2 ALTERNATIVES

This section will provide details of the EIS process for the proposed project, it's evolution through the study process and development of alternatives, and information relating to the decision-making process on the preferred segments and line.

2.1 THE STUDY PROCESS AND ALTERNATIVES DEVELOPMENT

Three phases of work are involved in the study process for the Springdale Northern Bypass.

- Phase I includes the Major Investment Study, the Scoping Process, and development of the project's purpose and need.
- Phase II includes the development of corridors within the study area, the refinement of alignments within the corridors, the detailed environmental study of those alignments, the preparation of a DEIS, and the designation of a preferred alignment alternative.
- Phase III includes the preparation of a FEIS and a Record of Decision (ROD) that documents the selected alignment decision.

This process ensures that only those alternatives that adequately meet the purpose and need of the project are fully developed and that those alternatives are evaluated and refined to minimize the potential environmental impacts. Figure 2-1 illustrates a simplified flow chart of the process utilized for this project.

2.1.1 <u>Involvement by Others in the Study Process and Alternatives Development</u>

Meetings with the general public, local officials, and resource agencies were an integral part in the development of this project.

A summary of information pertaining to the public meetings, public officials meetings, and agency meetings held for this project is provided in Section 6, Coordination and Public Involvement. Additional background information is also contained in the DEIS and SDEIS.

2.2 THE MAJOR INVESTMENT STUDY PROCESS

As previously discussed in the Purpose and Need Section, the objective of the Major Investment Study (MIS) was to identify a range of conceptual improvements which would address metropolitan transportation issues and to reach a consensus on selected improvements strategies to be further studied. These "investment strategies" were evaluated against the purpose of the Congressionally-designated High Priority Corridor and the project need. The MIS was conducted at the planning level and involved development of concepts rather than actual "location" alternatives. The Purpose and Need Section of the DEIS contains additional information on how the MIS objectives, strategies, concepts, and project needs were developed and evaluated.

A freeway north of Highway 412 on new location was the strategy recommended in this area's MIS. The NARTS Policy Committee adopted a resolution in support of this recommendation.

2.3 THE CORRIDOR AND ALTERNATIVE STUDY PROCESS

The purpose of the Corridor Study Process was to develop broad corridors within the study area that could then be evaluated for feasibility. The corridors were developed based on the following criteria:

- Meet the purpose and need of the project,
- Meet the required design criteria,
- Avoid or minimize impacts to known sensitive resources, and
- Address input from local officials, federal agencies, state agencies, and the public.

2.3.1 Corridor Decision Making Process

During Phase II of the study process, four broad corridors and eight connectors were identified and placed on an aerial mosaic and U.S. Geological Survey 7.5 minute quadrangle maps. Corridor development began by identifying design and environmental constraints throughout the project area. Design issues that placed limitations on corridor location included avoidance of undesirable topography and consideration of potential interchange locations. Specific interchange locations of concern were I-540, Highway 71B, Highway 112, and the termini at existing Highway 412. Environmental constraints were identified utilizing existing databases with refinement from agency scoping input, early public comments, and field work.



Analysis of public comment and further development of social, environmental and economic constraints led to the adjustment and/or elimination of some of these preliminary corridors. At this time, some segments of the corridors were discarded, while others were shifted to minimize impacts or address design concerns. For a more detailed description of this process, refer to Section 2, Alternatives, of the DEIS.

2.3.1.1 The Northwest Arkansas Regional Airport Access (NWARA) Road Project

TEA-21 authorized funds to construct a NWARA Access Road. The NWARA Authority began development of information in October 1998 for the required EIS. Work is underway to determine the location for a connector facility between the airport and either Highway 412 or I-540. From the beginning of the Springdale Northern Bypass and the NWARA Access Road projects, commitments were made to closely coordinate the projects and investigate the possibility of shared roadway sections for the two projects. This would reduce costs and minimize impacts to the region caused by road construction and operation for both facilities.

As the corridor and alignment studies progressed for the two projects, information used for the NWARA Access Road DEIS was also used in the development of the Springdale Northern Bypass corridors and vice versa. Figure 2-2 shows all the corridors considered in the NWARA Access Road DEIS.

2.3.2 Improvements Along Existing Highway 412

This section briefly describes improvement alternatives to existing Highway 412 that were developed and analyzed during the study process, but were dropped from further consideration. Results of the analysis showed that the alternatives were unable to meet the purpose and need of the project and/or that the alternatives had the potential to have substantial environmental impacts.

Improvements along the existing Highway 412 corridor were eliminated from further consideration because of the anticipated substantial right-of-way impacts, including numerous relocations (approximately 300), the resultant social disruption, and the total estimated costs for this alternative being substantially higher than the other alignments. Refer to Section 2.4.3 of the DEIS for additional background information related to this analysis and decision.

An elevated freeway over existing Highway 412 was also considered as a concept alternative. This alternative was eliminated from further consideration because of the anticipated substantial right-of-way impacts, including numerous relocations and the resultant social disruption, and the total estimated costs being substantially higher than the other alignments. Refer to Section 2.3.4.2 of the SDEIS for additional information regarding its analysis and evaluation.

2.3.3 Alignments Advanced for Further Study in the DEIS

Four alignments for the Highway 412 bypass were developed within the remaining corridors and carried forward for alignment comparison. Each alignment represented two funding alternatives with identical locations, corresponding to a Toll and Non-toll (free) Funding Alternative.

The four alignments evaluated in the DEIS are shown in Figure 2-3 as colored lines, identified as Line 1 (dashed red), Line 2 (blue), Line 3 (gold) or Line 4 (dashed green). For analysis purposes, the lines were divided into five segments that are marked with letters A through F. Refer to the DEIS Alignment Locations in Figure 2-3 for more information concerning the proposed location of alignments, interchanges and grade separations (overpasses). An Impact Summary Table for the Segments and Lines studied in the DEIS is presented in Table 2-1. Detailed information for each line such as length, lists of interchange locations, grade separations, and estimates of impacts are presented in the DEIS. Table 2-2 provides concise segment comparisons for each Line studied, also as presented in the DEIS.

