CHAPTER IV
ENVIRONMENTAL CONSEQUENCES AND MITIGATION MEASURES

The following discussions present the direct, indirect and cumulative impacts of the Preferred Alternative, compare the impacts of interchange alternatives at five locations within SIU 2, analyze the impacts of the No-Build Alternative relative to the Preferred Alternative and present mitigation measures for the impacts associated with implementation of the Preferred Alternative and alternatives (Table IV-1). Table IV-1 presents each of the primary evaluation factors or impacts addressed in each of the technical sections of this chapter. The factors are characterized in units such as acres of disruption, quantities (number) of anticipated displacements or qualitative ratings. The totals represent estimated impacts for the No-Build Alternative and the aggregated impacts of all components of the Preferred Alternative. Details associated with each of the entries in the No-Build and Preferred Alternative are presented throughout this chapter.

Table IV-1: Impact Summary

EVALUATION FACTOR	UNIT	No-Build	Preferred Alternative
ENGINEERING			
Length	Miles	62	62
Capital Cost (order of Magnitude)*			
-New Construction	$million	0	$863
-Acquisition cost (right of way)	$million	0	$93
Total	**$million**	**$372****	**$956**
Right of Way Impact (Typical width ~150 feet)	Acres	0	1,800
TRAFFIC			
2030 Daily Traffic Volumes (mainline)	ADT	68,263	70,642
Traffic Operations (2030):			
-% Target level of service (Level C)***	%	0	79
Travel Efficiencies (2030):			
-Travel Times	Minutes	57.5	53.7
-Daily vehicle miles traveled	Miles/Day	4,127,400	4,463,676
Change in 2030 Crashes (annual estimate):			
- Property-damage-only Crashes	Number	375	335
- Injury Crashes	Number	161	144
- Fatal Crashes	Number	111	76
Total	**Number**	**647**	**555**
SOCIAL AND ECONOMIC			
Land Use:			
- Compatibility with Current Plans/Trends	Rating	NA	●

Table IV-1: Impact Summary (Cont'd)

EVALUATION FACTOR	UNIT	No-Build	Preferred Alternative
Displacements:			
- Residences	Number	0	33
- Businesses	Number	0	21
Impacts to Existing I-70 Businesses:			
- During Construction	Rating	NA	◒
- Long-Term	Rating	NA	◒
Environmental Justice	Rating	NA	●
EVALUATION FACTOR	**UNIT**	**No-Build**	**Preferred Alternative**
ENVIRONMENTAL			
Air Quality	Rating	○	○
Noise	Rating	○	○
Parklands:			
- Refuges/Parks	Number	0	0
- Other Public Lands	Number	0	0
Prime Farmland	Acres	0	490
Streams	Lin. Ft.	0	41,560
Floodplains	Acres	0	98
Wetlands	Acres	0	26.9
Threatened and Endangered	Number	0	0
Conservation Reserve Program (CRP)	Acres	0	28
Wetlands Reserve Program (WRP)	Acres	0	8
Cultural Resources:	--	--	--
- Cemeteries	Number	0	0
- Architectural Resources (Eligible for the NRHP)	Number	0	1
- Historic Bridges	Number	0	0
- Archaeological Sites (recommended for Phase II testing)	Number	0	14
Potential Hazardous Waste Sites	Number	0	33
Visual Quality	Rating	○	○
Secondary Impacts	Rating	NA	○

* Costs are presented in 2005 dollars. As the construction timeline is extended, the costs are subject to inflation and include costs for design, maintenance of traffic, program administration, etc.

**Cost of the No-Build Alternative includes rehabilitation and reconstruction of the existing facility through the Year 2030.

*** The percent of the mainline and interchange subsections that had a level of service (LOS) of Level C or better

Rating Criteria

Benefits >> Potential Impacts	●
Benefits > Potential Impacts	◒
Benefits = Potential Impacts	○
Benefits < Potential Impacts	◑
Benefits << Potential Impacts	⊘
Not Applicable	NA

A. Land Use, Planning, Public Policy, Socioeconomics

1. Impacts of the Preferred Alternative

The primary issues associated with land use, planning, public policy and socioeconomic impacts of the Preferred Alternative for SIU 2 include:

- Displacement and relocation of residences, businesses and farms;
- Other direct and indirect land use impacts, including introduction of conflicts with sensitive land uses, fragmentation of parcels, changes in community character and potential conflicts with local land use plans and policies;
- Social impacts such as growth inducement and the potential for environmental justice issues; and
- Economic impacts such as changes in property values, tax revenues and other fiscal issues.

One important consideration with regard to land use and socioeconomic impacts associated with the Preferred Alternative is the extended timeframe between completion of the public involvement process in 2004 and the date construction activities would be expected to begin. Due to this considerable timeframe and the timeframe between initiation of the first construction contract and the completion of the last construction contract (potentially over 20 years), local governments, businesses (owners and tenants), residents (owners and renters) and Missouri Department of Transportation (MoDOT) have an extended period within which to anticipate, plan for and resolve many land use, community planning and socioeconomic impact issues. One drawback associated with this long timeframe, however, is that land use issues may arise between completion of the public involvement process and the initiation of construction that would complicate right of way acquisition or result in additional impacts, especially given the lack of funding for early right of way acquisition and other land use controls in most areas along SIU 2. The following discussion focuses on existing and reasonably foreseeable issues, but does not speculate in relation to these future possibilities.

a. Right of Way Acquisition, Displacement, Relocation and Related Land Use Changes

Table IV-2 below presents a summary of the estimated maximum number of displacements, by land use type, that would be expected to occur within SIU 2. The Preferred Alternative would result in the displacement of residences, commercial and industrial businesses, institutional and governmental operations and agricultural land due to right of way acquisition requirements.

Table IV-2: Right of Way Acquisition

Land Use	Units	Potential Impacts
Rural Residential Homes	Number	20
Urban/Suburban Residential Homes	Number	13
Commercial/Industrial	Number	21
Vacant Agricultural Land	Acres (Hectares)	1,125(455)
Vacant Urban/Suburban Industrial Land	Acres (Hectares)	120 (49)

Each residence or business was evaluated on the conceptual designs as a displacement or as a partial take. If it was obvious that the residence or business would be impacted by implementation of the Preferred Alternative, it was considered a displacement. If the property parcel of the business or residence w s located inside of the right of way line and it appeared that the structure might be avoided during final design, it was considered a partial take. It is important to note that the businesses or residences shown as partial takes on the conceptual drawings in Appendix A could be avoided during the final design process. However due to their apparent close proximity to the Preferred Alternative, they were enumerated as a partial take.

With regard to right of way acquisition, displacement and relocation, the Federal Highway Administration (FHWA) and MoDOT implement regulations and have adopted policies to provide fair treatment and just compensation for owners of businesses and residential properties. As required by the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, 42 USC Chapter 61 and amendments, relocation assistance must be provided to any person, business, or farm that is displaced due to the acquisition of real property by a public entity for public use. This Act, as well as Missouri state law, requires that just compensation be provided to the owner of private property that is taken for public use. An appraisal of the fair market value of an individual property is the basis for determining just compensation provided to the owner of a property to be acquired (FHWA and MoDOT, 2000).

The Missouri Department of Transportation's right of way acquisition and relocation program is designed to provide uniform and equitable treatment for those persons who are displaced from their residences, businesses or farms. The program is carried out without discrimination and in compliance with Title VI, the President's Executive Order on Environmental Justice, Limited English Proficiency and the Americans with Disabilities Act.

A MoDOT representative would assist each displaced person in securing comparable replacement housing regardless of race, color, religion, or national origin. In addition, MoDOT representatives are sensitive to the particular needs of any special group of residents. The relocation coordination office would also maintain liaison activities with other agencies rendering services useful to persons who must relocate. General relocation information is available in a brochure entitled "Relocation and Assistance and Payments Program" and would be provided to persons who are displaced. This relocation assistance program brochure is available at MoDOT district offices.

Residential displacement and relocation would be an inconvenience to some individuals and families. However, for others, this can be a hardship, particularly for people who have lived in their home for several years, senior citizens, disabled persons and/or persons with lower incomes. The variation in the level of hardship would be determined on a case-by-case basis. Similar variability would be expected for business displacement. For example, some businesses could readily relocate and take advantage of new opportunities at a new location, while others may find that relocation is highly disruptive and/or risky with respect to their business viability.

Residential Displacement

Of all of the issues associated with the construction of a major highway, the acquisition of real property is probably the most important issue to the landowners, residents, business owners and other property owners directly impacted by implementation of the Preferred Alternative. Standards have been developed to ensure adequate consideration and equitable compensation for those impacted. As previously described, any real property that is acquired as part of the I-70 improvements would be subject to the provisions of 42 USC Chapter 61. 42 USC Chapter 61

is the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 and is generally referred to as the Uniform Act.

The Relocation Assistance Program requires that a Replacement Housing Study be completed to assess the needs of those persons and families that would be displaced and the availability of replacement housing. No person would be required to move from his or her dwelling until a comparable, safe, sanitary and decent replacement dwelling has been made available to that person. The replacement housing must be available to all persons, regardless of race, color, religion or national origin Any displaced owner-occupant or tenant (of a dwelling) who qualifies as a displaced person is entitled to payment of his or her actual moving and related expenses, as MoDOT determines to be reasonable and necessary. A displaced owner-occupant who has occupied an affected dwelling for at least 180 days is also eligible to receive up to $22,500 for a replacement housing payment, which includes the amount by which the cost of a replacement dwelling exceeds the acquisition cost of the affected dwelling, increased interest costs and incidental costs. A displaced owner-occupant who has occupied an affected dwelling for at least 90 days but less than 180 days or a tenant who has occupied an affected dwelling for at least 90 days is entitled to a payment not to exceed $5,250 for either a rental or down payment assistance. In addition, mobile homes and their owners and occupants (renters) are provided the same status as other types of residences. However, impacts on this type of housing unit are given closer scrutiny to determine if they are considered affordable housing and/or if low-income persons or families, minorities or elderly persons occupy these units. Refer to the following discussion of environmental justice issues for more information on this topic.

Vacancy rates indicate that the availability of replacement housing varies throughout SIU 2. Rural areas of SIU 2 with low residential density have relatively low vacancy rates. However, the low vacancy rates of the rural areas are generally offset by the higher vacancy rates near the more urbanized areas of Odessa, Concordia, Sweet Springs and Boonville. The vacancy rate for the census tracts along SIU 2 is 8.9 percent, representing 1,321 units (U.S. Census 2000). As of February 12, 2004, in Sweet Springs, approximately ten houses were available with an average value of $50,000-$60,000. In Concordia, as of this same date, approximately 30 homes were available with an average value of $70,000-$80,000. In the Boonville area, as of February 10, 2004, approximately 100 residences were available with an average value ranging from $90,000 to $110,000. In the Odessa area, as of February 13, 2004, approximately 85 houses were available with an average price range of $110,000 to $135,000. Sources for this information included Concordia Realty, Brownsville Realty, ReMax Realty in Boonville and Heritage Realty in Odessa.

At this time, similar valued replacement-housing opportunities appear to be available or could be available in time to accommodate the phased losses of housing units in SIU 2. Data on housing costs related directly to each displacement and replacement availability were not available. Should this project include persons who cannot readily be moved using the regular relocation program benefits and procedures (i.e., when there is a unique housing need or when the cost of available comparable housing would result in payments in excess of the $22,500 or $5,250 statutory payment limits), MoDOT’s relocation policy commits to utilizing housing of last resort. Housing of last resort involves the use of payments in excess of statutory maximums or the use of other unusual methods of providing comparable housing. The Missouri Department of Transportation would utilize housing of last resort as needed on a case-by-case basis.

Based on preliminary analysis of the current design plans for SIU 2, 33 residences would be displaced by implementation of the Preferred Alternative in SIU 2. The number of displacements includes five mobile homes. These mobile homes are generally singlewide mobile home trailers

located on individual lots and not in large mobile home parks. The majority of these displacements occur around the interchanges where residential density is higher than the rural areas along mainline I-70. No concentrations of minority, low income, disabled or handicapped persons were identified during the reconnaissance studies for this project. Based on review of the 2000 Census data, the average household size in Lafayette, Saline and Cooper Counties is two people. Using 2.5 people per household, approximately 85 people could be relocated if the Preferred Alternative were implemented. These displacements would be addressed in accordance with the Uniform Act on a case-by-case basis.

The need for and completion of a Replacement Housing Study would be addressed at the time individual construction projects are fully funded and relocation is imminent.

Commercial, Industrial, Institutional and Governmental Displacement

Based on preliminary analysis of the current design plans for SIU 2, it is anticipated that implementation of the Preferred Alternative would displace 21 businesses. Refer to Table IV-3 for a list of displaced businesses and locations where real estate acquisition from businesses would be required. Economic impacts of these business displacements are discussed later in this section along with the potential for these and other related impacts low income, minority or elderly business owners or tenants. MoDOT would address impacts to businesses on a case-by-case basis in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, 42 USC Chapter 61.

Any displaced business, farm operation or nonprofit organization which qualifies as a displaced person is entitled to payment of actual moving and related expenses, as MoDOT determines to be reasonable and necessary. In addition, a business, farm or nonprofit organization may be eligible to receive a payment, not to exceed $10,000, for expenses incurred in reestablishing the business, farm operation or nonprofit organization at a replacement site.

A displaced business may be eligible to choose to receive a fixed payment in lieu of the payments for actual moving and related expenses and actual and reasonable reestablishment expenses. The payment amount for this entitlement alternative is based on the average net earnings of the business. This fixed payment amount cannot be less than $1,000 or more than $20,000.

Widening of I-70 will typically result in the need to acquire and remove existing billboards located where new right of way is required. Under current state and federal law, some of the billboards that are removed may be able to be replaced on other land adjacent to the new right of way limits. Minimum spacing and other requirements are likely to prevent other billboards from being replaced. The cost estimates assume that a greater cost will have to be paid for billboards that cannot be replaced, than for those which are able to be set back and replaced at their approximate original milepost location. These estimated costs are roughly approximate, due to uncertainties in the variables of time, potential changes in billboard laws and valuation, plus the unique circumstances that affect the value of each current billboard.

Within SIU 2, we estimate that construction of a build alternative would require the removal of approximately 62 existing billboards, depending on the alignment of the build alternative selected. A substantial number of these large billboards would be able to be set back and rebuilt at their same approximate milepost location under current law.

Under the No-Build Alternative, the existing billboard structures would not be affected.

Agriculture Land Displacement

Most of the land acquisition required for the Preferred Alternative would involve agricultural land. As described in Chapter III, cultivated agricultural land in 1997 made up approximately 55 percent or approximately 690,387 acres (279,400 hectares) of the total land area (1,255,250 acres, 508,000 hectares) within the three counties in SIU 2 (USDA, 1999) and approximately 119,430 acres (48,333 hectares), 10.5 percent, are considered prime farmland. Conservation Reserve Program (CRP) and Wetlands Reserve Program (WRP) acres make up about one percent of the total land area of the three counties.

Real estate acquisition required for the Preferred Alternative would impact approximately 1,125 acres (455 hectares) of agricultural land, including approximately 490 acres (184 hectares) that are considered prime farmland. Severed land was also considered when assessing impacts to farmland. Severed land occurs when a parcel is split by the right of way and no reasonable access is available. No severances to farmland would be expected to occur within the project area as a result of implementing the Preferred Alternative.

Impacts from the Preferred Alternative to CRP and WRP-enrolled land were evaluated in SIU 2. Approximately 28 acres (11 hectares) of CRP lands and eight acres (3.2 hectares) of WRP lands would be impacted through implementation of the Preferred Alternative in SIU 2.

A farmland impact rating analysis, based on the requirements of the Farmland Policy Protection Act, was completed through coordination with the Natural Resources Conservation Service (NRCS) to characterize the nature of these impacts. The rating form and results are presented in Appendix F.

The process began with site assessment criteria that were used to determine values for specific lands. A number rating system was applied that used ten factors to determine which sites deserve the most protection from conversion to non-farm uses. In summary, the farmland conversion impact ratings for the Preferred Alternative were below the significance criteria of 160 points for all three counties of the project area and the prime farmland that would be affected by the construction of this project would amount to approximately four-tenths of one percent (0.4 percent) of the prime farmland in the three counties.

b. Relationship Between the Preferred Alternative and Community Plans and Policies

As described in Section A of Chapter III, the majority of lands along the SIU 2 corridor are not governed by formal plans or policies and local municipalities acknowledge the considerable role I-70 has in influencing and shaping the physical and economic development of the local communities.

Lafayette County Comprehensive Plan Update

The Preferred Alternative would not be expected to conflict with the Lafayette County Comprehensive Plan update because it is still under development. Future conflicts are possible, but could be avoided depending on the nature of the planning process.

Table IV-3 Summary of SIU 2 Residential and Commercial Impacts

Mainline Subsections	WESTERN TERMINUS Mile Marker	EASTERN TERMINUS Mile Marker	Residential* Alt.	Single Family (SF)	SF Partial	Mobile Home (MH)	MH Partial	Commercial* Business Displacement	Business Partial Take	Other
ML-1 West Terminus at Odessa **Sheets A-1 to A-2**	39	40.81	NA	2	1	0	0	Bri-Ley Sales	Equipment Storage Lot	Fiber Optic Box, 2 grain silos
I-1 Routes M/O at Odessa **Sheet A3**	40.81	41.57	NA	1	0	0	0	None		None
ML-2 Route M/O to Route H **Sheets A-4 to A-7**	41.57	44.98	NA	6	0	4	1	Cobra Fencing (vacant)	Raney's Auto Sales and Salvage	Billboards (2), Water Tower Weigh Station
I-2 Route H **Sheet A-8**	44.98	45.64	NA	0	1	0	0	None		None
ML-3 Route H to Route 13 **Sheets A-9 to A-11**	45.64	49.05	NA	0	1	0	0	None	Unknown, Kleinschmidt Western Store, Inc.	Billboards (7)
I-3 Route 13/Higginsville **Sheets A-12A and A-12B**	49.05	49.81	A	0	0	0	0	Iron Horse, Incorporated	Pilot Travel Center, Alma's Meat Market, Ferrell Gas/Propane	None
			B	0	0	0	0	Iron Horse, Incorporated	Pilot Travel Center, Alma's Meat Market, Ferrell Gas/Propane	None
ML-4 Route 13 to Route T **Sheets A-13 to A-15**	49.81	52.36	NA	0	0	0	0	None		Billboards (7)
I-4 Route T/Aullville **Sheet A-16**	52.36	53.31	NA	1	0	0	0	None		None
ML-5 Route T to Route 23 **Sheets A-17 to A-20**	53.31	57.86	NA	1	1	1	0	Micro Tool and Dye, M & S Livestock Equipment		Sewage lagoon, rest area, pet cemetery
I-5 Route 23 at Concordia **Sheets A-21A, A-21B and A-22**	57.86	59.37	A	0	1	0	0	KFC/Taco Bell, McDonalds, Kuhns Log Homes Display, Public Storage	Travel Center, Amber's Restaurant, Hardees, Breaktime Service Station, NAPA Auto Parts, Cremee Freeze, American Family Insurance, Texaco, Conoco, Mike's Auto Repair	None
			B	0	1	0	0	McDonalds, Kuhns Log Home Display, Public Storage	Hardees, NAPA Auto Parts, Cremee Freeze, Breaktime Service Station, American Family Insurance, Texaco, Conoco, Mike's Auto Repair	None

Table IV-3 Summary of SIU 2 Residential and Commercial Impacts (Cont'd)

