

CHAPTER 3

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter discusses the effects of the alternatives on the human and natural environment. The effects are discussed for the No-Build Alternative, Geometric Improvements Alternative, Interchange Consolidations Alternative, and Preferred Alternative. The chapter includes a discussion of effects in subsections under 24 categories. For each category, background information is provided on the affected environment, describing existing conditions in the Study Area. For categories where the alternatives have a negligible impact, the discussion of resources and effects is brief. When the impacts to the Geometric Improvements Alternative, Interchange Consolidations Alternative, and Preferred Alternative are similar, the impacts are discussed for all three of these Build Alternatives. For more substantial impacts, the subsections contain a more detailed impacts analysis for each alternative. Figures of each alternative are located at the end of **Chapter 2**.

The width of the Study Area reflects the maximum potential area that improvements might have right of way impacts to homes, businesses, and resources. The impact could be property acquisition or construction impacts. However, effects such as noise level changes, air quality, and the effects of access changes may occur outside of the immediate Study Area. All of these effects will be considered.

When applicable, mitigation measures to avoid, minimize, or mitigate harm to environmental resources are also discussed. For each category, a brief discussion of how the analysis was completed, the effect each alternative has, and mitigation measures if necessary are provided.

What does Mitigation mean?

Mitigation is defined as the elimination, reduction, or control of the negative environmental effects of a project, and includes measures to address any damage to the environment caused by such effects through replacement, restoration, compensation, or any other means.

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3.1 Land Use and Zoning

This section describes the existing land use conditions in the Study Area, and future land use plans for various parts of the study area. It also describes the effects of the various alternatives for I-70 in the Study Area.

3.1.1 Land Use Planning and Transportation

Regional plans for the Kansas City area clearly see a link between land use and transportation. The *Transportation Outlook 2040* plan for Kansas City metropolitan region developed by the Mid-America Regional Council (MARC) cites a Livable Communities Partnership developed jointly by the U.S. Environmental Protection Agency (EPA), the U.S. Department of Housing and Urban Development (HUD), and the U.S. Department of Transportation (DOT). The goal of the partnership is to guide infrastructure improvements to help develop vibrant sustainable communities and neighborhoods rather than detract from them.

MARC has incorporated these ideas into their regional planning efforts by using Creating Quality Places, a set of principles that outline the steps needed to develop quality neighborhoods, balanced transportation networks, and sustainable mixed use commercial areas. These principles include:

- Homes and Neighborhoods
 - Choice and diversity of housing opportunities
 - Linkages to surrounding areas
 - Reinvestment
 - Identity that defines specific neighborhoods
 - Green spaces
 - Pedestrian and bicycle friendly
 - Opportunities to live and work in the same area
- Commercial Development
 - Mixed use
 - Scale
 - Durability of materials and construction
 - Walkability
 - Convenient parking
- Transportation and Public Places

What is Land Use?

Land Use is the type of activity that occurs on real property. Categories can include residences, wholesale and retail businesses, services, employment and open spaces such as parks.

What is meant by mixed use?

Mixed Use is the combination of residential, commercial, industrial, office, institutional, or other land uses in a single building or set of buildings.

- Multimodal transportation
- Quality local streets
- Safe bicycle and pedestrian access
- Transit supportive development
- Public spaces
- Environmental Quality
 - Water and air quality
 - Resource efficiency
 - Natural elements

Coordinated transportation and land use planning seeks to develop transportation projects that enhance the above principles.

3.1.2 Specific Area Plans and Existing Land Use Conditions in the Study Area

Planners for the City of Kansas City, Missouri have divided Kansas City into 18 unique geographical sub areas. The Study Area is part of four of these sub areas, shown in **Figure 3.1-1**. The following sections provide a review of the four relevant area plans.

Greater Downtown Area Plan



Statue of President Harry S. Truman on Truman Road at The Paseo

The Greater Downtown Area Plan focuses on the core of Kansas City. The eastern edge of this plan is Woodland Avenue, midway between The Paseo and Brooklyn Avenue. The plan calls for downtown (high) density residential uses and parks for the area immediately north of I-70. The plan supports a doubling of the downtown population. South of I-70, the plan calls for downtown mixed use and park land. The park spaces to the north and Parade Park on the south side of Truman Road are consistent with this plan. The American Jazz Museum is located just south of Parade Park. St. Stephen Baptist Church is located at the northwest corner of Truman Road and The Paseo. East of The Paseo are several automotive service establishments.

Heart of the City Area Plan

The Heart of the City Area Plan includes all of the Study Area south of I-70 east of Woodland Avenue as far east as the Blue River. The Heart of the City Area Plan includes several smaller area studies within its limits, including:

- Downtown East
- Santa Fe Area
- Washington Wheatley Neighborhood
- Prospect Corridor

The Heart of the City Area Plan continues the mixed use classification for the Truman Road Corridor, the lone exception being a park designation for The Grove Park. The plan supports industrial uses paralleling the I-70 corridor to a point just south of 23rd Street. The planned land use east of Jackson Avenue is low density residential. Exceptions are a strip of mixed use residential commercial along 27th Street and a parks designation for Cypress Park just west of Lister Avenue. Designations for neighborhood and community level mixed use and retail surround the intersection of 31st Street and Van Brunt Boulevard. The plan designates a thin strip of I-70 right of way as Open Space between Woodland Avenue and Van Brunt Boulevard.

The plan calls for industrial uses for most of the lands south of U.S. 40. The plan calls for neighborhood mixed use commercial on the north side of U.S. 40 west of I-70. There are a significant number of churches throughout the area, and one, a Church of God in Christ congregation, is immediately adjacent to the I-70 corridor just north of 24th Street.

The Washington Wheatley neighborhood lies within an area bounded on the north by 18th Street, on the west by Prospect Avenue, on the east by I-70 and on the south by 27th Street. The neighborhood has over 95 acres of vacant land and suffers from disinvestment and deterioration of the housing stock. Residents view the neighborhood as redeveloping.