2.3.4 DEIS Location Public Hearing/Ensuing Decisions

Location Public Hearings were held in April 2002 to display DEIS study information and maps of the alignments. After a review of comments received from citizens, public officials and public agencies, the next step in this environmental process would normally be to determine if adjustment to the Preferred Alignment needs to be considered. If public and agency acceptance of the Preferred Alternative can be demonstrated, then a Final Environmental Impact Statement (FEIS) would complete the analysis of this Preferred Alignment, document the impacts, develop and present any proposed mitigation, and provide justification for the final selection.





														Table	e 2-1					
																		IMPACT S	UMMARY	
Yellow Hig	hlighting in	dicates the	e DEIS Pret	ferred Alignme	nt in each S	egment												AS PRESENTEI	D IN THE	DEIS
							Relocatio	ons			Noise		404 Impact	ts	Cultural Resou	irces-Direct	t Impacts	Hazardous Materials	Farn	nland
Segments	Alignment	Length	Acreage	Total Cost **	Residential	Residential	Businesses	Non-Profit	Poultry	Total	2021	Springs	Stream Cr	rossings	Recorded	Historic	GLO	Auto-Salvage	acreage ((hectares)
		miles (km)	(hectares)	(in million \$)	Owners	Tenants	Dusillesses	Organizations	Farms	Total	Receptors	springs	Intermittent	Perennial	Archeology Sites	Structures	Resources	Yard	Total	Prime***
A-B	Line 1	4 (6)	290 (40)	46	10	1	1	0	1	13	21	2	6	4	1	1	0	1	200 (80)	
	*Line 2/4	6 (9)	310 (130)	57	16	4	1	0	1	22	53	1	8	3	1	0	05	1	200 (80)	
	Line 3	3 (5)	300 (120)	51	15	3	1	0	3	22	34	1	8	4	1	0	(0)	1	170 (70)	
B-C	Line 1	3 (5)	210 (80)	52	24	1	1	0	0	26	50	1	5	4		ρ	1	0	160 (60)	
	*Line 2/4	3 (5)	190 (80)	51	8	1	1	0	1	11	10	0	4	4\ [3	/ L	X Z	0	140 (60)	
	Line 3	3 (5)	190 (80)	45	7	7	9	0	0	23	12	0		3		0	0	0	110 (40)	
C-D	*Line 1/2	2 (3)	70 (30)	16	1	1	0	0	0	2	30	0	3	Q /		0	0	0	50 (20)	
	Line 3	2 (3)	60 (20)	17	8	1	1	0	0	0	50	0		0	0	0	0	- 107	40 (20)	
	Line 4	2 (3)	80 (30)	19	13	3	0		(p	16	39	6		0	0	0			50 (20)	
D-E	Line 1	3 (5)	160 (60)	48	21	23	15	1	0	60	47	0	0	0	1	2	0	0	70 30)	
	Line 2	3 (5)	170 (70)	49	23	23	15	VP \	0	62	50	0	2	0		2	0	0	90 (40)	
	Line 3	4 (6)	210 (80)	51	12	d V	8		0	20	25	0	2	0	0	1	0	0	170 (70)	
	Line 4	4 (6)	220 (90)	51	11	0 /	8	0	0	19	20	0	$1 \prod 1$		0		0	0	170 (70)	
E-F	Line 1	3 (5)	140 (60)	4) 6		2	0	1	8	50	1	2	1	0	0	0	0	120 (50)	
	*Line 2/4	5 (8)	210 (80)	47	10	1	1	0	0	12	25	0	5		0	0	0	0	120 (50)	
	Line 3	4 (7)	220 (90)	49	9	0	1	0	Q \	0	23	1	4	1	0	0	0	0	140 (60)	
							1(0)	$\gamma \nu$			$ \square$									-
	No-Action	0	0	0				0		0	0	0	0	0	0	0	0	0	0	0
	Line 1	15 (24)	870 (350)	202	62	26	19		2	109	198	4	16	9	3	3	1	1	600 (240)	253 (102)
LINE	Line 2	19 (30)	95 0 (38 0)	220	58	30	18	1	2	109	165	1	22	20	5	2	1	1	600 (240)	219 (89)
TOTALS	Line 3	16 (26)	980 (400)	2∢3	51	11	20	0	2	75	144	2	15	8	2	1	0	1	630 (250)	306 (124)
	Line 4	20 (32)	1000 (410)	225	58	9	11	0	3	85	147	1	20	8	4	1	1	2	680 (280)	290 (117)
	DEIS Preferred	19(30)	1010(410)	227	58	8	11	0	2	79	150	2	19	8	4	1	5	2	700 (280)	309 (125)

DEIS Preferred by Segment

22181101																				
A-B	Line 2/4	6 (9)	310 (130)	57	16	4	1	0	1	22	53	1	8	3	1	0	0	1	200 (80)	
B-C	Line 2/4	3 (5)	190 (80)	51	8	1	1	0	1	11	10	0	4	4	3	0	1	0	140 (60)	
C-D	Line 4	2 (3)	80 (30)	19	13	3	0	0	0	16	39	0	1	0	0	0	0	1	50 (20)	
D-E	Line 3	4 (6)	210 (80)	51	12	0	8	0	0	20	25	0	2	0	0	1	0	0	170 (70)	
E-F	Line 3	4 (7)	220 (90)	49	9	0	1	0	0	10	23	1	4	1	0	0	0	0	140 (60)	
TOTALS		19(30)	1010(410)	227	58	8	11	0	2	79	150	2	19	8	4	1	5	2	700 (280)	309(125)

*Shared Alignments within segment

**Includes ROW and Construction costs for the Non-toll Alternative. Toll Alternatives will require an additional \$21 million for toll plazas.