Mainline Subsections	WESTERN TERMINUS Mile Marker	EASTERN TERMINUS Mile Marker	Residential* Alt.	Single Family (SF)	SF Partial	Mobile Home (MH)	MH Partial	Commercial* Business Displacement	Business Partial Take	Other
ML-6 Rote 23 to Routes V V/Y **Sheets A-23 to A-25**	59.37	62.12	NA	0	0	0	0	None		Billboards (4)
I-6 Routes V V/Y at Emma **Sheet A-26**	62.12	63.05	NA	0	0	0	0	None	Motel (vacant), Restaurant (vacant)	
ML-7 Routes V V/Y to Route 127 **Sheets A-27 to A-30**	63.05	66.46	NA	1	1	0	0	None		Billboards (2)
I-7 Routes 127/ZZ at Sweet Springs	66.46	67.51	A	3	8	0	0	Amoco, Conoco, Brownsville Station, Omnivision wireless	Everybody's Restaurant/People's Choice Motel, Shelter Insurance, NAPA Auto Parts	
Sheets A-31A and A-31B			B	4	7	0	0	Amoco, Conoco, Brownsville Station, Omnivision wireless	Everybody's Restaurant/People's Choice Motel, Shelter Insurance, NAPA Auto Parts	
ML-8 Route 127 to Routes K/EE including the Crossover from North to South **Sheets A-32 to A-34**	67.51	71.1	NA	1	2	0	0	LTP Construction Pallets		Billboards (4)
I-8 Routes K/EE **Sheet A-35**	71.1	71.77	NA	0	0	0	0			None
ML-9 Routes K/EE to Route YY **Sheet A-36 to A-38**	71.77	74.32	NA	0	0	0	0	Adult Video	Betty's Used Farm Equipment	None
I-9 Route YY **Sheet A-39**	74.32	75.65	NA	0	1	0	0	None	Betty's Texaco Gas Station, Amoco, Restaurant, Truck Repair, Betty's Motel	Billboard (1), Above ground tanks
ML-10 Route YY to U.S. 65 **Sheets A-40 to A-42**	75.65	77.64	NA	0	2	0		None		Billboards (9)
I-10 U.S. 65	77.64	78.68	A	0	0	0	0	None		
Sheets A-43A and A-43B			B	0	1	0	0	None		

Table IV-3 Summary of SIU 2 Residential and Commercial Impacts (Cont'd)

Mainline Subsections	WESTERN TERMINUS Mile Marker	EASTERN TERMINUS Mile Marker	Residential* Alt.	Single Family (SF)	SF Partial	Mobile Home (MH)	MH Partial	Commercial* Business Displacement	Business Partial Take	Other
ML-11 U.S. 65 to Route J **Sheets A-44 to A-48**	78.68	84.27	NA	3	1	0	0	Trailer Sales		Billboards (4)
I-11 Route J **Sheets A-49**	84.27	85.02	NA	0	0	0	0	Stuckey's	Adult Superstore	None
ML-12 Route J to Route K **Sheets A-50 to A-53**	85.02	90.02	NA	1	0	0	0	None		
I-12 Route K **Sheets A-54 and A-55**	90.02	91.1	NA	0	1	0	0		Bill's Garage	
ML-13 Route K to Routes 135/41 **Sheets A-56 to A-61**	91.1	97.1	NA	3	1	0	0	Schmidt Key Shop		Billboards (3)
I-13 Routes 135/41 at Boonville	97.1	98.75	A	4	3	0	0	Antique Shop, Amoco, Wilmar Sales & Service, Car Star Auto Sales	All Star Gas, KOA Press, Mid-Missouri Thermal King, office building (vacant), Conoco Gas, Chase Auto Repair, Adult Superstore, First Amendment Video	None
Sheets A-62A and A-62B			B	4	3	0	0	Antique Shop, All Star Gas, KOA Press, Adult Superstore, office building (vacant)	Chase Repair, First Amendment Video	Clear Springs School (vacant)
ML-14 East Terminus at Boonville **Sheets A-63 to A-64**	98.75	99	NA	0	0	0	0	None		Billboards (5)
	Mainline Totals		**18**	**10**	**5**	**1**		**7**	**7**	
Proposed Action	Interchange Total		**10**	**15**	**0**	**0**		**14**	**31**	
	Preferred Alternative		**28**	**25**	**5**	**1**		**21**	**38**	

*****Some of the residential and commercial impacts are designated as partial takes on the sheets in Appendix A. A partial take means that although property impacts could occur, the structure might be avoided. This determination would be made when more accurate right of way requirements are defined during final design.

Proposed Comprehensive Plan for Concordia, Missouri

The Proposed Comprehensive Plan for Concordia emphasizes the desire for continued economic growth in the area through attracting businesses to the City and expanding the physical boundaries of the City to accommodate anticipated growth. This economic growth is highly dependant on I-70 and the interchange alternatives at this location. The Preferred Alternative is generally consistent with this plan, but displacement and relocation of businesses would be at least temporarily inconsistent with the plan. The differences between the impacts of the alternatives at this location are addressed later in this section where the impacts of the interchange alternatives are compared.

City of Boonville, Missouri Comprehensive/Strategic Plan

The Preferred Alternative within SIU 2 would not be in conflict with the City of Boonville Plan because the planning area limits are located east of the SIU 2 corridor terminus.

c. Social and Economic Impacts

Neighborhood and Community Disruption During and After Construction, Neighborhood Changes, Divisions and Barriers

In the near-term, construction activities would result in temporary disruptions to some neighborhoods. These disruptions would be in the form of temporary I-70 interchange and frontage road closures and/or detours and in some cases would involve permanent displacements that would change neighborhoods. No neighborhoods or communities would be severed by I-70 or through reconstruction of the interchanges. New frontage roads and cross road alignments would divide some small groups of homes.

Access to specific properties would be temporarily disrupted. Construction activities would be phased and would occur over a period of time. As such, these divisions and barriers would be localized within certain areas of SIU 2 and distributed over time. Standard and typical requirements for minimizing impacts during the construction period would be applied to construction contracts. It is not anticipated that improvements to I-70 would considerably alter existing neighborhoods in the long-term.

Given the existing presence of I-70, as well as its considerable role in shaping adjacent neighborhoods and communities, widening of I-70 and associated interchange improvements would not result in substantial disruption to communities on a regional scale, although the Preferred Alternative would increase the magnitude of some existing divisions and barriers on a more localized level, particularly near interchanges where homes are located and displacements are anticipated. With the exception of a few areas of high concentrations of development adjacent to SIU 2 (primarily near some interchanges), the majority of SIU 2 is characterized by low-density development and therefore the Preferred Alternative would affect few developed neighborhoods.

The Preferred Alternative includes the implementation of a Corridor Enhancement Plan that is intended to minimize potentially negative effects of the Preferred Alternative. The Enhancement Plan includes various design features that go beyond what is typically provided as environmental mitigation. For example, the Plan includes a policy that would provide a “friendly” localized environment for pedestrians and bicyclists along the I-70 corridor. This policy would

address issues related to I-70 as a physical barrier to north-south movement between community resources such as trail and path networks, parks and schools. The Plan also includes aesthetic components to increase compatibility of the proposed improvements with their surroundings. Impacts associated with these enhancements would be considered beneficial and would improve certain conditions relative to current conditions.

Public emergency services such as ambulances and police routinely utilize I-70 in responding to emergency calls. The phased construction of the Preferred Alternative would minimize construction related access issues for emergency service vehicles. Completion of the Preferred Alternative would reduce congestion and allow emergency vehicles to have increased access along I-70.

Community Related Construction and Post-Construction Impacts

In the short-term, I-70 improvements would create construction-related impacts such as increased noise, dust, odors, light and traffic for nearby communities and neighborhoods. These impacts would be reduced, whenever feasible, through the implementation of such standard measures as adherence to standard work hours and equipment operation and timing requirements. Refer to the respective resource sections (noise, air quality and visual quality) for detailed discussions of these effects.

In the long-term, potential impacts from I-70 enhancements would primarily result from increased traffic noise and, to a lesser extent, lighting, for specific residents that would be in closer proximity to I-70 and/or frontage roads than they were previously.

Access and Circulation

Construction activities would result in temporary impacts to business and residential access, circulation and parking. Roadway closures, detours and construction equipment would disrupt access to specific areas, making it more difficult for motorists as well as pedestrians and bicyclists to reach certain destinations. However, these impacts would be temporary and would be phased within SIU 2. The primary objective and outcome of the Preferred Alternative would be to improve access and circulation within and along SIU 2 through the proposed improvements to I-70 and associated interchanges and frontage roads.

Business and Economic Disruption During and After Construction

Business and economic disruption would primarily occur during the short-term as construction activities and displacement of businesses occurs. However, the farmland impacts discussed previously would be direct and could incrementally contribute to permanent losses of agricultural output and productivity. Business and economic disruptions during this time would be in the form of lost revenues to businesses that are displaced or suffer a reduction in sales during construction or access disruption. These impacts could include business closures or reduced parking areas, and would translate into temporary reductions in tax revenues to local municipalities. In the long-term, most businesses would likely benefit from the I-70 improvements by providing better access. Businesses can also take advantage of the infusion of money and jobs and associated secondary spending resulting from the project and improved business environments associated with improved access and circulation. In the long-term, the Preferred Alternative would provide a positive benefit to business and the overall economic and fiscal environment of SIU 2.

Loss of Businesses

As stated previously, 21 businesses within the SIU 2 would be displaced as a result of implementing the Preferred Alternative. In addition, 38 businesses were considered as partial takes. If the property parcel of the business or residence was located inside of the right of way line and it appeared that the structure might be avoided during final design, it was considered a partial take. Although some displaced businesses may not be able to relocate under certain circumstances (e.g., adequate property may not available in the same vicinity), it is expected that most businesses would be able to relocate due to the prevalence of undeveloped land within SIU 2 and because the I-70 improvements, in most cases, would provide enhanced opportunities for access to certain areas that would benefit existing, relocated, or future businesses. In some areas, such as the I-70/Route 23 interchange, there may be land constraints that limit the ability of displaced businesses to relocate in the immediate vicinity.

Although disruptions to businesses during construction or relocation would result in lost revenues during these periods, displaced businesses would be compensated in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 on a case-by-case basis. Additionally, based on information gathered during this study, none of the businesses that would be displaced are major employers for any of the communities within SIU 2 except for the interstate related businesses such as the Travel Centers near Concordia and Higginsville, both of which would not be displaced but partially impacted, and the fast food chain type restaurants near Concordia and throughout SIU 2.

Business District Changes, Divisions and Barriers

In the near-term, construction along SIU 2 would result in some divisions and barriers to local businesses as a result of road closures and detours. These could result in adverse impacts to individual businesses. MoDOT would work with negatively affected businesses to minimize impacts.

In the long-term, it is not expected that implementation of the Preferred Alternative would result in business district changes as I-70 has shaped the development of business districts in the Region of Influence (ROI) for many years.

Business Construction and Post-Construction Impacts

Business impacts in the near-term would be similar to those described for neighborhoods and communities and would include increased noise, dust, odors and traffic congestion. These impacts could result in temporary negative affects on businesses if customers decide to avoid certain areas or individual retail outlets. In the long-term, potential impacts from the Preferred Alternative would primarily result from increased parking difficulties, traffic noise and, to a lesser extent, lighting, for specific businesses that would be in closer proximity to I-70 and/or frontage roads than they were prior to the enhancements. These impacts would be minimized through the implementation of measures such as signage during detour periods that would direct motorists to parking areas and limits on construction activity.

Access, Parking and Circulation

Construction activities would result in temporary impacts to access and circulation associated with businesses. Roadway closures, detours and construction equipment would disrupt access to specific areas, making it more difficult for motorists as well as pedestrians and bicyclists to

reach certain destinations. Construction activities could cause considerable disruptions to businesses that are heavily dependant on customers being able to gain easy access or businesses that are reliant on road transportation for receipt and delivery of goods. However, these impacts would be temporary and would be phased within SIU 2 (refer to the discussion of traffic for a more detailed discussion of traffic impacts).

In the long-term, the primary objective of the Preferred Alternative is to improve access and circulation within and along SIU 2 through the proposed enhancements to I-70 and associated interchanges and frontage roads. Although specific businesses would be displaced due to permanent and unavoidable loss of access and parking, etc., MoDOT would provide appropriate compensation on a case-by-case basis. In the long-term, overall impacts to access and circulation would be beneficial.

Economic Development Opportunities During and After Construction

Improvements within SIU 2, particularly at the interchanges, present the opportunity for future economic development and growth along I-70. Lands with improved access to I-70 and existing communities and the anticipated vehicle volume growth by 2030 are expected to support economic growth in the future. As described previously, the infusion of over $1 billion for construction would also have economic benefits that would support growth directly and indirectly.

The Preferred Alternative for SIU 2 does not include additional interchanges and therefore unanticipated growth would only be expected where interchanges would be slightly relocated, such as the I-70/Route K interchange location. The process of managing unanticipated growth at interchanges, near interchanges and along the frontage roads is a function of city and county government. Some communities have developed or are updating plans associated with economic development. Efforts to plan for the economic effects of the proposed I-70 improvements could occur to enhance the benefits of the project and mitigate any adverse consequences of induced growth.

Adverse consequences of unplanned growth could include traffic congestion at local intersections, inadequate parking in high growth locations, inadequate infrastructure in terms of public services and utilities or simply changes to community character that are undesirable or inconsistent relative to local policy or opinions. All of these consequences can be addressed by local governments prior to initiation of I-70 construction improvements and/or along with review of development proposals that occur before or follow improvements to I-70. The proposed hospital in Sweet Springs is an example of change that can and should be anticipated and coordinated in terms of improvements to I-70. MoDOT does not have land use planning or land development review authority and therefore local governments should evaluate future projects in a manner that is consistent with the final decisions associated with the Improve I-70 program.

Population

Improvements within SIU 2 would likely contribute to long-term population growth within the ROI through economic development. Although the ROI as a whole is expected to grow, it is likely that population growth rates would differ, meaning that some areas may experience considerable population growth, while others experience minimal population growth as was the case for the communities within the region of influence between 1990 and 2000. Although it is possible that displaced persons could choose to relocate outside of the ROI, this effect on the regional population would be short-term and negligible relative to overall population figures.

Employment

In the near-term, the Preferred Alternative would have both positive and negative effects on local employment. The loss of some local jobs could occur if displaced businesses or other businesses close, either out of choice or because they lack the means necessary to remain open during or after the construction period. In the long-term, these improvements to I-70 would likely facilitate both physical (i.e., population and development) and economic growth in the region by improving transportation and access. Total expenditures within SIU 2 on I-70 improvements are estimated to be more than $970 million. These expenditures would be directly tied to purchasing and employment. Direct job growth from this infusion of dollars over 20 or more years are expected to be substantial and would likely generate additional secondary growth employment within the region.

Commercial and Industrial Development

In the near-term, the Preferred Alternative would have both positive and negative effects on commercial and industrial development. Negative impacts would include partial and complete takings of businesses displaced by the I-70 improvements. Positive effects would include direct economic effects from construction expenditures, as described previously, but perhaps more importantly, benefits would include creation of new and large land development opportunities at interchange locations with improved levels of access to and from I-70 in SIU 2.

Property Values, Property Taxes, Sales Taxes and Fiscal Impacts

In the near-term, the displacement of residences and businesses could reduce the property and sales tax base for local municipalities within which these displacements are located. The relatively low number of residences and businesses (33 residences and 21 businesses) that would potentially be displaced as a result of implementation of the Preferred Alternative over more than 60 miles (97 kilometers) of roadway is not anticipated to substantially impact government services relative to the overall tax base of the three county area. In addition, it is anticipated that any tax-based losses would be phased over time, replacement housing would be constructed back within the ROI and that most businesses would be able to relocate within the ROI. In the long term, economic growth that capitalizes on the opportunities created by the I-70 improvements in SIU 2 would result in a positive net impact.

Environmental Justice and the Potential for Disproportionate Impacts

Executive Order 12898, issued by President Clinton in 1993, requires that each federal agency make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority and low-income populations.

Based on the available demographic data, interviews with local government representatives and windshield surveys, it does not appear that the Preferred Alternative would have disproportionate displacement, relocation or other impacts on minority or low-income persons, or the elderly. In summary, there do not appear to be concentrations of minorities or low-income persons along the SIU 2 corridor and the impacts of the Preferred Alternative include a range of neighborhoods, housing unit types and business establishments (Sanders, 2003). No established low-income units or other housing complexes associated with government assistance would be displaced. No minority neighborhoods or business districts or business clusters catering to any particular group of minorities would be displaced. While the Preferred

Alternative could negatively affect some minorities and low-income persons, there is no evidence that such impacts would disproportionately affect minorities or low-income persons or that the anticipated impacts are avoidable.

In summary, these issues and findings clarify whether disproportionate impacts on minority and low-income populations would occur as a result of the Preferred Alternative. The key issues include whether direct, significant, unmitigated and unavoidable adverse impacts would occur to this population and whether these or other impacts would be considered disproportionate relative to impacts on other moderate-income or high-income populations. The preliminary findings are as follows:

- The Preferred Alternative does not appear to create significant, unmitigated and adverse impacts that could otherwise be avoided.
- The impacts of the Preferred Alternative on residential areas appear to be distributed evenly and equitably along SIU 2.

The Preferred Alternative would have no direct immitigable impacts on minority populations. No negative human health or environmental effects on minority populations are anticipated to result from implementation of the Preferred Alternative.

Based on current data available, it is not known if implementation of the Preferred Alternative would negatively impact any minority, low-income, or elderly business owners. It is possible that some business owners that meet these criteria would be affected. However, since there are no known concentrations of such businesses along the SIU 2 corridor, it is considered that such impacts would be evenly or at least reasonably distributed throughout the corridor. Displaced businesses would be compensated in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act and it is anticipated that most businesses would be able to relocate within the SIU 2 corridor. In the long-term, impacts to businesses resulting from the implementation of the Preferred Alternative would be beneficial.

2. Comparison of the Impacts of the Interchange Alternatives

As part of the Preferred Alternative, 13 interchanges in SIU 2 would be improved. A full description of the interchange alternatives is provided in Section A of Chapter II.

a. I-70/Route 13 Interchange - Higginsville

The implementation of Alternative A or B would not cause any residential displacements and would displace the same single business (Iron Horse, Inc.). Alternative A and Alternative B would both impact approximately two acres (0.8 hectares) of prime farmland. No significant differences between these alternatives would be expected relative to impacts to CRP lands, WRP lands, land use conflicts, neighborhood conflicts, consistency with local plans and planning, growth inducement, economic and fiscal effects, or environmental justice considerations.

b. I-70/Route 23 Interchange - Concordia

The implementation of either Alternative A or B would not displace any residences. However, the business displacements for each alternative would slightly differ. The implementation of Alternative A would result in the displacement of four businesses (Kuhns Log Homes Display Unit, McDonalds, Kentucky Fried Chicken/Taco Bell and Concordia Storage). Ten businesses (Ambers, Travel Center of America, Texaco gas station, Conoco, Mike's Automotive, Cree-mee Freeze (ice cream shop), Napa Auto Parts, Breaktime Service Station, American Family Insurance and Hardee's) would be partially impacted through the implementation of Alternative A. Implementation of Alternative B would displace one fewer business (Kentucky Fried Chicken/Taco Bell) and would not cause any impact to Ambers Restaurant or the Travel Center of America facility. The loss of the Travel Center associated with the implementation of Alternative A would disrupt the entire truck stop facility, which is a substantial commercial use and important local business. Alternative A presents access issues for the businesses located on the northeast side of the interchange. Both Alternative A and Alternative B would partially impact the same single residence.

The implementation of Alternative A would impact three acres (1.2 hectares) of prime farmland while implementation of Alternative B would impact two acres (0.8 hectares) of prime farmland. No significant differences between these alternatives would be expected relative to CRP lands, WRP lands, land use conflicts, neighborhood conflicts, consistency with local plans and planning, growth inducement and environmental justice considerations.

c. I-70/Route 127 Interchange – Sweet Springs

Two alternatives have been developed for the proposed interchange modification at Route 127. The implementation of either Alternative A or Alternative B would result in the displacement of same four businesses (Amoco, Conoco, Brownsville Station, and Omnivision Wireless) and would cause partial takes of the same three businesses (Everybody's Restaurant/Peoples Choice Motel Shelter Insurance and NAPA Auto Parts). The implementation of Alternative A would displace three residences and cause partial impacts to eight. The implementation of Alternative B would displace four residences and cause partial impacts to seven. The additional residential displacement is caused by the folded diamond in the northeast quadrant of the interchange. Displacement of this residence would be unavoidable due to the minimum radius required for the west bound on ramp.

