Pineville, Missouri
AHTD Job No. 090115
1998 Conceptual Design
1998 Bridges and Overpasses
2006 Design
2006 Bridges and Overpasses
2006 Proposed Toll Plaza
Residence Relocatee
0 375 750 1,500 2,250 3,000
Feet


Highlands Blvd.
Bella Vista
Co. Rd. 39
Co. Rd. 554 / Banks Ln.
279
Hiwassee Rd.
Co. Rd. 472
72
72
G
H
Co. Rd 456
279
Dickson Rd.
Co. Rd. 549
J
I
72
Co. Rd. 555
Co. Rd. 553
Co. Rd. 554
Co. Rd. 453
Figure 4
Design Modifications
Bella Vista, Arkansas to Pineville, Missouri
AHTD Job No. 090115
1998 Conceptual Design
1998 Bridges and Overpasses
2006 Design
2006 Bridges and Overpasses
2006 Proposed Toll Plaza
2006 Proposed Toll Booth
Business Relocatee
Farm Relocatee
Residential Relocatee
0 385 770 1,540 2,310 3,080
Feet


Highlands Gun Range
M
Kirkwall Dr.
Cemetery
N. Mt. Pleasant Rd.
Co. Rd. 469
Co. Rd. 478
Rocky Dell Rd.
Co. Rd. 21
L
K
Co. Rd. 35
72
Co. Rd. 546
Figure 5
Design Modifications
Bella Vista, Arkansas to Pineville, Missouri
AHTD Job No. 090115
1998 Conceptual Design
1998 Bridges and Overpasses
2006 Design
2006 Bridges and Overpasses
2006 Proposed Toll Booth
Residential Relocatee
Farm Relocatee
0 350 700 1,400 2,100 2,800
Feet


Highlands
Golf Course
Co. Rd. 21 Glasgow Rd.
Co. Rd. 472
Highlands Blvd.
Church
Co. Rd. 21
Kirkwall Dr.
Co. Rd. 469
Cemetery
Co. Rd. 21
Interchange Shift
with Alignment
Co. Rd. 34
Co. Rd. 34
Ferrell Rd.
Highlands
Gun Range
M
Figure 6
Design Modifications
Bella Vista, Arkansas to Pineville, Missouri
AHTD Job No. 090115
1998 Conceptual Design
1998 Bridges and Overpasses
2006 Design
2006 Bridges and Overpasses
2006 Proposed Toll Booth
Residential Relocatee
Farm Relocatee
0 350 700 1,400 2,100 2,800
Feet

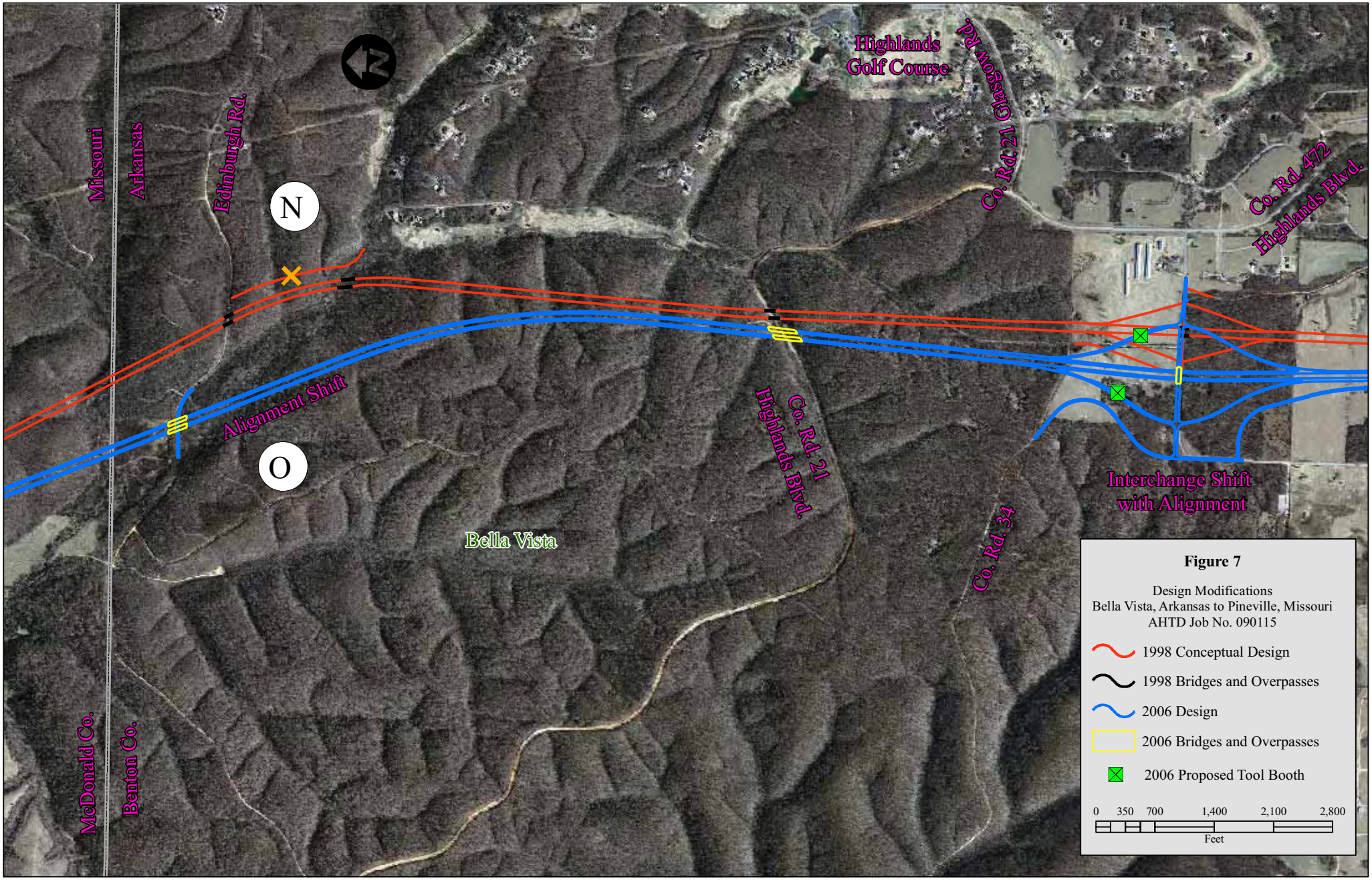

Missouri
Arkansas
Edinburgh Rd.
N
O
Alignment Shift
Bella Vista
Co. Rd. 21
Highlands Blvd.
Highlands
Golf Course
Co. Rd. 21 Glasgow Rd.
Co. Rd. 472
Highlands Blvd.
Interchange Shift
with Alignment
Co. Rd. 34
McDonald Co.
Benton Co.
Figure 7
Design Modifications
Bella Vista, Arkansas to Pineville, Missouri
AHTD Job No. 090115
1998 Conceptual Design
1998 Bridges and Overpasses
2006 Design
2006 Bridges and Overpasses
2006 Proposed Tool Booth
0 350 700 1,400 2,100 2,800
Feet

Table 2
Design Modification Summary

Location	Design Modification/Explanation
A	The Highway 71 Business/Highway 71 interchange was represented as a conventional diamond interchange in the 1998 Conceptual Design. At the 2006 DPH, the interchange was presented as a directional interchange in order to satisfy traffic needs. The interchange has been redesigned as a single point urban interchange to decrease the amount of right of way required, thereby reducing costs, and to provide for adequate turning movements.
B	The alignment was shifted north to reduce impacts to recent residential development. This alignment was presented at the 2006 DPH, after which it was determined the shift would result in stream relocation issues. Therefore, the alignment was shifted south of the stream while preserving the residential development to the greatest extent possible.
C	The County Road 52 grade separation was removed to reduce costs, as recommended by Value Engineering Study results.
D	The Arthur Road full interchange was removed and replaced with a grade separation due to insufficient traffic. The vertical grade of Arthur Road was reduced, minimizing right of way requirements and decreasing costs.
E	Miller Church Road was relocated and a frontage road added south of the bypass to maintain property access.
F	The alignment was shifted south, replacing two curves with one continuous curve.
G	The County Road 554 (Banks Lane) and County Road 453 (Faux Road) connection was shifted north to concur with the 2006 Design location.
H	The Highway 72 interchange was enlarged to meet current design standards, resulting in additional right of way acquisition.
I	An interchange was considered at Highway 279, but was determined as not needed due to insufficient traffic. Public input indicates the need for connectivity between Highway 72 and Highway 279. This highway connectivity will be evaluated under separate documentation.
J	In the 1998 Conceptual Design, the main lanes bridged County Road 549 (Dickson Road). Information presented at the 2006 DPH showed Dickson Road going over the main lanes. Comments received at the DPH led to further study of local traffic patterns and the elimination of the Dickson Road grade separation in favor of a grade separation at County Road 35 (Gordon Hollow Road).
K	The grade separations at Gordon Hollow Road and County Road 546 (Cash Springs Road) represented in the 1998 Conceptual Design were removed to reduce costs as recommended by the Value Engineering Study results. Due to comments received after the 2006 DPH and further study of local traffic patterns, the Gordon Hollow Road grade separation was reinstated.
L	The Highway 72 interchange footprint was enlarged to meet current design standards, and a frontage road between North Mount Pleasant Road and Highway 72 was added to maintain the local road network.
M	The County Road 34 (Ferrell Road) interchange was enlarged to meet current design standards, County Road 34 was realigned west of the interchange to reconnect the local road network, and a frontage road was added to maintain property access.
N	The frontage road between Edinburgh Road and Mill Creek was eliminated because it is no longer needed due to the alignment shift at Location O.
O	Alignment segment shifted west due to public comments regarding impacts to the Highlands Golf Course residents. This change was made in coordination with MoDOT.

The design presented at the 2006 Public Hearing will require 13.4 acres (5.4 hectares) of additional Prime Farmland and 60.9 acres (24.6 hectares) of additional Farmland of Statewide Importance more than the 1998 conceptual design estimates (see Table 3). Form NRCS-CPA-106, the Farmland Conversion Impact Rating, is included in Appendix A for both the 1998 Conceptual Alignment and the 2006 Modified Design. Due to the design modifications developed after the FEIS, the impact totals for prime farmland have increased approximately 5% and for farmland of statewide importance have increased approximately 8% over those presented in the FEIS.

Table 3
Farmland Impacts

Alignment Segment*	1998 Conceptual Design		2006 Modified Design	
	Prime Farmland Acres (Hectares)	Farmland of Statewide Importance Acres (Hectares)	Prime Farmland Acres (Hectares)	Farmland of Statewide Importance Acres (Hectares)
FW/NWH1	7.5 (3.0)	1.5 (0.6)	12.3 (5.0)	2.6 (1.0)
FWD1	35.8 (14.5)	90.8 (36.7)	44.3 (18.0)	123.8 (50.1)
FWC2	0	19.1 (7.7)	0	45.9 (18.6)
Total	43.2 (17.5)	111.4 (45.0)	56.6 (23.0)	172.3 (69.7)

*Alignment Segments used in the analysis of the FEIS Selected Alignment, as shown on Figure 8.

A preliminary analysis of noise impacts within the project study area was conducted and presented in the FEIS. A noise barrier analysis will be conducted during the final phase of design, in accordance with the AHTD Noise Policy, to determine barrier feasibility for the Windemere Woods Subdivision (see Figure 2) and other areas of concentrated residential development.

There were 15 residential and two business relocations estimated for the 1998 Conceptual Alignment. The 2006 Modified Design will result in 19 residential, two farm and three business relocations, eleven more than originally estimated.

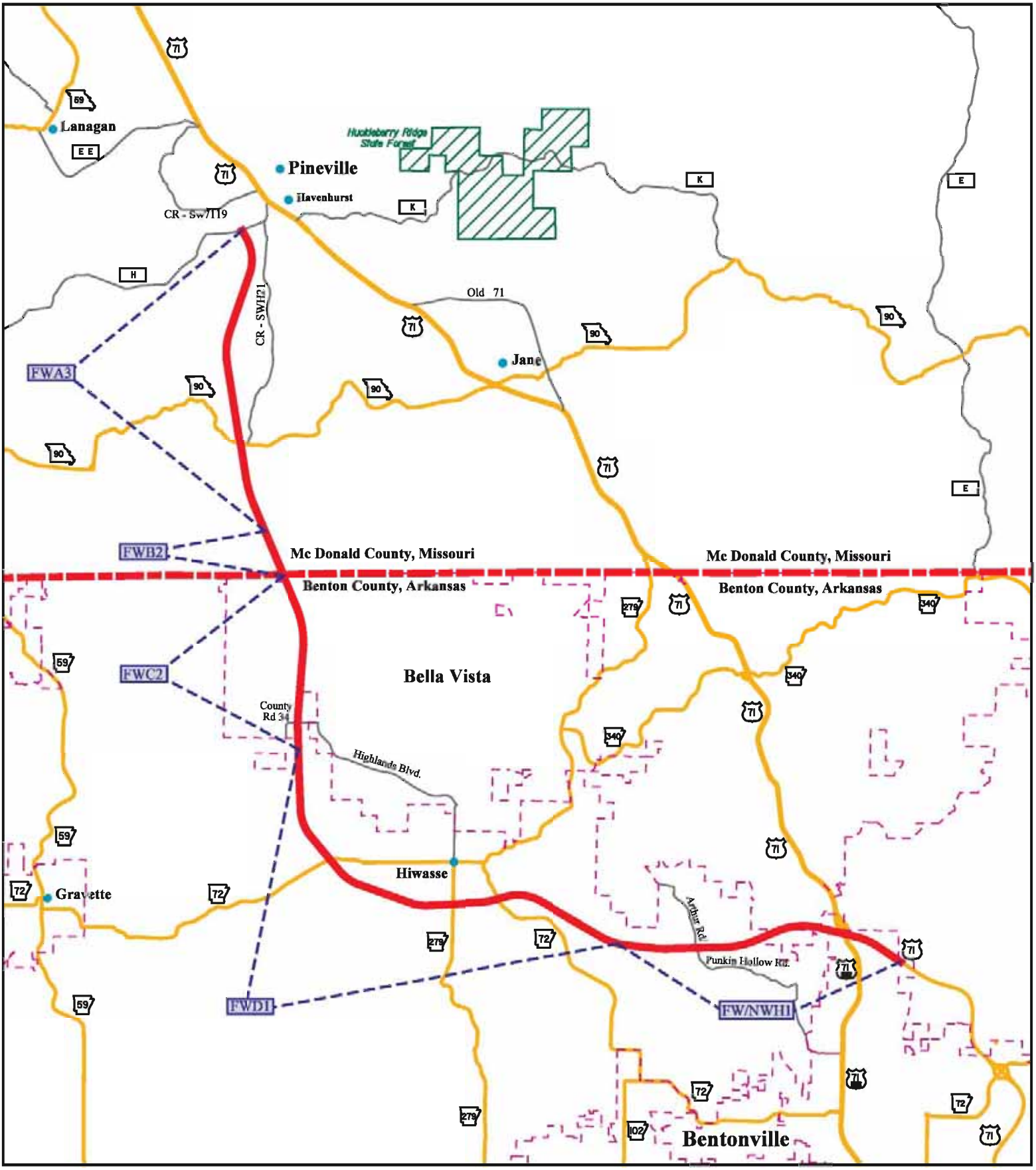
In Arkansas, four archeological sites were identified within the limits of the 1998 Conceptual Design, with only one (3BE634) warranting further evaluation. Subsequent Phase II testing determined that the site area located within the proposed right of way was not eligible for nomination to the National Register. Therefore, the 1998 Conceptual Design avoided eligible structures identified along the Selected Alternative. However, because portions of the 2006 Design are located outside of the area previously evaluated, additional cultural resource evaluation is required.

Cultural resource surveys have been conducted within the area not covered during the initial survey, and a report containing the results and recommendations has been submitted to the State Historic Preservation Officer (SHPO) for review. The survey identified three archeological sites (3BE756, 3BE748 and 3BE634) that have been recommended for Phase II evaluation. SHPO correspondence is included in Appendix B.

The assessment of sites associated with some private property where access has been restricted, and Phase II or III archeological work, is pending and will follow a Programmatic Agreement between the Advisory Council on Historic Preservation, SHPO, FHWA, and AHTD. The identified sites do not appear to contain material or features that would warrant preservation in place. The draft Programmatic Agreement is included in Appendix C.

An Architectural Survey was conducted for the project area with five structures identified as eligible to the National Register. All five eligible structures are located outside of the 2006 Modified Design and will not be impacted by the project.

FHWA project consultation with the Quapaw and Osage tribes was initiated during the early stages of project development and will continue throughout its duration.



0 0.5 1.0 1.5 2.0 2.5 3.0 miles
Approximate Scale

AHTD - Environmental GIS - Reed
January 24, 2007

Figure 8
FEIS Selected Alignment Segments
Highway 71 Relocation
Bella Vista, Arkansas to Pineville, Missouri
AHTD Job No. 009969

Legend
Project Location
FWD1 Alignment Segments

Construction of this project would impact 21 mapped streams within Arkansas (see Figure 9). Twelve of the 21 streams are classified as waters of the United States (WOUS). The FEIS and U.S. Army Corp of Engineers Section 404 Permit have identified these streams as B-1 through B-21. B-1 is located at the Missouri state line and B-21 at the intersection of existing Highway 71. The twelve WOUS streams are B-1, 2, 3, 4, 8, 12, 13, 14, 15, 16 and 21 (see Table 4). One non-jurisdictional wetland, identified as B-3a, is located near stream crossing B-3. Impacts to the wetland total 0.1 acre (0.04 hectare). There are no jurisdictional wetland impacts on this project.

The 2006 Modified Design will result in minimal stream crossing impacts, with changes of five structure types from the 1998 concepts. Stream crossing structure types and associated Section 404 information are found in Table 4. An unnamed tributary to Spavinaw Creek (crossing B-8) will require approximately 150 feet (45 meters) of stream relocation to align with a new box culvert. Impacts to the stream would be less than approximately 0.1 acre (0.04 hectare). Tanyard Creek (crossing B-14) will require approximately 350 feet (110 meters) of stream relocation to align with a new bridge. Impacts to the stream would be less than approximately 0.1 acre (0.04 hectare). An unnamed tributary to McKissic Creek (crossing B-21) would require approximately 750 feet (229 meters) of stream relocation at the Highway 71/71B interchange due to construction of a new box culvert and removal of two existing box culverts. Impacts to the unnamed tributary of McKissic Creek are estimated at 0.26 acre (0.1 hectare). Work roads will be required at stream crossings to facilitate construction access. Impacts due to work roads will be minimal and temporary.

The original Section 404 Permit was issued as a General Permit, which has since been discontinued. The permit should be reissued as a Nationwide Permit 14 for Linear Transportation Crossings as defined in Federal Register 67 (10): 2020-2095.

This reevaluation of the environmental impacts resulting from design modifications was conducted through document review, site visits, and evaluation of Design Public Hearing comments. The additional and/or revised impacts detailed in this design reassessment are not deemed significant.