Currently, Truman Road east of Woodland Avenue features mixed retail and service uses, industrial warehousing, and a U.S. Post Office just east of Brooklyn Avenue. There is a



Apartment Building at 27th Street and Benton Boulevard in Washington Wheatley Area

Kansas City Police Credit Union on the east side of Chestnut Avenue immediately south of I-70. A Union Pacific Railway line crosses the Study Area near 18th Street. On the north side of 18th Street just west of I-70 are a large lumber yard and a wholesale grocery delivery, both of which significantly contribute to truck traffic entering I-70 through the 18th Street service interchange.

Indiana Park is located at the edge of the Study Area along the east side of Indiana Avenue north of 25th Street.

Moving along the Study Area corridor to the south, the land uses are primarily residential with small service businesses mixed in. On 27th Street just west of I-70 are a church and a barber college. Open space exists along the eastbound off-ramp of I-70 to its terminus at 30th Street. East of the Jackson Curve, Cyprus Park is between Cypress and Lister Avenues south of I-70. There is a church facility on the north side of 30th Street just west of the Van Brunt Boulevard intersection with I-70. A car wash, a gasoline station with a mini-market, and a Pizza Hut restaurant are along Van Brunt Boulevard south of the I-70 interchange.



House in the Truman Plaza Area. (Source: Truman Plaza Area Plan)

The land uses on the south side of I-70 from Van Brunt Boulevard to U.S. 40 are a mix of residential with some service light industrial such as used auto parts, auto repair, and awning manufacturing. A motel is adjacent to the interchange of U.S. 40 and I-70. The Heart of the City Planning Area ends at the Blue River just east of the above intersection.

Truman Plaza Area Plan

The Truman Plaza Area Plan covers north and east of I-70, extending from Woodland Avenue in the west to the Blue River in the east. The area extends to the north several miles beyond the study area. The Truman Plaza Area Plan incorporated and superseded plans for several smaller areas, including:

- Garfield Independence Plaza Area Plan
- Budd Park Area Plan
- East 23rd Street Area Plan
- Blue Valley Neighborhood Plan

The Truman Plaza Area Plan identified five primary goals:

- Promote safe and clean neighborhoods and decrease the crime rates
- Promote Truman Plaza as the ethnic and cultural hub of Kansas City, Missouri
- Attract businesses and organizations that increase employment for area residents
- Capitalize on and encourage a walkable layout of the community and promote multi-modal transportation
- Emphasize, promote, and protect the attractive and historic character of the area's neighborhoods and corridors



East 23rd Neighborhood Sign

The Truman Plaza Area Plan classified neighborhoods as: stable, transitional or needing rehabilitation. Bordering the Study Area, the neighborhoods are all transitional or needing rehabilitation.

Medium density residential land uses are along the north side of I-70 east of Woodland Avenue to a point east of Prospect Avenue. East of there, land uses are primarily residential low density. The plan designates mixed use commercial along Truman Road east of I-70. A strip of light industrial land parallels the Union Pacific Railway corridor crossing I-70 just south of Truman Road. There is a designated strip of mixed use neighborhood (neighborhood support retail) along 27th Street just east of I-70. Medium and lower density residential classification is the norm until Topping Avenue east of Van Brunt Boulevard. East of there, the land is primarily open space parks, notably Blue Valley Park west of the Blue River.



U.S. Postal Service Facility at 18th Street and Indiana Avenue

There is a church at the corner of 14th Street at Michigan Avenue just north of I-70. The City Union Mission Family Center at the north side of I-70 at Wabash is a major existing community service activity center. Prospect Avenue just north of I-70 has two car sales centers, two gasoline service stations and a fast food franchise. A very large (in excess of 300,000 square feet) regional United States Postal Service (USPS) facility is north of 18th Street east of the I-70 interchange at that location. This facility generates a significant volume of truck traffic. Just south of this facility, there are two churches at the corner of 19th Street and Askew Avenue. Additional churches

exist on 25th Street east of Cleveland Avenue and on 27th Street just west of Jackson Avenue. East of Van Brunt Boulevard, a pedestrian bridge spans I-70 at Oakley Avenue.

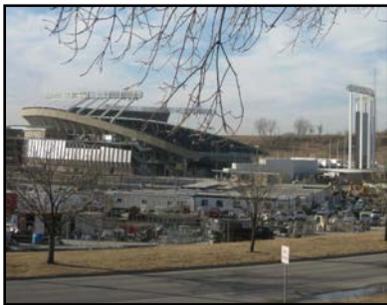


Housing in Truman Plaza Area

Sports Complex Area Plan

East of the Blue River is the Sports Complex Area. Industrial use lands lie between the Blue River and I-435. The dominant feature of this area is the Harry S. Truman Sports Complex featuring the home of the Kansas City Chiefs, Arrowhead Stadium, and Kauffman Stadium, the home of the Kansas City Royals. The plan classifies the lower portion of this area as commercial intensive, with a residential area at the northern edge. From that point east to Blue Ridge Cutoff, the plan calls for commercial uses.

3.1.3 Land Use Affects of Alternatives



Kauffman Stadium

No-Build Alternative

Under the No-Build Alternative, the current design configuration of the I-70 corridor in the Study Area would remain as is. No-Build traffic projections suggest that congestion will degrade performance and air quality will worsen. Traffic entering the highway may back up on the on-ramps back to the local roadways. Traffic seeking alternatives to a congested freeway may seek alternate routes on local streets.

The roadway system would not help provide improved transportation for residents to reach employment destinations. Increased congestion would also delay public transit and emergency services vehicles. Safety improvements resulting from geometric improvements to interchanges and the Benton and Jackson curves would not occur. Crash rates would likely not decrease.