Implementation of either alternative would impact approximately 13 acres (5.3 hectares) of prime farmland. Both Alternative A and Alternative B would impact approximately two acres (0.8 hectares) of land enrolled in WRP. Alternative A would impact approximately two acres (0.8 hectares) of land enrolled in CRP and Alternative B would impact approximately four acres (1.6 hectares) of CRP land.

d. I-70/U.S. 65 Interchange

The implementation of the No Build, Alternative A would not impact any residences or businesses. Although the implementation of Alternative B would not impact any businesses, its implementation would partially impact one residence. This residence is located along the mainline and would be impacted through the widening of the mainline. Neither alternative would require any additional right of way. The major difference between the two alternatives is the

design configuration. Alternative A would maintain the existing cloverleaf design and the free flow of traffic north and south on U.S. 65, whereas the implementation of Alternative B would introduce some type of stop control (lights or signs) at the ramp terminals. This could cause additional secondary impacts through the development of lands adjacent to U.S. 65 to serve the traveling public.

e. I-70/Route 135/41 Interchange

As shown in Appendix A Sheets A-62-A and A-62-B, the implementation of Alternative A would require the displacement of four businesses (Antique Shop, Wilmar Sales and Service, Car Star Auto Sales, and an Amoco retail gasoline station) while implementation of Alternative B would require displacement of five businesses (All Star Gas, KOA Press, Adult Superstore, vacant office building and the Antique Shop). However, the implementation of Alternative A would cause partial impacts to eight businesses (Adult Superstore, Conoco, Mid Missouri Thermal King, Chase Auto Repair, First Amendment Video All Star Gas, the vacant office building and KOA Press) at this location. A vacant school building (Clear Springs School) would also be displaced by Alternative B (Sheet A-62-B). The vacant school is an older one room school building that is privately owned. The implementation of either alternative would displace and partially impact the same number of residences. The implementation of Alternative A or Alternative B would impact approximately 26 acres (11 hectares) of prime farmland. The implementation of Alternative A would impact approximately one acre (0.4 hectares) of land enrolled in CRP while implementation of Alternative B would impact approximately ten acres (4 hectares) of CRP land. No impacts to lands enrolled in the WRP program are anticipated from either alternative.

The implementation of Alternative B would involve relocation of the overpass to the west, which would divert traffic around and away from the Outdoor Garden Shop, Car Star Auto Sales and Rentals, Conoco Strip Mall and Terry's Diesel Service. This diversion of motorists would reduce visibility of these businesses and would be expected to reduce highway convenience retail-related sales (Conoco Strip Mall) after construction is completed.

No significant differences between these alternatives would be expected relative to WRP lands, land use conflicts, neighborhood conflicts, consistency with local plans and planning, growth inducement and environmental justice considerations.

3. Impacts of the No-Build Alternative

The No-Build Alternative would avoid the adverse impacts of the Preferred Alternative and would forego the beneficial impacts of improvement access and land development opportunities created by improved interchanges and additional lanes on I-70. Residential, commercial and agricultural displacements and temporary community and economic disruptions would be avoided. In the short term, fiscal impacts from commercial sector disruption would be avoided, but so would long term opportunities created by the infusion of construction dollars and the real estate opportunities for new business from improved circulation and access.

4. Mitigation Measures

- MoDOT is required to comply with the requirements of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 to address right of way and displacement impacts.
- MoDOT would work cooperatively with local governments during the final design phase of the project to minimize direct impacts associated with right of way acquisition and corresponding displacements, access disruptions and parking impacts.
- Local governments and authorities should take proactive steps to plan for anticipated project features and economic changes and prevent future land development that conflicts with right of way requirements or otherwise hinders implementation of the Preferred Alternative.
- MoDOT would continue correspondence with the NRCS in order to determine appropriate mitigation measures for the loss of CRP lands (Appendix L).

B. Air Quality

1. Impacts of the Preferred Alternative

As stated in Chapter III, SIU 2 is in an area where the Missouri State Implementation Plan does not contain any transportation control measures for air quality. The conformity procedures of 23 CFR Part 770, 40 CFR Part 51, Subpart T and 40 CFR Part 93, Subpart A do not apply because the study area is not and has never been a nonattainment area for a transportation related pollutant.

An Air Quality Analysis Agreement executed in March 1988 by FHWA, Missouri Department Natural Resources (MDNR) and MoDOT states that a detailed air quality analysis for inclusion in an environmental document would only be prepared on federally funded highway projects when the present or predicted average daily traffic (ADT) volume on the project exceeds 54,000 vehicles in the year of project construction or 72,700 vehicles in the 20^{th} year following the project construction. Although traffic projections at the eastern terminus of SIU 2 are projected to exceed the 72,700 vehicles threshold, MoDOT, MDNR and FHWA are coordinating with Environmental Protection Agency (EPA) regarding the air quality along rural areas of I-70.

The most likely occurrence for exceeding the National Ambient Air Quality Standards is at a controlled intersection that has the potential to create excessive traffic queues. Since there are no controlled intersections along this section of the corridor and no major stationary sources, it is exceedingly unlikely that in the presence of free flow I-70 traffic that a detailed air quality analysis would project a violation. This air quality analysis approach for the non-urban sections of the I-70 corridor has been coordinated with the EPA.

New highway construction would temporarily increase the concentrations of PM_{10} primarily generated by local winds over disturbed areas. However, fugitive dust emissions would also be generated from the movement of trucks, heavy equipment and other motorists. In addition to particulate matter, engine exhaust would be expected to include SO_2, NO_X and CO emissions.

However, these emissions are considered as mobile sources and would not be expected to be substantial. During construction of the project, methods and operations would be conducted in accordance with MDNR and MoDOT regulations and to further minimize air pollution MoDOT's Standard Specifications for Highway Construction would be implemented during construction activities.

Without other mitigating factors it would be anticipated that carbon monoxide and other emissions would rise due to increased in vehicular traffic and vehicle miles traveled through SIU 2. However, due to advanced emission control technologies, the use of alternative fuels and increased travel efficiency resulting from the proposed improvements, these emissions would be minimized relative to No-Build conditions.

2. Comparison of the Impacts of the Interchange Alternatives

In each of the five locations where alternatives are proposed at interchanges, air quality impact differentials would be minor and inconsequential relative to the selection of a Preferred Alternative. Generally, additional traffic signals are not anticipated and would therefore not cause an increase in localized emissions.

3. Impacts of the No-Build Alternative

The No-Build Alternative would not include construction period increases in particulate and other emissions associated with the Preferred Alternative, but it would result in higher air pollutant emissions than the build alternatives due to less efficient travel through SIU 2. These conditions would not be expected to alter attainment conditions, air quality compliance or create health risks.

In general, implementation of the Preferred Alternative would be expected to improve local air quality relative to the No-Build Alternative by reducing overall emissions per vehicle mile traveled, travel times and emissions in congested areas where existing air pollutant concentrations are highest.

4. Mitigation Measures

- The Missouri Department of Transportation would require construction contractors to minimize emissions during construction through compliance with local, state and federal air pollution requirements that control exhaust and fugitive emissions.
- The Missouri Department of Transportation would implement measures that control windborne dust in construction areas near sensitive receptors and where dust may create nuisances or hazardous driving conditions.

C. Noise

This section analyzes and compares the Preferred Alternative, the interchange alternatives and the No-Build alternative and addresses feasible and reasonable mitigation measures for noise impacts associated with implementation of the Preferred Alternative.

The methodology discussed in Section C of Chapter III is applied here to evaluate both the location of noise contours and noise levels at receptor points adjacent to the current and proposed alignment. In summary, potential impacts of the Preferred Alternative in 2030 are compared to the noise abatement criteria and existing conditions.

The Federal Highway Administration's Noise Abatement Criteria (NAC) and MoDOT's policy derived from the NAC were used in the analysis of the potential noise impacts associated with implementation of the Preferred Alternative. The analysis was conducted according to Title 23 CFR Part 772, which provides guidance and procedures whereby potential noise impacts associated with the Preferred Alternative can be assessed and the needs for abatement measures can be determined when noise levels approach or exceed the FHWA's NAC for various land uses as presented in Table IV-4.

Table IV-4: Noise Abatement Criteria Hourly A-weighted Sound Level – (dBA)

Activity Category	$L_{eq}(h)$	Description of Activity Category
A	57 (exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of these qualities is essential if the area is to continue to serve its intended purpose.
B	67 (exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries and hospitals.
C	72 (exterior)	Developed lands, properties, or activities not included in Categories A and B above.
D	-----	Undeveloped lands
E	52 (interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals and auditoriums.

The Federal Highway Administration has defined the NAC approach criteria for Activity Category "B" as being one dBA less than the NAC or 66 dBA. The term "substantially exceed" equals an increase of at least 15 dBA from existing sound levels. The Federal Highway Administration has defined the criteria for Activity Category "C" or businesses, as being one dBA less than the NAC or 71 dBA.

When the 66 dBA criteria is exceeded for Activity Category B receptors, noise procedures would be reviewed to determine the effectiveness and feasibility of abatement measures according to the following criteria:

a) The noise wall must provide noise reduction of at least five dBA for all primary receptors. Primary receptors are those located closest to the highway.
b) The noise wall must provide attenuation for more than one receptor.
c) The noise wall must be 18 feet (5.5 meters) or less in height above normal grade.
d) The noise wall must not interfere with normal access to the property.
e) The noise wall must not pose a traffic safety hazard.

f) The 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 of five dBA or more.

g) The majority of the affected residents (primary and benefited receptors) must concur that a noise wall is desired.

Generally, traffic noise abatement would be considered whenever traffic noise impacts are identified. However, MoDOT would not normally provide abatement for Activity Category C or in areas of mixed land uses, which are dominated by, or changing to Activity Category C. Traffic noise abatement measures would be implemented on a highway project if found to be reasonable and feasible.

If a noise wall were to be required, it would become part of the improvement project. However, the noise wall would not be required unless all of the above listed criteria can be satisfied. Traditionally, noise abatement is not provided for commercial establishments since these require a high level of visibility, which cannot be provided with contemporary noise abatement measures (MoDOT Noise Policy 1997).

Based on the identification of noise receptors in Chapter III, an analysis of the noise impacts to these receptors for the mainline widening strategy and for the interchange alternatives was performed. Table IV-5 shows the anticipated 2030 design hour noise levels for the Preferred Alternative as compared to the project 2030 No-Build noise levels.

The Federal Highway Administration highway traffic noise prediction computer program, Traffic Noise Model Version 2.1® (TNM) was used to evaluate both mainline and ramp and interchange noise levels under the Preferred Alternative. The TNM utilizes the following parameters to calculate the hourly L_{eq} noise levels:

- Distance between the edge of the roadway and the receiver;
- Hourly traffic volumes for the appropriate mix of car/truck traffic;
- Vehicle speed; and
- Noise source height of the vehicles.

Based on these inputs, the TNM created noise-level contours for the Preferred Alternative and the No-Build alternatives along the mainline and assigned a projected noise level for each receptor within the contours. The noise level of each receptor that would not be displaced by the Preferred Alternative was then compared to the appropriate NAC Activity Category level to characterize potential noise impacts. Table IV-5 presents the sensitive receptors that would be impacted.

Table IV-5: Design Hour Noise Levels, dBA L_{eq}(h)

Receiver	Land Use	NAC Category	NAC Level	Noise Level (L_{eq}) (Design Hour)			Distance From Noise Receptor (FT)	Decibel Increase Over Existing	Impact*
				Existing	Build 2030	No-Build 2030			
1	Residence	B	66 dBA	63	68	67	304	5	Exceeding
3	Residence	B	66 dBA	66	69	70	272	3	Exceeding
5	Residence	B	66 dBA	64	67	68	349	3	Meeting
7	Residence	B	66 dBA	67	70	70	254	3	Exceeding

Table IV-5: Design Hour Noise Levels, dBA L_{eq}(h) (Cont'd)

Receiver	Land Use	NAC Category	NAC Level	Noise Level (L_{eq}) (Design Hour)			Distance From Noise Receptor (FT)	Decibel Increase Over Existing	Impact*
				Existing	Build 2030	No-Build 2030			
11	Residence	B	66 dBA	68	72	72	196	4	Exceeding
12	Residence	B	66 dBA	67	71	71	218	4	Exceeding
13	Residence	B	66 dBA	67	70	71	247	3	Exceeding
15	Residence	B	66 dBA	66	69	70	276	3	Exceeding
16	Residence	B	66 dBA	67	71	71	221	4	Exceeding
17	Residence	B	66 dBA	67	70	71	242	3	Exceeding
18	Residence	B	66 dBA	64	67	68	368	3	Meeting
19	Residence	B	66 dBA	64	66	68	373	2	Approaching
20	Residence	B	66 dBA	67	70	71	236	3	Exceeding
23	Business	C	71 dBA	67	71	71	220	4	Approaching
24	Residence	B	66 dBA	68	72	72	199	4	Exceeding
25	Residence	B	66 dBA	68	72	72	194	4	Exceeding
26	Residence	B	66 dBA	68	71	72	201	3	Exceeding
28	Residence	B	66 dBA	67	71	72	220	4	Exceeding
30	Residence	B	66 dBA	64	67	68	354	3	Meeting
31	Residence	B	66 dBA	65	67	69	335	2	Meeting
33	Residence	B	66 dBA	65	67	69	340	2	Meeting
35	Residence	B	66 dBA	63	66	67	396	3	Approaching
36	Residence	B	66 dBA	65	71	69	206	6	Exceeding
39	Residence	B	66 dBA	67	71	71	212	4	Exceeding
41	Residence	B	66 dBA	69	72	73	166	3	Exceeding
42	Residence	B	66 dBA	66	70	70	238	4	Exceeding
51	Business	C	71 dBA	69	72	73	166	3	Meeting
52	Residence	B	66 dBA	68	71	72	190	3	Exceeding
53	Residence	B	66 dBA	65	68	69	278	3	Exceeding
54	Business	C	71 dBA	69	72	73	154	3	Meeting
58	Residence	B	66 dBA	66	70	70	222	4	Exceeding
59	Residence	B	66 dBA	67	70	71	200	3	Exceeding
60	Residence	B	66 dBA	65	69	70	249	4	Exceeding
64	Residence	B	66 dBA	67	70	71	207	3	Exceeding
65	Residence	B	66 dBA	69	73	73	140	4	Exceeding
67	Residence	B	66 dBA	64	67	68	289	3	Meeting
74	Residence	B	66 dBA	66	69	70	223	3	Exceeding
75	Residence	B	66 dBA	63	66	67	342	3	Approaching
76	Residence	B	66 dBA	64	67	68	316	3	Meeting
80	Residence	B	66 dBA	66	70	70	223	4	Exceeding
82	Residence	B	66 dBA	64	67	68	313	3	Meeting
85	Residence	B	66 dBA	66	69	70	245	3	Exceeding
86	Residence	B	66 dBA	63	68	67	270	5	Exceeding

Table IV-5: Design Hour Noise Levels, dBA L_{eq}(h) (Cont'd)

Receiver	Land Use	NAC Category	NAC Level	Noise Level (L_{eq}) (Design Hour) Existing	Build 2030	No-Build 2030	Distance From Noise Receptor (FT)	Decibel Increase Over Existing	Impact*
87	Residence	B	66 dBA	61	66	65	354	5	Approaching
89	Residence	B	66 dBA	66	69	70	232	3	Exceeding
90	Residence	B	66 dBA	68	72	73	160	4	Exceeding
91	Residence	B	66 dBA	64	67	68	303	3	Meeting
92	Residence	B	66 dBA	68	72	73	159	4	Exceeding
95	Cons. Area	C	71 dBA	69	73	73	146	4	Exceeding
99	Residence	B	66 dBA	65	68	70	274	3	Exceeding
100	Residence	B	66 dBA	67	71	72	189	4	Exceeding
101	Residence	B	66 dBA	65	68	70	269	3	Exceeding
103	Residence	B	66 dBA	64	67	69	301	3	Meeting
109	Bus/hotel	B	66 dBA	63	67	67	342	4	Meeting
112	Bus/hotel	B	66 dBA	64	67	68	365	3	Meeting
115	Residence	B	66 dBA	65	71	69	206	6	Exceeding
118	Bus/hotel	B	66 dBA	69	73	73	159	4	Exceeding
122	Bus/hotel	B	66 dBA	69	72	73	170	3	Exceeding
123	Business	C	71 dBA	68	72	72	186	4	Meeting
130	Residence	B	66 dBA	64	70	68	218	6	Exceeding
131	Residence	B	66 dBA	64	70	68	210	6	Exceeding
136	Residence	B	66 dBA	65	68	69	261	3	Exceeding
136	Residence	B	66 dBA	65	68	69	261	3	Exceeding
136	Residence	B	66 dBA	65	68	69	261	3	Exceeding
136	Residence	B	66 dBA	65	68	69	261	3	Exceeding
136	Residence	B	66 dBA	65	68	69	261	3	Exceeding
136	Residence	B	66 dBA	65	68	69	261	3	Exceeding
136	Residence	B	66 dBA	65	68	69	261	3	Exceeding
136	Residence	B	66 dBA	65	68	69	261	3	Exceeding
136	Residence	B	66 dBA	65	68	69	261	3	Exceeding
136	Residence	B	66 dBA	65	68	69	261	3	Exceeding
136	Residence	B	66 dBA	65	68	69	261	3	Exceeding
136	Residence	B	66 dBA	65	68	69	261	3	Exceeding
136	Residence	B	66 dBA	65	68	69	261	3	Exceeding
150	Campground	B	66 dBA	65	68	71	254	3	Exceeding
164	Residence	B	66 dBA	67	70	71	208	3	Exceeding
180	Residence	B	66 dBA	67	70	71	209	3	Exceeding

* Impact is defined as approaching, meeting, or exceeding the FHWA NAC or causing a substantial increase in noise levels. Approaching is defined as a dBA level equal to the NAC dBA level for the appropriate activity category. Meeting is defined as one dBA greater than the NAC level for the appropriate activity category and exceeding is defined as exceeding the NAC level by more than one dBA for the appropriate activity category. A "substantial increase" is defined as a 15 dBA increase over existing noise levels.

1. Impacts of the Preferred Alternative

Noise impacts from the Preferred Alternative are related to contributions during the construction period and contributions from motor vehicle noise from the mainline- and interchange- related operations. The following discussion clarifies the contributions made from mainline- and interchange-related motor vehicle operations.

a. Construction Noise

Construction noise impacts would be temporary and distributed over time in various locations along I-70 within SIU 2. However, because I-70 operations would be not be halted during the construction period, it is expected that mainline noise levels would dominate construction related noise levels, except where frontage roads and related improvements are up to 250 feet (76 meters) from the edge of the travel lane pavement nearest the receptor. In these situations, the construction would be of limited duration and would be expected to generate noise levels typical of local road and building construction. Sensitive receptors in these areas would be exposed to noise impacts, but such impacts would be temporary.

To reduce the impacts of construction noise, MoDOT has special provisions in the construction contract which requires contractors to comply with all applicable local, state and federal laws and regulations relating to noise levels permissible within and adjacent to the project construction site. Mufflers, constructed in accordance with the equipment manufacturer's specifications, would be required for all construction equipment.