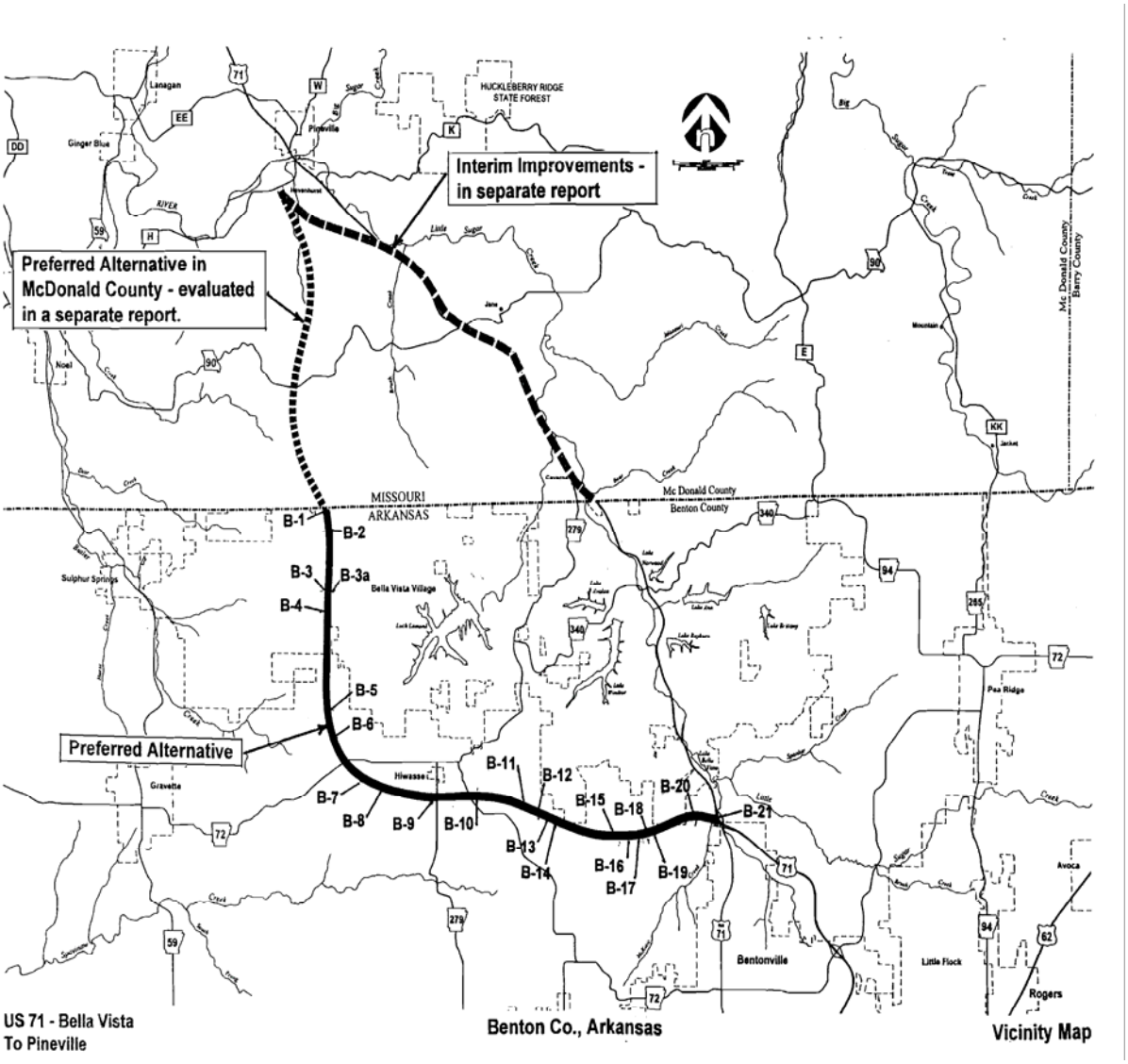


Figure 9
Stream Crossing Locations and Non-Jurisdictional Wetland
Bella Vista, Arkansas – Pineville, Missouri

Table 4 Stream Crossing Analysis			
Stream Crossing	**1998 Crossing Type**	**2006 Crossing Type**	**Waters of the United States (*)**
B-1	Bridge	Box Culvert	*
B-2	Bridge	Box Culvert	*
B-3	Culvert	Culvert	*
B-4	Culvert	Culvert	*
B-5	Culvert	Culvert	
B-6	Culvert	Culvert	
B-7	Culvert	Culvert	
B-8	Culvert	Box Culvert	*
B-9	Culvert	Box Culvert	
B-10	Culvert	Culvert	
B-11	Culvert	Culvert	
B-12	Culvert	Culvert	*
B-13	Culvert	Culvert	*
B-14	Culvert	Box Culvert	*
B-15	Culvert	Bridge	*
B-16	Culvert	Culvert	*
B-17	Culvert	Culvert	
B-18	Culvert	Culvert	
B-19	Culvert	Culvert	
B-20	Bridge	Stream Avoided	*
B-21	Culvert	3 Bridges 1 Culvert	*
Totals	21	24	12

APPENDIX A

THE FARMLAND CONVERSION IMPACT RATING

U.S. DEPARTMENT OF AGRICULTURE
Natural Resources Conservation Service

NRCS-CPA-106
(Rev. 1-91)

FARMLAND CONVERSION IMPACT RATING
FOR CORRIDOR TYPE PROJECTS

PART I *(To be completed by Federal Agency)* 090224	3. Date of Land Evaluation Request 1/18/07	4. Sheet 1 of ____
1. Name of Project Bella Vista to Pine Ville Mo.	5. Federal Agency Involved FHWA	
2. Type of Project Bypass	6. County and State Benton County Arkansas	
PART II *(To be completed by NRCS)*	1. Date Request Received by NRCS	2. Person Completing Form
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form.) YES ☐ NO ☐		4. Acres Irrigated / Average Farm Size
5. Major Crop(s)	6. Farmable Land In Government Jurisdiction Acres: %	7. Amount of Farmland As Defined in FPPA Acres: %
8. Name Of Land Evaluation System Used	9. Name of Local Site Assessment System	10. Date Land Evaluation Returned by NRCS

PART III *(To be completed by Federal Agency)*	Alternative Corridor For Segment			
	Corridor A	Corridor B	Corridor C	Corridor D
A. Total Acres To Be Converted Directly				
B. Total Acres To Be Converted Indirectly, Or To Receive Services				
C. Total Acres In Corridor	0	0	0	0
PART IV *(To be completed by NRCS) Land Evaluation Information*				
A. Total Acres Prime And Unique Farmland	43			
B. Total Acres Statewide And Local Important Farmland	111			
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted				
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value				
PART V *(To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)*				
PART VI *(To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))*	Maximum Points			
1. Area in Nonurban Use	15	15		
2. Perimeter In Nonurban Use	10	10		
3. Percent Of Corridor Being Farmed	20	10		
4. Protection Provided By State And Local Government	20	0		
5. Size of Present Farm Unit Compared To Average	10	10		
6. Creation Of Nonfarmable Farmland	25	1		
7. Availability Of Farm Support Services	5	0		
8. On-Farm Investments	20	5		
9. Effects Of Conversion On Farm Support Services	25	0		
10. Compatibility With Existing Agricultural Use	10	2		
TOTAL CORRIDOR ASSESSMENT POINTS	160	053	0	0	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland (From Part V)	100	100			
Total Corridor Assessment (From Part VI above or a local site assessment)	160	053	0	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	0153	0	0	0

1. Corridor Selected:	2. Total Acres of Farmlands to be Converted by Project:	3. Date Of Selection:	4. Was A Local Site Assessment Used?
FAR West	154	1/18/07	YES ☐ NO ☐

5. Reason For Selection:

1998 Conceptual Alignment

Signature of Person Completing this Part: _____ DATE 1/18/07

NOTE: Complete a form for each segment with more than one Alternate Corridor

U.S. DEPARTMENT OF AGRICULTURE
Natural Resources Conservation Service

NRCS-CPA-106
(Rev. 1-91)

FARMLAND CONVERSION IMPACT RATING
FOR CORRIDOR TYPE PROJECTS

PART I *(To be completed by Federal Agency)* 090224	3. Date of Land Evaluation Request 1/18/07	4 Sheet 1 of ____
1. Name of Project Bella Vista to Pineville/Mo	5. Federal Agency Involved FHWA	
2 Type of Project Bypass	6 County and State Benton County Arkansas	
PART II *(To be completed by NRCS)*	1. Date Request Received by NRCS	2. Person Completing Form
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form). YES ☐ NO ☐	4. Acres Irrigated	Average Farm Size
6. Major Crop(s)	8. Farmable Land In Government Jurisdiction Acres: %	7. Amount of Farmland As Defined in FPPA Acres: %
8. Name Of Land Evaluation System Used	9. Name of Local Site Assessment System	10. Date Land Evaluation Returned by NRCS

PART III *(To be completed by Federal Agency)*		Alternative Corridor For Segment ____			
		Corridor A	Corridor B	Corridor C	Corridor D
A. Total Acres To Be Converted Directly					
B Total Acres To Be Converted Indirectly, Or To Receive Services					
C. Total Acres In Corridor		0	0	0	0
PART IV *(To be completed by NRCS) Land Evaluation Information*					
A. Total Acres Prime And Unique Farmland		57			
B. Total Acres Statewide And Local Important Farmland		122			
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted					
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value					
PART V *(To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)*					
PART VI *(To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))*	Maximum Points				
1. Area In Nonurban Use	15	15			
2. Perimeter In Nonurban Use	10	10			
3. Percent Of Corridor Being Farmed	20	10			
4. Protection Provided By State And Local Government	20	0			
5. Size of Present Farm Unit Compared To Average	10	10			
6 Creation Of Nonfarmable Farmland	25	1			
7. Availability Of Farm Support Services	5	0			
8. On-Farm Investments	20	5			
9. Effects Of Conversion On Farm Support Services	25	0			
10. Compatibility With Existing Agricultural Use	10	2			
TOTAL CORRIDOR ASSESSMENT POINTS	160	053	0	0	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland (From Part V)	100	100			
Total Corridor Assessment (From Part VI above or a local site assessment)	160	053	0	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	0153	0	0	0

1. Corridor Selected:	2. Total Acres of Farmlands to be Converted by Project:	3. Date Of Selection:	4. Was A Local Site Assessment Used?
Far West	229 Acres	1/18/07	YES ☐ NO ☐

5. Reason For Selection:
2006 Design

Signature of Person Completing this Part: [signature] DATE 1/18/07

NOTE: Complete a form for each segment with more than one Alternate Corridor

Appendix B

Request for Technical Assistance and SHPO Response

The Department of
Arkansas Heritage

Mike Beebe
Governor

Cathie Matthews
Director

Arkansas Arts Council
•
Arkansas Natural Heritage Commission
•
Delta Cultural Center
•
Historic Arkansas Museum
•
Mosaic Templars Cultural Center
•
Old State House Museum

Arkansas Historic Preservation Program

1500 Tower Building
323 Center Street
Little Rock, AR 72201
(501) 324-9880
fax: (501) 324-9184
tdd: (501) 324-9811
e-mail:
info@arkansaspreservation.org
website:
www.arkansaspreservation.com

Opportunity Employer

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AHTD
APR 2 4 2007
ENVIRONMENTAL
DIVISION

April 20, 2007

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

RE: Benton County – Bella Vista
Section 106 Review – FHwA
Cultural Resources Survey Report Entitled "US 71 Bella Vista Alignment Study Reassessment, Benton County, Arkansas"
AHTD Job Number 090224
AHPP Project Number 62392

Dear Mr. Malbrough:

My staff has reviewed the referenced cultural resources survey report. We concur that this research is of sufficient intensity to identify cultural resources in the areas of potential effect (APE), although all standing structures 50 years old or older in the APE should be recorded as archeological sites.

This Phase I survey is not of the intensity in some cases to evaluate properties for their eligibility for inclusion in the National Register of Historic Places. We do concur, though, with the findings and recommendations on the prehistoric sites and on the historic sites that have been recommended for avoidance or archeological testing to determine National Register eligibility. However, we find that there is a lack of specific archival information and fieldwork on the other house sites and farmsteads to make a determination. This can be handled in a Phase II survey and testing program.

It is our understanding that landowner access problems prevented archeological investigations from being conducted on some of the house sites in the APE. Therefore, we recommend that a programmatic agreement be developed to address this issue, National Register evaluation procedures, assessments of effect, and the resolution of any adverse effects. Since the State of Missouri is a partner in this project, we believe the Advisory Council on Historic Preservation may also wish to be consulted and be a signatory to this agreement.

Thank you for your interest and concern for the cultural heritage of Arkansas. If you have any questions, please contact George McCluskey of my staff at (501) 324-9880.

Sincerely,

Ken Grunewald
Deputy State Historic Preservation Officer

cc: Federal Highway Administration
Osage Nation
Historic Preservation Associates
Arkansas Archeological Survey

The Department of
Arkansas
Heritage

Mike Beebe
Governor

Cathie Matthews
Director

Arkansas Arts Council
•
Arkansas Natural Heritage Commission
•
Delta Cultural Center
•
Historic Arkansas Museum
•
Mosaic Templars Cultural Center
•
Old State House Museum

Arkansas Historic Preservation Program

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323 Center Street
Little Rock, AR 72201
(501) 324-9880
fax: (501) 324-9184
tdd: (501) 324-9811
e-mail:
info@arkansaspreservation.org
website:
[redacted]arkansaspreservation.com

[redacted]nity Employer

March 16, 2007

RECEIVED
AHTD

MAR 2 0 2007

ENVIRONMENTAL
DIVISION

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

RE: Benton County – Bella Vista
Section 106 Review – FHWA
Bella Vista Bypass Toll Facility
AHPP Tracking #62392, AHTD Job # 090224

Dear Mr. Malbrough:

This letter is written in response to your inquiry regarding properties of architectural or historical significance in the area of the above referenced project. The staff of the Arkansas Historic Preservation Program has reviewed your submission and determined that Structures E, AA, CC, EE, and YY are eligible for inclusion in the National Register of Historic Places. Structure B, the New Home Church and School was listed on the National Register of Historic Places on January 28, 1988. We have determined that the remaining 48 structures are not eligible for inclusion in the National Register of Historic Places.

Once the undertaking is further along in the planning stages, we look forward to reviewing the proposed project. If you should have any questions or comments, please do not hesitate to contact Elizabeth A. James of my staff at (501) 324-9880.

Sincerely,

Ken Grunewald
Deputy State Historic Preservation Officer

cc: Federal Highway Administration

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

Dan Flowers
Director
Telephone (501) 569-2000

P.O. Box 2261
Little Rock, Arkansas 72203-2261
Telefax (501) 569-2400

March 15, 2007

Mr. Ken F. Grunewald
Deputy State Historic Preservation Officer
1500 Tower Building
323 Center Street
Little Rock, Arkansas 72201

Subject: Request for Technical Assistance
Job Number 090224
Bella Vista Bypass Toll Facility
Benton County

Dear Mr. Grunewald.

The project proposes to construct a four-lane divided highway on new location from the I-540 and Highway 71B interchange south of Bella Vista in Benton County, Arkansas that would reconnect with Highway 71 in Pineville, Missouri. Fifty-three structures appear to be at least 50 years old and may be impacted by the project.

Photographs, descriptions and a location map for the structures are included so your staff may evaluate the eligibility of these structures to the National Register. If, in the opinion of the AHPP the structure is eligible, please include any mitigation alternatives in the response letter. If you have any questions about the project, please contact Robert Scoggin of my staff at 569-2077.

Sincerely,

Lynn P. Malbrough
Division Head
Environmental Division

LM:RS:pb



AHTD Job 090224

Structure A

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a metal roof and no windows. The structure is Craftsman influenced and was probably built in the late 1930s. The structure is not eligible to the National Register due to the fact that a metal roof has been added and the windows have been removed. The structure is abandoned.



AHTD Job 090224

Structure B

In the opinion of AHTD the structure is **Eligible**.

The structure is frame with a composite shingle roof, and wooden windows. The structure built in 1896. The structure was previously determined eligible to the National Register by AHPP. The structure is currently in use as a church.



AHTD Job 090224

Structure C

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a composite shingle roof and metal windows. The structure was probably built in the mid 1960s. The structure is not 50 years old and is not eligible to the National Register. The structure is currently in use as a residence.



AHTD Job 090224

Structure D

In the opinion of AHTD the structure is **Not Eligible**.

The structure is rook with a composite shingle roof, side garage edition and wooden windows. The structure is Craftsman influenced and was probably built in the mid 1930s. The structure was previously determined not eligible to the national register by AHPP. The structure is abandoned.



AHTD Job 090224

Structure E

In the opinion of AHTD the structure is **Eligible**.

The structure is a wood barn with a wood shingle roof. The barn is the only extant structure of a 1920s farmstead. The structure is eligible to the National Register due to the fact that it is a good example of early agricultural buildings in the area of Bella Vista.



AHTD Job 090224

Structure F

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a composite shingle roof, side garage edition and vinyl windows. The structure is of the Minimal Traditional style and was probably built in the late 1950s. The structure is not eligible to the National Register due to the addition of a side garage and vinyl windows. The structure is in use as a residence.



AHTD Job 090224

Structure G

In the opinion of AHTD the structure is **Not Eligible**.

The structure is a metal barn. The structure is not eligible to the National Register due to the fact that the original wood exterior was replaced with sheet metal and there are better examples of agricultural buildings in the area. The structure is in use as a residence.



AHTD Job 090224

Structure H

In the opinion of AHTD the structure is **Not Eligible**.

The structure is rock with a composite shingle roof, replaced front window, aluminum siding and wooden windows. The structure is Craftsman influenced and was probably built in the mid 1940s. The structure is not eligible to the National Register due to the fact that aluminum siding was added and the front picture window was replaced. The structure is in use as a residence.



AHTD Job 090224

Structure I

In the opinion of AHTD the structure is **Not Eligible**.

The structure is brick with a composite shingle roof; rear addition, vinyl siding and vinyl windows. The structure was Craftsman influenced and was probably built in the late 1930s. The structure is not eligible to the National Register due to the fact that a new exterior has been constructed of brick and the window have been replaced with vinyl ones. The structure is in use as a residence.



AHTD Job 090224

Structure J

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a metal roof and wooden windows. The structure was probably built in the mid 1910s. The structure is not eligible to the National Register due to the fact that any architectural integrity has been compromised by its dilapidated condition. The structure is abandoned



AHTD Job 090224

Structure K

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a composite shingle roof, and vinyl windows. The structure is Ranch style and was probably built in the early 1960s. The structure is not eligible to the National Register due to the fact that the structure is not 50 years old. The structure is currently in use as a residence.



AHTD Job 090224

Structure L

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a composite shingle roof, vinyl siding, and vinyl windows. The structure is Craftsman influenced and was probably built in the late 1940s. The structure is not eligible to the National Register due to the fact that vinyl siding and windows have been added. The structure is currently in use as a residence.



AHTD Job 090224

Structure M

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a composite shingle roof, vinyl siding and wooden windows. The structure is Craftsman influenced and was probably built in the early to mid 1940s. The structure is not eligible to the National Register due to the fact that the vinyl siding has been added. The structure is currently in use as a residence.



AHTD Job 090224

Structure N

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a metal roof, numerous different kinds of siding and wooden windows. The structure is Folk Vernacular and was probably built in the early 1940s The structure is not eligible to the National Register due to the fact that is it has numerous types of siding which has compromised any architectural integrity it may have had. The structure is currently in use as a residence.



AHTD Job 090224

Structure O

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a composite shingle roof, vinyl siding, side additions and wooden windows. The structure is Craftsman influenced and was probably built in the mid 1930s. The structure is not eligible to the National Register due to the fact that vinyl siding and a side addition were added. The structure is currently in use as a residence.



AHTD Job 090224

Structure P

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a composite shingle roof, and metal windows. The structure was probably built in the mid 1960s. The structure is not 50 years old and is not eligible to the National Register The structure is currently in use as a residence.