Geometric Improvements Alternative

The Geometric Improvements Alternative will have minimal effect on the overall existing land use and zoning in the Study Area as it aims to make improvements within the existing right of way to the extent possible. The Geometric Improvements Alternative is consistent with the four area plans discussed above. While this alternative will cause the relocation of some businesses, residences, and a church, these impacts are not substantial enough to disrupt the overall existing or future land use patterns. **Section 3.4 Relocations** discusses the impacts more specifically. The improvements may help draw businesses to the Study Area by improving traffic flow and capacity on I-70 and traffic flow on the local streets around I-70. All four of the area plans discussed above discuss redevelopment, keeping existing businesses, and attracting new businesses. More specific impacts are discussed below.

Through traffic will be encouraged to use I-70 rather than local streets due to the construction of new auxiliary lanes between The Paseo and Prospect Avenue.

This alternative will remove 14th Street between Olive Street and Wabash Avenue with a cul-de-sac at the end of Olive Street both north and south of I-70. This is immediately adjacent to the City Union Mission Family Center. While immediate access to the freeway will be lost, traffic movements past the center will be calmed and local access will still be available from Olive Street and Wabash Avenue. To the south, closure of 14th Street between the Prospect Avenue on-ramp and Montgall Avenue does not affect primary access to adjacent properties which is from the north/south roadways.

Improving the Benton curve will increase traffic capacity of I-70 and help discourage cut-through traffic in the adjacent neighborhoods.

Removal of the Benton Boulevard access may affect access to a church and a small restaurant north of the study area, but alternative access is available from 12th and 13th Streets. Redesign of the 18th Street interchange will shift the footprint

of the interchange to the east, affecting the A-J Manufacturing Building on the south side of 18th Street east of Askew Avenue. Askew Avenue and 19th Street will no longer have direct access to the interchange ramp, but will have cul-de-sacs, which may affect convenient access to the two churches there.

Improving the Jackson curve and adding auxiliary lanes between 27th Street and Manchester Trafficway will increase the through traffic capacity of I-70 and help discourage cut-through traffic in the adjacent neighborhoods.

The replacement of bridges throughout the Study Area will improve the access across I-70 for cyclists and pedestrians, as well as improving their safety. These improvements could encourage more residents to use these alternate modes of transportation.

Improvements to the interchange of I-70 and I-435 will be within the footprint of the current right of way and will not affect land use.

Figure 2-1 in **Chapter 2** shows the changes discussed above.

Interchange Consolidations Alternative

The Interchange Consolidations Alternative will have minimal effect on the overall existing land use and zoning in the Study Area as it aims to make improvements within the existing right of way to the extent possible. The Interchange Consolidations Alternative is consistent with the three of the four area plans discussed above. The Washington Wheatley Neighborhood Group, whose neighborhood plan is a subset of the Heart of the City Plan, disagrees with the closures of interchanges. Their plan is built around the existing access points from I-70 into the neighborhood. This alternative will also cause the relocation of some businesses, residences, and a church. While the Interchange Consolidations Alternative impacts more existing land uses than the other Build Alternative, these impacts are still not substantial enough to disrupt the overall existing or future land use patterns. **Section 3.4 Relocations** discusses the impacts more specifically. The improvements may help draw businesses to the Study Area by improving traffic flow and capacity on I-70

and traffic flow on the local streets around I-70. All four of the area plans discussed above discuss redevelopment, keeping existing businesses, and attracting new businesses. More specific impacts are discussed below.

Closure of the Brooklyn Avenue interchange will affect travel patterns of motorists accessing destinations on Truman Road and 14th Street. Through traffic will be encouraged to use I-70 rather than local streets due to the construction of new auxiliary lanes between those remaining interchanges. More traffic to those locations will arrive from the interchanges at The Paseo and Prospect Avenue.

This alternative will remove 14th Street between Olive Street and Wabash Avenue with a cul-de-sac at the end of Olive Street both north and south of I-70. This is immediately adjacent to the City Union Mission Family Center. While immediate access to the freeway will be lost, traffic movements past the center will be calmed and local access will still be available from Olive Street and Wabash Avenue. To the south, closure of 14th Street between the Prospect Avenue on-ramp and Montgall Avenue does not affect primary access to adjacent properties which is from the north/south roadways.

Improving the Benton curve will increase traffic capacity of I-70 and help discourage cut-through traffic in the adjacent neighborhoods. Removal of the Benton Boulevard on-ramp may affect access to a church and a small restaurant north of the Study Area, but alternative access is available from 12th and 13th Streets.

This alternative recommends closure of the 18th Street and Indiana Avenue interchanges combined with new access from the 23rd Street interchange. This new access would occur along the Askew Avenue alignment. This change would affect a number of residences and two churches fronting on that, due to increased traffic.

Closure of the 27th Street interchange would also likely increase traffic on the new access from the 23rd Street interchange. This may extend north to 18th Street. This may be mitigated by improving the Jackson Avenue interchange to a

full movement interchange, directing some traffic to the arterial roadways (Jackson Avenue and 27th Street predominantly).

Improving the Jackson curve and adding auxiliary lanes between Jackson Avenue and Van Brunt Boulevard will increase the through traffic capacity of I-70 and help discourage cut-through traffic in the adjacent neighborhoods.

Proposed closure of the Manchester Trafficway interchange primarily affects an industrial and warehousing area to the south. Proposed new access from Stadium Drive and I-70 to the east may address these issues, as well as improvements to the Manchester Trafficway and U.S. 40 interchange.

The replacement of bridges throughout the Study Area will improve the access across I-70 for cyclists and pedestrians, as well as improving their safety. These improvements could encourage more residents to use these alternate modes of transportation.

Improvements to the interchange of I-70 and I-435 will be within the footprint of the current right of way and will not affect land use.

Figure 2-2 in **Chapter 2** shows the changes discussed above.