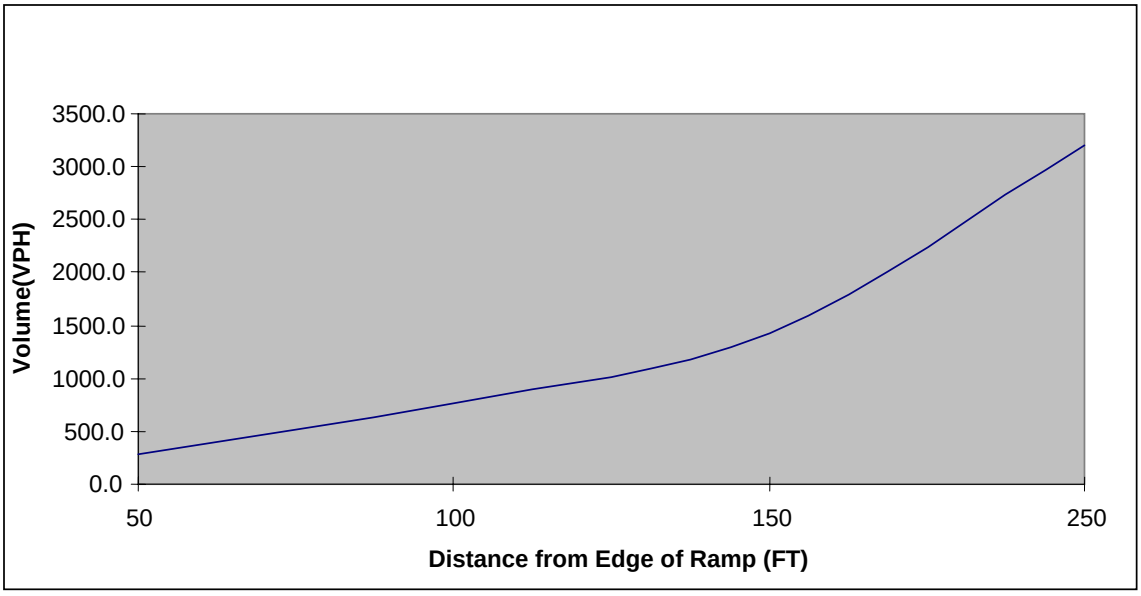
b. Motor Vehicle Noise

Noise levels along I-70 are dominated by traffic-generated sound energy for various distances under the Preferred Alternative due to the increased traffic volumes, high speeds and relative high percentage of trucks using the mainline. Due to the rural nature of SIU 2, ramp and interchange traffic volumes are relatively low and consequently their contributions to noise levels in the adjacent communities and at the receptor points are relatively low.

In order to calculate contributions to mainline noise levels, a noise analysis was conducted for a range of ramp and interchange volumes. In all cases, a ramp volume was selected which would increase the noise level from 65 dBA to 66 dBA – the compatibility criterion for noise sensitive land uses. Since distance from the receptor to the nearest lane of a ramp or interchange is an independent variable, it is possible to depict the relationship between peak hour volume, distance and a 1 dBA noise increase to a mainline L_{eq} 65 dBA receptor. The results of this analysis are depicted in Figure IV-1.

In all cases, where the ramp traffic volume is below the line shown in Figure IV - 1, the noise impact from traffic on the ramp or interchange is not substantial. It is therefore important to note that peak hour volumes at all of the 13 interchanges are less than 275 vehicles per hour. Therefore, any ramp would need to be within 50 feet (15 meters) of any receptor to meet the 66 dBA criterion level. Since there are no receptors within 50 feet (15 meters) of a proposed or existing ramp, no substantial contributions of interchange related noise levels would occur from additional traffic on the ramps or interchanges.

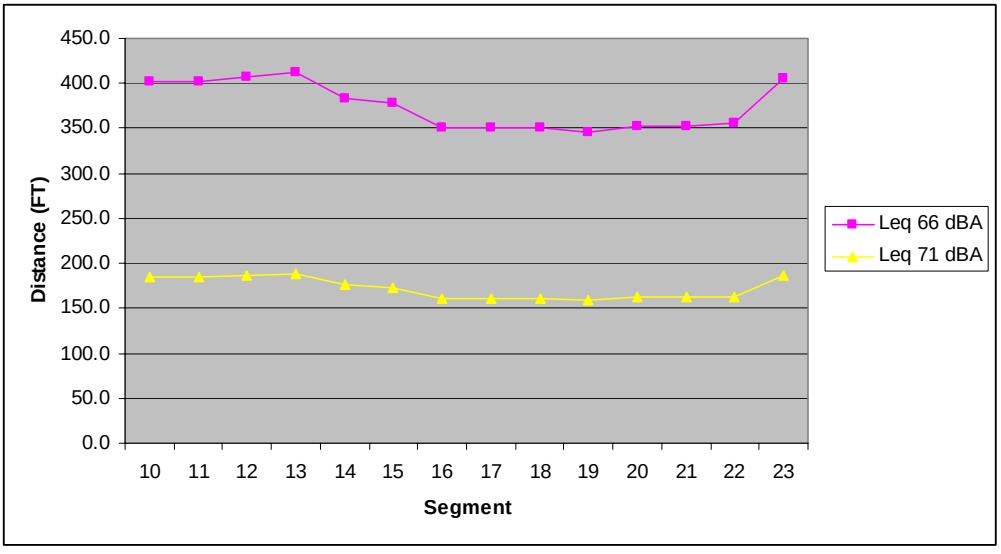
Figure IV-1: Peak Hour Ramp Volumes Required to Raise 65 dBA to 66dBA



Overall Noise Impacts from Motor Vehicles

Figure IV-2 shows the distance that the L_{eq} 66 and 71 dBA noise contours would extend from the near lane of I-70 with implementation of the Preferred Alternative. For the Preferred Alternative, depending on traffic composition, volume and flow characteristics, the L_{eq} 66 dBA noise contour would extend between 350 and 412 feet (107 and 125 meters) from the near lane of I-70 for SIU 2. The L_{eq} 71 dBA contour would extend from 161 to 185 feet (49 to 56 meters) from the near lane of the roadway.

Figure IV-2: Preferred Alternative L_{eq} 66 and 71 dBA Contour Distances in 2030



Eighty-one noise receptors would be affected by implementation of the Preferred Alternative. Of these, 71 are residences, eight are businesses including four hotels, one is a conservation area and one is a KOA campground. Of the 71 residences, 56 would be affected by noise levels greater than 67 dBA. Noise levels greater than 66 dBA but less than 67 dBA would affect the remaining 15 residences.

Of the eight businesses, two are hotels that would be exposed to noise levels greater than 67 dBA. Of the six remaining businesses, none would be exposed to noise levels greater than 72 dBA. The Harriman Hill Conservation Area is located adjacent to I-70 and would be affected by noise levels greater than 72 dBA but this area does not rely on quietness or solitude for its existence. A portion of the KOA campground, located near the U.S. 65 interchange, would also be exposed to noise levels greater than 72 dBA but also does not rely on quietness or solitude for its existence.

For the Preferred Alternative, the two additional lanes provide increased system capacity and traffic volumes are higher than for the No-Build Alternative. The additional lanes also move travel lanes closer to receptors in many locations, creating the potential for increased noise levels due to the reduction in distance between the noise generation point and the receptor. However, because of the additional capacity afforded by the Preferred Alternative, the average volume per lane is reduced (six lanes compared to four lanes) and those lanes closest to the receptors actually carry less traffic, reducing or mitigating the potential increases in noise level at many locations.

The Preferred Alternative in 2030 provides two lanes of additional capacity and does induce an increase in traffic volumes (less than 10 percent) over the No-Build Alternative. However, this volume change accounts for less than a 0.5 dBA increase in sound energy over the No-Build Alternative, with the noise potential spread over six lanes rather than four lanes. As a consequence, noise levels on the side opposite of the widening decrease. Essentially, the 0.5 dBA potential increase associated with the increased 2030 traffic volumes is offset by the fact that the increased volumes are moved away from receptors on the side opposite of the widening. On the side of I-70 being widened, where the new alignment shifts new lanes closer to receptors, noise levels increase slightly, but are also somewhat mitigated by this spreading effect.

2. Comparison of the Impacts of the Interchange Alternatives

As described in Section 1, the interchange alternatives would contribute to mainline noise impacts, but would not generate substantial noise impacts of their own. Consequently, noise impacts associated with interchange construction cannot be differentiated between the interchange alternatives and would not distinguish one alternative from another.

3. Impacts of the No-Build Alternative

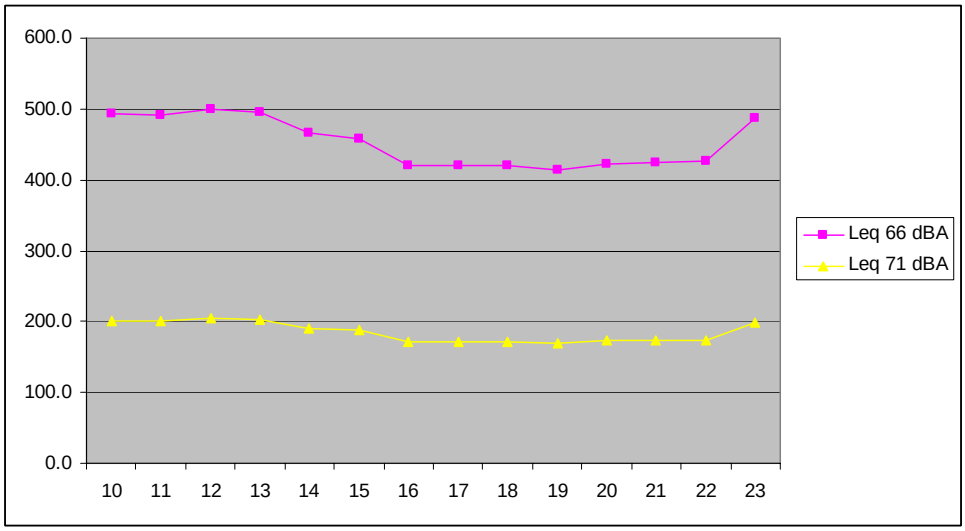
At the interchanges, impacts associated with implementation of the No-Build Alternative are limited. However, this is not the case for noise impacts along the mainline of I-70. The following discussion clarifies the impacts of the No-Build Alternative and compares them to the impacts of the Preferred Alternative.

For the No-Build Alternative, the existing I-70 alignment and design were used with the 2030 traffic volumes and operating characteristics under conditions where traffic volumes are not influenced by the additional capacity afforded by the additional lanes. For the Preferred Alternative, the two additional lanes provide increased system capacity and traffic volumes are higher than for the No-Build Alternative. The additional lanes also move travel lanes closer to receptors in many locations, thus creating the potential for increased noise levels due to the reduction in distance between the noise generation point and the receptor.

For the No-Build Alternative, growth in traffic volumes between the years 2000 and 2030 causes the L_{eq} 66 and 72 dBA noise contours to shift outward into adjacent areas as highway noise levels increase resulting in almost double the distance over the existing noise contour distance. As shown in Figure IV-3, the 66 dBA contour in 2030 extends approximately 410 to 500 feet (125 to 152 meters) from the edge of the lane nearest the receptors to the north and south of I-70, while the 72 dBA contour extends 175 to 200 feet (53 to 61 meters) to the north and south of I-70.

The noise contours created by vehicle traffic under the No-Build Alternative affect all of receptors impacted by the Preferred Alternative noise contours except for one business (Thermo King – 2.2dBA increase).

Figure IV-3: No-Build Distance to L_{eq} 66 and 72 dBA Noise Contours



4. Noise Abatement Measures

When noise impacts are shown to exist on a project, a number of possible noise abatement measures could be considered, including but not limited to:

1. Traffic management measures such as modified speed limits and traffic control devices.

2. Changes in horizontal or vertical alignment to break the line of sight between the receiver and the source.

3. Provisions in construction contracts regarding equipment sound attenuation and work times.

4. Barrier System. Noise barriers or berms are to be reviewed for effectiveness and feasibility according to the following criteria:

    a. Noise wall must provide a noise reduction of five decibels or more for first row receivers;
    b. Noise wall must provide attenuation for more than one receptor;
    c. Noise wall must be 18 feet (5.5 meters) or less in height above normal grade;
    d. Noise wall must not interfere with normal access to the property;
    e. Noise wall must not pose a traffic safety hazard;
    f. Noise wall must not exceed a cost of $30,000 per receptor.

Additional remedial abatement does not appear to be reasonable using barrier construction technology available at this time. Due to the fact that SIU 2 serves a rural area where population density is low and structures are not clustered, the length of the noise barriers would be prohibitive. In addition, extremely high barriers would be needed due to the fact that the six travel lanes are spread over such a large area – barrier height requirements increase as the distance from the travel lanes to the barrier increase.

The Missouri Department of Transportation would pursue a preventive abatement strategy, consistent with FHWA policy, involving the disclosure of L_{eq} 66 and 71 dBA noise contours to local land use control authorities. In this manner, local development policy can be formulated and implemented to discourage the development of noise sensitive land uses in close proximity to the roadway.

Based on the study completed, abatement of noise impacts for the Preferred Alternative does not meet all of MoDOT's definitions for reasonableness, which has been approved by FHWA. Therefore, no noise abatement measures are being considered for the Preferred Alternative. If substantial changes in horizontal or vertical alignment occur during the remaining stages of design and construction, noise abatement measures would be further reviewed.

D. Visual Quality/Aesthetics

The following discussion examines and summarizes impacts to visual and aesthetic resources from associated vantage points caused by the Preferred Alternative and compares the potential impacts of the interchange alternatives. The analysis considers views from the road (i.e. users of I-70 and related roads) and the views of the road from adjacent properties and vantage points as defined in Section D of Chapter III.

Visual impacts are determined by the degree of visual change introduced by project components, the degree to which those changes could be visible to surrounding viewers and the general sensitivity of the viewers to landscape alterations. Visual change is determined by the amount of visual contrast that a particular project component may create (e.g., changes to form, line, color, texture and scale in the landscape); the amount of view obstruction (i.e., loss of view); and degradation of specific scenic resources (e.g., construction of a facility that blocks views of significant landscape elements).

Project impacts can be classified into two categories: those during construction and permanent changes as a result of the project. Visual impacts from construction activities are temporary in nature and include elements such as the presence and storage of equipment and materials, earthmoving operations, vegetation disruption and related construction activity in certain public and private viewsheds. Permanent visual impacts include long-term modifications to existing viewsheds from public and private vantage points.

1. Impacts of the Preferred Alternative

a. Visual and Aesthetic Impacts from Construction Activity, Demolition and Clearing

During construction, views enjoyed by motorists using I-70 and associated roads would be temporarily degraded by construction equipment and phased construction activity such as earthmoving, building demolition and structure demolition. The magnitude of these impacts would depend upon the nature and duration of individual construction activities and the need for reducing highway speeds through construction zones. Based on the proposed designs, disruption areas would be in the foreground of most viewsheds and would not alter visibility of more distant resources. No significant loss of views or visual resources would be expected. However, these disruptions would be expected to dominate views from most vantage points both from the road and of the road. Domination of views would not be considered significant and would be unavoidable.

b. Long-Term Visual and Aesthetic Impact of the New Facilities

The Preferred Alternative would consist of obtaining additional right of way (north or south of the existing corridor) to allow for additional lanes separated by a wider median. Existing bridges and interchange overpasses would be reconstructed on a larger scale to accommodate the wider mainline footprint. Finally, the frontage road system would be modified, requiring the addition of roads in some locations and realignment of others. In general, improvements under the Preferred Alternative would permanently increase the visual scale of I-70 and the frontage road network. There would be some losses of agricultural lands and natural features, such as various drainage corridors. The long-term visual character changes of the corridor as a whole would be minimal since the scenic features along the corridors would not be eliminated or substantially disrupted.

c. Impacts on Motorists

Widening I-70 would require displacement of certain natural features and the demolition of buildings in some areas, which would change the visual character of these areas. For example, a new bridge would be constructed across the Lamine River, which would disrupt certain views of the river and from the river. With the exception of water crossings, the expansion of the SIU 2 corridor along its existing alignment would not create significant new vantage points and would not significantly alter the visual experience of motorists on I-70. No substantial visual resources would be added to those already available to motorists on the existing interstate within the study corridor. As described in the Enhancement Plan, the proposed cross-section of I-70 would “provide a more open feeling, creating a rural visual character due to the wider median and sense of separation between eastbound and westbound lanes.”

d. Impacts on Views of the Road

Upgrades to and realignments of mainline I-70, interchanges and the frontage roads would alter viewsheds and impact local vantage points such as homes and commercial developments along the route. The improvements would require building demolition in some areas, which would change the visual character of the communities in which they are located. However, no publicly defined scenic areas or vantage points would be impacted.

Some residents adjacent to the I-70 could be subject to a view of the wider roadway. In this regard, since there is an existing roadway in place, the "change" that would occur to the visual environment would be minimal. In addition, the adjacent visual receptors are accustomed to the proximity of an interstate highway facility.

In addition to the mainline and interchange improvements, the frontage road system would be modified. Although the completion of a continuous frontage road system is a long-term goal, it is not a high priority for MoDOT. MoDOT is not committed to constructing frontage roads in the near term unless a frontage road currently exists at that location or unless it is required for the purposes of maintaining existing local service connections and maintaining access to adjacent properties. In some instances, existing frontage roads would be used and improved and in others, new alignments would be selected and new roads constructed at some point in the future. Some of the new frontage roads could bring the roadway system closer to residences and businesses located nearby, resulting in a visual intrusion and a moderate to high degree of visual impact in those specific areas. In locations where frontage roads are constructed in new locations, the changes for some neighbors may be considered adverse, especially where displacements of residences and neighborhood disruption are required.

e. Visual and Aesthetic Enhancement

As described in Chapters II and I, a Corridor Enhancement Subcommittee has been established for the project to "develop appropriate measures to address the visual characteristics of the I-70 improvements and design issues". Corridor enhancements are planned to complement the visual importance of the following features:

- Recurring natural rock outcrops;
- Pastoral landscapes and native vegetation;
- Views to extensive farm lands adjacent to the corridor; and
- The appearance of natural river and water crossings.

Planned enhancements seek to visually blend the I-70 improvements into the existing landscape while introducing design treatments to build elements that reduce their sense of scale. Measures proposed by the Corridor Enhancement Subcommittee for major reconstruction include:

- Use of design standards to provide corridor continuity and rhythm including style, color and texture of the manmade elements (bridge abutments and piers, barriers, retaining walls, railings and fencing);

- Use of linear finishes to complement the extensive rock outcroppings that occur along the existing roadway;
- Use of landscape plantings (large sweeping masses of native grasses and wildflowers) to complement the natural character of the predominantly rural landscape; and
- Preservation of existing trees to the extent possible.

2. Comparison of the Impacts of the Interchange Alternatives

a. I-70/Route 13 Interchange - Higginsville

Alternative A for the Route 13 interchange would consist of a diamond interchange at the existing interchange location slightly offset to the east. Alternative B would consist of a single point interchange at the existing location, which would require a large bridge superstructure to accommodate turn lanes. Alternative B would have a larger visual scale than Alternative A and would result in a greater loss of views from some surrounding locations. This difference would not be considered substantial and would not be considered a key criterion for alternative selection.

b. I-70/Route 23 Interchange - Concordia

Alternative A for the Route 23 interchange would consist of a conventional diamond design with a roundabout serving as the intersection of Route 23 with First Street. Alternative B would be a single point interchange with a roundabout to the south. Although Alternative B would be slightly larger in scale, visual impacts of both designs would be similar and this criterion would not be considered important for alternative selection.

c. I-70/Route127 Interchange - Sweet Springs

Alternative A for the Route 127 interchange would be a conventional diamond offset immediately to the east of the existing interchange and incorporates a roundabout at the southern frontage road, allowing the intersection to be located close to the I-70 ramps. Alternative B would also be a diamond design, but the westbound entrance and exit ramps would be folded into the northeast quadrant. The visual impacts associated with the implementation of both alternatives would be similar.

d. I-70/U.S. 65 Interchange

Implementation of Alternative A would only change the mainline configuration at this location and implementation of Alternative B would remove the four cloverleaf ramps and add four diamond ramps. Therefore, implementation of Alternatives A or B would be similar and would not considerably change the existing viewshed of this area. However, the implementation of Alternative B would introduce some form of stop or signal control at this interchange, which could cause potential secondary development to occur in this area.

e. I-70 Route 135/41 Interchange

Alternative A for the Route 135/41 interchange would be a standard diamond design. Alternative B would also be a standard diamond design but would be located approximately 1,660 feet (488 meters) to the west of the existing interchange. Visual impacts of both designs would be similar, but Alternative B would move the bridge structure to a new location. This difference may be considered important for alternative evaluation, as additional visual impacts would be created where none exist currently.