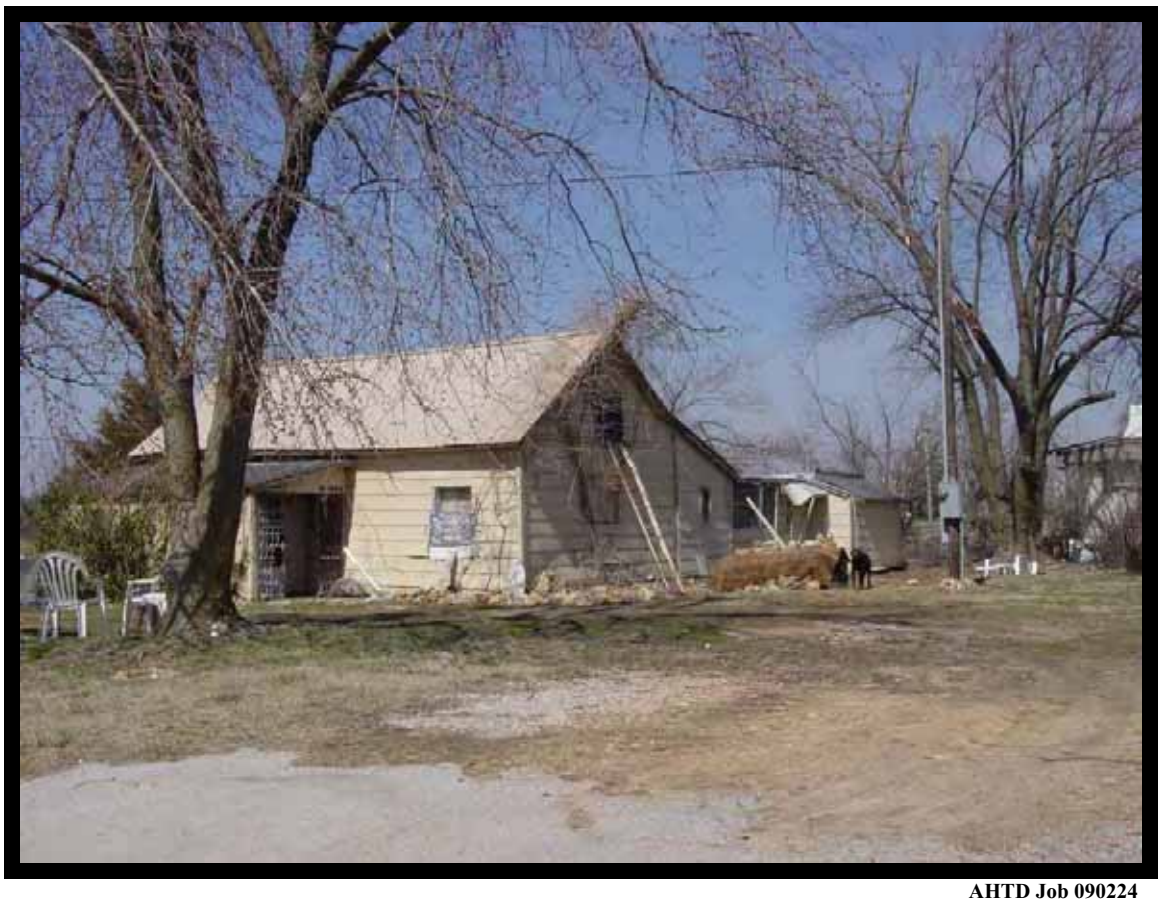


AHTD Job 090224

Structure Q

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a composite shingle roof and metal windows. The structure is of the Ranch style and was probably built in the mid 1960s. The structure is not 50 years old and is not eligible to the National Register. The structure is currently in use as a residence.



AHTD Job 090224

Structure R

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a metal roof, rear additions, aluminum siding and metal windows. The structure is Craftsman influenced and was probably built in the early 1930s. The structure is not eligible to the National Register due to the fact that rear additions, metal windows and aluminum siding were added. The structure is currently in use as a residence.



AHTD Job 090224

Structure S

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a composite shingle roof, vinyl siding, a side addition and metal windows. The structure is Folk Vernacular and was probably built in the late 1920s. The structure is not eligible to the National Register due to the fact that the vinyl siding and a side addition were added. The structure is currently in use as a residence.



AHTD Job R090224

Structure T

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a composite shingle roof and metal windows. The structure is of the Minimal Traditional style and was probably built in the late 1950s. The structure is not eligible to the National Register due to the fact that it is on the border of 50 years old and there are better examples in the area. The structure is currently in use as a business.



AHTD Job 090224

Structure U

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a composite shingle roof, aluminum siding and wooden windows. The structure is Craftsman influenced and was probably built in the late 1940s. The structure is not eligible to the National Register due to the fact that aluminum siding was added. The structure is currently in use as a residence.



AHTD Job 090224

Structure V

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a composite shingle roof, aluminum siding and wooden windows. The structure is Ranch style and was probably built in the late 1960s. The structure is not 50 years old and is not eligible to the National Register. The structure is currently in use as a residence.



AHTD Job 090224

Structure W

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a composite shingle roof, side addition and metal windows. The structure was probably built in the late 1940s. The structure is not eligible to the National Register due to the fact that the windows have been replaced; a side addition and new exterior siding were added. The structure is currently in use as a residence.



AHTD Job 090224

Structure X

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a composite shingle roof, side additions, vinyl siding and vinyl windows. The structure is of the Craftsman style and was probably built in the late 1930s. The structure is not eligible to the National Register due to the fact that side additions, vinyl siding and vinyl windows were added. The structure is currently in use as a residence.



AHTD Job 090224

Structure Y

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a composite shingle roof, a rear addition, aluminum siding and vinyl windows. The structure is of the Minimal Traditional style and was probably built in the mid 1950s. The structure is not eligible to the National Register due to the fact that a rear addition, aluminum siding and vinyl windows were added. The structure is currently in use as a residence.



AHTD Job 090224

Structure Z

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a pyramidal composite shingle roof, a rear addition, aluminum siding and vinyl windows. The structure is of the Craftsman style and was probably built in the late 1930s. The structure is not eligible to the National Register due to the fact that a rear addition, aluminum siding and vinyl windows were added. The structure is currently in use as a residence.



AHTD Job 090224

Structure AA

In the opinion of AHTD the structure is **Eligible**.

The structure is a wooden barn with a metal roof. The structure is part of a farmstead built in the early 1930s (the other buildings in the farmstead are BB and CC). The structure is eligible to the National Register as a contributing structure to the farmstead.



AHTD Job 090224

Structure BB

In the opinion of AHTD the structure is **Eligible**.

The structure is frame with a composite shingle roof, metal and wooden windows. The structure has craftsman influences and is part of a farmstead built in the early 1930s (the other buildings in the farmstead are AA and CC). The structure is eligible to the National Register as a contributing structure to the farmstead.



AHTD Job 090224

Structure CC

In the opinion of AHTD the structure is **Eligible**.

The structure is rock and frame with a composite shingle roof and wooden windows. The structure is of the Craftsman style and is part of a farmstead built in the early 1930s (the other buildings in the farmstead are AA and BB). The structure is eligible to the National Register as a contributing structure to the farmstead.



AHTD Job 090224

Structure DD

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a metal roof and wooden windows. The structure is Ranch style and was probably built in the late 1960s. The structure is not 50 years old and is not eligible to the National Register. The structure is currently in use as a residence.



AHTD Job 090224

Structure EE

In the opinion of AHTD the structure is **Eligible**.

The structure is frame with a pyramidal composite shingle roof, a rear addition, and wooden windows. The structure is Folk Victorian and was probably built in the early 1900s. The structure is eligible to the National Register as a good example of the Folk Victorian style. The structure is currently in use as a residence.



AHTD Job 090224

Structure FF

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a composite shingle roof, vinyl siding and vinyl windows. The structure is Folk Vernacular and was probably built in the early 1940s. The structure is not eligible to the National Register due to the fact that vinyl siding and vinyl windows were added. The structure is currently in use as a residence.



AHTD Job 090224

Structure GG

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a pyramidal composite shingle roof, aluminum siding and vinyl windows. The structure is an American Foursquare and was probably built in the mid 1930s. The structure is not eligible to the National Register due to the fact that aluminum siding and vinyl windows were added. The structure is currently in use as a residence.



AHTD Job 090224

Structure HH

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a composite shingle roof, a side addition, vinyl siding and vinyl windows. The structure is Craftsman influenced and was probably built in the mid 1940s. The structure is not eligible to the National Register due to the fact that a side addition, vinyl siding and vinyl windows were added. The structure is currently in use as a residence.



AHTD Job 090224

Structure II

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a composite shingle roof, vinyl siding and vinyl windows. The structure is Ranch style and was probably built in the late 1950s. The structure is not eligible to the National Register due to the fact that vinyl siding and vinyl windows were added. The structure is currently in use as a residence.



AHTD Job 090224

Structure JJ

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a composite shingle roof, vinyl siding and vinyl windows. The structure is Folk Vernacular and was probably built in the mid 1920s. The structure is not eligible to the National Register due to the fact that vinyl siding and vinyl windows were added. The structure is currently in use as a residence.



AHTD Job 090224

Structure KK

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a composite shingle roof, aluminum siding and metal windows. The structure is Folk Vernacular and was probably built in the early 1940s. The structure is not eligible to the National Register due to the fact that aluminum siding and metal windows were added. The structure is currently abandoned.



AHTD Job 090224

Structure LL

In the opinion of AHTD the structure is **Not Eligible**.

The structure is a wooden barn with a metal roof. The date of construction for this barn is probably in the mid 1930s. The structure is not eligible to the National Register due to the fact that its physical condition compromises its architectural integrity and there are better examples of this type of structure in the area.



AHTD Job 090224

Structure MM

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a composite shingle roof, aluminum siding and metal windows. The structure is of the Craftsman style and was probably built in the mid 1940s. The structure is not eligible to the National Register due to the fact that aluminum siding and metal windows were added. The structure is currently in use as a residence.



AHTD Job 090224

Structure NN

In the opinion of AHTD the structure is **Not Eligible**.

The structure is a wooden barn with a metal roof. The date of construction for this barn is probably in the mid 1940s. The structure is not eligible to the National Register due to the fact that there are better examples of this type of structure in the area.



AHTD Job 090224

Structure OO

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a composite shingle roof, front and side additions, aluminum siding and wooden windows. The structure was probably built in the late 1910s. The structure is not eligible to the National Register due to the fact that front and side additions and aluminum siding were added. The structure is currently in use as a church.



AHTD Job 090224

Structure PP

In the opinion of AHTD the structure is **Not Eligible**.

The structure is cinder block with a metal roof, side and rear additions and metal windows. The structure was probably built in the early 1950s. The structure is not eligible to the National Register due to the fact that rear and side additions were added. The structure is currently in use as a business.



AHTD Job 090224

Structure QQ

In the opinion of AHTD the structure is **Not Eligible**.

The structure is a wooden barn with a metal roof. The date of construction for this barn is probably in the mid 1940s. The structure is not eligible to the National Register due to the fact that there are better examples of this type of structure in the area.



AHTD Job 090224

Structure RR

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a composite shingle roof, aluminum siding, side addition and metal windows. The structure is of the Craftsman style and was probably built in the mid 1940s. The structure is not eligible to the National Register due to the fact that a side addition, aluminum siding and metal windows were added. The structure is currently in use as a residence.



AHTD Job 090224

Structure SS

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a composite shingle roof, vinyl siding and metal windows. The structure is of the Minimal Traditional style and was probably built in the mid 1950s. The structure is not eligible to the National Register due to the fact that aluminum siding and metal windows were added. The structure is currently in use as a residence.



AHTD Job 090224

Structure TT

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a composite shingle roof, aluminum siding and wooden windows. The structure is of the Craftsman style and was probably built in the late 1940s. The structure is not eligible to the National Register due to the fact that aluminum siding was added. The structure is currently in use as a residence.



AHTD Job 090224

Structure UU

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a composite shingle roof, side addition, wooden and metal windows. The structure is of the Craftsman style and was probably built in the mid 1930s. The structure is not eligible to the National Register due to the fact that in is in the process of being completely remodeled and will not retain its architectural integrity when completed. The structure is currently in use as a residence.



AHTD Job 090224

Structure VV

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a composite shingle roof, aluminum siding, rear addition and wooden windows. The structure is of the Craftsman style and was probably built in the early 1930s. The structure is not eligible to the National Register due to the fact that aluminum siding and a rear addition were added. The structure is currently in use as a residence.



AHTD Job 090224

Structure WW

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a metal roof, vinyl siding and vinyl windows. The structure is Craftsman influenced and was probably built in the late 1940s. The structure is not eligible to the National Register due to the fact that vinyl siding and vinyl windows were added. The structure is currently in use as a residence.



AHTD Job 090224

Structure XX

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a composite shingle roof, aluminum siding, rear addition and metal windows. The structure is Folk Vernacular and was probably built in the early 1940s. The structure is not eligible to the National Register due to the fact that aluminum siding and metal windows were added. The structure is currently in use as a residence.



AHTD Job 090224

Structure YY

In the opinion of AHTD the structure is **Eligible**.

The structure is log with a hipped composite shingle roof and wooden windows. The date of construction for this structure is unknown, but it appears to have a Craftsman roof. The structure is eligible to the National Register as a good example of a log structure in the area. The structure is currently in use as a church.



AHTD Job 090224

Structure ZZ

In the opinion of AHTD the structure is **Not Eligible**.

The structure is frame with a composite shingle roof and metal windows. The structure is Ranch style and was probably built in the mid 1960s. The structure is not 50 years old and is not eligible to the National Register. The structure is currently in use as a residence.

occurred since the LPH were presented to the public at Design Public Hearings (DPH) held in Gravette and Bella Vista on November 15 and November 16, 2006, respectively.



AHTD Job 090224

Structure AAA

In the opinion of AHTD the structure is **Not Eligible**.

The structure is a wooden barn with a metal roof. The date of construction for this barn is probably in the mid 1940s. The structure is not eligible to the National Register due to the fact that there are better examples of this type of structure in the area.

The Department of
Arkansas
Heritage

Mike Beebe
Governor

Cathie Matthews
Director

Arkansas Arts Council
•
Arkansas Natural Heritage Commission
•
Delta Cultural Center
•
Historic Arkansas Museum
•
Mosaic Templars Cultural Center
•
Old State House Museum

Arkansas Historic Preservation Program

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March 16, 2007

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ENVIRONMENTAL
DIVISION

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

RE: Benton County – Bella Vista
Section 106 Review – FHWA
Bella Vista Bypass Toll Facility
AHPP Tracking #62392, AHTD Job # 090224

Dear Mr. Malbrough:

This letter is written in response to your inquiry regarding properties of architectural or historical significance in the area of the above referenced project. The staff of the Arkansas Historic Preservation Program has reviewed your submission and determined that Structures E, AA, CC, EE, and YY are eligible for inclusion in the National Register of Historic Places. Structure B, the New Home Church and School was listed on the National Register of Historic Places on January 28, 1988. We have determined that the remaining 48 structures are not eligible for inclusion in the National Register of Historic Places.

Once the undertaking is further along in the planning stages, we look forward to reviewing the proposed project. If you should have any questions or comments, please do not hesitate to contact Elizabeth A. James of my staff at (501) 324-9880.

Sincerely,

Ken Grunewald
Deputy State Historic Preservation Officer

cc: Federal Highway Administration

APPENDIX C

DRAFT PROGRAMMATIC AGREEMENT

PROGRAMMATIC AGREEMENT
AMONG
THE FEDERAL HIGHWAY ADMINISTRATION,
THE ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
AND
THE ARKANSAS STATE HISTORIC PRESERVATION OFFICER,
REGARDING
THE CONSTRUCTION OF AHTD JOB NUMBER 009969 (090224)
FAP NUMBER DPR-0051(1)
U.S. 71-BELLA VISTA TO PINEVILLE
BENTON COUNTY, ARKANSAS AND MCDONALD COUNTY, MISSOURI

WHEREAS, the Federal Highway Administration (FHWA) has determined that proposed improvement of U.S. 71 from Bella Vista, Arkansas to Pineville, Missouri (the Project) in Benton County, Arkansas and McDonald County, Missouri is necessary to serve the transportation needs of northwest Arkansas and southwest Missouri to improve traffic flow, safety and capacity in the Project area; and

WHEREAS, a Preferred Alignment for the Project was identified in the Draft Environmental Impact Statement based on the review of records regarding previously recorded archeological sites and historic properties, a reconnaissance of high probability areas and an architectural resources survey within the area of potential effect (APE) of alternative routes; and

WHEREAS, a Selected Alignment for the Project was identified in the Final Environmental Impact Statement and a Phase I survey and subsequent Phase II site evaluation resulted in a decision of no historic properties affected and the Selected Alignment was finalized in the Record of Decision (ROD); and

WHEREAS, portions of the Selected Alignment in Arkansas were changed after the ROD had been finalized due to input obtained during the Location Public Hearing, Value Engineering Analysis, and the Design Public Hearing; and these subsequent changes have been addressed in a Design Reassessment; and

WHEREAS, the Arkansas Highway and Transportation Department (AHTD) and the Missouri Department of Transportation (MDOT) have conducted separate design reassessments and Phase I evaluations for the portion of the Project within each State. The FHWA, working with MDOT, in consultation with the Missouri State Historic Preservation Officer has concluded that no historic properties will be affected within the proposed project area in Missouri and no further historic or archeological investigations are necessary within that state; and

WHEREAS, this Programmatic Agreement (PA) is pursuant only to that part of the Project within Arkansas and does not warrant participation by MDOT or the Missouri State Historic Preservation Officer; and

WHEREAS, the FHWA has determined that the Project may have an effect on properties that are eligible for inclusion in the National Register of Historic Places (the Register) and in

accordance with 36 CFR Part 800 *Protection of Historic Resources*, regulations implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470f), as amended, must address these effects; and

WHEREAS, additional Phase I cultural resources surveys have been conducted in all areas where the changes have occurred and were of sufficient intensity to identify cultural resources within the APE of the current Selected Alignment; and

WHEREAS, the architectural components of all standing structures 50 years old or older associated with the Arkansas portion of the Project have been evaluated by the FHWA in consultation with the Arkansas State Historic Preservation Officer (SHPO) and six structures (Structures B, E, AA, CC, EE and YY) have been determined eligible for inclusion in the National Register. Design adjustments have resulted in the avoidance of all six structures and none of them will be affected by construction of the proposed Project; and

WHEREAS, three archeological sites (3BE634, 3BE748, and 3BE756) have been identified and have been recommended for Phase II evaluation and a number of other archeological sites have been identified within the APE in Arkansas but not yet evaluated due to property access issues. None of the archeological sites identified appear to contain elements that would warrant preservation in place or that would otherwise necessitate a FHWA Section 4(f) analysis; and

WHEREAS, the signatories agree that all identification, evaluation and reporting efforts have and shall follow the Secretary of the Interior's *Standards and Guidelines for Archeology and Historic Preservation* (48 FR 44716-39) and *A State Plan for the Conservation of Archeological Resources in Arkansas* (Davis ed. 1994); and

WHEREAS, the FHWA has consulted with representatives of the Osage Nation, the Quapaw Tribe of Oklahoma, the United Keetoowah Band of Cherokee Indians and the Cherokee Nation of Oklahoma regarding the project. All four Tribes expressed interest in the project and requested continued consultation as the project develops. None of them requested signatory status on this PA, but may want to be included as signatories on any future agreements that deal specifically with the treatment of sites that contain Native American components; and

WHEREAS, the FHWA has consulted with the Advisory Council on Historic Preservation (the Council) regarding the Project. The Council indicated that they would not want to be a party to this PA unless controversy or extra-ordinary circumstances developed as the project proceeded. They have requested, and FHWA shall provide them with, standard notification of adverse effect documentation as specified in 36 CFR Part 800.6; and

WHEREAS, the FHWA and AHTD have developed this PA under the guidance and in consultation with the SHPO; and

WHEREAS, the treatment of human remains and grave associated objects shall follow the Council's policy statement regarding the *Treatment of Burial Sites, Human Remains and Funerary Objects*, the procedures set forth in the Native American Graves Protection and Repatriation Act (NAGPRA) (25 U.S.C. § 3001 et seq.; 43 CFR Part 10) and guidelines promulgated under the Arkansas State Burial Law (Act 753 of 1991, as amended); and

WHEREAS, the definitions set forth in 36 CFR Part 800 are applicable throughout this PA; and

NOW, THEREFORE, the signatories agree that the Project shall be implemented in accordance with the following stipulations in order to take into account the effect of the Project on historic properties.

STIPULATIONS

The FHWA shall ensure that the following stipulations are carried out prior to taking any action that could have an effect on properties listed in or considered eligible to the National Register of Historic Places.