***Segment Information unavailable

SEE TABLE 4-21 FOR IMPACT SUMMARY OF FEIS PREFERRED LINE

		Table 2-2	
		Segment Comparison as Present	ed in the DEIS*
		Preferred segment is shaded	with gray
Segment	Line	Advantages	Disadvantages
	Line 1	Lowest estimated costsFewest relocatees	 Bisects Elm Springs (community impacts) Not practicable for use by NWARA Access Road
A-B	*Line 2/4	 Avoids majority of Elm Springs Community Best alignment & design for interchange with NWARA Access road Minimizes severance impacts to local land owners 	 Most relocatees Most noise receptors Highest estimated costs Longest segment (more ROW needed)
	Line 3		Crosses one planned residential development
B-C	Line 1	 Avoids impacts associated with removal of local access for I-540 & bypass Avoids costs & difficulties associated with crossing active quarry 	 Bisects Elm Springs (community impacts) Not practicable for use by NWARA Access Road Most residential relocatees High number of noise receptors
	*Line 2/4	 access for I-540 & bypass Avoids costs & difficulties associated with 	ALAL
	Line 3	 Avoids interchange impacts to Spring Creek Lowest cost estimates 	 Removes local access to 1-540 & bypass High number business relocatees Crosses active quarry
	*Line 1/2	 Minimizes community impacts to Bethel Heights Avoids impacts associated with removal of local access for I-540 & bypass Avoids costs & difficulties associated with crossing active quarry Fewest relocatees 	Crosses two planned residential developments
C-D	Line 3	 Avoids interchange impacts to Spring Creek Avoids subdivision/developments 	 Removes local access to I-540 & bypass Most noise receptors Bisects Bethel Heights
		SAME	
	Line 1	• Minimizes community impacts to Bethel Heights	 Crosses Fitzgerald Mountain High Number of noise receptors (similar to Line 2) Interchanges with Old Wire Rd.
D-E	Line 2	Minimizes community impacts to Bethel Heights	 Crosses Fitzgerald Mountain High Number of noise receptors (similar to Line 1) Interchanges with Old Wire Rd.
	Line 4	 Fewest relocatees Fewest noise receptors Interchanges with S.H. 264 	Bisects Bethel Heights
	Line 1	• Shorter alignment resulting in fewest relocatees and lowest cost	 Eastern terminus does not connect to divided 4-lane section of U.S. 412 Most noise receptors
E-F	*Line 2/4	• Eastern terminus connects to divided 4-lane section of U.S. 412	Most relocateesLongest segment (more ROW needed)
	Line 3	 Eastern terminus connects to divided 4-lane section of U.S. 412 Fewer relocatees than Line 2/4 Fewest noise receptors 	• Highest costs

*Shared Alignments within Segment

However, comments received at the DEIS Location Public Hearing suggested two additional alignments for consideration that were not presented in the DEIS. These proposed additions were a "northern" alignment and a "split interchange" alignment that uses an existing segment of I-540 as a part of the proposed bypass.

Evaluation of these comments led to the determination that a Supplemental Draft Environmental Impact Statement (SDEIS) would be necessary to document the feasibility and reasonableness of these proposed alternative alignments and compare any identified impacts to the previously evaluated alternative alignments evaluated in the DEIS. The scope of the SDEIS was limited to the center portion of the project that contained the newly proposed alternative alignments and the center portions of the alignments previously studied (Segments B-E in the DEIS).

Based on DEIS information, two Preferred Line Segments were designated and identified as such in the SDEIS for the re-evaluation of the alignments. These segments are also being evaluated in this FEIS as part of the entire preferred line. The rationale for designating these two segments as part of the preferred line is discussed in the following sections.

2.3.4.1 DEIS Preferred Alignment Segments Carried Forward

2.3.4.1.1 Segment A-B

This segment extends from the western terminus at existing Highway 412 to the eastern end of the Highway 112 interchange. DEIS Line 2/4, as shown in Figure 2-3, was chosen as the Preferred Line Segment through A-B because it has a better alignment and design for an interchange with the NWARA Access Road; encourages concurrent segments with the NWARA Access Road; and minimizes cumulative impacts between the two projects. It also avoids most of the City of Elm Springs, thereby minimizing community disruption and related impacts, and minimizes property severance impacts.

2.3.4.1.2 <u>Segment E-F</u>

Segment E-F extends from just north of the Benton/Washington County line to the eastern terminus at existing Highway 412. As indicated in the DEIS, there are minimal differences in the social, economic and environmental impacts between DEIS Line 3 and DEIS Line 2/4

through this segment. The City of Springdale commented that DEIS Line 2/4, the more northeastern alignment, would be more consistent with the City's long-range land use plans. Therefore, DEIS Line 2/4, as shown in Figure 2-3, was established as the Preferred Alignment through this segment.

2.3.5 Additional Alignments and Other Changes Proposed in SDEIS

2.3.5.1 Development of "Northern" Alignment-SDEIS Line 5

The "northern" alignment crosses I-540 between the Wagon Wheel Road Interchange and the Highway 264 Interchange and is located north of Callahan Mountain. Evaluation by the AHTD and the FHWA led to the determination that this new alignment, designated Line 5, was feasible and must be fully considered and documented in a SDEIS. Figure 2-4 illustrates this alignment's location in addition to the other DEIS alignments carried forward into the SDEIS. This alignment avoids the Cave Springs recharge area and potential impacts to its associated endangered species. The addition of this new alignment established four alignments for further analysis and impact comparisons within the center portion of the project (Segments B-E) that was the focus of the SDEIS.

2.3.5.2 Split Interchange Alignment

Comments received as a result of the DEIS Location Public Hearing requested consideration of an alignment that utilized an existing section of I-540. This alignment would follow the DEIS Line 2/4 from Highway 112 to an interchange with I-540, merge with I-540 to proceed northward, then pass through another I-540 interchange and proceed eastward along the location of Line 5 in the SDEIS. This "split interchange" alignment was analyzed and a determination was made that this alignment was not feasible based on current accepted engineering design principles related to future traffic volumes, overlapping routes, route continuity and weaving movements that would compromise existing safety standards. Refer to Section 2.3.4.3 of the SDEIS for additional information concerning this decision.