3. Impacts of the No-Build Alternative

The No-Build Alternative would not alter the existing visual environment. Visual resources, vantage points and viewsheds would remain unchanged. No new vantage points would be created.

4. Mitigation Measures

Based on the impacts of the Preferred Alternative and proposed facility enhancements, no mitigation measures are required or recommended other than those proposed by the enhancement subcommittee.

E. Water Resources

1. Impacts of the Preferred Alternative

a. Surface Water

Water bodies potentially impacted by the Preferred Alternative are rivers, creeks, intermittent tributaries, streams, lakes and ponds (Table IV-6). Although these water bodies may not be considered special aquatic sites, impacts to them may be regulated by the Corps of Engineers under Section 10 of the Rivers and Harbors Act and/or Section 404 of the Clean Water Act. The proposed mainline improvements would cross five perennial streams and numerous intermittent streams. Existing culverts and bridges along the I-70 corridor would be replaced or extended to maintain existing drainage and flow patterns. The perennial crossings at the Lamine River, Blackwater River, Davis Creek (west and east crossings), Dry Creek and Chouteau Creek would be bridged and the remaining intermittent streams would either be bridged or spanned with a culvert to maintain existing flow patterns. Implementation of the Preferred Alternative would result in the impact to 9.9 acres (4.0 hectares) of ponds and 41,560 linear feet (7,482 meters) of stream corridor.

Although best management practices would be used during construction, increased surface water runoff could transport sediments to nearby waterways. Construction would be implemented in compliance with the provisions of the MoDOT General National Pollutant Discharge Elimination System (NPDES) permit for road construction (Appendix G). The amount of runoff and sediment transport would be dependent upon the number, duration and intensity of rain events; adjacent land use; roadside vegetation; and drainage characteristics of the local

and regional zones. Water quality impacts are expected to be temporary in nature and would be minimized by implementing MoDOT's Erosion and Sedimentation Control Guidelines.

The operation and maintenance of highway systems contributes pollutants to surface water runoff. Examples of such pollutants are petroleum products, battery acid, coolant solutions, rubber and deicing salt. Highway runoff can be minimized by implementing designs and procedures such as vegetated ditches, preservation of riparian areas, erosion control features and deicing management practices.

b. Ground Water

Highway construction projects have the potential to impact the quality and/or quantity of groundwater by closing existing wells and contributing pollutants from surface water runoff into improperly installed groundwater wells. Impacts to groundwater quality are also dependant upon the composition and level of traffic. Accidental spills on highways also could potentially impact surface water, soils and groundwater quality. The extent of contamination would be dependant upon local spill response and control plans.

The Missouri Department of Natural Resources considers a public water supply to be any well that supplies water to more than 25 people (on average) and designates a half-mile radius or Well Head Protection Area (WHPA) around the well. The proposed right of way for the project crosses within the WHPA of five public water supply wells. These five wells are: Stuckey's 130, Marshall Fireworks, Country Side Palace (two wells) and the Breaktime Country Store and Restaurant (Table IV-6). The Breaktime Country Store and Marshall Fireworks use the only active groundwater wells on this list.

Table IV-6: Public Water Supply Wells in SIU 2

Water System Name	Location	Source water	Status	Number Served
Stuckey's 130	I-70/J NE	Groundwater	inactive	100
Breaktime Country Store and Restaurant	I-70/65 SE	Groundwater	active	450
Country Side Palace	I-70/65 SW	Groundwater	closed	100
Country Side Palace	I-70/65 SW	Groundwater	inactive	25
Marshall Fireworks	I-70/65 NW (0.3 mi north)	Groundwater	active	200

Four of the five wells are located around the U.S. 65 interchange but none would be impacted with implementation of the Preferred Alternative. Wells that are directly affected by the construction of the proposed project would be decommissioned in accordance with the State of Missouri guidelines to prevent direct surface infiltration to the groundwater.

c. Floodplains

Section of Independent Utility 2 crosses the floodplains of numerous rivers and creeks. Based on an evaluation of the Flood Hazard Boundary and Flood Insurance Rate Maps for Lafayette, Cooper and Saline counties, the proposed widening in SIU 2 would cross the 100-year floodplain of more than 30 creeks and rivers (Table IV-7). In accordance with Missouri Executive Order 97-09 and 98-03, the proposed improvements would be designed so that no more than

one foot of backwater increase would occur. Final hydraulic calculations would be submitted with the final bridge and culvert design for each crossing. The final design would be constructed to maintain the existing 100-year floodplain conditions and thus impacts on wildlife, floodwater storage and adjacent property would be minimal.

Executive Order 11988 mandates that impacts to floodplains should be avoided and/or minimized to the maximum extent practical. As part of the First Tier Study and this study, alternatives that avoid impacts to floodplains were evaluated.

Nearly all of the floodplain crossings in SIU 2 are perpendicular crossings and therefore extend along both the north and south sides of I-70. The result of the First Tier Environmental Impact Statement (EIS) and associated Record of Decision was to widen I-70 along its existing location throughout the corridor. Because these floodplains extend along both the north and south sides of I-70 in SIU 2, the impacts associated with these crossings would be unavoidable. In accordance with Executive Order 11988, the widening alternative was determined by the First Tier EIS and associated Record of Decision to be the least damaging practical alternative.

In SIU 2, approximately 98 acres (40 hectares) of floodplains would be crossed by the mainline, frontage roads and interchanges. No regulatory floodways would be crossed within SIU 2. Floodplains associated with Davis Creek and its tributaries compose the majority of the crossings. The existing southern frontage road on the west side of Sweet Springs is commonly flooded.

The project corridor is in a rural setting with large tracts of undeveloped land that are better suited for development than the land associated with the floodplains along the corridor. It is unlikely that the Preferred Alternative would encourage incompatible floodplain development.

Table IV-7 Maximum Floodplain Impacts

Stream Name	Acres	Hectares	Location
unnamed tributary to Davis Creek	1.0	0.4	Mainline
unnamed tributary to Davis Creek	0.4	0.2	Mainline
unnamed tributary to Davis Creek	1.6	0.6	Mainline
unnamed tributary to Davis Creek	1.1	0.4	Route M/O
unnamed tributary to Davis Creek	2.0	0.8	Mainline
unnamed tributary to Davis Creek	0.6	0.2	Mainline
unnamed tributary to Davis Creek	1.0	0.4	Mainline
unnamed tributary to Davis Creek	1.3	0.5	Route 13
Davis Creek	1.1	0.4	Mainline
unnamed tributary to Davis Creek	1.3	0.5	Mainline
unnamed tributary to Davis Creek	3.1	1.3	Route T
unnamed tributary to Davis Creek	1.6	0.7	Mainline
unnamed tributary to Davis Creek	1.1	0.4	Mainline
unnamed tributary to Davis Creek	0.1	0.0	Mainline
unnamed tributary to Mulkey Creek	0.4	0.2	Mainline
Mulkey Creek	0.6	0.3	Mainline
unnamed tributary to Davis Creek	0.8	0.3	Mainline
unnamed tributary to Mulkey Creek	1.6	0.6	Mainline
unnamed tributary to Davis Creek	0.6	0.2	Mainline

Table IV-7 Maximum Floodplain Impacts (Cont'd)

Stream Name	Acres	Hectares	Location
unnamed tributary to Davis Creek	0.5	0.2	Mainline
unnamed tributary to Davis Creek	1.1	0.4	Mainline
unnamed tributary to Davis Creek	0.5	0.2	Route Y/V V
unnamed tributary to Davis Creek	0.6	0.2	Mainline
Davis Creek	12.6	5.1	Mainline
unnamed tributary to Davis Creek	3.2	1.3	Route 127
unnamed tributary to Davis Creek	3.7	1.5	Mainline
Harpers Branch	1.8	0.7	Mainline
Coppers Creek	2.3	0.9	Mainline
unnamed tributary to Davis Creek	0.5	0.2	Mainline
Long Branch	4.0	1.6	Mainline
Blackwater River	28.7	11.6	Mainline
Dry Creek	0.8	0.3	U.S. 65
Martin Branch	3.4	1.4	Mainline
Chouteau Creek	6.3	2.6	Mainline
Lamine River	6.7	2.7	Mainline

d. Wetlands

Although avoidance and minimization of wetland losses is a priority for highway construction projects, there would be unavoidable wetland losses from implementation of the Preferred Alternative. Impacts to wetlands would occur primarily from the placement of fill to create new roadway and associated right of way. Potential indirect impacts could include the alteration of wetland hydrology and changes in water quality due to surface water runoff from the highway. The effects of these impacts could include loss of floodwater storage, loss of pollution filtering and groundwater recharge and loss of wildlife habitat.

The largest wetland complexes in the study area are located along the floodplains of the Blackwater and Lamine Rivers. Additional wetland complexes are located along Lick Branch and Martin Branch at the point where these streams cross I-70 and a few isolated emergent wetlands are scattered throughout the project area. Total wetland impacts in SIU 2 are presented in Table IV-8.

Table IV-8: Wetland Impacts of the Preferred Alternative

	Emergent Wetland acres (hectares)	Forested Wetland Acres (hectares)	Scrub-Shrub Wetland acres (hectares)	Total Wetland acres (hectares)	Non-Wetland Waters of the United States linear feet (meters)	Potentially Jurisdictional Ponds acres (hectares)
Potential Impact	8.2 (3.3)	18.3 (7.4)	0.4 (0.16)	26.9 (10.9)	41,560 (12,667)	9.9 (4.0)

Interchange alternative designs offered more flexibility than the mainline improvements; thus relatively minor wetland impacts would occur at the interchanges within SIU 2 (Table IV-9).

2. Comparison of the Impacts of the Interchange Alternatives

a. I-70/Route 13 Interchange Higginsville

The implementation of Alternative A or Alternative B at the I-70/Route 13 interchange would impact 1.3 acres (0.5 hectares) of the 100-year floodplain along an unnamed tributary to Davis Creek. No ponds or wetlands would be impacted by implementation of Alternative A or Alternative B at the I-70/Route 13 interchange

b. I-70/Route 23 Interchange - Concordia

Implementation of either Alternative A or Alternative B would have no impact on floodplains or wetlands at the Route 23 Interchange. Three intermittent streams cross I-70 from south to north at the interchange. The Preferred Alternative (Alternative B) would impact approximately 2,718 feet (828 meters) of stream channel. The largest impact [~2,000 feet (610 meters)] is along a captured stream that is currently functioning as a maintained roadside ditch.

c. I-70/127 Interchange - Sweet Springs

The proposed northern and southern frontage roads at either Alternative A or Alternative B would impact 3.2 acres (1.3 hectares) of the 100-year floodplain of an unnamed tributary to the Blackwater River. Implementation of Alternative B would impact approximately 635 feet (194 meters) and 0.35 acres (0.14 hectares) of potentially jurisdictional ponds. This alternative would also impact two potential wetlands. The northernmost wetland is an approximate 0.1 acres (0.04 hectares) of emergent wetland that would be filled by the new frontage road. A small 0.1 acre 0.04 hectares) forested wetland would also be impacted by the same frontage road. The southwest frontage road would impact approximately 2.2 acres (0.9 hectares) of a forested wetland.

d. I-70/U.S. 65 Interchange

Implementation of Alternative A would only change the mainline configuration at this location and implementation of Alternative B would remove the four cloverleaf ramps and add a diamond interchange configuration. There would be no impacts to floodplains, wetlands, ponds or streams with the implementation of Alternative A or B at this interchange.

Regarding the groundwater wells near this interchange, none would be impacted by implementation of either of the alternatives. If during construction of the project it was determined that a groundwater well would be impacted, the well would be decommissioned in accordance with the State of Missouri guidelines to prevent direct surface infiltration to the groundwater.

e. I-70/135/41 Interchange

Implementation of the alternatives at this location would not impact any floodplains or jurisdictional ponds. Implementation of Alternative A would impact 339 feet (103 meters) of stream channel. The implementation of Alternative A would have no impacts on wetlands.

Table IV-9: Preferred Interchange Alternative Water Resource Impacts

Interchange Alternative	Emergent Wetland acres (hectares)	Forested Wetland acres (hectares)	Scrub-Shrub Wetland acres (hectares)	Total Wetland acres (hectares)	Non-Wetland Waters of the United States linear feet (meters)	Potentially Jurisdictional Ponds acres (hectares)
I-70/Route 13 Alt A	0	0	0	0	0	0
I-70/ Route 23 Alt B	0	0	0	0	2,718 (828)	0
I-70/Route127 Alt B	0.1(0.04)	2.3 (0.93)	0	2.4 (0.97)	635 (194)	0.35 (0.14)
I-70/U.S. 65 Alt B	0	0	0	0	0	0
I-70/Route 135/41 Alt A	0	0	0	0	339 (103)	0
Total Impacts	**0.1 (0.04)**	**2.3 (0.93)**	**0**	**2.4 (0.97)**	**3,692 (1,125)**	**0.35 (0.14)**

3. Impacts of the No-Build Alternative

The No-Build Alternative would have no impact on water resources or floodplains. Potential long term impacts resulting from additional traffic and vehicle miles traveled would be similar to those of the Preferred Alternative, but might be slightly higher due to less surface area dilution and the increased incidence of crashes associated with the older facilities. In addition, portions of frontage roads and the mainline would continue to flood during heavy rains.

4. Mitigation Measures

- In compliance with the General NPDES permit for road construction, MoDOT would implement erosion and sedimentation control measures where appropriate. These measures could include revegetation and directing stormwater runoff through grass channels, sedimentation basins, constructed wetlands, straw bales, check dams, infiltration basins, silt fences and vegetated areas (Appendix G).
- The Missouri Department of Transportation's final design phase process would minimize impacts to floodplains, where feasible.
- The Missouri Executive Orders 97-09 and 98-03, which indicates how the state complies with the requirements of the National Flood Insurance Program, would be adhered to for all floodplain crossings. The above directive indicates that a broad and unified effort would be made to ensure that developments in floodplains would be adequately analyzed to lessen the risk of flood losses.
- The United States Army Corps of Engineers (USACE) Kansas City District, the FHWA, the EPA and the United States Fish and Wildlife Service (USFWS) have

signed an interagency partnering agreement with MoDOT regarding working together to process the environmental documentation for the entire I-70 corridor (Appendix J).

- The USACE Kansas City District will review a Section 404 Clean Water Act application for the Preferred Alternative as part of their review of the overall I-70 Improvement Program (SIUs 1 through 7). Measures included in USACE approvals and related permits that may result are expected to include a wide range of wetland mitigation and avoidance measures and specifications for constructed wetlands and/or wetland banking concepts and plans. The merged National Environmental Policy Act (NEPA)/Section 404 Process would not be used for SIU 2 since the construction of proposed improvements will not occur in the immediate future. MoDOT would continue to work with the USACE and other commenting agencies after completion of the SIU 2 NEPA process to avoid and minimize wetland impacts within SIU 2 and also to develop plans and specifications for compensatory mitigation plans. MoDOT would mitigate wetland losses by creating or restoring wetlands in sufficient quantity and quality such that there would be no net loss of area or function in accordance with state and federal wetland Executive Orders. Wetlands lost due to construction of the highway would be replaced in kind based on the standard wetland classes through mitigation activities in the project area or offsite. Potential wetland mitigation sites could include suitable construction borrow sites within the vicinity of the project.

  Note: MoDOT prefers to purchase wetland mitigation sites from willing sellers, a process that cannot be initiated until preliminary right of way requirements are developed. Therefore, it is impractical to produce a detailed wetland mitigation plan with specific design details at this early stage of the project.

The Missouri Department of Transportation, HNTB, MDNR, NRCS, the Missouri Department of Conservation (MDC), USACE, and FHWA met on June 24, 2004, in Jefferson City to discuss wetland mitigation options for the I-70 project. This meeting presented a forum to discuss mitigation preferences from each agency and to determine an approach for wetland mitigation along the I-70 corridor. The meeting identified the Loutre River, located in SIU 6, as a potential wetland mitigation site. An I-70 corridor wetland mitigation plan will be produced based on the discussions and preferences presented at this meeting.

F. Geology and Soils

1. Impacts of the Preferred Alternative

Impacts to area soils would occur during construction. Impacts would principally involve the temporary disturbance of surface layers from scraping and grading operations at the primary construction site and at sites for borrow material; compaction by heavy equipment; permanent loss of soils that are overlain by the roadbed and associated facilities; potential erosion during periods of exposure; and possible contamination from spills of petroleum products by construction equipment. The primary impact to soils would be the loss of future productivity, particularly in those areas that are rated as prime farmland (See Section A of Chapter IV). No impacts to geology or exposure to geologic hazards are anticipated; however, embankment structures at the Lamine River crossing may require removal of rock. In addition, the northern

abutment for the proposed Route K interchange would be located on a rock bluff above the existing mainline.

2. Comparison of the Impacts of the Interchange Alternatives

At each of the five locations where alternatives are proposed at interchanges, impact differentials associated with soils and geology would be minor and inconsequential relative to the selection of a preferred alternative.

3. Impacts of the No-Build Alternative

The No-Build Alternative would avoid construction related impacts to site soils and their productivity. Losses of soils associated with prime farmland are discussed in Section A of this chapter.

4. Mitigation Measures

- The Natural Resources Conservation Service, the Farm Services Agency, the FHWA and MoDOT have all signed an interagency Cooperative Agreement regarding the coordination of potential impacts to WRP, CRP, and Prime and Unique Farmlands along the I-70 Corridor (Appendix L).
- The Missouri Department of Transportation would require construction contractors to control erosion and sedimentation by applying appropriate Best Management Practices, as described in MoDOT's Erosion and Sedimentation Control Program, to the specifications. These erosion control best management practices (BMP) could include phased grading to minimize exposed soil, mulching, temporary seeding and the use of erosion control blankets.
- The Missouri Department of Transportation would perform on-site inspection in areas where erosion and sedimentation may impact primary waterways and other water resources such as wetlands to ensure that implementation of the specifications occurs and is effective in the field.

G. Biological Resources

Potential impacts to terrestrial and aquatic ecosystems and associated wildlife can be evaluated by considering the amount of acres of habitat directly impacted by the project and the degree of physical disturbance that occurs due to that impact. Indirect disturbances, such as habitat fragmentation, must also be considered as these disturbances could indirectly impact the composition and abundance of wildlife in the project area. Important habitat types that were evaluated for impacts in each alternative include forested areas, riparian corridors along perennial streams, water bodies and any significant natural features identified by the MDC or MDNR. Impacts to streams and water bodies are discussed in Section E of this chapter.

1. Impacts of the Preferred Alternative

a. Natural Habitat

Due to the agricultural nature of the Lafayette, Saline and Cooper counties, the project area contains relatively few natural plant communities. The dominant pre-settlement vegetation of prairie and scattered woodland has historically been cultivated or converted to pasture at some point since settlement. There are no known prairies and only a few large, [approximately 500 acres (202 hectares) or larger] forest tracts remaining in the vicinity of SIU 2. Although the MDC indicated that several natural features occur within the region (Appendix E), none are located within the impact zone of the proposed right of way or are immediately adjacent to SIU 2.

Approximately 294 acres (119 hectares) of scattered forested areas would be impacted by implementation of the Preferred Alternative. These forested areas would be converted to highway right of way. The loss of forested areas would also impact wildlife associated with woodland areas. The largest impact to forest habitat would occur within the mainline portion of the project area. Impacts within this area would be the result of habitat loss. Existing I-70 currently fragments most of these habitats. Impacts within the interchange portions of the project would be a result of both habitat loss and habitat fragmentation in some cases. It is anticipated that less mobile species of wildlife would be directly impacted and could be lost or displaced during highway construction.

Additional natural habitat identified in the project area includes the riparian habitat around two of the perennial stream crossings in the corridor. Both the Blackwater River and the eastern crossing of Davis Creek contain a forested riparian corridor. National Wetland Inventory mapping identifies these areas as forested wetlands. Impacts to these areas are similar to the wetland impacts described in Section E 1 d of this chapter.