I. AREA OF POTENTIAL PROJECT EFFECT

The APE is defined as the Selected Alignment as identified in the 2007 Design Reassessment and in the Phase I report (Klinger, Dickson and Gray 2007). Should the APE change, the FHWA shall ensure that any areas requiring additional survey will follow all appropriate identification, evaluation and reporting guidelines as outlined in the Secretary of the Interior's *Standards and Guidelines for Archeology and Historic Preservation* (48 FR 44716-39) and *A State Plan for the Conservation of Archeological Resources in Arkansas* (Davis ed. 1994).

II. ARCHEOLOGICAL RESOURCES

A. Archeological sites 3BE634, 3BE748, and 3BE756 will be affected by construction of the Project and will require Phase II assessment to determine their National Register eligibility. In addition, there are a number of archeological sites that were not defined or evaluated during the Phase I Survey due to property access issues. Most of these are archeological components that are associated with 20th century farmsteads, some of which are currently used as private residences. All of these will also require further evaluation to determine their eligibility.

1. The FHWA shall ensure that additional research and investigations are conducted as necessary to define, document and determine the eligibility of all unevaluated archeological resources within the APE. This includes recording all archeological components associated with standing structures that are 50 years old or older, many of which could not be defined or properly recorded at the time of the Phase I field work due to property access issues. Archival research will be conducted and fieldwork will be sufficient to determine National Register eligibility and include site sizes and boundaries, contents of the archeological record, depth and integrity of cultural deposits, presence or absence of cultural features, site functions, age and cultural affiliation. The Phase II assessments shall follow the Secretary of the Interior's *Standards and Guidelines for Archeology and Historic Preservation* (48 FR 44716-39) and the standards for fieldwork and report writing in *A State Plan for the Conservation of Archeological Resources in Arkansas* (Davis ed. 1994).

2. The FHWA shall determine National Register eligibility in consultation with the SHPO. All National Register evaluations shall follow the guidelines established in the National Register Bulletins *How to Apply the National Register Criteria for Evaluation* and *Guidelines for Evaluating and Registering Archeological Properties*. Disputes concerning eligibility shall be resolved by the Keeper of the National Register of Historic Places (the Keeper) as set forth in 36 CFR Part 800.

3. The FHWA shall ensure that a treatment plan is developed for any archeological site that is determined eligible for inclusion in the National Register that is adversely affected by the Project. This treatment plan will consider measures to avoid or mitigate adverse effects on archeological sites such as design adjustments, buffer zone establishment, protective fencing, construction monitoring and education of construction personnel, and will take into account engineering feasibility, cost and other factors considered appropriate by the FHWA. If adverse effects on archeological sites cannot be avoided, the FHWA shall consult with the signatories, to determine appropriate measures to mitigate adverse effects. These measures will be included in the treatment plan.

4. None of the archeological sites identified appear to contain deposits, features or other elements that would warrant preservation in place or that would require additional Section 4(f) evaluation. However, should additional research reveal archeological resources that warrant preservation in place, they will be avoided if prudent and feasible alternatives exist that avoid the use of the site(s) for highway construction.

5. If the appropriate treatment of an archeological site involves data recovery, the FHWA shall ensure that a data recovery plan is developed in consultation with the SHPO and other consulting parties, as appropriate. Data recovery plans shall meet the Secretary of the Interior's *Standards and Guidelines for Archeological Documentation* (48 FR 44734-37) and the standards in *A State Plan for the Conservation of Archeological Resources in Arkansas* (Davis ed. 1994).

6. The FHWA shall provide treatment plans and data recovery plans to all consulting parties for review. Comments shall be provided by these parties within thirty (30) calendar days. Failure to comment within thirty (30) calendar days of receipt shall be taken as concurrence with the submitted plan. Any disputes arising from such review shall be resolved in accordance with Stipulation XI of this PA.

B. Following completion of data recovery or other treatment plans, the appropriate analysis shall be conducted and final reports shall be prepared. The FHWA shall ensure that all final reports resulting from actions pursuant to this PA are provided to all signatories and to the National Park Service for possible submission to the National Technical Information Service. The FHWA shall ensure that all such reports in accordance with contemporary professional standards and meet the Secretary of the Interior's *Standards and Guidelines for Archeology and Historic Preservation* (48 FR 44716-39) and the standards in *A State Plan for the Conservation of Archeological Resources in Arkansas* (Davis ed. 1994). Precise location data may be provided only in a separate appendix if it appears that its release could jeopardize archeological sites.

C. Following appropriate analysis, all material and data recovered as a result of the Project from public land and from private land (with permission of the landowner) shall be curated in a permanent facility approved by the SHPO in accordance with 36 CFR Part 79.

III. ARCHITECTURAL RESOURCES

A. Architectural Resources are defined as structural features or elements of archeological sites that consist of historic buildings, structures, objects and districts.

B. An architectural survey of the Project area has been completed and the results and recommendations have been reviewed by the SHPO. A total of 54 structures 50 years old or older were identified in the project vicinity. Of these, six (Structures B, E, AA, CC, EE and YY) were determined eligible for inclusion in the National Register; 48 were found to be ineligible. Design adjustments were made to avoid all six eligible structures and none of them will be affected by construction of the proposed Project. Only 11 (Structures G, H, K, T, U, V, QQ, RR, UU, WW and XX) fall within the APE; the remaining 43 are outside the APE and are not expected to be impacted by Project construction. All 11 structures within the APE have been determined to be ineligible for inclusion in the National Register. No additional work regarding architectural resources is expected within the APE, aside from the noted documentation and evaluation of the archeological components associated with all standing structures that are 50 years old or older.

IV. FEDERALLY RECOGNIZED CONSULTING TRIBES

FHWA consultation with the Quapaw Tribe of Oklahoma and Osage Nation was initiated with letters soliciting views about the Project during the early planning stages. No formal responses have been received from either Tribe, but informal discussions have also occurred throughout the project with the NAGPRA Representative of both Tribes. The U.S. Government recognized all of Arkansas north of the Arkansas River as part of Osage hunting territory in the early 19th century. While the Quapaw do not usually consult on projects in Benton County, there is some documentation of a camp or camps along the removal route taken by the Quapaw in the Project vicinity although the exact location of the route is not known. Recently available (2006) research reviewed during the Design Reassessment resulted in the identification of a previously unknown route associated with the removal of the Cherokee. The exact location of the route has not been verified, but it is thought to have traveled along or near what is now State Highway 72 which crosses the Project in two places near the town of Hiwassee. In light of this new data, and in consultation with the SHPO, the United Keetoowah Band of Cherokee Indians and the Cherokee Nation of Oklahoma were added to the consultation list of appropriate federally recognized Tribes. During the Design Reassessment, representatives from all four of these Tribes were informed about the status of the Project and this PA. All expressed interest in the Project and requested continued consultation as it develops. None of them requested signatory status on this PA, but they may want to be included as signatories on any future agreements that deal specifically with the treatment of sites that contain Native American components. None of the tribal representatives contacted knew of specific sites that might be of cultural or religious significance to their Tribe within the Project area.

1. The FHWA shall ensure that consultation continues with the four Tribes listed above throughout the duration of the Project. If further research or analysis results in the identification of other federally recognized Tribes with interests or cultural ties to the Project, they will also be added to the list of consulting Tribes. Consultation methods will vary depending on the requests from the Tribes. They may include phone calls, on-site meetings, providing various levels of documentation for review, field reviews and jointly developing site specific treatment plans or agreement documents.

V. HUMAN REMAINS

Human remains are not expected at any of the sites identified, however if they are encountered during implementation of the terms of this PA or during implementation of the Project, all activity in the vicinity of the discovery shall cease and the AHTD shall notify the FHWA. The FHWA shall immediately notify the SHPO and other consulting parties. If it can be determined that the remains are not Native American, there will be no need to consult with the Native American parties. The FHWA shall consult with the SHPO and, as appropriate, the descendants or other interested parties to determine treatment of the human remains including analysis, if any, funerary objects, and proposed plans for reburial.

VI. QUALIFICATIONS

The FHWA shall ensure that all investigations pursuant to this PA are carried out by, or under the direct supervision of, a person or persons meeting the appropriate qualifications set forth in the Secretary of Interior's *Professional Qualifications Standards* (48 FR 44739) for archeology.

VII. COMMENCEMENT OF CONSTRUCTION

Construction may commence in a portion of the Project area once appropriate efforts to evaluate and mitigate adverse effects on historic properties in that portion have been completed and the SHPO and the FHWA have reviewed and commented on the results of the investigation and the SHPO concurs that the effort is consistent with the agreed evaluation plan, treatment plan or data recovery plan. Construction may commence if the FHWA and the SHPO concur that no adverse effect on eligible or listed cultural resources will occur as a result of construction in a specific area of the Project.

VIII. CONSULTING AND INTERESTED PARTY PARTICIPATION

The FHWA shall ensure access by consulting parties, the public and other interested parties, as appropriate, to all determinations made pursuant to this PA and shall consider or respond to comments or objections by consulting and interested parties in a timely manner. Comments from the Osage Nation, the Quapaw Tribe of Oklahoma, the United Keetoowah Band of Cherokee Indians and the Cherokee Nation of Oklahoma and interested parties, as appropriate, shall be solicited by the FHWA and shall be taken into account during the consultation process when Native American properties are identified in the APE.

Consulting parties, members of the public, or interested parties, as appropriate, may ask the Council to review a finding, become a party to consultation or request the Keeper of the National Register to review a determination of eligibility made under this PA by the FHWA and SHPO.

Stipulation IIA.5 provides for federally recognized tribal consultation in data recovery plans developed by the FHWA and the SHPO if the site involves prehistoric or historic Native American remains. If the Tribe or Tribes object to the data recovery plan agreed to by the other consulting parties, the FHWA shall consult with the Council pursuant to 36 CFR Part 800 (see also Stipulation XI).

IX. DISCOVERY SITUATIONS

Pursuant to 36 CFR Part 800.11, if cultural material is discovered during the implementation of the Project, the FHWA shall ensure all construction activities cease in the area of the discovery and the consulting parties or other interested parties, as appropriate, shall be notified. The FHWA and the SHPO shall determine eligibility of the discovered property for the Register and the treatment of the historic property. The other consulting parties and other interested parties, as appropriate, shall be provided with an opportunity to review and comment on proposed treatment plans. Disputes arising from such review shall be resolved in accordance with Stipulation XI.

X. DOCUMENTATION AND REPORTING REQUIREMENTS

A. A management summary and report will be prepared for all Phase II work (National Register eligibility evaluations) as soon as it is completed. Phase III archeological data recovery management summaries and reports will be prepared by individual site.

B. All archeological reports shall meet the Secretary of the Interior's *Standards and Guidelines for Archeology and Historic Preservation* (48 FR 44716-39) and the standards for fieldwork and report writing in *A State Plan for the Conservation of Archeological Resources in Arkansas* (Davis ed. 1994).

C. The FHWA and the SHPO shall ensure that site location information will be made available only to qualified persons in accordance with state and federal guidelines.

D. The FHWA shall provide management summaries, Phase II and Phase III reports, as necessary, to the SHPO for review. The SHPO comments shall be provided to the FHWA within thirty (30) calendar days.

E. The AHTD shall distribute all final reports to the FHWA, the SHPO, the appropriate federally recognized Tribe(s) and the Arkansas Archeological Survey.

XI. DISPUTE RESOLUTION

Should the SHPO or any consulting party object within thirty (30) calendar days to any findings, proposed actions or determinations made pursuant to this PA, the FHWA shall consult with the objecting party to resolve the objection. If the FHWA determines that the objection cannot be resolved, it shall request further comments from the Council pursuant to 36 CFR Part 800.6(b).

Any Council comment provided in response to such a request shall be taken into account by the FHWA in accordance with 36 CFR Part 800.6(b)(2) with reference only to the subject of the dispute; the FHWA responsibility to carry out all actions under this PA that are not subject to the dispute shall remain unchanged.

The consulting parties or one or more of the parties in cooperation may monitor efforts carried out pursuant to this PA.

XII. AMENDING THE PROGRAMMATIC AGREEMENT

Should any of the signatories to this PA believe that the terms of this PA are not being met or cannot be met, that party shall immediately notify the other signatories and request consultation to amend this PA in accordance with 36 CFR Part 800.13. The process to amend this PA shall be conducted in a manner similar to that leading to the execution of this PA.

XIII. TERMINATING THE PROGRAMMATIC AGREEMENT

Any signatory to this PA may terminate it by providing thirty (30) calendar days notice to the other parties, provided that the parties shall consult during the period prior to termination to seek agreement on amendments or other actions that would avoid termination. In the event of termination, the FHWA shall comply with 36 CFR Part 800.4 through 800.6 with regard to the Project covered by this PA.

XIV. FAILURE TO CARRY OUT THE PROGRAMMATIC AGREEMENT

In the event the FHWA does not carry out the terms of this PA, the FHWA shall comply with 36 CFR Part 800.4 through 800.6 with regard to the undertaking covered by this PA.

XV. FULFILLMENT OF SECTION 106 RESPONSIBILITIES

Execution and implementation of this PA evidences that the FHWA has afforded the Council a reasonable opportunity to comment pursuant to 36 CFR Part 800.13 on the proposed construction of the U.S. 71 Relocation, in Benton County, Arkansas and its effect on historic properties, and the FHWA has taken into account the effect of the Project on historic properties.

XV. FULFILLMENT OF SECTION 106 RESPONSIBILITIES

Execution and implementation of this PA evidences that the FHWA has afforded the Council a reasonable opportunity to comment pursuant to 36 CFR Part 800.13 on the proposed construction of the U.S. 71 Relocation, in Benton County, Arkansas and its effect on historic properties, and the FHWA has taken into account the effect of the Project on historic properties.

Signatories

FEDERAL HIGHWAY ADMINISTRATION

Sandra Otto
Division Administrator

6-13-07
Date

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

Dan Flowers
Director of Highways

6-8-07
Date

ARKANSAS STATE HISTORIC PRESERVATION OFFICER

Cathie Matthews
Arkansas SHPO

6/21/07
Date

DESIGN REASSESSMENT OF

BELLA VISTA-PINEVILLE, MO

ENVIRONMENTAL IMPACT STATEMENT

HIGHWAY 71 IN BENTON COUNTY, ARKANSAS

FROM BELLA VISTA, ARKANSAS TO THE

ARKANSAS/MISSOURI STATE LINE

Federal Highway Administration-Arkansas Division

FHWA-AR-EIS-98-01-F

Federal Project: DPR-00551(1)

State Project: 009969

APPROVED

Environmental Specialist
Federal Highway Administration

Date: 11/08/07

November 2007

The Bella Vista Bypass (Bypass) project, as shown in Figure 1, was initially evaluated as part of FAP DRP-0051(1), Arkansas State Highway and Transportation Department (AHTD) Job Number 009969, *U.S. 71, Bella Vista to Pineville, Missouri*, for which a Final Environmental Impact Statement (FEIS) was prepared by the HNTB Corporation. The FEIS was approved by the Federal Highway Administration (FHWA) on December 22, 1999, and the Record of Decision was issued April 19, 2000. A Design Reassessment that reflects changes made to the 1998 Conceptual Design following a Location Public Hearing (LPH) held in Bella Vista, Arkansas on May 21, 1998, was approved by FHWA on June 7, 2007.

Design work within Arkansas was initiated with HNTB Corporation in August 2001 under AHTD Job Number 090115. Due to funding conflicts and transportation priorities, work on the project was suspended between April 2004 and May 2005. Design modifications that have occurred since the LPH were presented to the public at Design Public Hearings (DPH) held in Gravette and Bella Vista on November 15 and November 16, 2006, respectively.

Comments received at the DPH supported an interchange located at Highway 279, or located at both Highway 279 and Highway 72 East. These comments stated that Highway 279 provided the most direct connection from the Bypass to the Northwest Arkansas Regional Airport area, and has been proposed as a future four-lane arterial route by the Northwest Arkansas Regional Planning Commission (NWARPC).

Currently, both highways are designated as collector routes. Highway 279 and Highway 72 East are located too close together for Bypass interchanges to be provided at both locations. From overpass to overpass, the main lanes will be 0.75 mile (1.2 kilometers) in length.

A planning study was performed that provided information to determine the best location of an interchange, at either Highway 279 or Highway 72 East. Highway 279 currently carries approximately 2,100 vehicles per day (vpd), and Highway 72 East carries approximately 7,000 vpd, where traversed by the Bypass. Traffic projections that were made for the planning period, Year 2026, predicted 7,100 vpd for Highway 279. Forecasts for Highway 72 anticipated 23,000 vpd north of the interchange and 15,200 vpd south of the interchange. The study recommended that an interchange be constructed at Highway 72 East because it is projected to carry more traffic during the planning period.

As a result of the comments, the Bypass design has been modified to include a frontage road in order to shorten travel time from Highway 279 to the interchange at Highway 72 East, as shown in Figure 2. No traffic projections have been made for the proposed frontage road. The facility and the frontage road have been designed so that a "split" interchange with collector/'distributor roads can be built in the future if and when traffic warrants the construction. The frontage road will be located along the south side of the Bypass and the design includes relocating a portion of County Road 553. The decision was made to place the frontage road on the south because travelers coming down