Preferred Alternative

The Preferred Alternative is a combination of the Geometric Improvements and the Interchange Consolidation Alternatives. Like the other two, Build Alternatives it will have minimal effect on the overall existing land use and zoning in the Study Area as it aims to make improvements within the existing right of way to the extent possible. The Preferred Alternative is consistent with the four area plans discussed above. While the Preferred Alternative will cause the relocation of some businesses and residences, these impacts are not substantial enough to disrupt the overall existing or future land use patterns and are fewer than the other two Build Alternatives. **Section 3.4 Relocations** discusses the impacts more specifically. The improvements may help draw businesses to the Study Area by improving

traffic flow and capacity on I-70 and traffic flow on the local streets around I-70. All four of the area plans discuss redevelopment, keeping existing businesses, and attracting new businesses. More specific impacts are discussed below.

Closure of the Brooklyn Avenue interchange will affect travel patterns of motorists accessing destinations on Truman Road and 14th Street. Through traffic will be encouraged to use I-70 rather than local streets due to auxiliary lanes between those remaining interchanges. More traffic to those locations will arrive from the interchanges at The Paseo and Prospect Avenue.

This alternative will remove 14th Street between Olive Street and Wabash Avenue with a cul-de-sac at the end of Olive Street both north and south of I-70. This is immediately adjacent to the City Union Mission Family Center. While immediate access to the freeway will be lost, traffic movements past the center will be calmed and local access will still be available from Olive Street and Wabash Avenue. To the south, closure of 14th Street between the Prospect Avenue on-ramp and Montgall Avenue does not affect primary access to adjacent properties which is from the north/south roadways.

Improving the Benton curve will increase traffic capacity of I-70 and help discourage cut-through traffic in the adjacent neighborhoods.

The improvements to the Truman Road westbound on-ramp and connecting it to Benton Boulevard run adjacent to Freeway Park Community Gardens and should not affect any land uses.

The addition of a westbound separated auxiliary lane between 18th and 23rd Street will provide increased access to adjacent properties to encourage redevelopment.

Addition of cul-de-sacs to Mersington Avenue south of 27th Street, Myrtle Avenue north of 27th Street, and on Spruce Avenue, Cypress Avenue, and Elmwood Avenue north of I-70 are all needed to accommodate improvements to and connections between the Jackson Avenue and 27th Street

interchanges, as are closures of 29th Street between Wenzel Avenue and I-70 and 28th Street between Cypress Avenue and Elmwood Avenue.

Multiple access points to roadways in the neighborhood will still exist, and the neighborhood will be somewhat insulated from freeway cut through traffic. Some minor out of direction traffic might result.

The replacement of bridges throughout the Study Area will improve the access across I-70 for cyclists and pedestrians, as well as improving their safety. These improvements could encourage more residents to use these alternate modes of transportation.

Improvements to the interchange of I-70 and I-435 will be within the footprint of the current right of way and will not affect land use.

Figure 2-3 in **Chapter 2** shows the changes discussed above.

3.2 Community and Neighborhood Affects

This section discusses how the Build Alternatives will affect the local residents, neighborhoods, and community facilities. This section includes a demographic profile of who lives in the Study Area, how they travel, and where community facilities are located.

3.2.1 How Was an Assessment of the Study Area Developed?

The Study Team used information from the Mid-America Regional Council (MARC) and the U.S. Census Bureau to develop a general demographic profile of the residents in the Study Area. Information on ethnicity/race, age, gender, income, education, and employment are displayed in the charts and tables that follow in this section.

When available, the Study Team used 2010 Census Block (ethnicity/race) or Block Group level data; however, not all data needed to complete the demographic profile was available at the Census Block or Block Group level. In those cases, data was collected at the Census Tract level. There are 338 blocks that are either entirely or partially in the Study Area, 114 of these blocks have people living in them. There are 16 block groups that are either entirely or partially within the Study Area and ten census tracts. As a means of comparison, the Study Team also completed demographic profiles for the City of Kansas City, Jackson County, and the State of Missouri.

3.2.2 Who Lives in the Study Area and Surrounding Jurisdictions?

There are 4,175 residents living in the 114 blocks that make up the Study Area. Of these residents, nearly 80 percent are minorities. The largest minority group being African American, approximately 61 percent of the residents are classified as African American. A detailed discussion on minority populations within the Study Area can be found in Section 3.5 Environmental Justice.

What is a Census Tract?

A census tract is a small, relatively permanent statistical subdivision of a county or equivalent entity, delineated for data presentation. Census tract boundaries are delineated with the intention of being stable over many decades, so they generally follow relatively permanent visible features.

What is a Block Group?

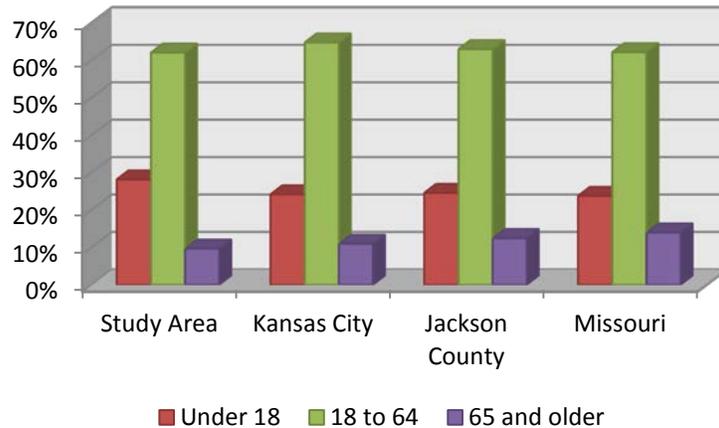
A block group is the smallest geographic unit for which the Census Bureau tabulates sample data. A block group consists of all the blocks within a census tract with the same beginning number. Example: block group 3 consists of all blocks within a 2000 census tract numbering from 3000 to 3999.

The population in the Study Area is slightly younger than Kansas City, Jackson County, and Missouri. The Study Area has a higher population under 18 years old and a lower population over 18 years old. **Table 3.2-1** and **Figure 3.2-1** show the age and gender profiles for the Study Area and the surrounding jurisdictions.