2.3.5.3 New I-540/Bypass Interchanges and Associated Modifications

A re-evaluation of increasing traffic volumes and projections for I-540 resulted in new conceptual designs of the directional interchanges for the I-540/bypass alignments that are



discussed in the SDEIS. These designs require the relocation of Wagon Wheel Road and a new I-540/Wagon Wheel Road local access interchange for SDEIS Lines 2, 3 and 4. SDEIS Line 5 would allow the existing I-540/Wagon Wheel Road interchange to remain. Appendix K contains additional information from the SDEIS about Lines 2, 3, and 4 and the proposed conceptual designs for the I-540 interchange locations and associated modifications.

2.3.5.4 Highway 265 Interchange

The Northwest Arkansas Regional Planning Commission and the City of Springdale requested that an interchange be located at Highway 265 (Old Wire Road) instead of the Highway 264 location as identified in the DEIS. The new interchange location was studied in the SDEIS along with the secondary impacts that will occur as a result of widening the existing portion of Highway 265 (Old Wire Road) between Lines 3, 4, or 5 and Highway 264. The analysis concluded that the conceptual interchange at Highway 265 would have one less residential relocatee than the interchange planned at Highway 264 and that there were no significant impacts associated with this proposed change. Since Highway 265 is projected to carry more traffic than Highway 264, a decision was made to locate the interchange at Highway 265.

2.3.6 Alignments Studied in the SDEIS

The scope of the SDEIS was limited to the portion of the project that contained the new northern alignment and the center portions of the alignments previously studied (Segments B-E) in the DEIS. The SDEIS included evaluation of four alignments, in addition to the No-Action Alternative, for social, economic and environmental impacts, traffic analysis, development of conceptual design, and estimated costs.

The four alignments studied in the SDEIS within the center portion (Segments B-E) of the proposed project are Line 2 (blue), Line 3 (gold), Line 4 (dashed green) and Line 5 (red). These alignments are illustrated in Figure 2-4. As discussed previously in Section 2.3.4 of this document, two "Preferred Segments" carried forward from the DEIS, i.e., Segments A-B and E-F, were combined with the various alignments being studied within Segments B-E for the SDEIS analysis.

The corridors under consideration by the NWARA Authority for their access road are shown in Figure 2-2. SDEIS Lines 2, 3, 4 and 5 are concurrent with the various NWARA Access Road project corridors between Highway 112 and I-540.

The bypass alignments studied in the SDEIS ranged from 19.8 miles to 20.6 miles (31.9 to 33.2 kilometers) in length. All of the alignments are north of existing Highway 412 and share the same termini with existing Highway 412 at the west and the east ends of the proposed project. All alignments are planned with a fully directional interchange at I-540, local access interchanges at Highway 71B, Highway 112, and Highway 265 (Old Wire Road), and a grade separation at the Arkansas-Missouri Railroad. Additionally, plans to maintain a local access interchange on I-540 at Wagon Wheel Road are also included for each alignment. Table 2-3 provides a summary of basic information and impacts for each of the four alignments as presented in the SDEIS.

2.3.7 SDEIS Location Public Hearing and Decision-making Process

The SDEIS was published in May 2004 and Location Public Hearings were held June 2004 to display SDEIS study information and maps of the alignments. The comments received from the DEIS and SDEIS Location Public Hearings and the information in the DEIS and the SDEIS were used to choose an alignment to be carried forward into the FEIS.

The Interdisciplinary Staff, composed of representatives from various disciplines of AHTD and FHWA, met and considered the potential impacts, advantages, and disadvantages of the various segments before making a recommendation. Table 2-3, the Segment Impact Summary, and Table 2-4, the Segment B-E Comparison, is a portion of the information used as a part of the decision making process.

2.3.8 Alignments not Advanced in the FEIS

The AHTD and FHWA evaluated the SDEIS alignments for social, economic and environmental impacts, traffic analysis, and conceptual design. Comments received from resource agencies, public officials, and the public were also evaluated in the decision making process. Three of the alignments studied in the SDEIS have not been recommended for advancement through the final study process. The reasons these alignments were not preferred follows.

	Longth	A ana a -			Existing Land	Use Converted t	o Highway Right-	of-Way			Cultural Re	sources-Direct	Impacts	
	Length	Acreage	Commercial	Residential	Industrial	Woodland	Agricultural	Prime Farmland	Farmland of S. I.	Recorded	Historic Structures	GLO	Cemeteries	Old Roads
	miles (km)	(hectares)	acres (hec.)	acres (hec.)	acres (hec.)	acres (hec.)	acres (hec.)	acres (hec.)	acres (hec.)	Archeological Sites	instorie structures	Resources	Cemeteries	Olu Roaus
Line 2 B-E	8.2 (13.2)	597 (242)	39 (16)	88 (36)	0 (0)	102 (41)	352 (142)	58 (23)	78 (32)	5	2#	1	0	1
Line 3 B-E	8.6 (13.8)	654 (265)	45 (18)	66 (27)	61 (25)	43 (17)	337 (136)	97 (39)	86 (35)	1	0	0	0	1
Line 4 B-E	8.9 (14.3)	685 (277)	24 (10)	80 (32)	10 (4)	93 (38)	463 (187)	86 (35)	80 (32)	3	1#	2	p)	7 1
Line 5 B-E	8.9 (14.3)	622 (252)	19 (8)	54 (22)	17 (7)	72 (29)	419 (170)	78 (32)	64 (26)	1	1#			1
Segment A-B*	6.5 (10.5)	366 (148)	21 (8)	59 (24)	0 (0)	64 (26)	194 (79)	17 (7)	12 (5)	1			$\langle 0 \rangle$	0
Segment E-F*	4.6 (7.4)	236 (96)	3 (1)	26 (11)	0 (0)	73 (30)	112 (45)	11 (4)	0 (0)			0		0
								257	SI	# getermined melig	Ible to National Regist	er of Historic Pl		7
Continued	Residenti	al Owners	Residential	Tenants	Businesses	Farms	ocations Non-Profit Organizations	Total	Minority Households	Elderly Households	Low Income Households	Noise Im Estimated Receptors 2004 Traffic	Estimated Receptors - 2024 Traffic	Hazardous Materials Impacts
Line 2 B-E	8	2	14		29	3	3	131	12	8		37	55	0
Line 3 B-E	3	1	- 14	<u> </u>	26	1	0	72	2	5	1	10	34	0
Line 4 B-E	4	5/	11		16	2		75	4	10	5	13	45	0
Line 5 B-E		0	5		28	4		77	3	6	2	8	21	0
Segment A-B*	2	.8	2		4	0		34	0	4	1	11-12 ⁺	20-24 ⁺	1 auto salvage yard
Segment E-F*	(9	2				0	13	0	1	0	0-1+	3	0
	FOR INI									+The number of in this segment c to the align	noise receptors hange according nent/traffic			