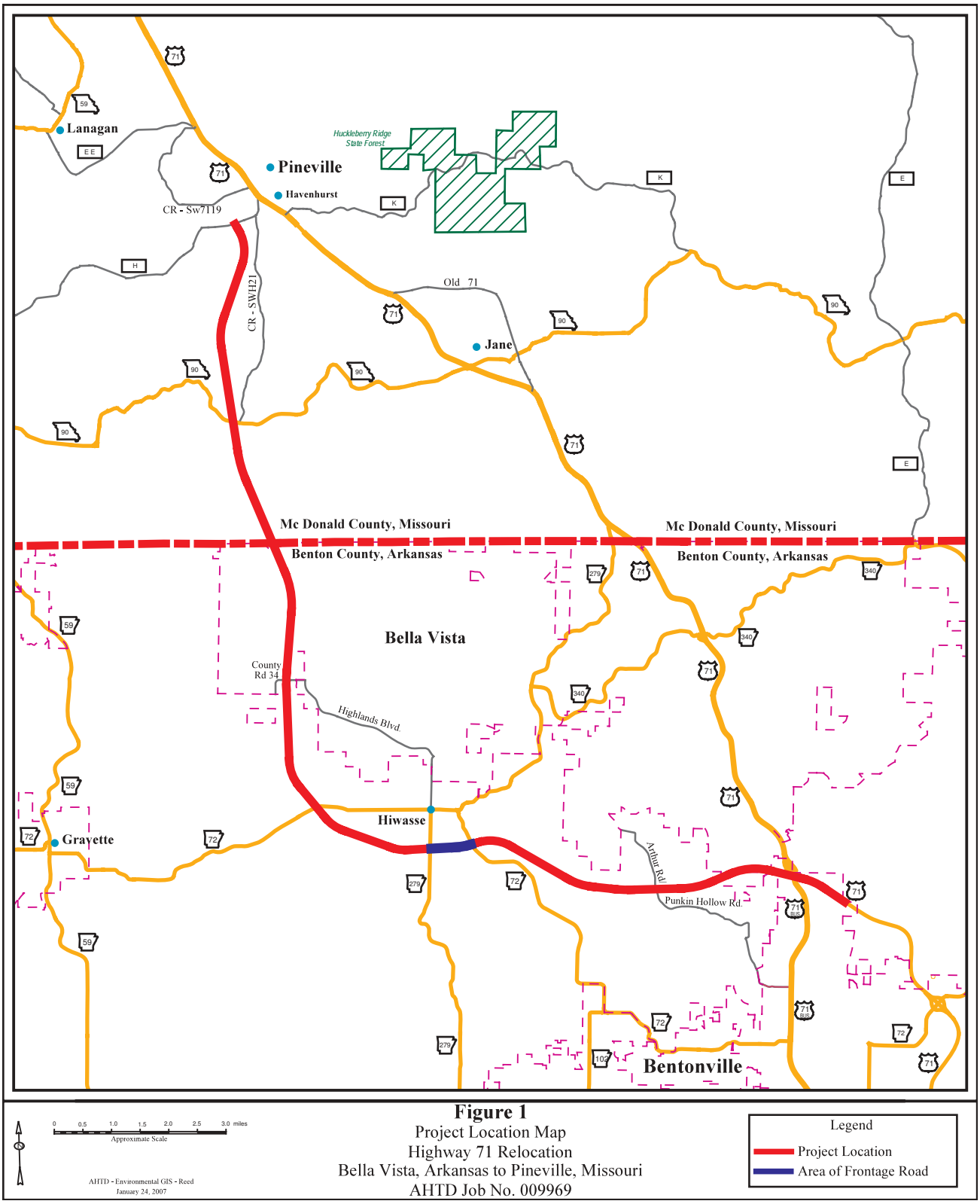
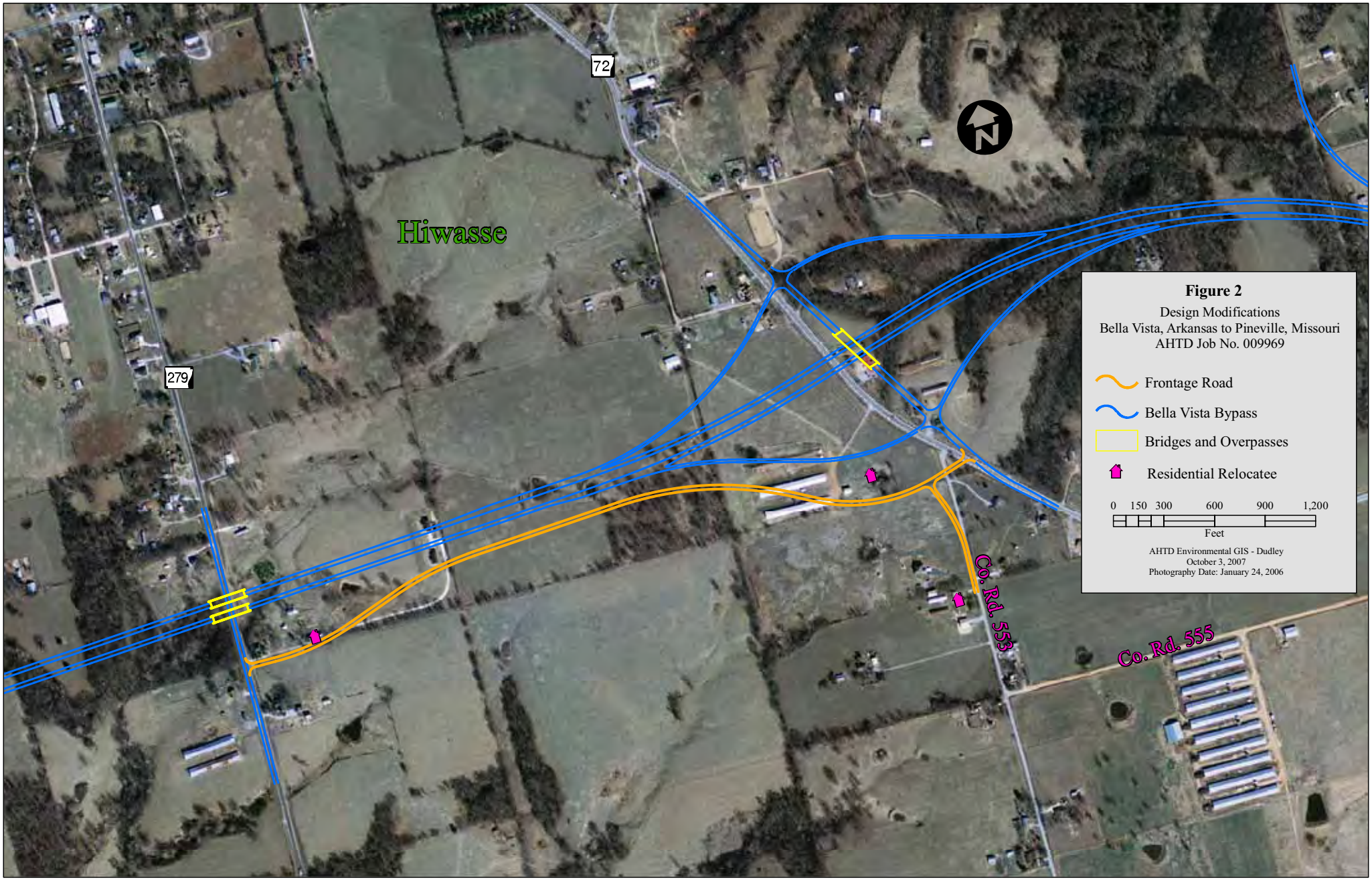


Figure 1
Project Location Map
Highway 71 Relocation
Bella Vista, Arkansas to Pineville, Missouri
AHTD Job No. 009969


72
Hiwasse
279
Co. Rd. 553
Co. Rd. 555
Figure 2
Design Modifications
Bella Vista, Arkansas to Pineville, Missouri
AHTD Job No. 009969
Frontage Road
Bella Vista Bypass
Bridges and Overpasses
Residential Relocatee
0 150 300 600 900 1,200
Feet
AHTD Environmental GIS - Dudley
October 3, 2007
Photography Date: January 24, 2006

Highway 279 from the north would use the closer Highway 72 interchange, and that the higher vpd traffic would be coming from the south on Highway 279.

The previous Bypass design that did not include the frontage road resulted in a loss of access to parcels of land. These land-locked parcels were absorbed in the overall project cost as damaged property. Construction of the frontage road will provide access to 25.8 acres (10.4 hectares) of previously land-locked parcels and minimize impacts to these landowners by restoring their access. Due to the re-established access, the addition of the frontage road will result in a reduction of the overall right of way cost, despite three additional residential relocations and the additional right of way required for the frontage road. Information on the modifications necessary for the frontage road and changes to County Road 553 is shown in Table 1.

Table 1

Frontage Road Length Mile (Kilometers)	Frontage Road Right of Way Acres (Hectares)	Relocation Cost	Total Estimated Cost*
0.9 (1.4)	18.2 (7.4)	$99,000	$14,000

*Reflects estimated cost of right of way reduction, relocation, and construction.

Addition of the frontage road and the relocated portion of County Road 553 will result in the impacts shown in Table 2.

Table 2

Relocations	Prime Farm Land Acres (Hectares)	Farm Land of Statewide Importance Acres (Hectares)
3 Residences	3.8 (1.5)	1.2 (0.5)

The area containing the proposed frontage road was assessed during the initial Phase I Cultural Resources survey. One historic standing structure was identified near the western end of the proposed frontage road and was determined potentially eligible to the National Register of Historic Places (NRHP). Subsequent study and documentation revealed that significant alterations had been made to the structure. Because of the alterations, a reassessment was conducted and resulted in a reversal of the previous eligibility determination (see attached correspondence). The proposed access road will cause destruction of the structure. Further assessment of the 20th century archeological

component associated with the structure will be handled according to the Programmatic Agreement with the State Historic Preservation Officer dated July 2, 2002.

In July 2004, HNTB Corporation conducted a *Traffic, Revenue and Toll Feasibility Study,* (2004 Study) for the US 71 Bella Vista Bypass Project. In the 2004 Study, the AHTD and MoDOT considered the feasibility of constructing the Bypass using toll financing. The 2004 Study was conducted as an investment-grade toll study to determine the potential toll financing feasibility of the bypass project.

A Bella Vista Bypass Toll Study Update (2006 Study) was conducted by HNTB Corporation to examine the feasibility of tolling only the Arkansas portion of the project, from the Arkansas-Missouri state line to the Highway 71/Highway 71 Business interchange north of Bentonville.

The 2006 Study determined the estimated capital cost of the Bypass and recommended an appropriate tolling solution that would require a commitment by the AHTD for road operation and maintenance but would fully fund the construction costs of the project with no additional funds necessary.

On April 12, 2006, the Arkansas State Highway Commission authorized the AHTD to construct and fund the Bypass as a toll facility, based on the combined findings of the 2004 Study and 2006 Study. Carter & Burgess, Inc. (C&B), an engineering consulting firm, was hired to design the toll facility and to reassess the toll feasibility.

The toll feasibility reassessment provided by C&B estimated a toll income that was substantially less than that which was previously suggested in the HNTB 2004 Study. Due to the results of the C&B toll reassessment, at this time the AHTD has decided to forego constructing the Bypass as a toll facility. Should this proposed roadway be converted to a toll facility in the future, the social, economic and environmental impacts associated with the conversion will be fully evaluated as a design reassessment or a separate National Environmental Policy Act document.

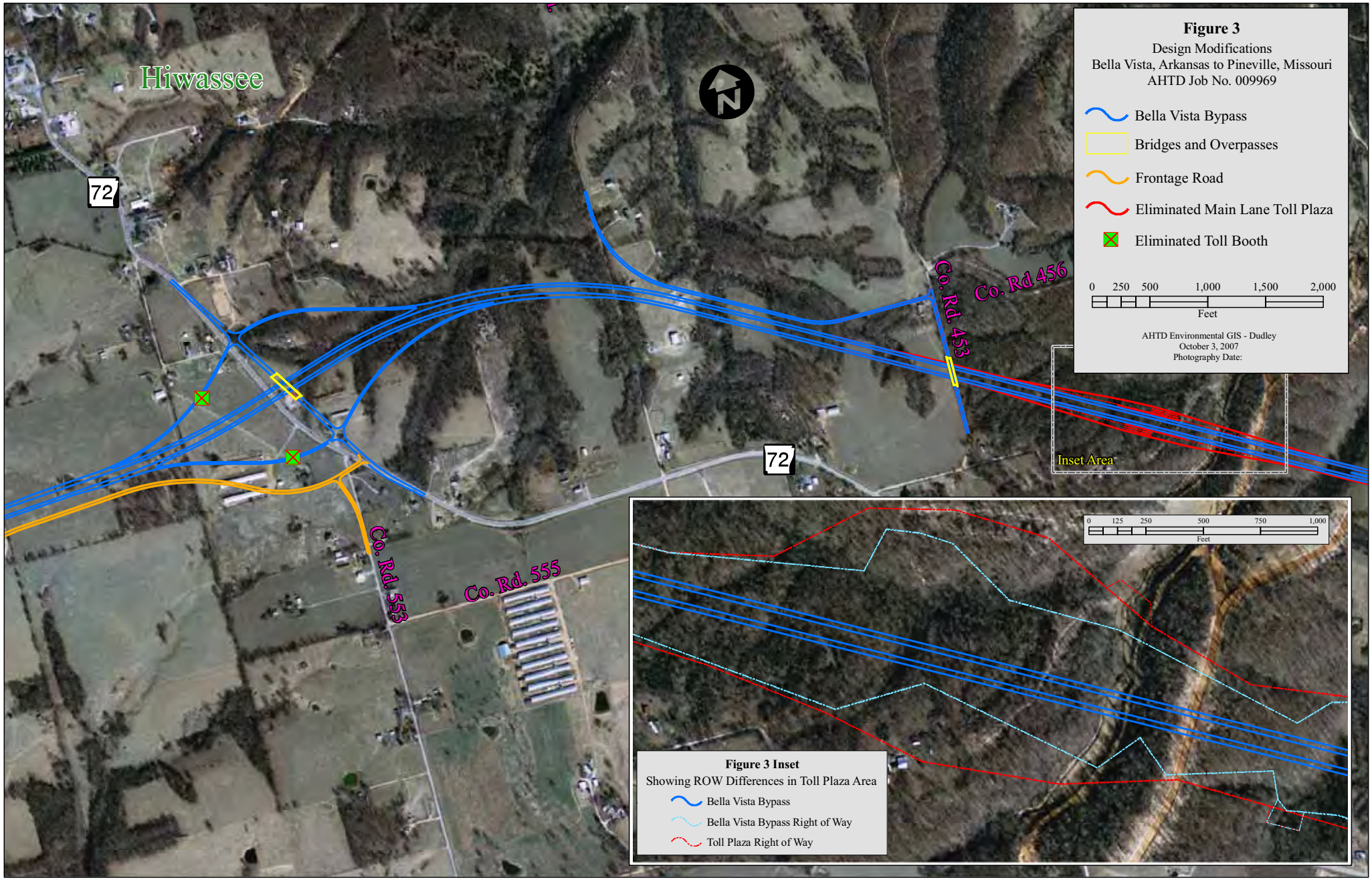
Toll booths located at both the Hiawasse interchange and the Highway 72 West interchange (shown on Figures 3 and 4, respectively), and a Main Lane Toll Plaza (Plaza) located east of Hiwasse (see Figure 3 Inset) have been eliminated from the design. The elimination of the interchange toll booths resulted in no significant change to the design. However, the elimination of the Plaza resulted in a reduction of right of way as shown in the Figure 3 Inset. Right of way will be reduced by 15.7 acres (6.4 hectare) in the Plaza area.

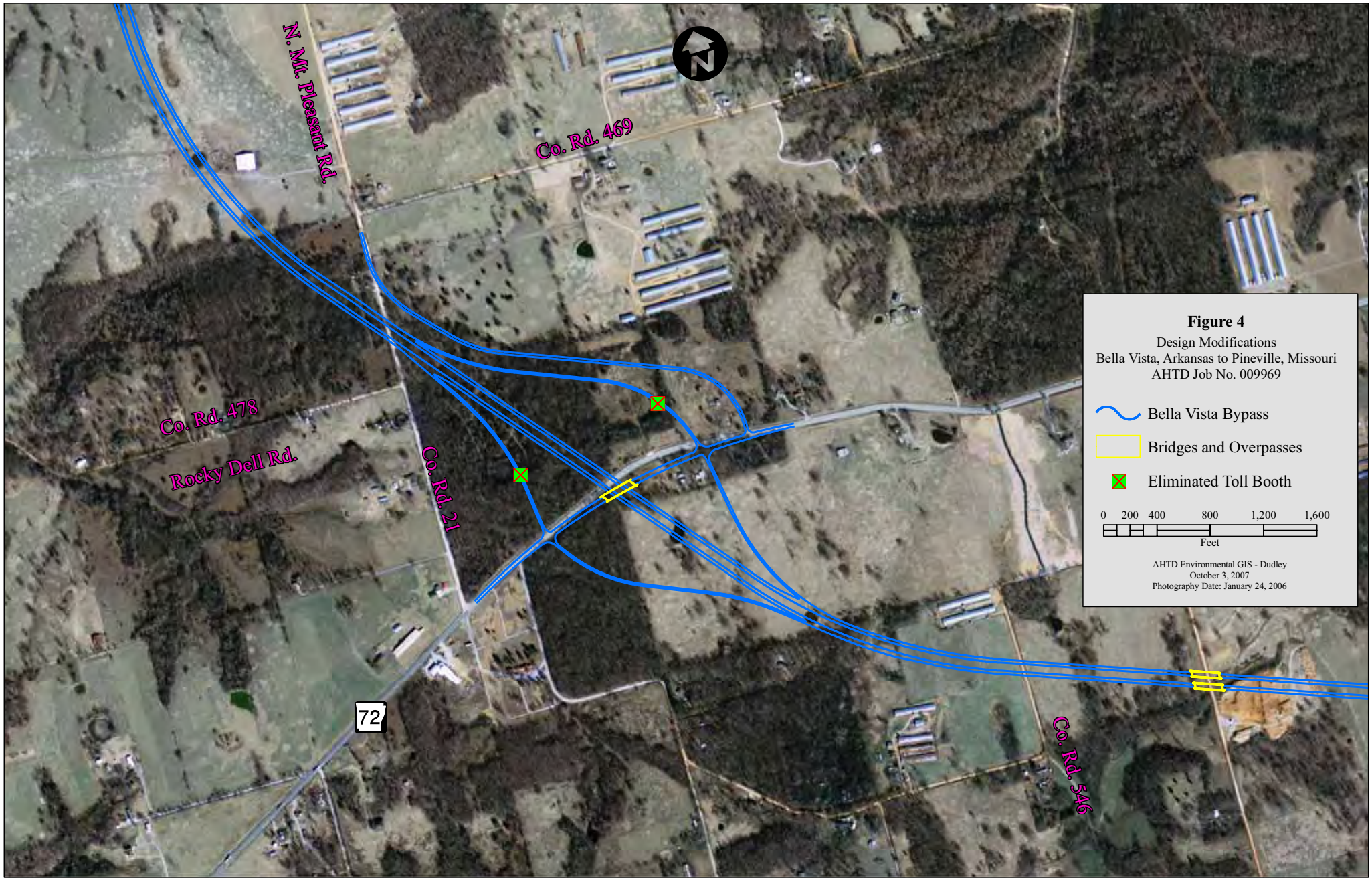
The elimination of the Toll Plaza will result in the estimated cost savings shown in Table 3.

This reevaluation of the environmental impacts resulting from design modifications was conducted through document review, site visits, and evaluation of the Design Public Hearing comments. The additional and/or revised impacts detailed in this design reassessment are not deemed significant.

Table 3		
Right of Way	Relocation	Construction & Design*
$180,000	$7,000	$20,360,000

*Includes estimated costs for the Toll Booths and Plaza.


Hiwassee
72
72
Co. Rd. 456
Co. Rd. 453
Co. Rd. 553
Co. Rd. 555
Inset Area
Figure 3
Design Modifications
Bella Vista, Arkansas to Pineville, Missouri
AHTD Job No. 009969
Bella Vista Bypass
Bridges and Overpasses
Frontage Road
Eliminated Main Lane Toll Plaza
Eliminated Toll Booth
0 250 500 1,000 1,500 2,000
Feet
AHTD Environmental GIS - Dudley
October 3, 2007
Photography Date:
0 125 250 500 750 1,000
Feet
Figure 3 Inset
Showing ROW Differences in Toll Plaza Area
Bella Vista Bypass
Bella Vista Bypass Right of Way
Toll Plaza Right of Way


N. Mt. Pleasant Rd.
Co. Rd. 469
Co. Rd. 478
Rocky Dell Rd.
Co. Rd. 21
72
Co. Rd. 546
N
Figure 4
Design Modifications
Bella Vista, Arkansas to Pineville, Missouri
AHTD Job No. 009969
Bella Vista Bypass
Bridges and Overpasses
Eliminated Toll Booth
0 200 400 800 1,200 1,600
Feet
AHTD Environmental GIS - Dudley
October 3, 2007
Photography Date: January 24, 2006

The Department of
Arkansas
Heritage

Mike Beebe
Governor

Cathie Matthews
Director

Arkansas Arts Council

Arkansas Natural Heritage
Commission

Delta Cultural Center

•

Historic Arkansas Museum

•

Mosaic Templars
Cultural Center

Old State House Museum

Arkansas Historic
Preservation Program

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website:
www.arkansaspreservation.com

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March 16, 2007

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MAR 2 0 2007

ENVIRONMENTAL
DIVISION

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

RE: Benton County -- Bella Vista
Section 106 Review -- FHWA
Bella Vista Bypass Toll Facility
AHPP Tracking #62392, AHTD Job # 090224

Dear Mr. Malbrough:

This letter is written in response to your inquiry regarding properties of architectural or historical significance in the area of the above referenced project. The staff of the Arkansas Historic Preservation Program has reviewed your submission and determined that Structures E, AA, CC, EE, and YY are eligible for inclusion in the National Register of Historic Places. Structure B, the New Home Church and School was listed on the National Register of Historic Places on January 28, 1988. We have determined that the remaining 48 structures are not eligible for inclusion in the National Register of Historic Places.

Once the undertaking is further along in the planning stages, we look forward to reviewing the proposed project. If you should have any questions or comments, please do not hesitate to contact Elizabeth A. James of my staff at (501) 324-9880.

Sincerely,

Ken Grunewald
Deputy State Historic Preservation Officer

cc: Federal Highway Administration

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

Dan Flowers
Director
Telephone (501) 569-2000

P.O. Box 2261
Little Rock, Arkansas 72203-2261
Telefax (501) 569-2400

July 5, 2007

Mr. Ken Grunewald
Deputy State Historic Preservation Officer
1500 Tower Building
323 Center Street
Little Rock, Arkansas 72201

Re: Request for Technical Assistance
Job Number 090224
Bella Vista Bypass Toll Facility
Madison County

Dear Mr. Grunewald.