Table 3.2-1 Age and Gender Assessment				
	Study Area	Kansas City	Jackson County	Missouri
Total Persons	17,268	459,787	674,158	5,988,927
Under 18	28.2%	24.2%	24.6%	23.8%
18 to 64	62.1%	64.8%	63.0%	62.2%
65 and older	9.7%	11.0%	12.5%	14.0%
Male	46.8%	48.5%	48.3%	49.0%
Female	53.2%	51.5%	51.7%	51.0%

Source: U.S. Census Bureau, 2010 Census Summary File 1

Figure 3.2-1 Age Assessment



What is a Median Household Income?

Median household income is the income earned by the household for whom half of their neighbors make more money and half make less.

3.2.3 What are the Economic Characteristics of Study Area Residents?

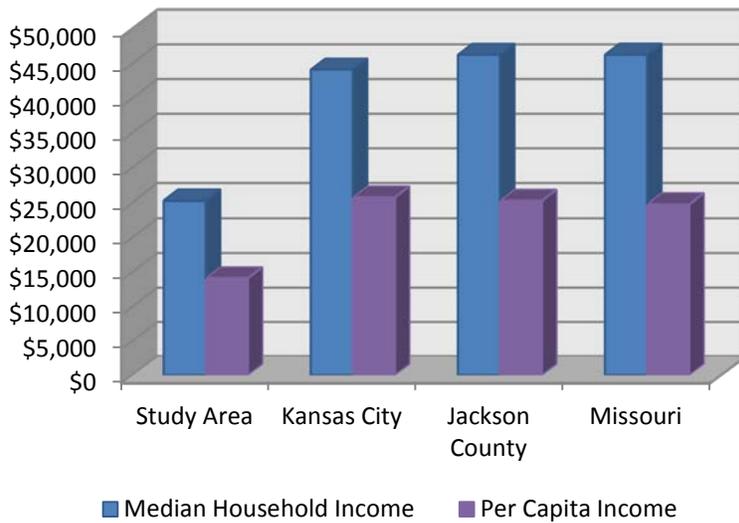
The Study Team examined two ways of measuring income; median household income and per capita income. **Table 3.2-2** and **Figure 3.2-2** show the income levels and poverty status profiles for the Study Area and the surrounding jurisdictions.

The median household income and the per capita income are lower in the Study Area than the surrounding jurisdictions. The residents in the Study Area had a median household income of \$25,251 and a per capita income of \$14,117.

Table 3.2-2 Economic Characteristics Comparison				
	Study Area	Kansas City	Jackson County	Missouri
Median Household Income	\$25,251	\$44,113	\$46,252	\$46,262
Per Capita Income	\$14,117	\$25,683	\$25,213	\$24,724
Individuals Below Poverty Level	26.8%	18.1%	15.7%	14.0%

Source: U.S. Census Bureau, ACS 2006 - 2010 5 Year Estimate

Figure 3.2-2 Income Levels



What is a Per Capita Income?

Per capita income is measured by adding all of the incomes reported for an area together and dividing by the number of people in that area.

3.2.4 What are the Education Levels of Residents in the Study Area?

Education levels were measured for population 25 years old and over. They were not consistent between the Study Area and the surrounding jurisdictions. Overall education levels are lower in the Study Area compared to the surrounding jurisdictions. **Table 3.2-3** shows the education profile for the Study Area, Kansas City, Jackson County, and Missouri.

The percent of residents who earned a high school diploma (including equivalency) or higher were significantly lower in the Study Area than the surrounding jurisdictions, as was the percent of residents who earned a bachelor’s degree or higher.

According to the U.S. Census Bureau, approximately 67 percent of residents in the Study Area earned a high school diploma, compared to approximately 87 percent in Kansas City, Jackson County, and Missouri. In addition, approximately ten percent of residents in the Study Area earned a bachelor's degree or higher compared to nearly 30 percent in Kansas City, 27 percent in Jackson County, and 25 percent in Missouri.

Table 3.2-3 Education Levels				
	Study Area	Kansas City	Jackson County	Missouri
Population 25 years and over	14,983	300,129	439,574	3,906,865
Less than 9th grade	6.2%	4.2%	3.6%	4.7%
9th to 12th grade, no diploma	16.5%	9.4%	9.1%	9.2%
High school graduate or equivalent	31.1%	27.3%	30.1%	32.6%
Some college, no degree	21.6%	22.7%	23.8%	22.0%
Associate's degree	4.7%	6.9%	6.6%	6.6%
Bachelor's degree	6.3%	18.8%	16.9%	15.8%
Graduate or professional degree	3.8%	10.8%	10.0%	9.2%
Percent high school graduate or higher	67.4%	86.4%	87.3%	86.2%
Percent Bachelor's degree or higher	10.1%	29.6%	26.9%	25.0%

Source: U.S. Census Bureau, ACS 2006 – 2010 5 Year Estimate

3.2.5 What are the Employment Characteristics of the Study Area?

What is the Labor Force?

The Labor Force consists of all people 16 and over who are working or are actively looking for work. Individuals in the labor force include those in the armed forces, civilians employed, and civilians unemployed.

Employment Status is measured for the population 16 years old and over for individuals in the labor force and those not in the labor force. Civilians who are unemployed include those who do not have a job, have actively looked for a job in the prior four weeks, and are currently available to work. **Table 3.2-4** and **Figure 3.2-3** show the employment profile for the Study Area and the surrounding jurisdictions.

Section 3.6 Economics has updated information on regional unemployment.