		Floodplain Impacts		U	Surface Water Quality Impact Ratings							
Continued	Special Flood Hazard Area	Floodway	Longitudinal Encroachments	Constitution and		Stream		Low	Madium	Iliah		
	Linear Ft (Lin. Meter)	Linear Ft (Lin. M)	Linear Ft (Lin. M)	springs	Ephemeral	Intermittent	Perennial	Total	LOW	Mealum	Ingn	
Line 2 B-E	0 (0)	4050 (1234)	300 (91)	0	1	15	8	24	10	5	1	
Line 3 B-E	1200 (366)	2140 (652)	1220 (372)	0	0	8	3	11	3	4	1	
Line 4 B-E	0 (0)	3550 (1082)	300 (91)	0	1	12	8	21	6	5	1	
Line 5 B-E	1200 (366)	600 (183)	0 (0)	0	1	3	1	5	5	1	0	
Segment A-B*	1000 (305)	0 (0)	0 (0)	3	3	4	3	10	7	2	0	
Segment E-F*	400 (122)	0 (0)	0 (0)	0	5	1	0	6	6	0	0	

*Shared Alignments within Segment

**Noise receptors with 10 dBA or greater increase using Toll Alternative traffic. 10 dBA level receptors also include the receptors that approach the noise abatement criteria (66 dBA).

Table 2-3 SEGMENT IMPACT SUMMARY AS PRESENTED IN THE SDEIS

SEE TABLE 4-21 FOR IMPACT SUMMARY OF FEIS PREFERRED LINE

Table 2-4														
	Segment B-E Comparison As Presented in the SDEIS													
Segment B-E	Advantages	Disadvantages												
Line 2	 Best minimizes community impacts to Bethel Heights Avoids costs & difficulties associated with crossing active quarry Requires least estimated ROW Lowest prime farmland impacts (58 acres) 	 131 estimated total relocatees (highest) Requires relocation of I-540/Vagon Wheel Road Interchange and Wago, wheel Road. Directly impacts four soblivisions and Springdale Public Se. Interchange impacts to opring Creek Crosses Fitzera a Mountain Highest unics of noise receptors Highest number of stream crossings (24) & recent primacts to vite quality 												
Line 3	 Avoids subdivision developments 2nd lowest number of stram crossings (11) 	 Stimated to an excatees Requires re ocal A of I-540/Wagon Wheel Road Intervinge and Wagon Wheel Road. Introductory of the properties of the state o												
Line 4	 Avoids costs a annulties as called with crossing active quarry Low standards number to business relocates (16) 	 75 estimated total relocatees Requires relocation of I-540/Wagon Wheel Road Interchange and Wagon Wheel Road. Interchange impacts to Spring Creek Bisects Bethel Heights Directly impacts one new subdivision Requires most estimated ROW 2nd highest number of stream crossings (21) 												
Line 5	 Avoids impacts associated with relocation of I-540/Wagon Wheel Road Interchange and Wagon Wheel Road. Avoids interchange impacts to Spring Creek Lowest number of stream crossings (5) & potential impacts to water quality Lowest number of noise receptors 	 77 estimated total relocatees Bisects Bethel Heights Crosses active quarry Directly impacts one subdivision development 												

2.3.8.1 SDEIS Line 2

Line 2 has the highest number of relocatees and noise receptors and directly impacts four subdivisions and a Springdale public school. It also has the highest number of stream crossings and potential impacts to water quality since it requires relocation of the I-540/bypass directional interchange to the Spring Creek floodplain. It would require removal of the existing I-540/Wagon Wheel Road local access interchange and relocate it at Spring Creek Road. Also, Wagon Wheel Road would be relocated northward and reconnected to Spring Creek Road, providing access to the new interchange.

The U.S. Fish and Wildlife Service (USFWS) in its comments on the SDEIS expressed concerns over the possibility that reconstructing the local access at this location and connecting Wagon Wheel Road to Spring Creek Road would lead to increased secondary development and cumulative impacts to the endangered species in the Cave Springs recharge area.

Generally, the public did not support this alignment, citing its proximity to neighborhoods and schools.

2.3.8.2 SDEIS Line 3

This line requires the removal of the existing I-540/Wagon Wheel Road local access interchange for construction of a new I-540/bypass interchange. A new I-540/Wagon Wheel Road local access interchange would be built to the south at Spring Creek, and Wagon Wheel Road would be relocated southward to connect to this interchange. This alignment was eliminated from further consideration because of potential impacts to the Spring Creek floodplain and prime farmland impacts.

2.3.8.3 SDEIS Line 4

The public had concerns similar to those expressed for Line 2, including perceived negative impacts to existing residential areas and subdivisions such as Stone Crest and Eagle Crest Subdivisions. Line 4 would require the largest amount of estimated right-of-way and had the second highest number of stream crossings. As with Line 2, Line 4 would impact the Spring Creek floodplain due to the relocation of the I-540/bypass directional interchange. It would require the removal of the existing I-540/Wagon Wheel Road local access interchange and

relocate it northward to Spring Creek Road. Wagon Wheel Road would also be relocated northward to reconnect to the new interchange.

The USFWS expressed the same concerns they had with Line 2 over the possibility that reconstructing the local access at this location and connecting Wagon Wheel Road to Spring Creek Road could lead to increased secondary development and cumulative impacts to the endangered species in the Cave Springs recharge area.

2.4 ALTERNATIVES BEING CONSIDERED IN FEIS

This section provides a basic description of the two alternatives that have been chosen to be carried through the environmental study process.