As part of the initial standing structures survey for the referenced project, Structure EE was photographed and submitted for review by personnel at the Arkansas Historic Preservation Program (AHPP). Structure EE consists of a Folk Victorian frame house and initial photographs showed only one view of the structure. Based on this photograph (see original picture below), the structure appeared to be original and reasonably intact and the AHTD determined that it was potentially eligible for inclusion in the National Register of Historic Places. The AHPP concurred with this recommendation in the enclosed response letter of March 16, 2007.

As part of the documentation for the Arkansas Architectural Resource Form, the structure was more closely examined and two additions were discovered that were not clearly visible during the initial structure survey. The east addition completely covers the east elevation of the house and the south addition has removed the porch and significantly altered the south elevation (see attached pictures below).

This structure style is defined by the presence of Victorian decorative detailing on simple folk house forms, which are generally much less elaborate than the Victorian styles that they attempt to mimic. The primary areas for the application of this detailing are the porch and cornice line.

It is the opinion of AHTD that the determination of eligible to the National Register of Historic Places for Structure EE should be changed to not eligible due to the fact that the main areas that would have the decorative detailing such as the porch and cornice line have been destroyed, in the case of the porch, and significantly altered in the case of the east and south elevations by the additions. This has destroyed any architectural integrity the structure may have retained.

If you have any questions about the project, please contact Robert Scoggin of my staff at 569-2077.

Sincerely,

John L. Harris

for Lynn Malbrough
Division Head
Environmental Division

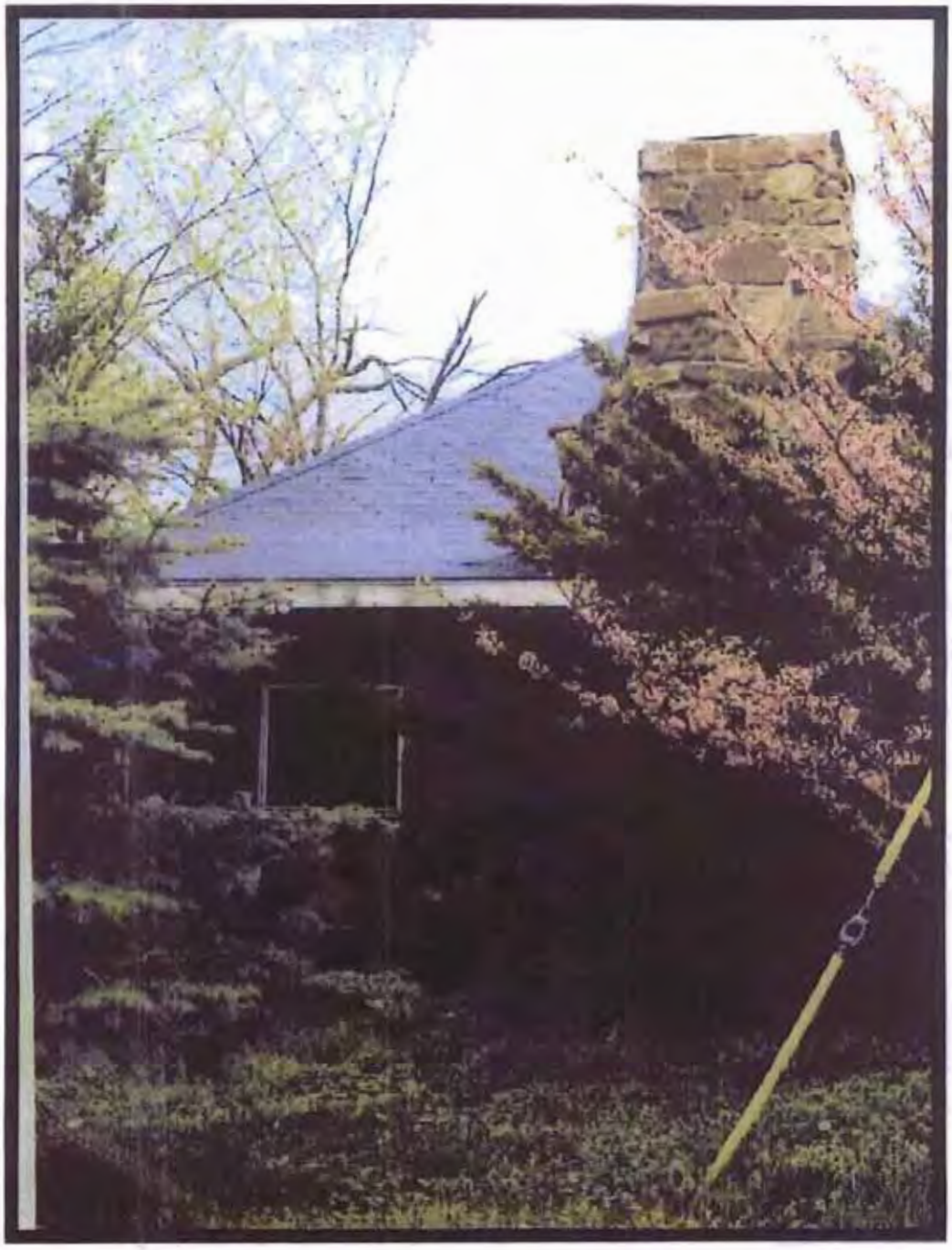
LM:RS:pb



Original picture submitted for Structure EE



Photograph showing addition to the east elevation.



Photograph showing addition to the south elevation that has replaced porch.

The Department of
Arkansas
Heritage

Mike Beebe
Governor

Cathie Matthews
Director

Arkansas Arts Council

•

Arkansas Natural Heritage Commission

•

Delta Cultural Center

•

Historic Arkansas Museum

•

Mosaic Templars Cultural Center

•

Old State House Museum

Arkansas Historic Preservation Program

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July 16, 2007

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

RE: Benton County – Bella Vista
Section 106 Review – FHWA
Bella Vista Bypass Toll Facility
AHPP Tracking #62392, AHTD Project #090224

Dear Mr. Malbrough:

This letter is written in response to the additional documentation provided with your July 5, 2007, letter concerning Structure EE. The staff of the Arkansas Historic Preservation Program has reviewed the additional documentation that pertain to this undertaking and determined that Structure EE is not eligible for inclusion in the National Register.

Once the undertaking is further along in the planning stages, we look forward to reviewing the proposed project. If you should have any questions or comments, please do not hesitate to contact Elizabeth James at (501) 324-9880.

Yours truly,

Ken Grunewald
Deputy State Historic Preservation Officer

KG/rw

cc: Federal Highway Administration

RECEIVED
AHTD

JUL 19 2007

ENVIRONMENTAL
DIVISION

ARKANSAS STATE HIGHWAY
AND
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Scott E. Bennett
Director
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www.arkansashighways.com

August 15, 2014

Ms. Sandra L. Otto
Division Administrator
Federal Highway Administration
700 West Capitol, Room 3130
Little Rock, Arkansas 72201-3298

Re: AHTD Job Number CA0903
FAP Number 9991
Hwy 71 Interchange (B.V. Bypass)(S)
Benton County
-And-
AHTD Job Number CA0904
FAP Number ACNHPP-0004(49)
Hwy. 71B-Hwy. 72 South (B.V. Bypass)(S)
Benton County

Dear Ms. Otto:

The referenced projects were evaluated under the preliminary engineering Job Number 009969 in an Environmental Impact Statement (EIS) approved in December 1999 and a Record of Decision (ROD) approved in April 2000. Since that time, the Bella Vista Bypass project was divided into three smaller Connecting Arkansas Program projects (CA0903, CA0904 and CA0905). The referenced projects are being reassessed to ascertain if any additional environmental documentation is required.

Job CA0904 will construct two lanes of an ultimate 4-lane section between Highway 71B and Highway 72 and a roundabout at the intersection of the new facility with Highways 71 and 71B. The roundabout is an interim measure that will operate until the ultimate 4-lane section is built in the future under Job CA0903. That job will add two additional lanes, provide a concrete median barrier and replace the roundabout with an interchange for Highways 71 and 71B. An enclosed figure illustrates the project locations. A public involvement will be held to inform the public of these changes.

Based upon the reassessment of the current design plans, no additional right of way is required and no additional environmental impacts were identified. Our review of the referenced project reflects no change in the environmental determination and no further work should be required. Should you have questions or require additional information, please contact Terry Tucker at (501) 569-2281.

APPROVED

Environmental Specialist
Federal Highway Administration
Date: 8/26/2014

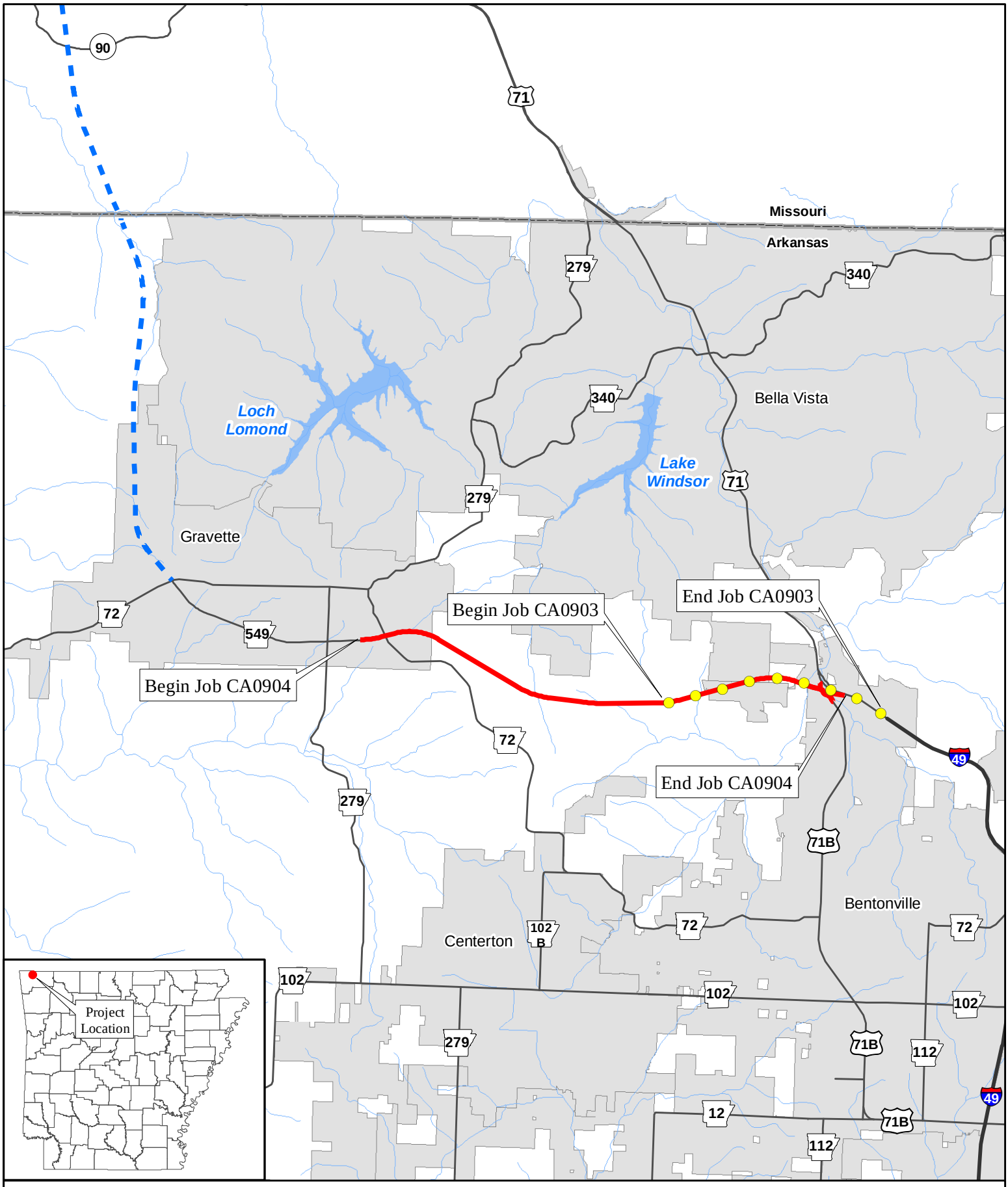
Sincerely,

John Fleming

John Fleming
Division Head
Environmental Division

Enclosure

JF:TT:fc


90
71
Missouri
Arkansas
279
340
Bella Vista
Loch Lomond
Lake Windsor
Gravette
72
549
Begin Job CA0904
Begin Job CA0903
End Job CA0903
End Job CA0904
49
71B
Bentonville
Centerton
102
B
112
12
Project Location
N
0
1
2
Miles
Job 009969
AHTD - Environmental GIS - Reed
August 15, 2014
Project Locations
Job CA0903
Job CA0904
Bella Vista Bypass

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

REPLY TO
ATTENTION OF

Regulatory Division

FEB 24 2014

STANDARD PERMIT NO. **SWL 2011-00051-1**

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

Dear Mr. Malbrough:

Under authority of Section 404 of the Clean Water Act (33 U.S. Code 1344), enclosed is Department of the Army Permit No. **SWL 2011-00051-1** which would authorize the placement of dredged and fill material in waters of the United States associated with upgrading U.S. Highway 71 and constructing a four-lane highway bypass around the City of Bella Vista. This job would construct the eastern segment of the bypass. This eastern segment of the project begins just south of the community of Hiwasse at State Highway 72 and extends eastward to U.S. Highway 71B approximately one mile south of Bella Vista. The project is approximately six miles in length and is located in sections 7, 8, 12, 13, 14, 15, 16 and 17, T. 20 N., R. 31 W., Benton County, Arkansas.

The proposed highway shall be constructed and maintained as described in the permit. If changes are proposed in the design or location of the project, you are required by law to submit revised plans to the District Engineer for approval before construction of the change is begun.

It is your responsibility to understand and comply with all of the conditions of the permit and to make any of your employees or contractors involved with this project continuously aware of the permit conditions. Your attention is directed to **Special Condition Nos. 1-8** of the enclosed permit. These conditions include erosion control measures and the required stream mitigation. We will periodically inspect the construction site and the associated mitigation sites to insure compliance with the conditions. We have also attached a copy of the state water quality certification and conditions which are a part of this permit.

Your cooperation in the Regulatory Program is appreciated. If you have any additional questions regarding this project, please contact Mr. Johnny McLean at (501) 324-5296 and refer to Permit No. **SWL 2011-00051-1, Bella Vista Bypass, Eastern Segment**.

Sincerely,

M. Elaine Edwards

M. Elaine Edwards
Chief, Regulatory Division

Enclosures

Copy Furnished:
Ch, Regulatory Enforcement Br, w/cy dwgs
PM, Johnny McLean

DEPARTMENT OF THE ARMY PERMIT

Permittee: **Arkansas Highway and Transportation Department**

Permit No.: **SWL 2011-00051-1**

Issuing Office: Department of the Army
Little Rock District
PO Box 867
Little Rock, Arkansas 72203-0867

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: **The purpose of this project is to upgrade U.S. Highway 71 and construct the eastern segment of a four-lane highway bypass around the City of Bella Vista. The entire project will be built on new alignment. This permit authorizes the discharge of approximately 25,000 cubic yards of dredged and fill material into 8,310 linear feet of streams for stream channel realignment and box culvert construction. The impacted streams are Tanyard Creek, McKisic Creek, and ten unnamed tributaries. The total length of the project is approximately six miles and the project shall be constructed and/or accomplished as shown on the attached drawings, Sheets 1 through 4 of 4.**

Project Location: **This eastern segment of the bypass begins just south of the community of Hiwasse at State Highway 72 and extends westward to U.S. Highway 71B approximately one mile south of Bella Vista. The project is located in sections 7, 8, 12, 13, 14, 15, 16 and 17, T. 20 N., R. 31 W., Benton County, Arkansas.**

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on **December 31, 2017.** If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

1. The Arkansas Highway and Transportation Department (AHTD) shall notify the Corps of Engineers Transportation Program Manager of any additional fill proposed in waters of the United States to construct the bridge and box culverts in Tanyard Creek, McKisic Creek and the ten unnamed tributaries. This includes all activities associated with the discharge and excavation of material in waters of the United States by any AHTD contractor. Also, all AHTD contractors shall be furnished and required to implement the conditions of the Standard Permit and receive additional authorization required for all associated activities in waters of the United States.

2. AHTD shall implement the AHTD's Standard Erosion Control Measures during all construction phases of the highway. Erosion control measures will be maintained before, during and after construction of the project. All disturbed areas along the highway right–of-way shall be seeded, planted, or given some other type of equivalent protection against subsequent erosion during construction and upon completion of the project.

3. AHTD shall place all construction debris, including any excess material, on land in such a manner to prevent it from entering or being discharged in any waterway.

4. Upon completion of the project, AHTD will remove all temporary work roads, restore the area(s) to preconstruction contours and reestablish native vegetation.

5. Upon completion of the project, AHTD will restore all manipulated stream channels and riparian zones to preconstruction conditions and reestablish native vegetation.

6. Should any cave openings be exposed during excavation activities authorized by this permit, work will immediately stop and the Corps of Engineers Transportation Program Manager will be notified. The Corps of Engineers will initiate the Federal and state coordination necessary to determine if Federally threatened or endangered species are present. All practical and reasonable efforts should be made to protect the site from further damage. These efforts should include, but are not limited to, the construction of a ring levee with silt fence and staked straw bales as soon as possible around the opening to reduce silt-laden runoff from entering the opening.

7. The AHTD agrees to mitigate for the permanent impacts (53,597.2 credits) to 8,310 linear feet of streams at one or more stream mitigation banks within the Illinois or Elk River watersheds by December 31, 2014. The AHTD will provide documentation of the mitigation bank transaction to the Corps of Engineers Transportation Program Manager no later than December 31, 2014.

8. The AHTD will notify the Corps of Engineers, Regulatory Division, Enforcement Branch Chief when the construction of the project begins so that periodic compliance inspections can be performed.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

( ) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S. Code 403).

(**X**) Section 404 of the Clean Water Act (33 U.S. Code 1344).

( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization:

a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability: In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision: This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with

such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions: General Condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

Ly P. McCloney L
(PERMITTEE)

2/21/14
(DATE)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

Pursuant to the direction from Colonel Courtney W. Paul, District Engineer:

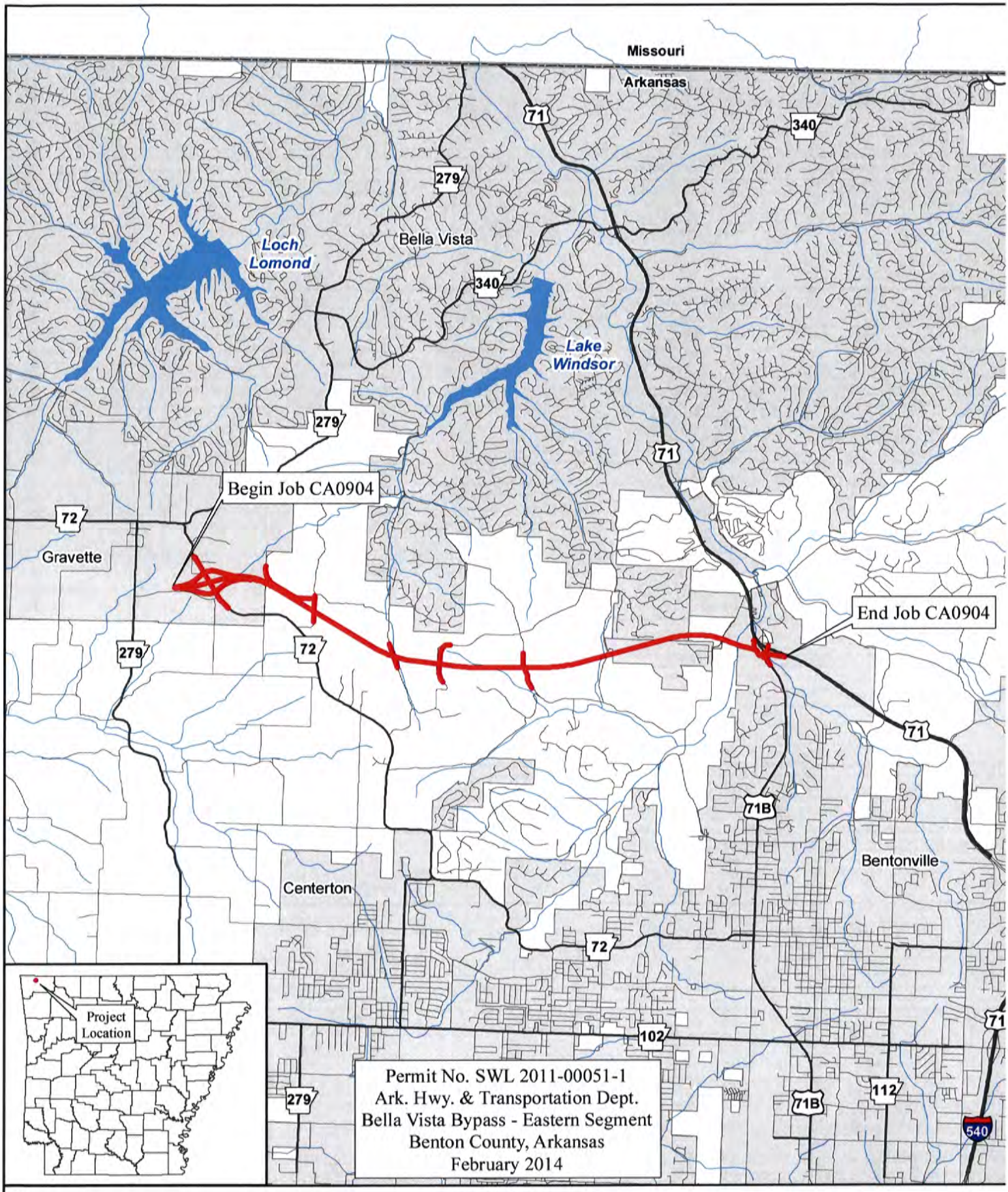
M. Elaine Edwards
M. Elaine Edwards
Chief, Regulatory Division

2/24/14
(DATE)

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

(TRANSFEREE)

(DATE)



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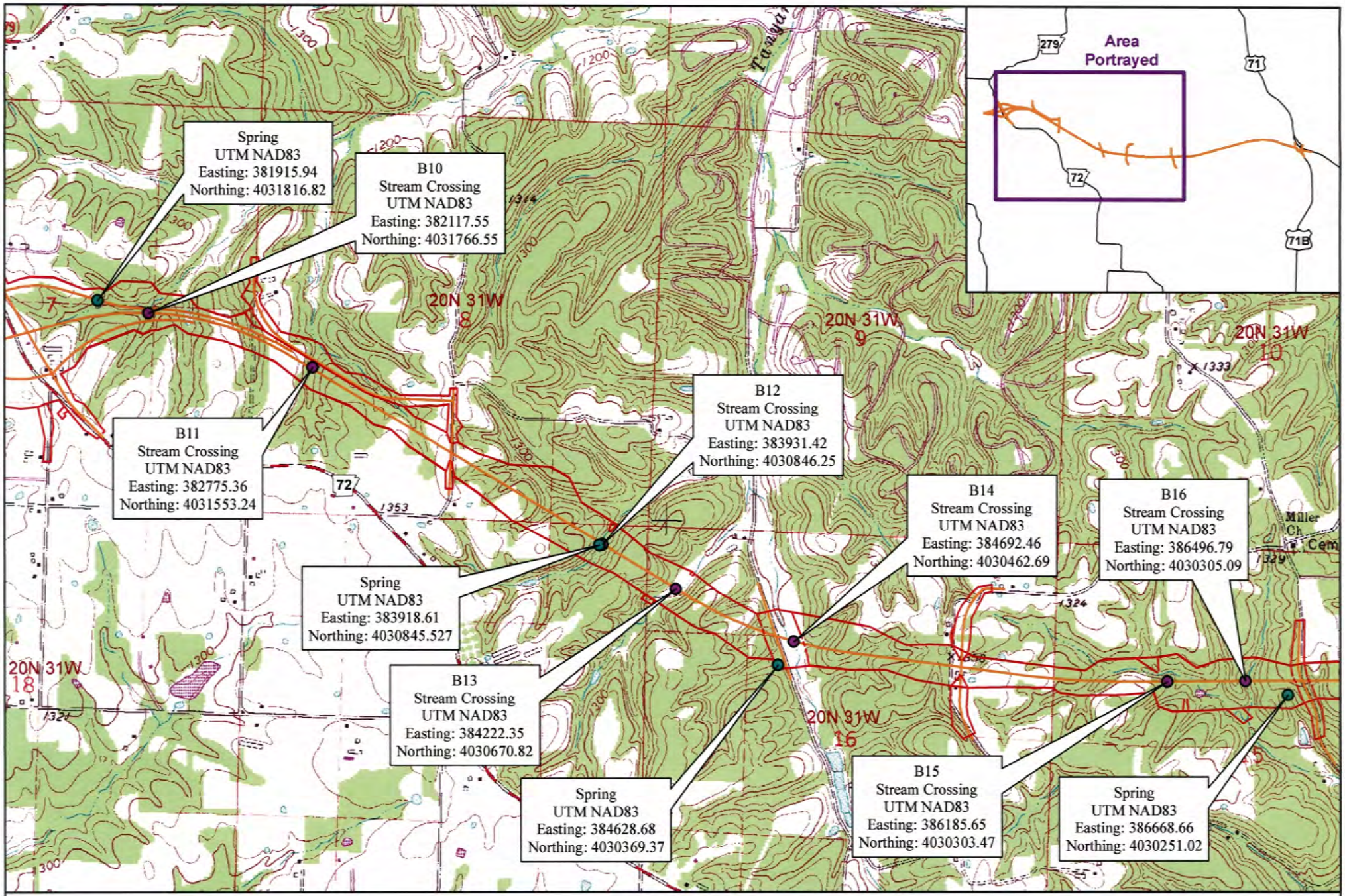
AHTD - Environmental GIS - Reed
February 21, 2014

Job CA0904
Sheet 1 of 4
Hwy. 71B - Hwy. 72 South
(Bella Vista Bypass) (Hwy. 71)
Benton County

Project Location



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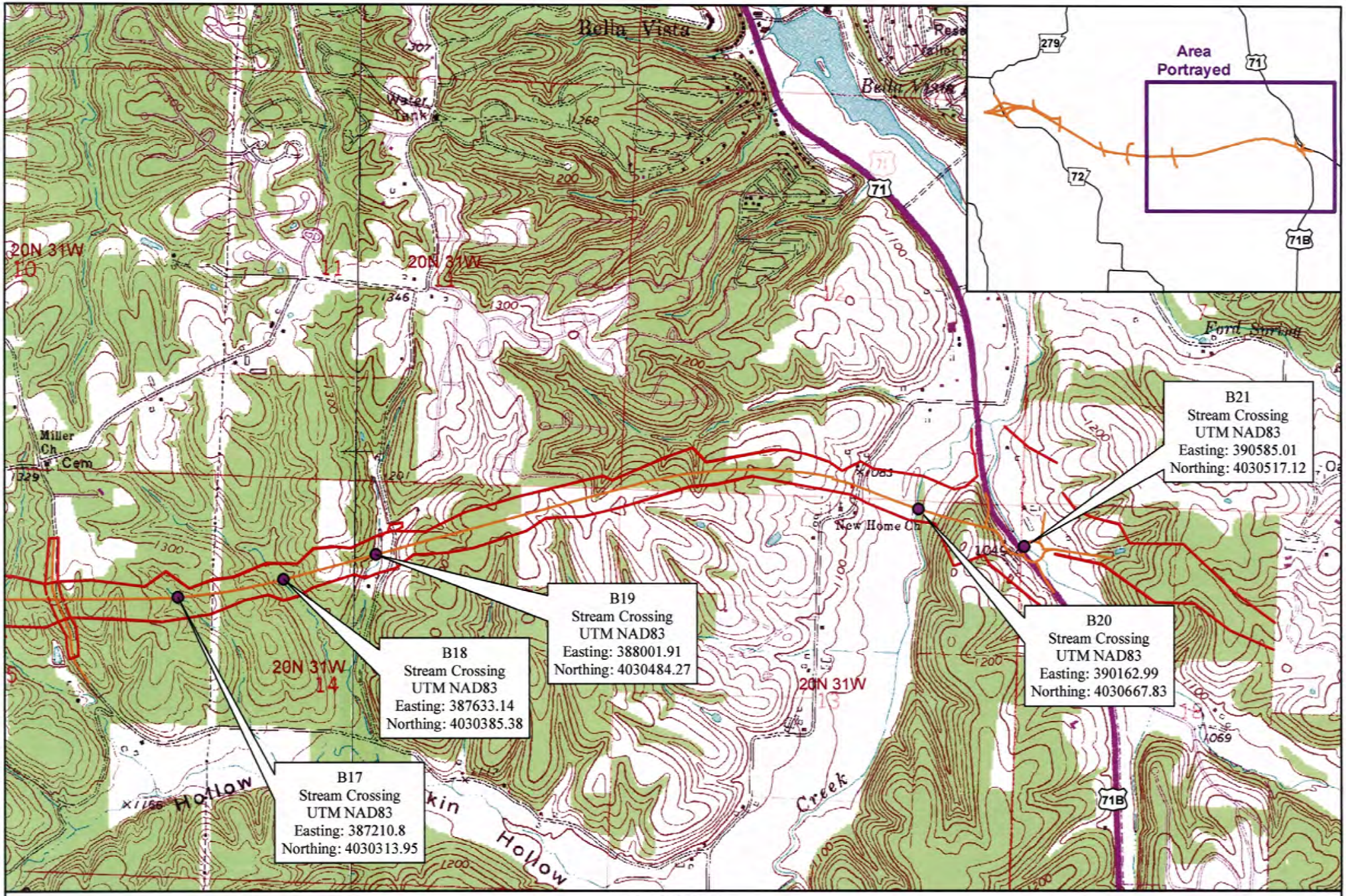
AHTD - Environmental GIS - Reed
February 21, 2014

Job CA0904
Sheet 2 of 4
Hwy. 71B - Hwy. 72 South
(Bella Vista Bypass) (Hwy. 71)
Benton County

Proposed Right of Way
Project Location

Hiwasse 1982 USGS Topographic Map


Area Portrayed
279
71
72
71B
B17
Stream Crossing
UTM NAD83
Easting: 387210.8
Northing: 4030313.95
B18
Stream Crossing
UTM NAD83
Easting: 387633.14
Northing: 4030385.38
B19
Stream Crossing
UTM NAD83
Easting: 388001.91
Northing: 4030484.27
B20
Stream Crossing
UTM NAD83
Easting: 390162.99
Northing: 4030667.83
B21
Stream Crossing
UTM NAD83
Easting: 390585.01
Northing: 4030517.12
20N 31W
10
11
14
13
Bella Vista
Water Tank
Miller Ch
Cem
New Home Ch
Ford Spring
Hollow
Creek
N
0
1,000
2,000
Feet
AHTD - Environmental GIS - Reed
February 21, 2014
Job CA0904
Sheet 3 of 4
Hwy. 71B - Hwy. 72 South
(Bella Vista Bypass) (Hwy. 71)
Benton County
Proposed Right of Way
Project Location
Bentonville 1982 and Hiwasse 1982
USGS Topographic Maps

AHTD Job Number 090224

Bella Vista Bypass P.E.

East Section from Hwy. 71 – Hwy. 72 South

STREAM IMPACT TABLE

STREAMS B10 – B21

Station Number	Stream Relocation Length	Culvert	Culvert Length
838+19 (B10)	610′	Double Pipe (42″)	512′
861+30 (B11)	600′	Double Pipe (42″)	498′
905+13 (B12)	680′	Single Box (6′x5′)	510′
915+65 (B13)	660′	Double Box (6′x5′)	574′
933+15 (B14)	380′	Bridge	
982+70 (B15)	2,470′	Double Box (5′x5′)	590′
993+98 (B16)	705′	Single Box (5′x5′)	606′
1016+32 (B17)	665′	Single Pipe (48″)	616′
1030+01 (B18)	605′	Double Box (6′x5′)	514′
1042+57 (B19)	645′	Double Box (5′x5′)	526′
1116+50 (B20)	0	Bridge	
1129+23 (B21)	290′	Sextuple Box (12′x11′)	528′
TOTALS	**8,310′**		**5,474′**

B10 – B13 = Unnamed Trib.

B14 = Tanyard Creek

B15 – B19 = Unnamed Trib.

B20 = McKisic Creek

B21 = Unnamed Trib.

ADEQ

ARKANSAS
Department of Environmental Quality

FEB 2 0 2014

Colonel Courtney W. Paul, District Commander
Little Rock District Corps of Engineers
P. O. Box 867
Little Rock, Arkansas 72203-0867

RE: 401 Water Quality Certification: AHTD Application No. SWL 2011-00051-1 Bella Vista Bypass Eastern Half, Benton County, Arkansas

Dear Colonel Paul:

The Arkansas Department of Environmental Quality ("ADEQ") has completed its review of the above referenced public notice for Lynn Malbrough, Arkansas Highway and Transportation Department, (AHTD), P.O. Box 2261, Little Rock, Arkansas 72203, for the placement of dredged and fill material in waters of the United States associated with constructing a four-lane highway bypass around the City of Bella Vista. The western segment of the bypass was permitted in 2011, and is currently under construction. This eastern segment of the project begins just south of the community of Hiwasse at State Highway 72 and extends eastward to U.S. Highway 71 approximately one mile south of Bella Vista. The project extends from approximately six miles and is located in the Sections 7, 8, 12, 13, 14, 15, 13, and 17, T 20 N, R 31 W, in Benton county Arkansas. The project would impact eleven streams totaling approximately 5,432 linear feet and would require approximately 26,599 cubic yards of fill material. The streams impacted are the headwaters of Tanyard and McKisic Creek, and nine unnamed tributaries that flow into either Tanyard Creek or McKisic Creek. The AHTD has agreed to mitigate for all stream impacts by purchasing stream credits from an approved mitigation bank in the Elk River watershed or the Illinois River watershed.

ADEQ has determined that there is a reasonable assurance the project will be conducted in a manner which, according to the Arkansas Pollution Control and Ecology Commission's Regulation No. 2, will not physically alter a significant segment of a water body and will not violate the water quality criteria.

Pursuant to §401(a)(1) of the Clean Water Act, the ADEQ hereby **issues** water quality certification for this project: ID NO. SWL 2011-00051-1; contingent upon the following conditions:

1) The applicant shall implement and maintain all practicable best management practices to avoid impacts of sedimentation and turbidity to all streams in project area. The applicant shall stabilize the disturbed areas as soon as possible after construction by the use of seeding, planting with permanent vegetation, mulching or other suitable erosion control measures.

2) The applicant shall limit construction to the low flow periods as much as possible to minimize adverse effects on water quality and aquatic life.
3) The applicant shall obtain a Short Term Activity Authorization from the ADEQ prior to commencement of work.
4) All reasonable measures shall be taken to prevent the spillage or leakage of any chemicals, oil, grease, gasoline, diesel or other fuels into any streams in the project area. In the unlikely event such spillage or leakage occurs, the applicant must contact ADEQ immediately.

In issuing this certification, ADEQ does not assume any liability for the following:

a. Damages to the proposed project, or uses thereof, as a result of other permitted or unpermitted activities or from natural causes.
b. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity specified in this certification.
c. Design or construction deficiencies associated with this proposed project.

Sincerely,

Ellen Carpenter
Chief, Water Division

cc: Johnny Mclean, USACE, Project Manager
Alison West, ADEQ District 1 Water Inspector
Debby Davis, ANRC, debby.davis@arkansas.gov

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

REPLY TO
ATTENTION OF

FEB 28 2011

Regulatory Division

STANDARD PERMIT NO. **SWL 2011-00051**

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

Dear Mr. Malbrough:

Under authority of Section 404 of the Clean Water Act (33 U.S. Code 1344), enclosed is Department of the Army Permit No. **SWL 2011-00051** which would authorize the placement of dredged and fill material in waters of the United States associated with upgrading U.S. Highway 71 and constructing a four-lane highway bypass around the City of Bella Vista. This job would construct the western segment of the bypass. This western segment of the project begins just south of the community of Hiwassee at State Highway 72 and extends northward to the Missouri State Line. The project extends for approximately eight miles and is located in sections 3, 10, 11 and 12, T. 20 N., R. 32 W., section 7, T. 20 N., R. 31 W., and in sections 15, 16, 22, 27 and 34, T. 21 N., R. 32 W., Benton County, Arkansas.

The proposed highway shall be constructed and maintained as described in the permit. If changes are proposed in the design or location of the project, you are required by law to submit revised plans to the District Engineer for approval before construction of the change is begun.

It is your responsibility to understand and comply with all of the conditions of the permit and to make any of your employees or contractors involved with this project continuously aware of the permit conditions. Your attention is directed to **Special Condition Nos. 1-8** of the enclosed permit. These conditions include erosion control measures and the required stream mitigation. We will periodically inspect the construction site and the associated mitigation sites to insure compliance with the conditions. We have also attached a copy of the state water quality certification and conditions which are a part of this permit.

Your cooperation in the Regulatory Program is appreciated. If you have any additional questions regarding this project, please contact Mr. Johnny McLean of my staff at (501) 324-5296 and refer to Permit No. **SWL 2011-00051, Bella Vista Bypass, Western Segment**.

Sincerely,

Joyce C. Perser

Joyce C. Perser
Chief, Regulatory Division

DEPARTMENT OF THE ARMY PERMIT

Permittee: **Arkansas Highway and Transportation Department**

Permit No.: **SWL 2011-00051**

Issuing Office: Department of the Army
Little Rock District
PO Box 867
Little Rock, Arkansas 72203-0867

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: **The purpose of this project is to upgrade U.S. Highway 71 and construct the western segment of a four-lane highway bypass around the City of Bella Vista. The entire project will be built on new alignment. This permit authorizes the discharge of approximately 20,089 cubic yards of dredged and fill material into 7,279 linear feet of streams for stream channel realignment and box culvert construction. The impacted streams are the headwaters of Mill Creek and Butler Creek and six other unnamed tributaries that flow into either Mill Creek or Spavinaw Creek. The total length of the project is approximately eight miles and the project shall be constructed and/or accomplished as shown on the attached drawings, Sheets 1 through 4 of 4.**

Project Location: **This western segment of the bypass begins just south of the community of Hiwassee at State Highway 72 and extends northward to the Missouri State Line. The project is located in sections 3, 10, 11 and 12, T. 20 N., R. 32 W., section 7, T. 20 N., R. 31 W., and in sections 15, 16, 22, 27 and 34, T. 21 N., R. 32 W., Benton County, Arkansas.**

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on **December 31, 2014.** If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

1. The Arkansas Highway and Transportation Department (AHTD) shall notify the Corps of Engineers of any additional fill proposed in waters of the United States to construct the bridge and box culverts in Mill Creek, Butler Creek and the six unnamed tributaries. This includes all activities associated with the discharge and excavation of material in waters of the United States by any AHTD contractor. Also, all AHTD contractors shall be furnished and required to implement the conditions of the Standard Permit and receive additional authorization required for all associated activities in waters of the United States.

2. AHTD shall implement the AHTD's Standard Erosion Control Measures during all construction phases of the highway. Erosion control measures will be maintained before, during and after construction of the project. All disturbed areas along the highway right–of-way shall be seeded, planted, or given some other type of equivalent protection against subsequent erosion during construction and upon completion of the project.

3. AHTD shall place all construction debris, including any excess material, on land in such a manner to prevent it from entering or being discharged in any waterway.

4. Upon completion of the project, AHTD will remove all temporary work roads, restore the area(s) to preconstruction contours and reestablish native vegetation.

5. Upon completion of the project, AHTD will restore all manipulated steam channels and riparian zones to preconstruction conditions and reestablish native vegetation.