Impacts would also occur to aquatic wildlife during construction of the project and temporary impacts would result at stream crossings. Construction activities would temporarily increase turbidity and perhaps sedimentation, leading to a decrease in visibility for aquatic species, a decrease in food supply and a temporary reduction in spawning habitats. Streams in the project area are relatively turbid and the aquatic species of the region have adapted to that environment. In addition, it is anticipated that upon completion of construction activities, aquatic conditions would return to near pre-construction levels. The implementation of MoDOT's Sedimentation and Erosion Control Program would reduce the severity of impact to aquatic habitats. At the larger perennial streams, bridges would be constructed to minimize long-term impacts.

b. Threatened and Endangered Species

No state or federally listed threatened or endangered species are known to occur within the project area and therefore impacts to protected species are not anticipated. However both the USFWS and MDC indicated the possible occurrence of running buffalo clover, Indiana bats and ghost shiners within SIU 2 (Appendix E).

Running buffalo clover, a federally endangered species, has not been recorded within SIU 2. However, according to the USFWS, it could occur within the project area near the disturbed

floodplain habitats of the Lamine and Blackwater Rivers and Davis Creek. This species was identified along the Loutre River adjacent to I-70 in 2002. Interstate 70 crosses the Loutre River in Montgomery County approximately 80 miles (129 kilometers) east of the eastern terminus of SIU 2.

Since it would likely be a number of years before the I-70 Improvement is constructed, the distribution of this endangered plant could change over time. MoDOT would review the Natural Heritage Database periodically for new locations of the running buffalo clover and would conduct a survey for the running buffalo clover at least one year prior to construction and clearing activities at the locations noted below and any new areas identified from the Natural Heritage Database. MoDOT would commit to conducting running buffalo clover surveys at the Loutre River crossing, the Auxvasse Creek crossing in SIU 6, the Cedar Creek crossing in SIU 5 and the Lamine River crossing in SIU 2 prior to construction. MoDOT would also continue consulting with the USFWS and MDC on this plant species and would develop or improve habitat for the plant when feasible to do so as part of the construction activities.

MoDOT recognizes the importance of riverine corridors for a variety of benefits, including habitats suitable for endangered species such as the Indiana bat and running buffalo clover. MoDOT has developed a stream mitigation and enhancement plan for the major river crossings, including those noted above.

The Indiana bat, a federally endangered species, has not been recorded from SIU 2, however they are known to use the Rocheport cave as a winter roost. During summer months the bats are known to feed on insects and utilize snags near perennial streams in Missouri. There are likely additional areas within the I-70 corridor that provide seasonal habitat to the Indiana bat. MoDOT recognizes the importance of minimizing the effects of habitat loss, especially with respect to habitats that could be used by threatened and endangered species. The Indiana bat prefers woodlands with a variety of species and age classes.

The USFWS previously used a guidance that focused on not cutting suitable roost trees during the breeding season (April 1 through September 30) to avoid negative impacts on the species. The USFWS now advocates reviewing projects on a case by case basis focusing on the following criteria: the projects proximity to known hibernacula; maternity, male roosts and/or important foraging areas; the composition of the woodland; the land use of the area after the project is complete; location in Knox, Macon and Shelby counties; and consideration of the magnitude, scope, frequency, and duration of the Preferred Alternative with regard to the importance of the area to the Indiana bat.

To address USFWS and MDC concerns, MoDOT would review the Natural Heritage Database periodically during the project development process to identify any new locations of Indiana bat activity. MoDOT would continue consultation with the USFWS to avoid or minimize potential impacts to this species.

The ghost shiner, a state species of Conservation Concern (S2), has been recorded in the Lamine and Blackwater rivers. The MDC identified the potential for the species to occur near SIU 2. The closest known observations of the ghost shiner in the Blackwater River occurred approximately 3.5 miles (5.6 kilometers) downstream of the I-70 crossing of the Blackwater River. The closest known observation in the Lamine River occurred eight miles (13 kilometers) upstream from the I-70/Lamine River crossing.

The ghost shiner prefers streams with permanent flow and moderately clear water. In addition, suitable spawning habitat includes sluggish riffles over sand or fine gravel. Although this species could occur in the Lamine or Blackwater rivers near the I-70 crossings, no spawning habitat is present and therefore adverse direct impacts to this species are unlikely. Because suitable breeding habitat for the ghost shiner is not present at the Lamine and Blackwater river crossings within SIU 2, potential impacts to this species are not anticipated. However, other construction activities could disturb area soils leading to potential degradation of water quality. Measures to limit intrusion into potential habitat areas and efforts to control stormwater and minimize erosion in these locations would be implemented to mitigate potential impacts to ghost shiner habitat.

2. Comparison of the Impacts of the Interchange Alternatives

No threatened, endangered, watch-listed species or unique habitats occur in areas where interchange alternatives are proposed; consequently impact comparisons throughout the following discussion focus on wildlife and associated habitat losses.

a. I-70/Route 13 Interchange - Higginsville

Impacts to habitats in the area of the I-70/Route 13 interchange would be limited to two small forested tracts. Implementation of either Alternative A or Alternative B would directly impact approximately four acres (2.0 hectares) and contribute to the fragmentation of another three acres (1.2 hectares).

b. I-70/Route 23 Interchange - Concordia

No impacts to forested habitats are anticipated from implementation of the Concordia interchange alternatives.

c. I-70/Route 127 Interchange - Sweet Springs

Impacts to the natural habitat in the area of this interchange would be limited to one small tract of forested land. Implementation of either Alternative A or Alternative B would directly impact approximately two acres (0.8 hectares) of forested land and contribute to the fragmentation of another approximately 5.5 acres (2.2 hectares).

d. I-70/U.S. 65 Interchange

Impacts to natural habitats in the Marshall Junction area would be minimal with the implementation of Alternative A, the No Build or Alternative B, the diamond design. Both alternatives would be constructed within existing right of way and existing frontage roads would be used instead of creating new frontage roads that would have the potential to impact forested or other habitats.

e. I-70/Route 135/41 Interchange

Implementation of Alternative A would impact approximately two acres (0.8 hectares) of forest and contribute to the fragmentation of approximately one additional acre (0.4 hectares). Implementation of Alternative B would not impact forested habitats at this interchange.

3. Impacts of the No-Build Alternative

The No-Build Alternative would have no impacts to natural habitats or threatened and endangered species.

4. Conservation Measures

- In areas where it is necessary to clear and remove trees, MoDOT would implement their tree mitigation policy and plant two trees for every tree removed that has a diameter greater than six inches at breast height.
- MoDOT would conduct a running buffalo clover survey of the area proposed for construction within the Lamine River floodplain.
- MoDOT would implement the stream mitigation and enhancement plan for the major river crossings.
- MoDOT would review the Natural Heritage Database periodically during the project development process to identify any new locations of Indiana bat activity.
- MoDOT would review the Natural Heritage Database periodically for new locations of the running buffalo clover and would then field check for the running buffalo clover at least one year prior to construction and clearing activities at the Lamine River and any new areas identified from the Natural Heritage Database.
- MoDOT would implement their Sedimentation and Erosion Control Program to reduce the severity of impact to aquatic habitats.

H. Cultural Resources

1. Impacts of the Preferred Alternative

a. Architectural Resources

Although none of the architectural sites in SIU 2 are currently listed on the National Register of Historic Places (NRHP), the Center for Archaeological Research (CAR) surveyed 90 properties that dated prior to 1945. The characteristics of these properties are the subject of a separate technical report entitled: "*Interstate 70, SIU 2 Historical and Architectural Survey, Volume 5.*" Based on the findings of this report, the CAR has recommended that five properties and one object are potentially eligible for the NRHP. The remaining 84 properties are recommended by the CAR as not eligible for the NRHP. Although former U.S. 40 in SIU 2 was not given a

property number it was evaluated and also recommended as not eligible for the NRHP. The following discussion describes the five properties and the one object.

Marth/Fischer Barn (2LF66.1)

The Marth/Fischer Barn is located near mile marker 55 and is within the proposed right of way of the mainline and frontage road alignment (Sheet A18, Appendix A). The barn would be directly impacted by reconstruction of the existing frontage road. It is within the limits of construction, as is the house and some grain bins. The other buildings on the property are within the Area of Potential Effects (APE) but outside the construction limits. If this resource is determined eligible for the NRHP, a Section 4(f) Evaluation appears to be necessary.

Avoidance Alternatives:

This barn would be impacted by the reconstruction of the existing frontage road. The barn is located on the north side of I-70, the side proposed for widening near mile marker 55. The Preferred Alternative includes widening I-70 to the north from the eastern terminus near mile marker 39 to near mile marker 69 where a crossover to the south would occur. Although this resource was identified during the initial north/south screening, avoiding the resource was not considered practicable. Although the barn could be avoided by not re-constructing the frontage road, there would be no other access to this farmstead. One other farmstead, east of this location, also uses this frontage road for ingress and egress. The other alternatives to avoiding this structure include reducing the 80-foot (24 meter) separation between the mainline of I-70 and the frontage road to avoid the barn, reconstruct the frontage road around the back of the structure and provide a rear access to this farmstead and construct a crossover for the mainline to the south and another back to the north. These alternatives would be fully evaluated in the Section 4(f) Evaluation for this resource.

Burrow House (2LF113)

The Burrow house sits on a town lot about 140 feet by 66 feet (43 meters by 20 meters); the recommended NRHP boundary is the lot (Sheets A21A and A21B, Appendix A). The building would not be directly impacted by the project. Although improvements to Main Street near the intersection with First Street would be required with either of the two interchange alternatives for Concordia, the improvements would not physically impact the building. A Section 4(f) Evaluation does not appear to be necessary.

Hall/Simmons House (2SA191)

The Hall/Simmons House is a small Craftsman open-gable bungalow that still retains its original detailing (Sheet A35, Appendix A). The house is on a 15-acre (6 hectare) parcel with a small portable building and an unused highway development building that postdates 1945; the recommended NRHP boundary is the footprint of the house. According to the current owner, it was built in the late 1930s.

Due to the existing proximity of I-70, the nature of the improvements to I-70 in the vicinity and the fact that no access disruption is anticipated, the indirect (constructive use) impacts of the Preferred Alternative are not expected to substantially impact this resource. A Section 4(f) Evaluation does not appear to be necessary.

Younger/Swift House (2SA208)

This property consists of three buildings (Sheets 43A and 43B). The house (2SA208.1) is a brick Craftsman bungalow. The other two buildings are a brick garage (2SA208.2) and a service station (2SA208.3). The buildings are currently on an oddly shaped 5-acre (2 hectares) parcel (an angular hour-glass shape), a small portion of the 225 acres (91 hectares) owned by Younger in 1930. Therefore, the recommended NRHP boundary is the area immediately around the buildings. The buildings associated with the Younger House would not be impacted by either of the U.S. 65 alternatives.

Although this resource could be determined eligible for the NRHP, a Section 4(f) Evaluation would not be required because no impacts to this building or associated buildings are anticipated from implementation of either of the alternatives.

Schmitt Garage (2CP239)

This structure is an example of a rock highway development building (Sheet 54, Appendix A). The rock comprising the structure of this building has fallen over the service bay and is badly cracked in other places. The wood details are substantially deteriorated. Several windows in the rear are entirely devoid of glass, causing deterioration of the structure and interior.

Despite its condition, SHPO determined 2CP239 to be eligible for the NRHP under Criterion A, Transportation, and Criterion C, Architecture. The period of significance would be 1935 to 1954, the date of construction until 50 years ago. The NRHP boundary would be the footprint of the building. There would be no adverse effect from the project as the building is not within the right of way of the preferred alternative.

Higginsville Hand Sign (2LF277)

This is one of three signs used by the Higginsville Chamber of Commerce to attract visitors to the town (Sheet A13, Appendix A). An identical sign is located south of I-70 and east of Highway 13 along the south outer road, visible to eastbound motorists on I-70. The sign north of Higginsville was surveyed for an earlier MoDOT project along Highway 13. It was determined eligible for the NRHP under Criterion A, Commerce, for its association with the expansion of the highway system and maintaining small-town commercial viability. The sign along I-70 (2LF277) is also recommended eligible for the NRHP under Criterion A, Commerce. Although moved, the sign is still recommended eligible using Criteria Consideration B since the significance of the sign is not tied to a specific location as long it is still near its original location along a major transportation route. Under the same argument, the present project would not have an adverse impact on the sign even though it is in the right of way of the preferred alternative as it can easily be moved again to be adjacent to an expanded I-70. The period of significance would be 1940–1954, and the NRHP boundary would be the footprint of the sign.

b. Archaeological Resources

The Center for Archaeological Research conducted a Phase I archaeological survey of the potentially impacted areas along SIU 2. The characteristics of the archaeological sites are the subject of a separate technical report entitled: "*Interstate 70 Archaeological Survey, Volume 6.*

The Area of Potential Effect that was surveyed consisted of a 164-foot (50-meter) wide area adjacent to the existing right of way (or outer road right of way) where lane expansion is proposed to occur. A similar area was surveyed for construction of the new outer road. At the interchanges, all new proposed rights of way were surveyed.

The Phase I archaeological survey identified nine previously recorded sites and 79 newly defined sites for a total of 88 sites. There were also 40 isolated finds recorded during the survey. Sixty-two of the 88 sites are not recommended for Phase II testing, 14 are recommended for Phase II testing and 12 have an undetermined NRHP status due to denial of access. All of the 12 undetermined sites are historic sites with standing buildings that were initially identified during the architectural survey (Lopinot et al. 2004). These 12 sites would require further evaluation when access is granted. Sites recommended for Phase II testing consist of 10 prehistoric sites, three historic sites, and one multi-component pre-historic-historic site, although the latter is primarily a historic site. The 14 sites recommended for Phase II testing represent one in Lafayette County, eight in Saline County, and five in Cooper County. These sites are summarized in Table IV-10.

Table IV-10: Summary of Archaeological Sites in SIU 2 Eligible for Phase II Testing

ASM No.	Size (m2)	Cultural Affiliation	Site Type
AS2LF9	3,900	Late nineteenth-century historic	Site of a former church
AS2SA30*****	1,800	Undetermined prehistoric	Lithic tool and debris scatter
AS2SA38	9,500	Late Woodland	Lithic tool and debris scatter
AS2SA51	225,000	Late Paleo-Indian, Archaic, and Woodland	Habitation / prehistoric (camp-site, village)
AS2SA63*****	430	Undetermined prehistoric	Lithic tool and debris scatter
AS2SA138	430	Undetermined prehistoric	Lithic tool and debris scatter
ASM No.	**Size (m2)**	**Cultural Affiliation**	**Site Type**
AS2SA10	930	Mid nineteenth-century historic	Residence / farmstead
AS2SA32	440	Early twentieth-century historic	Site of a former school
AS2SA37	2,000	Early twentieth-century historic	Residence / farmstead
AS2CP11	28,400	Undetermined prehistoric	Lithic tool and debris scatter
AS2CP12	37,100	Late Archaic	Lithic tool and debris scatter
AS2CP21	1,900	Middle Late Woodland	Habitation / prehistoric (camp-site, village)
AS2CP24	2,900	Late Archaic	Lithic tool and debris scatter
AS2CP65*****	5,840	Undetermined prehistoric	Cultural material scatter

***** These sites are recommended for Phase II testing to determine the efficacy of shovel probing.

2. Comparison of the Impacts of the Interchange Alternatives

a. I-70/Route 13 Interchange - Higginsville

No NRHP eligible resources were observed at the I-70/Route 13 Interchange.

b. I-70/Route 23 Interchange - Concordia

One NRHP recommended eligible resource was observed at the Route 23 Interchange (Burrow House). This resource would not be directly impacted by the implementation of Alternative A or Alternative B; however, it is located near the end of the proposed right of way requirements. Potential indirect impacts could occur during construction of the proposed improvements.

c. I-70/Route127 Interchange - Sweet Springs

No NRHP eligible resources were observed at the I-70/Route 127 Interchange.

d. I-70/U.S. 65 Interchange

A single NRHP recommended eligible resource (Younger/Swift House) is located near the U.S. 65 Interchange. The building would not be impacted by either of the two alternatives under consideration.

e. I-70 Route 135/41 Interchange

No NRHP eligible resources were observed at the I-70/Route 135/41 Interchange.

3. Impacts of the No-Build Alternative

The No-Build Alternative would avoid construction related impacts to NHRP eligible resources.

4. Mitigation Measures

- The Federal Highway Administration, MoDOT and the MDNR have signed a Memorandum of Understanding (MOU) regarding the eligibility I-70 for the NRHP (Appendix H).
- The Federal Highway Administration has sent requests for information to four different Native American Tribes requesting information and comments on the Improve I-70 program (Appendix E).
- A Section 4(f) evaluation has been prepared for the Marth/Fischer Barn (2LF66.1). Mitigation for impacts to this resource would be coordinated between FHWA, MoDOT and MDNR.

I. Potential Hazardous Materials and Wastes

1. Impacts of the Preferred Alternative

Based on the review of the EDR Reports, the database searches, windshield surveys and review of aerial photographs, 33 potential hazardous materials or potential hazardous waste sites could be impacted by implementation of the Preferred Alternative.

Table IV-11: Potential Hazardous Waste Sites Potentially Impacted by the Preferred Alternative

Site Name/Owner*	Alternative	Potential for Contamination**
Mainline Improvements		
Bri-Ley Sales – Utility Equipment Supplier (possible UST)		Moderate
Raney Auto Sales and Service (UST)		Moderate
Klienschmidts (unknown prior use)		Low
Micro Tool and Dye (Potential RCRA Waste)		Moderate
M&S Livestock Equipment (UST)		Moderate
Trader's Corner Used Farm Equipment (Possible UST)		Moderate
Unknown Truck Service Facility (UST)		Moderate
Bill's Garage (AST and UST)		Moderate
I-70/Route H		
Former Minuteman II missile site	Alternative A	Low
I-70/Route 13 Interchange - Higginsville		
Pilot Travel Center (UST)	Alternative A and B	Moderate
Iron Horse (AST and possible UST)	Alternative A and B	Moderate
I-70/Route 23 Interchange - Concordia		
Travel Center (UST)	Alternative A	Moderate
Break Time (AST and UST)	Alternative A and B	Moderate
Texaco (AST and UST)	Alternative A and B	Moderate
Conoco (UST)	Alternative A and B	Moderate
Mike's Auto Repair (UST)	Alternative A and B	Moderate
I-70/Route 127 Interchange		
Amoco (UST)	Alternative A and B	Moderate
Conoco (UST)	Alternative A and B	Moderate
I-70/Route YY Interchange		
Betty's Motel/Restaurant and Gas Station (AST and UST)	Alternative A	Moderate
Amoco (AST)	Alternative A	Moderate
Truck Repair (UST)	Alternative A	Moderate
TSI (former Kerr McGee site – AST)	Alternative A	Moderate
Mainline Improvements		
I-70/U.S. 65 Interchange		
No potential hazardous waste sites would be impacted by either of the alternatives		
I-70/Route J Interchange		
Stuckey's (AST)	Alternative A	Low
Abandoned Gas Station (possible UST)	Alternative A	Moderate
I-70/Route 135/41 Interchange		
All Star Gas (UST)	Alternative A and B	Moderate

Table IV-11: Potential Hazardous Waste Sites Potentially Impacted by the Preferred Alternative (Cont'd)

Site Name/Owner*	Alternative	Potential for Contamination**
Mid Missouri Thermal King (AST)	Alternative A	Moderate
Williams Sales and Service (Possible UST)	Alternative A and B	Moderate
KOA Press (potential leakage of printing/processing chemicals)	Alternative A and B	Moderate
Conoco Gas Station (UST)	Alternative A	Moderate
Chase Repair (UST)	Alternative B	Moderate
First Amendment Video (potential UST)	Alternative A and B	Moderate
Texaco Gas Station (UST)	Alternative A and B	Moderate

UST = Underground Storage Tank
AST = Aboveground Storage Tank

***** This table includes sites listed as displacements and partial takes.
****** This information is based on limited non-intrusive windshield surveys. Definitive quantification of the potential for contamination can only be determined through intrusive investigations, which have not been conducted as part of this project. Low potential for contamination means a relatively low risk site. Likewise, moderate potential for contamination means moderate potential risk.