2.4.1 <u>The No-Action Alternative</u>

Included in the study process for the proposed project is the concept of the No-Action Alternative. The No-Action Alternative consists of no improvements to the present system and no expenditures other than regular maintenance of the existing route. The majority of the existing route would remain a five-lane facility. As a result, the LOS and safety issues identified in the Purpose and Need Section would remain and deteriorate to the point at which nearly the entire route would provide poor service to the traveling public. Undesirable LOS problems would exist on Highway 412 in downtown Springdale and service on other nearby facilities would also degrade. Through traffic will continue to increase as the Highway 412 corridor across northern Arkansas is upgraded as part of its designation as a High Priority Corridor. Delays along the highway would be more severe than exist currently and crashes would be expected to increase.

There are costs involved with the No-Action Alternative and they include the following:

- Maintenance of the roadway system the longer improvements and/or reconstruction are postponed, the higher the costs. Conducting maintenance on highways at or near capacity is also difficult and costly;
- Increased vehicle operating costs on substandard, inadequate facilities;
- The monetary value of time lost due to congestion;

- The intangible costs associated with the inconvenience and annoyance provoked by the above deficiencies;
- Increased travel time for emergency services;
- Costs associated with an increase in the number of crashes; and
- In addition, improved access to business centers would not be realized, outlying rural and suburban communities would be difficult to reach, accessibility to job centers for commuters would not improve, and potential industries may not consider the study area as a probable site without an improved transportation facility to transport raw materials and finished products.

In all but no growth scenarios, No-Action is a deferral of difficult choices. Benton and Washington Counties are experiencing significant growth with the options or choices related to Highway 412 becoming more difficult to make as each year passes. Growth will eventually cause congestion so intolerable that action will not be avoidable or growth will slow. When that time comes, right-of-way acquisition will be more difficult and costly because of increased development in the corridor and the overall increase in property values as development and growth continues to occur in Benton and Washington Counties. The result will be an increase in cost to the community, state, and nation in both environmental and monetary values.

Although the No-Action Alternative avoids the impacts that could be caused by the proposed construction, the identified need for an east-west, four-lane, controlled access facility to serve the area remains valid. Selection of the No-Action Alternative would avoid the major state and federal expenditures and impacts to the social, economic, natural and cultural environment, including residential displacements, which could ensue from the selection of a construction alternative. However, the costs associated with the No-Action Alternative, along with the adverse impacts related to traffic congestion such as air pollution, noise, and decreased vehicular and pedestrian safety, could create an undesirable environment that could have more long-term adverse impacts than the anticipated construction impacts. Additional impacts that would result from the selection of the No-Action Alternative can be found in the Environmental Consequences Section of this FEIS.

This concept of No-Action remains a viable alternative until the decision making process has been completed. Each alternative developed and advanced through the EIS process will be compared to the No-Action Alternative.

2.4.2 Basis for Selection of the Preferred Alignment

The alignments compared in the FEIS are shown in Figure 2-5. As discussed previously in Section 2.3.4, two Preferred Line Segments were designated in the DEIS and carried forward in the SDEIS for the re-evaluation of these alignments in combination with the new alignments developed in the SDEIS. The selection rational for the segments being combined for the Preferred Line is repeated in the following sections.

2.4.2.1 Segment A-B

This segment extends from the western terminus at existing Highway 412 to the eastern end of the Highway 112 interchange. DEIS Line 2/4, as shown in Figure 2-3, was chosen as the Preferred Line Segment through A-B because it has a better alignment and design for an interchange with the NWARA Access Road; encourages concurrent segments with the NWARA Access Road; and minimizes cumulative impacts between the two projects. It also avoids most of the City of Elm Springs, thereby minimizing community disruption and related impacts, and minimizes property severance impacts.

2.4.2.1.1 Design Revisions to DEIS Preferred Segment A-B

As a result of comments received at the DEIS Location Public Hearings from residents in the area, the conceptual design of the interchange of Highway 412 and the bypass was adjusted to avoid the Brush Creek Subdivision. An additional change was made south of Brush Creek Road, where approximately one mile (1.6 km) of the alignment was shifted slightly south to avoid major electrical transmission lines. These changes were analyzed after completion of the SDEIS and the revised impacts documented in the impact summary of this FEIS. These proposed changes reduced the number of residential relocations in Segment A-B by 13 residences. No other substantial impacts were found. A Public Involvement Session was conducted locally in September 2004 to give the public an opportunity to comment on these changes. The results of that meeting can be found in Appendix A. Figure 2-6 shows the adjustments to the Preferred Segment A-B.

2.4.2.2 Segment E-F

Segment E-F extends from just north of the Benton/Washington County line to the eastern terminus at existing Highway 412. As indicated in the DEIS, there are minimal differences in the social, economic and environmental impacts between DEIS Line 3 and DEIS Line 2/4 through this segment. The City of Springdale commented that DEIS Line 2/4, the more northeastern alignment, would be more consistent with the City's long-range land use plans. Therefore, DEIS Line 2/4, as shown in Figure 2-3, was established as the Preferred Alignment through this segment.

2.4.2.3 Segments B-C, C-D, and D-E

The AHTD and FHWA evaluated the alignments for social, economic and environmental impacts, traffic analysis, and conceptual design. Comments received from resource agencies, public officials, and the public were also evaluated in the decision making process. These evaluations led to the identification of Line 5 from the SDEIS as the preferred alignment for Segments B-C, C-D, and D-E to be carried forward in the FEIS, along with the Preferred Segments A-B and E-F.

The identification of Line 5 as the Preferred Line is based upon its compatibility with existing I-540 and the local street network; minimal number of relocations; lower wetland, floodplain, and water quality impacts; the potential to limit secondary impacts to the Cave Springs recharge area; and public comment. The basis for the choice of Preferred Segments from the DEIS and SDEIS is summarized in Table 2-5.