6. Should any cave openings be exposed during excavation activities authorized by this permit, work will immediately stop and the Corps of Engineers will be notified. The Corps of Engineers will initiate the Federal and State coordination necessary to determine if threatened or endangered species are present. All practical and reasonable efforts should be made to protect the site from further damage. These efforts should include, but are not limited to, the construction of a ring levee with silt fence and staked straw bales as soon as possible around the opening to reduce silt-laden runoff from entering the opening.

7. The AHTD agrees to mitigate for the adverse impacts (38,642 credits) to the 7,279 linear feet of streams at a bank, in-lieu fee program, or readily available mitigation area in the Elk, Lower Neosho or Illinois River watersheds within one year of the date of issuance of this permit.

8. The AHTD will notify the Corps when the construction of the project begins so that periodic compliance inspections can be performed.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

( ) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S. Code 403).

(**X**) Section 404 of the Clean Water Act (33 U.S. Code 1344).

( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization:

a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability: In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision: This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions: General Condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

Ly P. MAllory L _____ 2/23/11 _____
(PERMITTEE) (DATE)

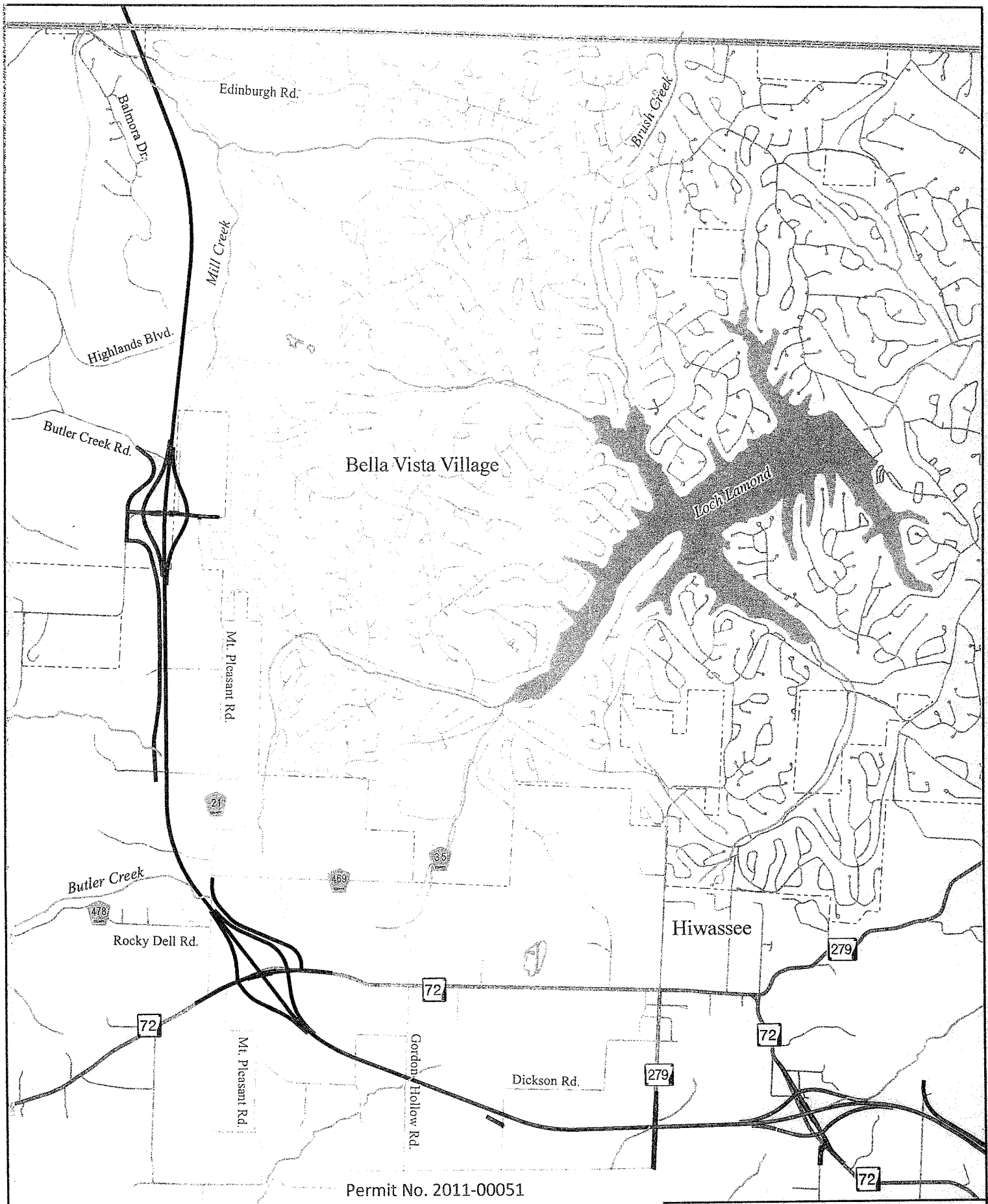
This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

Pursuant to the direction from Colonel Glen A. Masset, US Army District Engineer:

Joyce C. Perser _____ 2/25/2011 _____
Joyce C. Perser (DATE)
Chief, Regulatory Division

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

_____ _____
(TRANSFEREE) (DATE)

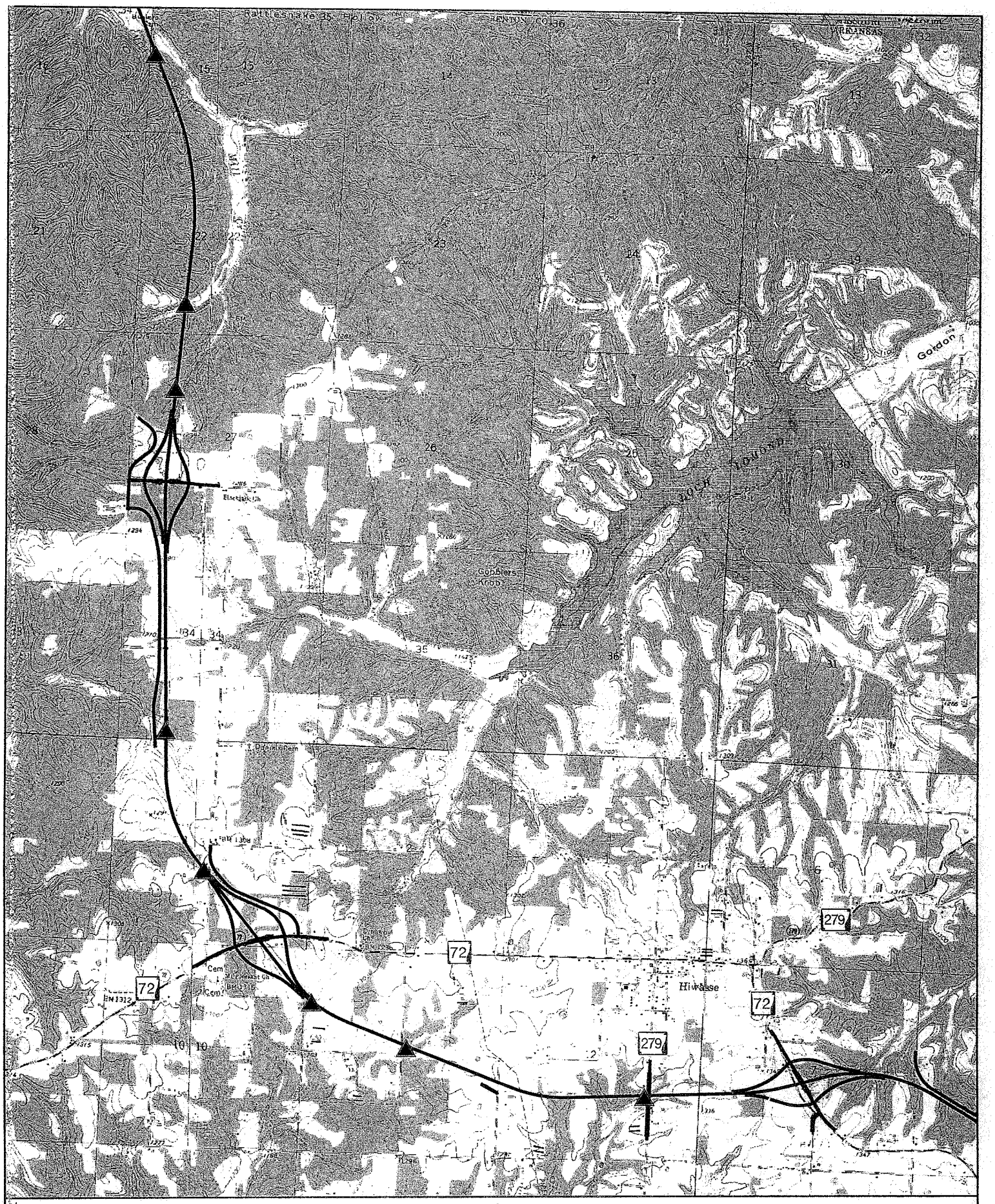


Permit No. 2011-00051
Bella Vista Bypass - U.S. Hwy. 71
Mill Creek and Butler Creek
Benton County, Arkansas
February 2011 - Sheet 1 of 4

0 1,000 2,000 Feet

AHTD Environmental GIS - Dudley
November 2, 2010

Project Location

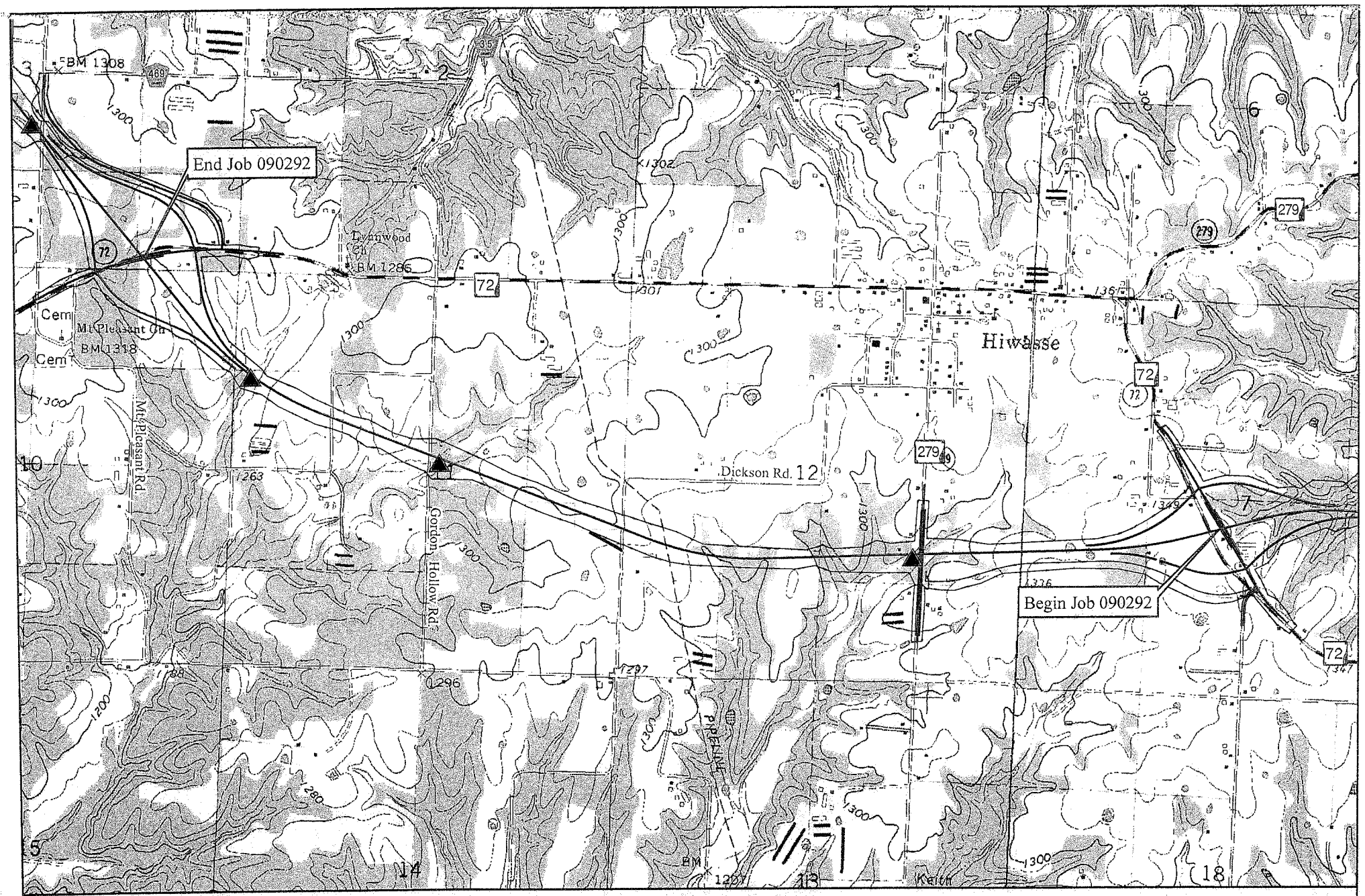


0 1,000 2,000 Feet

AHTD Environmental GIS - Dudley
November 2, 2010

Waters of the U.S.
Job 090224
Bella Vista Bypass
Benton County

Project Location
Stream Crossing



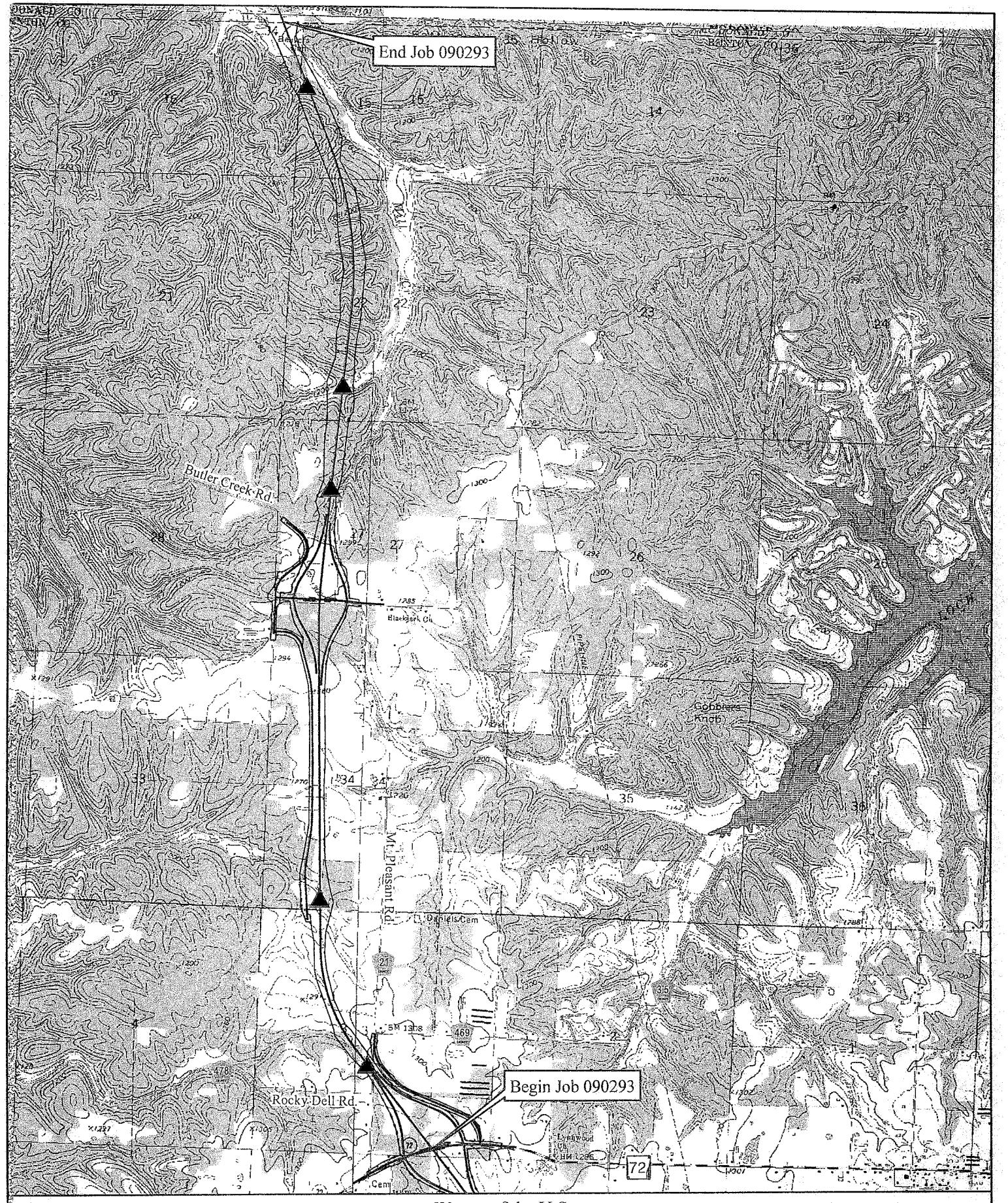
0 500 1,000 Feet

AHTD Environmental GIS - Dudley
November 19, 2010
USGS Topographic Maps: Hiwasse 1982

Waters of the U.S.
Job 090292
Hwy. 72 South - Hwy. 72 North
(Bella Vista Bypass)
Benton County

Sheet 3 of 4

Stream Crossing
Project Location
Proposed Right of Way



0 1,000 2,000 Feet

AHTD Environmental GIS - Dudley
November 19, 2010
USGS Topographic Maps:
Gravette 1981; Hiwasse 1982

Waters of the U.S.
Job 090293
Hwy. 72 North - MO St. Line
(Gr. & Strs.) (B.V. Bypass)
Benton County

Sheet 4 of 4

Stream Crossing
Project Location
Proposed Right of Way

ADEQ
ARKANSAS
Department of Environmental Quality

February 18, 2011

Colonel Glen A. Masset, District Commander
Little Rock District Corps of Engineers
P. O. Box 867
Little Rock, Arkansas 72203-0867

RE: **PUBLIC NOTICE: SWL 2011-00051**

Dear Colonel Masset:

The Arkansas Department of Environmental Quality ("ADEQ") has completed its review of the above referenced 401 Water Quality Certification request for the **Arkansas Highway and Transportation Dept. (AHTD), P.O. Box 2261, Little Rock, AR. 72203**, for the placement of dredged and fill material in waters of the United States associated with constructing the western segment a four lane highway bypass around the City of Bella Vista on new alignment.. The project will impact eight streams totaling 7,279 linear feet and would require 20,089 cubic yards of fill material. The streams impacted are the headwaters of Mill Creek and Butler Creek and six other unnamed tributaries that flow into either Mill Creek or Spavinaw Creek. This western segment of the project begins just south of the community of Hiwassee at State Highway 72 and extends northward to the Missouri State Line. The project extends for approximately eight miles and is located in sections 3, 10, 11 and 12, T. 20 N., R. 32 W., section 7, T. 20 N., R. 31 W., and in sections 15, 16, 22, 27 and 34, T. 21 N., R. 32 W., Benton County, Arkansas.

ADEQ has determined that there is a reasonable assurance that this activity will be conducted in a manner which, according to the Arkansas Pollution Control and Ecology Commission's Regulation No. 2, will not physically alter a significant segment of a water body and will not violate the water quality criteria.

Pursuant to §401(a)(1) of the Clean Water Act, the ADEQ hereby **issues** water quality certification for this project contingent upon the following conditions:

1) Regulation Number 2 identifies numerous springs, spring-fed tributaries, and caves in Benton County as being Ecologically Sensitive and are of great ecological importance due to the presence of sensitive species such as the Ozark cavefish, Southern cavefish, cave snails, cave crawfish and other unique invertebrates. These populations could be severely impacted by sedimentation if these karst areas are not fully protected. The contractors should take every precaution when working in these areas to protect this sensitive ecosystem. The applicant shall implement and maintain all practicable best management practices to avoid impacts of sedimentation and turbidity to all streams in project area.