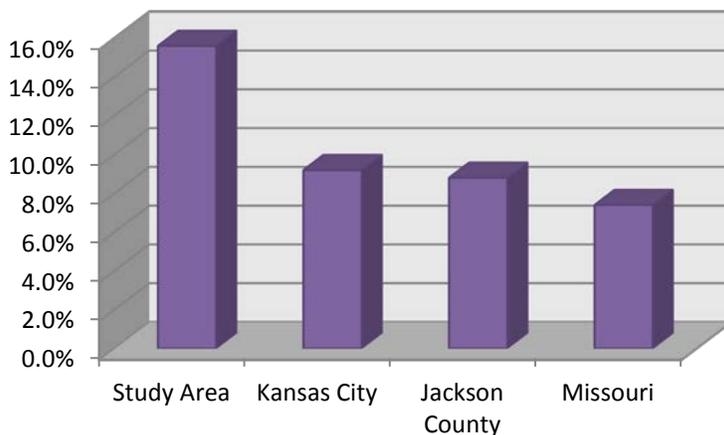
Table 3.2-4 Employment Status				
	Study Area	Kansas City	Jackson County	Missouri
Population 16 years and over	18,708	354,716	520,175	4,664,019
In the labor force	54.9%	69.3%	68.2%	65.2%
Employed	45.5%	62.8%	62.1%	59.9%
Unemployed Rate	15.6%	9.2%	8.8%	7.4%

Source: U.S. Census Bureau, ACS 2006 - 2010 5 Year Estimate

The Study Area has less residents 16 years old and over in the labor force compared to the surrounding jurisdictions. However, more of those in the labor force are unemployed in the Study Area than in Kansas City, Jackson County, and Missouri. The unemployment rate in the Study Area was approximately 16 percent, nearly double the unemployment rate of the surrounding jurisdictions.

The Bureau of Labor Statistics (BLS) monthly estimates of unemployment rates indicate that since the U.S. Census Bureau's 2010 estimate the unemployment rates in Kansas City, Jackson County, and Missouri have decreased. According to the BLS, the unemployment rates in 2012 were 8.7 percent in Kansas City (in Jackson County), 7.9 percent in Jackson County, and 7.1 percent in Missouri.

Figure 3.2-3 Unemployment Rate



3.2.6 How Do People Travel in the Study Area and Surrounding Jurisdictions?

Driving alone is by far the most common source of transportation to and from work for residents in the Study Area, as well as the surrounding jurisdictions. **Table 3.2-5** shows the means of transportation to work for the Study Area, Kansas City, Jackson County, and Missouri. While nearly the same percentage of workers drive alone or carpool to work in the Study Area and the surrounding jurisdictions, a much higher percentage of residents in the Study Area utilize public transportation than the surrounding jurisdictions. The Kansas City Area Transportation Authority (KCATA) currently has three fixed bus transit routes with nearly 40 buses per day that travel on I-70 in the Study Area between downtown Kansas City and other communities. In addition, the KCATA has eight fixed bus routes that cross I-70 within the Study Area. **Figure 3.2-4** shows the bus routes in the Study Area.

Table 3.2-5 Means of Transportation to Work				
	Study Area	Kansas City	Jackson County	Missouri
Workers 16 years and over	9,533	218,562	316,448	2,752,405
Drive alone	76.9%	80.5%	81.9%	80.7%
Carpool	9.5%	9.3%	9.0%	10.3%
Public transportation	8.5%	3.7%	0.8%	1.5%
Walk	1.4%	2.1%	1.6%	2.0%
Other means of transportation	2.2%	1.3%	1.2%	1.2%
Work at home	1.5%	3.1%	3.5%	4.2%

Source: U.S. Census Bureau, ACS 2006 - 2010 5 Year Estimate

3.2.7 Describe the Local Community Facilities

There are a variety of local community facilities within the I-70 Study Area, such as schools, churches, emergency services, and community centers. This section discusses the existing community facilities that are a key part of community and neighborhood cohesion. **Figure 3.2-4** at the end of this chapter shows the location of the community facilities.

Churches

There are nine churches located in the Study Area:

- St. Stephen Baptist Church, 1414 E Truman Road
- House of Refuge Pentecostal Church, 1332 Michigan Avenue
- Faith Worship and Love Ministries, 3100 E 13th Street
- New Testament Pentecostal Church, 1833 Askew Avenue
- Galilee Baptist Church, 3601 E 19th Street
- Bales Temple Church of God in Christ, 2340 Bales Avenue
- New Hebron Missionary Baptist Church, 2702 Mersington Avenue
- Christ is King Nondenominational Church, 4021 E 27th Street
- Miracle Valley Ministries, 5240 E 30th Street



Galilee Baptist Church

In addition, the Fellowship of Christian Athletes headquarters is located in the Study Area at 8701 Leeds Road.

Schools

There are no schools located in the Study Area. The closest schools to the Study Area are:

- Manual Career Technical Center, 1215 E Truman Road, 150 feet south of the Study Area
- East High School, 1924 Van Brunt Boulevard, 0.9 miles east of the Study Area
- Lincoln College Preparatory Academy, 2111 Woodland Avenue, 0.8 miles west of the Study Area
- Wheatley Elementary School, 2415 Agnes Avenue, 1000 feet west of the Study Area
- KIPP Endeavor Academy, 2700 E. 18th Street, 1100 feet south of the Study Area



House of Refuge Pentecostal Church

Colleges and Universities

There is one college located in the Study Area, the Metro Barber College at 3801 E 27th Street. Vatterott College was previously in the Study Area, but has closed.

Libraries

There are no libraries located in the Study Area. The closest library to the Study Area is the Kansas City Public Library L.H. Bluford Branch, 3050 Prospect Avenue, 0.8 miles southwest of the Study Area.

Hospitals

There are no hospitals in the Study Area. The closest hospitals to the Study Area are Truman Medical Center and Children's Mercy Hospital near 23rd Street and Holmes Street, which are both about one mile southwest of the Study Area. In addition, the Kansas City VA Medical Center is located less than a half mile south of the Study Area at Linwood Boulevard and Chelsea Avenue.



Fire Station 18

Emergency Service Facilities

There are no police stations or fire stations in the Study Area; however, the former Kansas City, Missouri Police Department (KCPD) Training Center and the KCPD Service Station are located in the Study Area near the Prospect Avenue interchange.

The Kansas City Fire Department and Police Department are the key emergency service providers for the Study Area. The closest fire stations to the Study Area are Station 10 at 1515 E 9th Street and Station 18 at 3211 Indiana Avenue. Both of these fire stations are within a half mile of the Study Area. The closest police station to the Study Area is the East Patrol Division at 5301 E 27th Street. The KCPD is currently building a new East Patrol Division station that will be farther out of the Study Area at 26th Street and Olive Street.