Impacts to these sites could involve right of way acquisition and/or demolition of associated resources and facilities for proposed roadway improvements. Prior to acquisition of the land associated with these sites and before construction would occur, additional investigations and documentation would be required. These investigations would determine whether hazardous materials are or have been present. If hazardous materials are or have historically been present, investigations would be performed to assess site characteristics and determine the nature and extent of any contamination that has occurred. If environmental contamination were present, measures to address site-specific circumstances would be determined. Construction would proceed following implementation of required cleanup steps.

The former Minuteman II missile site is unique because although the fenced area of the facility would not be impacted by the proposed improvements, the gravel access road to the site would be impacted by the expansion of the mainline right of way. Regarding the current condition of this site, in 1997, the United States Geological Survey implemented a long term monitoring program at the site to assess the potential for PCB contamination in the groundwater. Initial results of this study indicated that no PCBs were detected above the minimum reporting level and no other contaminants of concern were listed for the site (Witt, 2002).

2. Comparison of the Impacts of the Interchange Alternatives

a. I-70/Route 13 Interchange - Higginsville

The implementation of both Alternatives A and B would have similar business displacement impacts. Both alternatives would potentially impact the same two potentially hazardous waste sites (Pilot Travel Center and Iron Horse, Inc.). Since both alternatives would potentially impact the same sites, there is no preference of alternatives with respect to potentially hazardous waste sites.

b. I-70/Route 23 Interchange - Concordia

The implementation of Alternative A would potentially impact the following sites: Travel Center, Texaco Gas station, Conoco gas station, Mike's Automotive and a Breaktime Service Station. The implementation of Alternative B would not impact the Travel Center. The remaining sites would be impacted by Alternative B.

c. I-70/Route 127 Interchange – Sweet Springs

The implementation of both alternatives impact two potential hazardous waste sites, an Amoco gas station and a Conoco station. Since both alternatives would potentially impact the same sites, there is no preference of alternatives with respect to potentially hazardous waste sites.

d. I-70/U.S. 65 Interchange

The implementation of either Alternative A or Alternative B would not impact any potential hazardous waste sites at this location.

e. I-70/Route 135/41 Interchange

The implementation of Alternative A would impact seven potentially hazardous sites, an All Star Gas station, KOA Printing Press, Mid Missouri Thermal King, a Texaco, Williams Sales and Service, a Conoco and First Amendment Video (suspected to have an orphaned UST). The implementation of Alternative B would impact six potentially hazardous sites, with the differences being that Alternative B would not impact the Conoco station or Mid Missouri Thermal King, but would impact Chase Repair.

3. Impacts of the No-Build Alternative

Implementation of the No-Build Alternative would allow existing potentially hazardous materials and hazardous waste sites to remain undisturbed. Potential environmental contamination associated with these sites would remain in place.

4. Mitigation Measures

- Prior to acquisition, MoDOT would perform additional investigations on the sites that have been identified as being impacted. These investigations would better define the horizontal and vertical limits of environmental contamination and determine potential ownership of the contamination.
- Any hazardous waste sites encountered during the construction of the Preferred Alternative would be dealt with in accordance with appropriate state and federal regulations.

J. Public Services and Utilities

1. Impacts of the Preferred Alternative

a. Electricity and Gas

The Preferred Alternative would require various aboveground electricity and underground natural gas line relocations where road facilities either cross or would be parallel to existing systems. Although none of these relocations involves a major power transmission line, existing I-70 does cross over three natural gas transmission pipelines near the eastern terminus of SIU 2 at mile marker 97. At this location, I-70 crosses over three 16-inch (41 centimeter) pipelines operated by Panhandle Eastern Pipe Line Company that transport natural gas from Texas and Oklahoma into the upper Midwest. The valve settings for these lines are on the north side of I-70, opposite the widening and would remain in place. However, the lines could require lowering prior to construction. Implementation of the Preferred Alternative would not be expected to create substantial service disruptions to these lines.

Facility lighting and intelligent transportation system (ITS) would require electricity, but the demand from these systems would be minor and without consequence relative to supply and associated system infrastructure. Implementation of the Preferred Alternative would not require new natural gas service connections.

b. Telecommunications

Implementation of the Preferred Alternative would require relocation of various underground and aboveground telecommunications facilities on both sides of I-70. These relocations would involve major fiber optic systems, cellular towers and other communications lines and infrastructure. The relocations would be completed in a manner that would avoid substantial service interruptions.

The ITS systems would require fiber optic connections, but the demand and existing infrastructure is expected to be adequate for the future needs of the I-70 ITS network.

c. Water

The Preferred Alternative would require relocation of relatively small water lines, but would not be expected to involve major water line relocation, substantial local service disruption, or substantial new service demands. Water would be needed to provide fire protection, irrigate proposed landscaping and for potable uses associated with future developments. At this time, no supply issues would limit access to water for this purpose and minor infrastructure improvements would be necessary. The new water line being extended into the U.S. 65 interchange area could require relocation. Potential impacts to water wells are addressed under Water Resources (See Section E of Chapter IV).

d. Sanitary Sewage Facilities

The Preferred Alternative would not impact major sanitary sewage infrastructure or service demand, but it would require minor sewer line relocations in various locations. These incidental relocations would not be expected to substantially impact local service.

e. Emergency Response and Fire Protection

Traffic congestion, delays and detours created during the construction process would incrementally and temporarily increase emergency service (police, fire and ambulance) response times at various locations depending on the nature of construction activities and specific site plans which have not been developed at this time. Measures to maintain adequate traffic flow on the mainlines of I-70 should be minor, even where the proposed crossover would be located and should be limited at intersections where MoDOT would implement measures to maintain appropriate traffic flows.

In the long-term, increased capacity and improved safety conditions would minimize traffic crash related demand, avoid increased demand for emergency response staff members and decrease emergency response times.

2. Comparison of the Impacts of the Interchange Alternatives

At each of the five locations where alternatives are proposed at interchanges, impact differentials associated with public services and utilities would be minor and inconsequential relative to the selection of a preferred alternative.

3. Impacts of the No-Build Alternative

The No-Build Alternative would not require utility relocations, new service demands, or infrastructure modifications or connections. No emergency response time delays would occur. No incidental service disruptions would be expected.

However, long-term benefits of improved access and circulation and safety upgrades could cause emergency response times to increase and the demand for emergency services to increase as traffic volumes and congestion increase and as the number of crashes on I-70 increase over time.

4. Mitigation Measures

The Missouri Department of Transportation would coordinate with local public service and utility service providers during the final design phase of the project and during the construction period to minimize infrastructure relocation, modifications and connectivity requirements and to minimize associated service demands for electricity, water and telecommunications. Refer to mitigation measures associated with maintaining adequate traffic.

K. Public Lands

There would be no public land impacts associated with the implementation of the Preferred Alternative in any of the three counties in SIU 2.

Although none of the Section 6(f) sites in Cooper and Saline Counties are within the area of effect for this project (no direct impacts), the Concordia Shelter House Developments were initially thought to be relatively close to the area of impact. However, upon further evaluation and coordination with the MDNR, it was determined that these two shelter house developments are located at the corner of 13th and Main Streets. None of the Concordia interchange alternatives extend past First Street and therefore would not affect these developments. All of the remaining Section 6(f) resources are located beyond the area of direct impacts from right of way acquisition and construction of the Preferred Alternative. In addition to the Section 6 (f) resources, other public lands were evaluated for impact as discussed below.

1. Harriman Hill Access Conservation Area

Because the proposed widening is located on the opposite side of I-70 from this area and no frontage road would be constructed on the north side of I-70 through this area, no direct impacts are anticipated to the Harriman Hill Access Conservation Area or the boat ramp area. Indirect impacts would include construction period impacts (temporary disruptions such as those associated with noise, dust, air pollutants from construction equipment and activities). Due to the existing proximity of I-70, the nature of the improvements to I-70 in the vicinity and the fact that no access disruption is anticipated, the indirect (constructive use) impacts of the Preferred Alternative are not expected to substantially impact the use or enjoyment of the boat ramp or the Harriman Hill Conservation Area. No other federal programs such as the Pittman-Robertson Wildlife Funds or Dingell Johnson Sport Fish Funds were utilized at the Harriman Hill Conservation Area.

Note: MoDOT and the FHWA would incorporate measures to minimize adverse impacts from blasting or other earthwork techniques necessary to allow for widening just east of the Lamine River.

2. Maple Leaf Lake Conservation Area

No direct impacts are anticipated to the Maple Leaf Conservation Area because the proposed widening is located on the opposite side of I-70 from the Conservation Area and because the existing frontage road and right of way adjacent to the Conservation Area would be used. Indirect impacts would include construction period impacts (temporary disruptions such as those associated with noise, dust, air pollutants from construction equipment and activities). Due to the existing proximity of I-70, the nature of the improvements to I-70 in the vicinity and the fact that no access disruption is anticipated, the indirect (constructive use) impacts of the Preferred Alternative are not expected to substantially impact the use or enjoyment of the Maple Leaf Lake Conservation Area. *Note:* It is assumed that during construction the project would incorporate measures to maintain circulation and access to the Conservation Area via Highway H.

Preliminary Finding:

The preliminary findings in this document suggest that Section 4(f) or Section 6(f) evaluations are not necessary due to the avoidance of impacts to public lands associated with the implementation of this project.

3. Other Public Lands

One additional resource within SIU 2 is the abandoned Minuteman II missile site located in the northwest quadrant of the Route H interchange. Property ownership records indicate that this site is privately owned. Remnant signs on fencing surrounding the site indicate that the U.S. Government once owned the property. The proposed mainline improvements would not impact the fenced portion of this site but the mainline right of way would extend across the access road for this site.

L. Construction Implementation and Phasing

The first step toward construction is completion of the Final Design process. Currently no schedule exists for the Final Design process, construction implementation or construction phasing for the proposed improvements in SIU 2. For purposes of the impact analysis contained in this Environmental Assessment (EA), the following assumptions have been applied:

- The Missouri Department of Transportation may acquire selected parcels of land prior to completion of the Final Design phase of the project if MoDOT were compelled to do so to protect project feasibility or partner in some manner with a public or private entity and funding for this purpose was available. However, most, if not all, of the required right of way acquisition would occur after the final design phase of the project is completed or sometime between then and initiation of the construction process.
- Construction would be implemented in phases based on funding availability and need, as determined by MoDOT over time.
- Construction contracts would be for a comprehensive set of improvements for specific and independent subsections of SIU 2.
- Construction contracts would include specifications to minimize impacts and mitigation measures set forth in the SIU 2 EA would be included, as appropriate, in construction contract bid packages.
- Construction period mitigation monitoring would occur to ensure that the required measures are implemented and effective.

1. Other Construction Components and Requirements

Traffic control during construction would be required in each phase. All standard MoDOT requirements that address capacity and safety issues during construction would apply to this project, plus all appropriate specific measures necessary to address site-specific circumstances. Standard requirements and policies of this type are included in MoDOT's ''Policy, Procedure and

Design Manual." In addition, the Federal Highway Administration's "Manual on Uniform Traffic Control Devices" (MUTCD) provides guidance along with each state's version of the MUTCD.

Grading, cutting, filling blasting and other earth-moving related activities would be required during the construction period. Heavy equipment and machinery would be used for these activities and other construction related activities. Transportation and storage of construction materials would be required. These activities would generate noise, require temporary use of property and disrupt existing site conditions during portions of the construction period. At this time, details about these project related activities are limited, so worst case assumptions were used to evaluate impacts, as necessary.

Most of these activities would occur within defined corridors. However, local roadways would be subject to some construction-related traffic and off-site locations may be used for disposal of cut material (soil and rock) or may be subject to earth moving activities to obtain material for fill. The final design process would attempt to balance cut and fill requirements thereby avoiding the use of sites beyond the boundaries of the corridor. At this time, no sites beyond the boundaries of the project corridor have been identified for such purposes.

All standard and typical requirements for minimizing impacts during the construction period would be applied to the construction contracts. These requirements relate to Occupational Safety and Health Administration safety rules and regulations, noise and dust generation, erosion control measures, fencing, workday time limitations for certain kinds of construction activity and site restoration requirements. Standard requirements and policies of this type are included in MoDOT's "Policy, Procedure and Design Manual." Construction details are hypothetical and generic at this time. They are only presented here to clarify sources of potential impacts from the project. Variation should be expected during the actual construction process.

Other construction components and requirements include areas for construction staging, materials storage, the use of batch plants for road surfacing needs and aggregate borrow areas and disposal areas for locations where cut and fill needs are not balanced.

Construction staging and material storage areas would be needed throughout the construction process. However, the locations for these areas and the staging and storage area requirements cannot be determined at this time. For impact analysis purposes, it has been assumed that construction staging and materials storage would occur predominantly within the boundaries generally defined by the northern and southern edges of the mainline subsections and within the boundaries of the interchange area subsections.

2. Required and Proposed Mitigation Measures: Construction Practices and Other Commitments

As part of the First Tier EIS process, the related Record of Decision and continuing discussions between MoDOT and federal and state agencies, corridor-wide mitigation proposals were and are being developed that would apply within SIU 2 and other SIUs. Each SIU would be subject to these requirements and the outcomes of these discussions. These requirements, standard MoDOT operating procedures and their use of Best Management Practices during construction are considered part of the Preferred Alternative.

In formal terms, MoDOT would comply with all applicable regulatory requirements and permit conditions that may be known during the preparation of this EA and those that may become final thereafter. In less formal terms, MoDOT is committed to various common practices to avoid, minimize and mitigate construction period impacts. Examples include the implementation of BMP's to control erosion, sedimentation and water quality degradation where grading of steep slopes is required and site restoration after earth moving activities.

Relevant mitigation measures of all types are described in this chapter and are considered with respect to characterizing corresponding impact findings. Mitigation measures presented at the end of each section of this chapter are presented, as necessary, to avoid, minimize or mitigate impacts of the Preferred Alternative.

M. Summary of Secondary and Cumulative Impacts

Secondary impacts are those that are caused by the Preferred Alternative, but could occur later in time or farther removed in distance, relative to the primary impacts of the Preferred Alternative. "Cumulative impacts result from the incremental impact of the Preferred Alternative when added to other past, present and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." These definitions are found in the Code of Federal Regulations described as 40 CFR Section 1508.7.

1. Area of Influence and Timeframe

Determining the boundaries and time period for analysis of cumulative impacts depends on the characteristics of the resources affected, the magnitude and scale of the projects' impacts and the environmental setting. To avoid extending data and analytical requirements beyond those relevant to decision-making, a practical delineation of the spatial and temporal factors is needed.

The general guideline for determining the basic Area of Influence (AOI) or spatial factor for a project is the construction disruption zone. For a highway project, the general AOI is the geographic extent to which the project, based on the facility's design life, would affect traffic levels and transportation service. However, the overall AOI for a highway project includes these areas and the individual areas that encompass the project's direct, indirect and cumulative effects. For SIU 2, the following apply to the AOI:

- The basic AOI (construction disruption zone) for SIU 2 includes the areas directly impacted by earthmoving activities, equipment and material storage and the broader area defined by factors such as the local roadway network that would be disrupted during construction and potential noise generation.
- The general AOI (traffic limits and transportation service) is set by the western and eastern termini of SIU 2 and various points north and south of I-70 associated with the crossroads that have direct and indirect interchange access to I-70 and the anticipated frontage road system.

- The overall AOI of the Improve I-70 Program would include I-70 from Kansas City to St. Louis and much of northern Missouri (refer to the following discussion of reasonably foreseeable projects).

The general guideline for determining the time period for analysis of past, present and reasonably foreseeable projects relates directly to the history of the corridor and anticipated changes resulting from the Preferred Alternative or other anticipated changes that are independent of the Preferred Alternative. Given the history of development along I-70, the most relevant time frame would be the 75 years between 1955 and 2030. Developments prior to 1955 were minor relative to changes since then and development beyond 2030 would be considered speculative.

2. Past, Present and Reasonably Foreseeable Projects

Consideration of cumulative effects requires identification of past, present and reasonably foreseeable projects within the AOI. Given the characteristics of the Preferred Alternative, alternatives and project site, there are two primary types of past, present and reasonably foreseeable projects that might have created, be creating, or would create impacts similar to those of the Preferred Alternative. Those project types could include road construction, reconstruction and maintenance or real estate development.

Based on a literature review and agency consultation and coordination, a list of the primary past, present and reasonably foreseeable projects in the AOI was developed. These projects created, are creating, or will create impacts similar to those that would be created by the Preferred Alternative.

Past project and activities are defined as those that took place since 1955, with larger and more recent projects typically being of more significance. The primary past projects that contribute to cumulative impact issues include: construction and maintenance of U.S. 40, I-70 and other major roads; intensification of agricultural activities in northern Missouri; residential, commercial, industrial and institutional development along I-70; and infrastructure (pipelines, transmission lines, communication towers, water and sewage treatment facilities) construction.

Active and ongoing projects are those that are under construction in 2004. Active and ongoing construction projects are limited within SIU 2. Some of the key ongoing activities that would have impacts similar to those associated with the proposed SIU 2 improvements are incidental maintenance and upgrades to I-70 and local roads and land development at I-70 interchanges and along existing frontage roads. Infrastructure construction such as the new six-inch water line that is being extended from Marshall into the area of the U.S. 65 Interchange is another example of an ongoing project.

Reasonably foreseeable projects and activities are those that are planned or anticipated based on approved or pending actions. Speculation that a project may occur in the future does not make the subject project reasonably foreseeable. Reasonably foreseeable projects that are expected to contribute to impacts caused by SIU 2 improvements include future improvements within SIU 1 and within SIUs 3 through 7 (Kansas City to St. Louis), other road maintenance and improvements and land development such as a subdivision on the south side of the I-70 Route K interchange, a potential hospital in Sweet Springs and a potential hotel and truck stop complex near the I-70/U.S. 65 interchange.

3. Secondary Effects of the Project

Secondary impacts, impacts caused by the Preferred Alternative that may occur later in time or occur in more distant locations relative to the primary impacts of the Preferred Alternative, would primarily relate to real estate development opportunities created by expanded interchange designs and the improved frontage road system.

Land development potential would increase in many locations because of improved access to increasing vehicle volumes in the future. Improved road conditions would incrementally support business viability and additional development density in some locations. As described in Section M of this Chapter, these secondary effects would not occur immediately and would occur in phases linked to construction phasing packages. Some land speculation prior to construction could be anticipated, but the period between selection of preferred alternatives and actual construction of induced developed could be ten years or more. Growth and growth inducement would be expected, but as always would be limited by a variety of other factors including zoning, comprehensive planning, lack of supporting infrastructure and free market economics.

Direct impacts from this future development would be similar to the land use, biological and visual impacts of the Preferred Alternative. The incremental loss of agricultural land, natural landscapes, habitats and similar impacts should be anticipated. These impacts could be addressed by local government planning efforts that unite future characteristics of I-70 with existing development patterns, economic development interests and community design and planning efforts.

4. Cumulative Effects of the Project

The Preferred Alternative would contribute to cumulative impacts in the overall AOI in many ways. The responsibility for characterizing these impacts is shared between the documentation contained in the First Tier EIS for I-70 and the documentation contained in the seven Second Tier project-specific NEPA documents for I-70 that are in progress at this time.

The First Tier EIS outlined cumulative effects as follows:

Cumulative impacts are the outcome of incremental consequences of an action when added to other past and projected future actions (40 CFR 1508.7). These impacts are less distinct than secondary impacts.