Line 5 would not require the removal and reconstruction of the I-540/Wagon Wheel Road interchange as would Lines 2, 3 and 4. Line 5 also has considerable support from the public, including the perception that Line 5 would have the least impact on older, established neighborhoods. Line 5 is supported by the Springdale City Council as it is compatible with Springdale's Master Street Plan. The number of relocatees for Line 5 (60) is similar to the number relocated by Lines 3 and 4 and the number of noise receptors was the lowest of the alignments. No direct impacts to known cultural resources are anticipated. Additional information and analysis of these social, economic, and environmental issues are presented in Section 4, Environmental Consequences, of this FEIS

The Cave Springs recharge area is inhabited by an endangered cave fish. The USFWS has conveyed concerns that increasing development could impact this species. Selection of Lines 2 or 4 as the Prefered Alignment in Segment B-E could promote secondary development in or near the Cave Springs recharge area by providing local traffic new connectivity from Wagon Wheel Road to Spring Creek Road and a local interchange access point. Line 5 does not allow local access at the I-540/bypass directional interchange near the recharge area. This should limit induced development. Drainage and storm water runoff into the Cave Springs recharge area is a concern but due to topography of the surrounding lands, runoff from Line 5 would not discharge into the Cave Springs recharge area. Additional commitments for Line 5 have been established that limit access, additional interchanges, and the construction of frontage roads between Highway 112 and I-540. See Section 7.2.1 in the Comments and Response Section for further information on this issue and the commitments.

	Table 2-5
	Identification of the Preferred Alignment
Segment	Basis for Selection of Preferred Alignment
A-B (from DEIS)	 Avoids most of the City of Elm Springs Better alignment and design for interchange with NWARA Access road; encourages concurrent segments with NWARA Access road; and minimizes cumulative impacts
	Minimized severance impact to local land owners
	• Avoids impacts associated with relocation of I-540/Wagon Wheel Interchange and Wagon Wheel Road
В- Е	Avoids interchange impacts to Spring Creek
(from SDEIS)	• Lowest number of stream crossings (5) & potential impacts to water quality
	• Lowest number of noise receptors
	• Preferred overall by public and local officials
EE	• Connects with existing Highway 412 divided four-lane instead of five- lane section
(from DEIS)	• Provides for complete bypass of existing Highway 412 five-lane section through Springdale
DLIS	• More consistent with the City of Springdale's Long Range Land Use Plan

2.4.3 General Description of Preferred Line

Figure 2-7 shows the location of the Preferred Line, which begins with an interchange approximately 0.5 mile (0.8 kilometer) west of Tontitown where Highway 412 transitions from a four-lane, divided cross-section to a five-lane cross-section. A directional interchange with the proposed NWARA Access Road is located about one mile (1.6 km) west of Highway 112, and a local access interchange is proposed at Highway 112 approximately 0.75 mile (1.9 km) north of the Elm Springs city limits.

From Highway 112, the alignment continues to the northeast, staying south of the Cave Springs recharge area, to a directional interchange with I-540. From I-540 it dips southeast to the Highway 71B local access interchange, passes over the Arkansas Missouri Railroad, and continues east to a local access interchange at Highway 265 (Old Wire Road). The alignment then runs southeast, crossing Highway 264 just west of Accident road and continues to the southeast about 0.4 mile (0.6 kilometer) northeast of Scott Hollow Road. The alignment ends at the eastern terminus located just west of Beaver Lake at the area where Highway 412 transitions from a four-lane divided cross-section into a five-lane cross-section. No further access is currently planned between Highway 264 and existing Highway 412. Table 2-6 lists the planned locations of interchanges and grade separations. Refer to the U.S. Fish and Wildlife Service (USFWS) letter dated August 5, 2004 in Appendix O for additional design commitments related to this project.

2.4.3.1 General Design Standards Information for the Preferred Alignment

The design features for the Preferred Alignment include two twelve-foot (3.6-meter) travel lanes in each direction separated by a variable width median. Right-of-way requirements will vary depending on the depth of cut or height of fill, but for the comparison of impacts, are estimated to average 300 feet (90 meters) in width. Figure 1-2 illustrates a typical section of improvement for the project. The design standards for Interstate type facilities with divided lanes and a design speed of 70 mph (110 km/h) are being used for this project. This alignment includes both a Toll and Non-toll Funding Alternative.

2.4.3.2 Alignment Traffic Analysis

The close proximity of the new location alignments to each other results in very little difference in the traffic assignment for the Non-toll (free) alternatives. It is expected that

		Table 2-6												
	FEIS Preferred Alignment													
	Proposed Interchange and Grade Separation Locations													
Segment	General Information	Proposed Interchange Locations	Proposed Grade Separations (Overpasses)											
A-B	3 Interchanges 6 Grade Separations	Highway 412 (west) NWARA Access Road Highway 112	Highway 412 Liberty Avenue Javello Road West Brush Creek Road Marchant Road Robbins Road											
B-C	1 Interchange 3 Grade Separations	I-540	Grimsley Road East Wagon Wheel Road Spring Creek Road											
C-D	1 Grade Separation	N/A	North Graham Road											
D-E	2 Interchanges 4 Grade Separations	Highway 71B Highway 265 (Old Wire Road)	Arkansas-Missouri Railroad North Oak Street Highway 264 Mountain Road											
E-F	1 Interchange 4 Grade Separations	Highway 412 (east)	East Monitor Road East Scott Hollow Road Parsons Monitor Road Coonskin Bluff Road											

between 9,800 vehicles per day (vpd) and 22,900 vpd would use the proposed Non-toll alternatives in the current year. These volumes are expected to grow to between 17,700 vpd and 40,900 vpd by 2024 and include 12% truck traffic. These figures include traffic that would divert to the bypass from existing Highway 412 and traffic from the NWARA Access Road. Table 2-7 gives a synopsis of the current and projected traffic for 2004 and 2024 for each Non-toll alternative alignment studied in the SDEIS.