Indiana Park

Park and Recreational Areas

There are five park and/or recreational areas located within the Study Area. The five parks are:

- The Parade Park
- The Grove Park
- Indiana Park

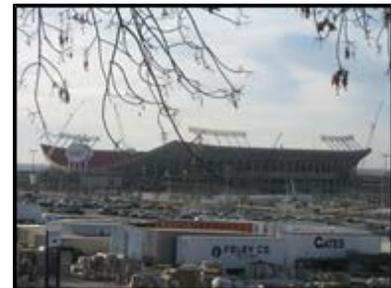
- Cypress Park
- Van Brunt Park

Also in the Study Area is the Freeway Park Community Gardens located at 14th Street and Indiana Avenue and the Harry S. Truman Sports Complex located at I-70 and Blue Ridge Cutoff.

Additional information on the parks and recreational areas is located in **Section 3.3 Public Lands and Facilities**.

Community Facilities

There are no community centers in the Study Area; however the Theron B. Watkins Residential Council and the City Union Mission Family Center are both located in the Study Area. The closest community center to the Study Area is the Gregg Klice Community Center, 1600 John “Buck” O’Neil Way, 1,000 feet south of the Study Area.



Arrowhead Stadium in the Harry S. Truman Sports Complex

Bicycle and Pedestrian Facilities

There are 19 roadways that cross over or under the I-70 corridor in the Study Area, of those 16 include sidewalks. All of these 16 sidewalks, but one connects sidewalks on either side of I-70. The only crossing that does not connect is the sidewalk on the Lister Avenue bridge. In addition, there are two pedestrian bridges in the Study Area. The pedestrian bridges are located east of Van Brunt Boulevard and west of Lister Avenue. **Table 3.2-6** lists all of the crossings, including the pedestrian bridges, the side of the cross street that sidewalks are present on, and the condition of the sidewalk as of March 2012. **Figure 3.2-5** shows the location of the crossings in the Study Area.

There are three identified on-street bike lanes available throughout the Study Area according to the MARC Bikeway and Trail Map. These on-street bike lanes are along Woodland Avenue, Benton Boulevard, and Blue Ridge Cutoff.

Table 3.2-6 Pedestrian Crossings			
Cross Street	Sidewalk	Condition*	ADA Ramps Present at all Crossings
The Paseo	Both sides	Improvements Needed	Yes
Woodland Avenue	Both sides	Good	No
Brooklyn Avenue	Both sides	Good	Yes
Prospect Avenue	Both sides	Good	Yes
Chestnut Avenue	Both sides	Good	No
Benton Boulevard	Both sides	Good	No
Truman Road	Both sides	Good	No
18 th Street	Both sides	Improvements Needed	No
23 rd Street	Both sides	Improvements Needed	Yes
Cleveland Avenue	Both sides	Improvements Needed	Yes
27 th Street	Both sides	Good	Yes
Jackson Avenue	Both sides	Good	No
Lister Avenue	East side	Improvements Needed	No
Van Brunt Boulevard	East side	Good	Yes
Stadium Drive**	East side	Good	No
Blue Ridge Cut-off	West side	Good	Yes
Pedestrian bridge east of Van Brunt Boulevard	N/A	Good	N/A
Pedestrian bridge west of Lister Avenue	N/A	Improvements Needed	N/A

*Good condition is based on visual inspection for cracking, heaving, sinking, or other maintenance needs of the sidewalk.
 **There is a sidewalk on the bridge however; there are no sidewalks along Stadium Drive connecting to the bridge.

Section 3.1 discusses the type of land uses that make up the Study Area.



Pedestrian Bridge West of Lister Avenue

3.2.8 How will the Alternatives Affect Communities and Neighborhoods within the Study Area?

The following paragraphs discuss the anticipated effects of the alternatives on existing neighborhoods and community facilities. Many of the potential impacts of the alternatives on neighborhoods such as relocations, noise, air quality, travel patterns, and visual appearance are discussed in detail in other sections of this document. These Affects will be mentioned briefly here and readers will be directed to the other sections.

Strong neighborhoods are those with an identity, where neighbors have easy access to each other and are familiar with one another. Transportation projects can impact neighborhoods by relocating residents, dividing the neighborhood, removing local businesses, and creating an atmosphere that discourages neighbors from interacting with each other.

All Build Alternatives will affect existing neighborhoods. The Study Team took into consideration the number of relocations and modified the design of the Build Alternatives through the use of retaining walls. MoDOT will continue to work with local communities and neighborhoods to reduce and minimize neighborhood impacts as much as possible.

No-Build Alternative

The No-Build Alternative will affect the neighborhoods surrounding the existing corridor as increased congestion will make it more difficult to live near I-70. Without improvements, local residents can expect increased congestion leading to increased noise and air quality issues. These Affects are discussed in more detail in **Section 3.10 Noise** and **Section 3.11 Air Quality**.

Increased congestion will lead to the use of alternative routes which are often local roads through neighborhoods which will make it more difficult for local residents to access local businesses and community facilities.

Geometric Improvements Alternative

The Geometric Improvements Alternative will potentially require 42 residential and five commercial displacements. When businesses are displaced, residents may have to travel farther to go the bank or buy a car. The relocation impacts are discussed in more detail in **Section 3.4 Relocations**.

The Geometric Improvements Alternative will not impact any schools, colleges and universities, libraries, hospitals, or park and recreational areas.



Houses in the Study Area

The Geometric Improvements Alternative will require land from five churches in the Study Area; one of the five will need to be relocated. The four churches that the alternative will need land from are; Galilee Baptist Church, Bales Temple Church of God in Christ, New Hebron Missionary Baptist Church, and Christ is King Nondenominational Church. The New Testament Pentecostal Church will need to be relocated. The Geometric Improvements Alternative will also require land from the City Union Mission property. It will require approximately 2,000 square feet of right of way from the southeast corner of the property, but it will not impact the building, parking lot, or any recreation areas. Nor will it require relocation.