The First Tier EIS provided a general overview of cumulative impacts for the First Tier Improvement Study. The following is a summary of the impact issues addressed in the First Tier EIS:

- Future land development along the I-70 Study Corridor is a function of the distance from interchanges to the nearest community, the availability of public water and sewer services and the distance to a major metropolitan area. The development of new land is likely to occur in existing under-developed or agricultural lands. The location of future development along the I-70 Study Corridor will be highly dependent on the selected location of the new corridor as well as the location of current and future interchanges.

- The implementation of the build alternatives from the First Tier Study have the potential to result in secondary impacts to parkland due to improved transportation access. An increase in development may result in encroachment to existing resources, increased noise levels and visual impacts to some parkland that was previously somewhat remote.
- The conversion of a portion of existing farm property to new right of way may result in the loss of the entire farmed property as the owner chooses to sell the remaining farmland instead of continuing to farm the property. The construction of a new or improved roadway may act to increase growth and relocate development and expansion in the region.
- Secondary and cumulative impacts could result to terrestrial and aquatic ecosystems as a result of increased development in the study area.
- Secondary and cumulative impacts to threatened and endangered species are not expected as much of the undeveloped land adjacent to I-70 already exhibits substantial amounts of disturbance.
- The Widen Existing I-70 Strategy would cause secondary and cumulative impacts to visual quality along the I-70 Corridor.
- Secondary impacts to wetland and other waters of the U.S. may include sedimentation, changes in stream hydraulics and clearing of riparian habitats. The potential for increased growth may also impact wetlands and other waters of the U.S.

This EA and the other Second Tier NEPA documents provide a more focused evaluation than the First Tier EIS by characterizing various impacts in more detail and by providing aggregated impact data for the entire I-70 Program. The following is a summary of impact issues addressed in other sections of this chapter that would incrementally contribute to similar impacts in the project area and in the project's overall AOI. The background and context for these impacts is presented in Chapters III and IV.

- The Preferred Alternative would result in land use conversion from natural, agricultural and open space uses to more urban uses and later from secondary development directly and indirectly related to project construction, improved access, new land use opportunities and other factors. Incremental losses of natural, agricultural and open spaces lands in this area would contribute to similar losses across Missouri and contribute to statewide and national losses of prime agricultural land. Some of the indirect losses can be limited and/or managed by local governments using their land use authority and ability to guide development through community planning efforts. As described previously, local communities have many years to plan before land use changes are expected to occur. Coordinated community planning could be implemented to avoid, minimize and mitigate many land use impacts.
- The Preferred Alternative would displace residences and commercial, industrial and agricultural businesses and operations as a result of right of way and construction requirements. These displacements would temporarily reduce tax revenues and economic activity at the local level. This impact combined with other similar losses associated with the Improve I-70 Program could add up to a more regional economic impact, especially when combined with construction period disruptions that have the potential to temporarily shift spending patterns. However, these incremental impacts

would be spread out over time and would be offset to some degree by the expenditure of funds for labor and materials during construction of the I-70 improvements. Coordinated and proactive community economic development planning at the local level could be implemented to avoid, minimize and mitigate these adverse cumulative impacts.

- The Preferred Alternative would result in traffic delays from road construction activity and would incrementally contribute to similar delays anticipated within the other SIUs. The delays from two or more SIUs could occur at the same time or they could be spread out over time. Depending on the nature and timing of construction funding allocations, construction delays across Missouri could occur continuously from the initiation of construction through completion of all of the improvements. These delays would be minimized by the use of existing lanes during the construction of new lanes, except where crossovers are required.
- The Preferred Alternative would incrementally contribute air pollution emissions during construction and would allow for increased vehicle volumes, speeds and travel efficiency thereafter. Increased volumes, speeds and travel efficiency would have some benefits with respect to certain pollutants and would allow other pollutant emissions to increase. The anticipated contribution would not be expected to create non-attainment conditions, but would move certain locations closer to non-attainment. Air pollution emissions from automobile traffic are expected to increase over time as traffic volumes increase and urban development occurs with or without the I-70 improvements. Overall, future emissions and exposure concentrations would be expected to be worse without the Improve I-70 program.
- The Preferred Alternative would generate additional construction and operational noise at certain sensitive receptors in the vicinity of I-70 and the related road improvements. Noise levels at receptors that would not be displaced by the Preferred Alternative would be quite high relative to land use compatibility standards. These levels would be reached as a result of a wide variety of factors that generate vehicle volumes on I-70. The analysis in Section C accounts for the past, present and reasonably foreseeable traffic volumes and mitigation measures that are recommended.
- The Preferred Alternative would contribute directly and indirectly to changes in the visual character of the SIU 2 corridor and the rural nature of this portion of central Missouri. These changes began to occur in the 1950s and are expected to occur in the future as the advantages of living and working within SIU 2 increase over time. The Preferred Alternative includes measures to enhance the visual character of the new facilities, but it would require community planning and focused local development review efforts to manage visual changes anticipated along I-70 in the future.
- The Preferred Alternative would potentially contribute to soil erosion, sedimentation and potential water quality degradation that has occurred in the past, occurs now and can be expected in the future as a result of agricultural activities and land development. Impacts of this type can incrementally contribute to wetland and other aquatic habitat degradation. Measures to control these impacts are proposed by MoDOT.
- The Preferred Alternative would disrupt wildlife movement by increasing one of the many barriers for wildlife in the area and degrade habitats by incrementally converting native areas to roadway right of way and by inducing secondary

development that would add to habitat losses. Measures are proposed to replace sensitive habitat such as wetlands to offset this statewide impact.

- The Preferred Alternative would incrementally contribute to the loss of cultural resources in Missouri and would add to the potential for discovering and/or damaging previously unrecorded cultural resources of value. In some cases, these impacts are unavoidable. However, MoDOT is performing an extensive cultural resource effort to avoid, minimize and mitigate anticipated impacts for this SIU and the other SIUs.
- The Preferred Alternative requires acquisition of right of way that involves sites that formerly or currently handle hazardous waste and/or are associated with environmental contamination. This is required in SIU 2 and elsewhere along I-70. The acquisition of this right of way could incrementally increase construction worker exposure to contamination and/or result in a release of waste into the environment. However, the project does not create waste sites and would result in sites being cleaned up sooner than normal.
- The Preferred Alternative would incrementally impact utility systems in terms of demand growth and service to areas that are not currently served. The direct incremental impacts would be limited to electricity requirements for lighting and ITS facilities, telecommunication facilities for ITS systems and water systems for potable water, fire protection or landscaping purposes.

While none of the incremental impacts associated with implementation of the Preferred Alternative are considered significant on their own, the cumulative impacts of SIU 2 are considerable, especially in light of similar impacts from past, present and reasonably foreseeable improvements, especially those within the other SIUs.

As stated previously, the impacts of the I-70 Program were the subject of the First Tier EIS and are now the subject of ongoing NEPA documents for each SIU. To address these impacts, a statewide interagency coordination effort began during the First Tier Study. This interagency coordination effort is now underway through the development of a corridor-wide Enhancement Plan created by the I-70 Study Management Group for the Improve I-70 Program. The Enhancement Plan is the first step towards addressing statewide impact issues from the Improve I-70 Program.

Mitigation for the SIU 2 related impacts is presented in this document. Additional details associated with mitigation for cumulative impacts would be provided in the final NEPA documents for SIU 2 and the other SIUs.

N. Irreversible / Irretrievable Commitment Of Resources

An irreversible commitment of resources is defined as the loss of future options. The term applies primarily to the effects of use of nonrenewable resources such as minerals or cultural resources, or to those factors such as soil productivity that are renewable only over long periods. It could also apply to the loss of an experience as an indirect effect of a "permanent" change in the nature or character of the land. An irretrievable commitment of resources is defined as the loss of production, harvest, or use of natural resources. The amount of

production foregone is irretrievable, but the action is not irreversible. If the use changes, it is possible to resume production.

The Preferred Alternative would have irreversible impacts in relation to lost agricultural and biological productivity and lost and degraded characteristics of cultural resources as described in this chapter. Future options for using the highway median for alternative transportation such as high-speed rail would remain.

The primary irretrievable impacts of the Preferred Alternative would involve the use of energy, labor, materials and funds and the conversion of some lands from a natural condition through the construction of buildings and facilities. Irretrievable impacts would occur as a result of construction, facility operation and maintenance activities.

O. The Relationship Between Local Short-Term Uses Of The Human Environment And The Maintenance And Enhancement Of Long-Term Productivity

This section addresses the commitment of resources associated with the Preferred Alternative relative to the loss of long-term productivity associated with these commitments.

The Preferred Alternative would commit resources in the form of energy, labor, materials and funds over 20 years or more. The justification for these commitments at this time is described in Chapter I. Long-term productivity associated with SIU 2 relates to biological value as habitat and agricultural land and open space values associated with aesthetic quality and recreation. The Preferred Alternative would involve the use of lands where these values have already been compromised to some degree by I-70.

P. Unavoidable Adverse Impacts

There would be no significant, unavoidable, adverse impacts of the components of the Preferred Alternative. However, some adverse impacts would be expected. These impacts and corresponding mitigation measures are described throughout other sections of this chapter and are listed in the Summary of this EA.

Q. Overall Impacts and Comparison of the Interchange Alternatives

1. Aggregated Impacts of the Proposed Improvements and Preliminary Findings

All of the documentation in this EA and the findings presented here are preliminary and subject to agency and public review. Refinements to the analyses in this EA are expected to occur until the Final EA is completed and related decisions are made.

Table IV-1 (see Page IV-1) summarizes the aggregated impacts of the Preferred Alternative for each technical section of this chapter (Sections A through N).

A project involving improvements to approximately 60 miles (100 kilometers) of I-70, including 13 interchanges, frontage road improvements and the construction of various ancillary facilities would be expected to create adverse environmental impacts. This chapter describes those effects. One goal of this EA process is to characterize the magnitude of those impacts. Table IV-1 presents quantitative and qualitative characterizations of those impacts.

Based on the nature of the project, the planning that has occurred to date, the effects described in this chapter and the measures that have been taken or will be taken to mitigate environmental effects, a preliminary finding has been made that the Preferred Alternative would not result in significant effects and an Environmental Impact Statement under NEPA is not required.

2. Comparison of the Impacts of the Interchange Alternatives and Preliminary Findings

The following discussions and Table IV-12 summarize and compare the impacts of the interchange alternatives and present preliminary findings in relation to the preferred alternatives at each interchange location. All of the documentation in this EA and the findings presented here are preliminary and subject to agency and public review. Refinements to the analyses in this EA are expected to occur until the Final EA is completed and related decisions are made.

a. Comparison of the Alternatives at the Route 13 Interchange

Alternative A is a standard diamond interchange at the existing location whereas Alternative B is a Single Point Urban Interchange (SPUI) at the existing location. Although the SPUI design would handle traffic more efficiently than the standard diamond design, the projected traffic at this interchange does not warrant the $14,000,000 cost differential. Both alternatives would displace the same single business (Iron Horse Incorporated). Neither alternative would affect any residences. Regarding natural resources such as prime farmland, wetlands, floodplains and forested areas, both alternatives would have similar impacts.

Based on these preliminary findings, Alternative A is the recommended Preferred Alternative at the I-70/Route 13 Higginsville interchange.

b. Comparison of the Alternatives at the Route 23 Interchange

Similar to the I-70/Route 13 interchange, alternatives evaluated for the I-70/Route 23 interchange included the standard diamond design, Alternative A and the SPUI design, Alternative B. Because Route 23 passes under I-70, the cost differential of the SPUI versus the standard diamond is minimized. Implementation of Alternative B would cost approximately $2,000,000 more than the implementation of Alternative A. The benefits of implementing the SPUI design at this location outweigh this slight cost differential. The benefits of implementing Alternative B include fewer business displacements, fewer acres of prime farmland and linear distance of stream impacted and a minimized overall footprint. Based on these preliminary findings, Alternative B has been selected as the Preferred Alternative.

c. Comparison of the Alternatives at the Route 127 Interchange

Two alternatives were evaluated for the I-70/Route 127 interchange at Sweet Springs. Alternative A is the standard diamond design at the existing location. Alternative B is a half folded diamond at the existing location. The configuration of the half folded diamond is exactly the same as the diamond except for one of the sets of entrance/exit ramps is folded into one quadrant versus two. In this case, Alternative B minimizes potential impact to the proposed I-70 hospital site located in the northwest quadrant of the existing interchange by folding the westbound entrance and exit ramps into the northeast quadrant.

Alternative B would have more CRP impacts and one more residential displacement than Alternative A. The implementation of Alternative A or Alternative B would have similar impacts to wetlands, streams, forested lands and floodplains. For these reasons and the city's plans for a future medical center, Alternative B is the recommended preferred alternative at this location.

d. Comparison of the Alternatives at the U.S. 65 Interchange

Two alternatives were evaluated for the I-70/U.S. 65 interchange. Alternative A is the No Build alternative and would allow the existing cloverleaf design to remain in place. Alternative B is the standard diamond design that would introduce some form of stop or signal control into this interchange. Although implementation of Alternative A would be the least costly of the two alternatives, the substandard loop radii of the existing cloverleaf would eventually become a safety issue at this location. Although Alternative B would cost more to construct, its' construction would not displace any businesses or residences and would not require any new right of way.

Some of the benefits of Alternative A include the low cost and zero right of way requirements. Some of the deficiencies include substandard loop ramp radii, requiring traffic to rapidly change speed, substandard median shoulder widths and introduction of a concrete median barrier which reduces the clear zone for mainline I-70 from the typical section proposed for the I-70 corridor. Additionally, as the four quadrants of this interchange develop, traffic at the outer roads would increase, and could warrant signalization. Signals this close to the interchange would reduce the benefits of continuous flow traffic movement at the interchange.

For the diamond design, the ramp merges and diverges on I-70 were found to operate at a level of service of "C" or better in the year 2030. The ramp terminal intersections with U.S. 65 were analyzed as stop controlled and traffic signal controlled intersections. The intersections with a

stop control were found to operate at level of service (LOS) F, which is not acceptable. To provide acceptable at-grade intersection operation in the year 2030, traffic signals would be required to allow I-70 ramp traffic to access U.S. 65.

While the diamond interchange would provide acceptable intersection levels of service, some through U.S. 65 traffic and ramp traffic accessing or egressing from U.S. 65 would experience short delays due to the signal.

There are currently access breaks on U.S. 65 close to the existing cloverleaf interchange. If a large development is approved at one of the four quadrants, it is likely that one or more of these access breaks would be signalized sometime in the future. Based on these preliminary findings, Alternative B has been selected as the Preferred Alternative.

e. Comparison of the Alternatives at the Route 135/Route 41 Interchange

At the I-70/Route 135/41 interchange, two alternatives were evaluated. Alternative A is a standard diamond design at the existing location. Alternative B is also a standard diamond design but is offset approximately 1,660 feet (488 meters) west of the existing interchange. Alternative B was developed because this interchange is characterized by commercial developments in the southern quadrants and residential developments in the northern quadrants. The implementation of Alternative A would displace fewer business and would not require the reverse curve associated with Alternative B to tie back in to Route 135. This reverse curve would require non-standard frontage roads on the south side of I-70. In addition, the implementation of Alternative A would impact less CRP lands than implementation of Alternative B. Based on these preliminary findings, Alternative A is the recommended Preferred Alternative.

Table IV-12 Impact Comparison of Interchange Alternatives

EVALUATION FACTOR*	UNIT	INTERCHANGE ALTERNATIVES											
		No-Build	Preferred Interchange Alternative	I-70/Route 13		I-70/Route 23		I-70/Route 127		I-70/U.S. 65 Interchange		I-70 Route 135/41	
				Alt A	Alt B	Alt A	Alt B	Alt A	Alt B	Alt A	Alt B	Alt A	Alt B
ENGINEERING													
Length	miles		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Capital Cost (order of Magnitude)													
-New Construction	$million		99	$ 17	$ 31	$ 22	$ 26	$ 20	$ 20	$ 8	$ 20	$ 16	$ 15
-Right of Way	$million		60	$ 13	$ 13	$ 32	$ 30	$ 7	$ 8	$ -	$ 3	$ 6	$ 3
Total	$million		159	**$ 30**	**$ 44**	**$ 54**	**$ 56**	**$ 27**	**$ 28**	**$ 8**	**$ 23**	**$ 22**	**$ 18**
Right of Way Impact	Acres		288	**52**	**52**	**70**	**64**	**59**	**59**	**0**	**46**	**67**	**74**
TRAFFIC													
2030 Daily Traffic Volumes													
Traffic Operations (2030):													
-% Target LOC (Level C)	%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Travel Efficiences (2030):													
- Travel Times	Number	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
-Daily VMT	Number	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Change in 2030 Crashes:													
-PDO Crashes	Number	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
-Injury Crashes	Number	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
-Fatal Crashes	Number	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total	Number	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SOCIAL AND ECONOMIC													
Land Use:													
- Compatibility with Current Plans/Trends	Rating	NA	●	●	●	●	●	●	●	●	●	●	●
Displacements and Partial Takes:													
- Residences	Number	0	8 (12)	0 (0)	0 (0)	0 (1)	0 (1)	3 (8)	4 (7)	0 (0)	0 (1)	4 (3)	4 (3)
- Businesses	Number	0	12 (22)	1 (3)	1 (3)	4 (10)	3 (8)	4 (3)	4 (3)	0 (0)	0 (0)	4 (8)	5 (2)
Impacts to Existing I-70 Businesses:													
- During Construction	Rating	NA	●	●	●	●	●	●	●	●	●	●	●
- Long-Term	Rating	NA	◒	●	●	○	◒	◒	●	◒	◒	◒	◒
Environmental Justice	Rating	NA	●	●	●	●	●	●	●	●	●	●	●
ENVIRONMENTAL													
Air Quality	Rating	○	○	○	○	○	○	○	○	○	○	○	○
Noise	Rating	○	○	○	○	○	○	○	○	○	○	○	○
Parklands:													
- Refuges/Parks	Number	0	0	0	0	0	0	0	0	0	0	0	0
- Other Public Lands	Number	0	0	0	0	0	0	0	0	0	0	0	0
Floodplains	Acres	0	4.5	1.3	1.3	0	0	3.2	3.2	0	0	0	0
Wetlands	Acres	0	2.4	0	0	0	0	2.4	2.4	0	0	0	0
Threatened and Endangered	Number	0	0	0	0	0	0	0	0	0	0	0	0
CRP	Acres	0	5	0	0	0	0	2	4	0	0	1	10
WRP	Acres	0	2	0	0	0	0	2	2	0	0	0	0
Streams	Feet	0	3,692	0	-	-	2,718	-	635	0	0	339	-
Cultural Resources:													
- Cemetaries	Number	0	0	0	0	0	0	0	0	0	0	0	0
- National Register Sites	Number	0	0	0	0	0	0	0	0	0	0	0	0
- Historic Bridges	Number	0	0	0	0	0	0	0	0	0	0	0	0
- Eligible Archeological Sites	Number	0	TBD	0	0	0	0	0	0	0	0	0	0
Hazardous Waste Sites	Number	0	14	2	2	5	4	2	2	0	0	7	6

Table IV-12 Impact Comparison of Interchange Alternatives (Cont'd)

EVALUATION FACTOR*	UNIT	INTERCHANGE ALTERNATIVES											
		No-Build	Preferred Interchange Alternative	I-70/Route 13		I-70/Route 23		I-70/Route 127		I-70/U.S. 65 Interchange		I-70 Route 135/41	
				Alt A	Alt B	Alt A	Alt B	Alt A	Alt B	Alt A	Alt B	Alt A	Alt B
Visual Quality	Rating	○	○	○	○	○	○	○	○	○	○	○	○
Secondary Impacts	Rating	○	○	○	○	○	○	○	○	○	○	○	○

Rating Criteria

Benefits >> Potential Impacts	●
Benefits > Potential Impacts	◒
Benefits = Potential Impacts	○
Benefits < Potential Impacts	◑
Benefits << Potential Impacts	⊘
Avoidance Recommended	
Not Applicable	NA
To Be Determined	TBD

***** (x) indicates a partial take as defined in Chapter IV. This table does not include evaluation factors, displacement and partial take numbers from the mainline or the other eight standard interchanges.