The traffic assignments for the toll alternatives are based on the traffic assignments for the Non-toll alternatives with a diversion rate of 33%. This means that 33% of the traffic that would use the Non-toll alternative would choose not to use the toll route and would remain on existing Highway 412 or other routes. Diversion rates are different depending on amount of toll/mile. The toll charges for a through trip are assumed to be \$1.00 for a passenger car

and \$2.50 for a commercial vehicle, which equate to per-mile rates of \$0.061 and \$0.152 respectively. It is expected that between 6,600 vpd and 19,300 vpd would use the bypass Toll Alternatives in the current year. These volumes are expected to grow to between 11,800 vpd and 30,300 vpd by 2024 for the Toll Alternatives. These numbers include 12% truck traffic.

By separating and diverting through traffic from local traffic, flow and maneuverability for both will improve. The removal of the through traffic will have a positive impact on the ability to maintain an acceptable level-of-service (LOS) on existing Highway 412. Reduction in traffic along the existing facility can be translated to an improvement in the 2024 LOS along the urban sections from LOS E and F to LOS C and D.

			Tabla 2	7										
	LADIC 2-7 Current and Projected Traffic Volumes for													
	Current and Projected Traffic Volumes for													
	Non-toll Alternative Alignments													
Upper number is estimated 2004 ADT Lower number is estimated 2024 ADT														
Aligr	nment	Highway 412 West to Highway 112	Highway 112 to I-540	I-540 to Highway 71B	Highway 71B to Highway 265	Highway 265 to Highway 412 East								
Existing	Highway	21,700	24,500	29,300	24,700	12,900								
412 Ali	ignment	36,900	41,800	49,900	39,200	20,500								
	Dumoga	13,100	14,900	19,700	15,900	10,800								
Line 2	Буразз	23,600	27,000	35,500	28,600	19,600								
Line 2	Highway	8,600	10,100	14,000	13,100	2,100								
	412	14,400	16,800	23,800	20,700	3,400								
	Dumoga	13,800	15,800	22,900	18,000	9,800								
Line 2	Буразз	24,900	28,400	40,900	32,500	17,700								
Line 5	Highway	7,900	9,100	12,500	10,400	3,200								
	412	13,200	15,300	21,400	16,500	5,000								
	Dumora	11,600	14,500	20,400	18,300	10,600								
Line 4	Буразз	21,000	29,300	36,900	3,100	19,200								
Line 4	Highway	10,100	10,500	14,300	11,300	2,400								
	412	16,800	1,400	24,300	17,700	3,700								
	Demogra	12,800	14,500	20,800	16,100	10,800								
Preferred	Бураss	23,100	26,300	37,600	29,000	19,600								
Line 5	Highway	8,900	10,400	13,700	11,800	2,300								
	412	14,900	17,300	23,300	18,500	3,600								

Traffic analysis of the Preferred Line shows that it is expected that between 9,800 vehicles per day (vpd) and 22,900 vpd would use the proposed Non-toll alternative in the current year. These volumes are expected to grow to between 17,700 vpd and 40,900 vpd by 2024 and include 12% truck traffic. These figures include traffic that would be attracted to the bypass from existing Highway 412 and traffic from the NWARA Access Road. Figure 2-8A and 2-8B illustrate the Preferred Line and its Non-toll and Toll alternative traffic assignments, respectively, for 2004 and 2024.

2.4.3.3 Congestion and Delay

For local traffic, an overall reduction in volumes along existing Highway 412 will reduce delay and improve travel times. With the construction of a Highway 412 bypass, delay and congestion for through travelers will be reduced. The traffic remaining along existing Highway 412 will likely have an overall increase in travel speed resulting in a reduction in travel time. In the year 2024, the estimated annual delay is expected to be reduced from 1,870,000 hours to 650,000 hours with the construction any of the proposed alignments. This 65% reduction in delay is due to the reduction of congestion and the resulting increase in travel speed along existing Highway 412 along with the higher anticipated speed limit along the proposed bypass.

2.4.3.4 Safety

Crash rates for access controlled facilities statewide are lower than the crash rates for all sections of existing Highway 412. Additionally, the separation of through traffic from local traffic will likely result in fewer and less severe crashes for both passenger vehicles and heavy trucks. The separation of through traffic and local traffic that would occur as a result of this project will have a positive impact on the safety of the region's transportation system. Higher speed, through traffic will no longer have potential conflicts with slower, local traffic making frequent turning movements. Likewise, lower traffic volumes along the existing route will likely lead to a reduction in crashes related to congestion.

2.4.3.5 Alternative Cost Comparisons

Table 2-8 presents a comparison of the estimated costs for both the Toll and Non-toll Funding Alternatives. The cost for the Preferred Line Non-toll (free) alternative is estimated

to be \$300 million. Each toll alternative will have additional costs for main lane and ramp toll plazas, estimated to be \$21 million.

	Table 2-8 Alternative Cost Comparisons* (in 2004 million \$)													
Alignment Alternatives	Alignment AlternativesLength in miles (km)ConstructionGross ROWUtilityRelocationTotal Cost 													
Line 2	19.8 (31.9)	245	60	5	4	314	335							
Line 3	20.2 (32.5)	269	64	5	3	341	362							
Line 4	20.6 (33.2)	249	53	5	3	310	331							
Line 5	20.6 (33.2)	238	54	5	3	300	321							

*Costs were estimated in 2004. The current rate development within the corridors is substantial, and Right-of-way costs will likely increase on all of the proposed lines.

**Toll plazas add an estimated \$21 million to the cost of the Non-toll Alternatives.

2.4.4 <u>Preferred Alignment Summary</u>

The Preferred Line is shown in Figure 2-7. This alternative:

- Meets the project purpose and need,
- Minimizes overall impacts,
- Best balances the benefits expected from the project with the overall impacts,
- Provides good access to communities and other regional highway facilities,
- Provides an improved link in the High Priority Corridor system that serves the travel, economic development, and commercial demands of northern Arkansas and the nation,
- Enhances intermodal access to the Northwest Arkansas Regional Airport,
- Minimizes cumulative impacts by utilizing the same 3.5 mile (5.6 kilometer) roadway segment as the NWARA Access Road, between Highway 112 and I-540.
- Provides for connections to planned transportation facilities identified in the 2025 Regional Transportation Plan for Metropolitan Northwest Arkansas prepared by the Northwest Arkansas Regional Planning Commission.