The Geometric Improvements Alternative will not impact any emergency service facilities. The improvements proposed as part of the Geometrics Improvement Alternative could improve emergency access and response times along I-70. The Study Team met with officials from the Kansas City Police Department on March 14, 2013 regarding impacts to emergency services from the Build Alternatives. They indicated that improvements to the Benton and Jackson Curves were important, as well as other improvements.

What is a Conflict Point?

A conflict point is the point where pedestrians/cyclists and vehicular traffic cross paths.

As discussed in **Chapter 2 Alternatives Considered**, Geometric Improvements Alternative will decrease congestion along I-70. This would improve travel for residents in the Study Area who utilize I-70 to get to work or other destinations. In addition, it would improve travel for residents who ride transit that utilizes I-70 in the Study Area.

By closing the Benton Boulevard on-ramp, the Geometric Improvements Alternative eliminates a conflict point between pedestrians/cyclists and vehicles. This improves safety for both pedestrians/cyclists and motorists.

The Geometric Improvements Alternative may also improve the pedestrian facilities in the Study Area by making them more accessible in accordance with Title V of the Americans with Disabilities Act of 1990 (ADA). MoDOT's Environmental Policy Guide (EPG) states that "whether a project is considered new construction, an alteration or maintenance to an existing facility is important in determining how the

Americans with Disabilities Act applies. However, it is MoDOT's policy to provide and upgrade pedestrian accommodations on projects when and where it is possible and appropriate" and "in accordance with ADA, when an alteration is made to a roadway on which pedestrian facilities (sidewalks, pedestrian grade separations, curb ramps, etc.) exist on Missouri Highways and Transportation Commission right of way, each altered element or space within the limits or scope of the project shall comply with the applicable requirements for new construction to the maximum extent feasible".

The Study Team completed an analysis of the difference in travel times from a variety of locations throughout the Study Area and beyond between the No-Build Alternative and the three Build Alternatives. **Table 3.2-7** at the end of the chapter provide the results of this analysis. The Geometric Improvements Alternative has one route that the travel time increases compared to the No-Build Alternative. The increase in travel time was one minute. This route is highlighted in yellow in **Table 3.2-7**. Additional information on the changes in travel patterns and accessibility due to the Geometric Improvements Alternative is discussed in **Section 3.1 Land Use** and **Section 3.6 Economics**.

The Geometric Improvements Alternative may also have Environmental Justice, noise, air quality, and visual effects on residents in the adjacent neighborhoods. These Affects are discussed in more detail in **Sections 3.5 Environmental Justice, 3.7 Visual Affects, 3.10 Noise, and 3.11 Air Quality**.

Interchange Consolidations Alternative

The Interchange Consolidations Alternative will potentially require 62 residential and eight commercial displacements. The relocation impacts are discussed in more detail in **Section 3.4 Relocations**.

The Interchange Consolidations Alternative will not impact any schools, colleges and universities, libraries, hospitals, or park and recreational areas.

The Interchange Consolidations Alternative would require land from five churches in the Study Area; one of the five will need to be relocated. The four churches that the alternative will need land from are; House of Refuge Pentecostal Church, Galilee Baptist Church, New Hebron Missionary Baptist Church, and Christ Is King Nondenominational Church. The Bales Temple Church of God in Christ will need to be relocated.



Sidewalk along west side of Brooklyn Avenue

The Interchange Consolidations Alternative will not impact any emergency service facilities. It could impact how emergency service providers access I-70. At the meeting with Kansas City Police Department officials, they indicated that even though the current East Patrol Division station is located on 27th Street that the closure of 27th Street interchange is not a major concern; nor would it be a concern for the new East Patrol campus along as the improvements at the 23rd Street and Jackson Avenue interchanges are carried forward. The interchange closures that did concern KCPD officials are the closure of both the Truman Road and the 18th Street interchanges. They indicated that if both of these interchanges were closed it could impede police from accessing I-70 efficiently.

The Interchange Consolidations Alternative will require land from the City Union Mission property. Similar to the Geometric Improvements Alternative, it will require approximately 2,000 square feet of right of way from the southeast corner of the property, but it will not impact the building parking lot, or any recreation areas. Nor will it require relocation.

The Interchange Consolidations Alternative will also decrease congestion along I-70. This would improve travel for residents in the Study Area who utilize I-70 to get to work or other destinations. In addition, it would improve travel for residents who ride transit that utilizes I-70 in the Study Area.

By closing interchanges, the Interchange Consolidations Alternative eliminates conflict points between pedestrians/cyclists and vehicles. This improves safety for both pedestrians/cyclists and motorists. The Interchange Consolidations Alternative will eliminate nine conflict points.

Like the Geometric Improvements Alternative, the Interchange Consolidations Alternative may also improve the pedestrian facilities in the Study Area by making them more accessible in accordance with ADA as outline in MoDOT's EPG.

The analysis completed by the Study Team of the difference in travel times between the No-Build Alternative and the three Build Alternatives indicated that the Interchange Consolidations Alternative has nine routes that the travel time increases compared to the No-Build Alternative. These increases in travel time range from one to three minutes. These routes are highlighted in yellow in **Table 3.2-7**. Additional information on the changes in travel patterns and accessibility due to the Interchange Consolidations Alternative is discussed in **Section 3.1 Land Use** and **Section 3.6 Economics**.

Concerns were raised from the public that the Interchange Consolidations Alternative would isolate the communities along the Study Area by closing interchanges.

The Interchange Consolidations Alternative may also have Environmental Justice, noise, air quality, and visual effects on residents in the adjacent neighborhoods. These Affects are discussed in more detail in **Sections 3.5 Environmental Justice, 3.7 Visual Affects, 3.10 Noise, and 3.11 Air Quality**.

Preferred Alternative

The Preferred Alternative will potentially require 31 residential and six commercial displacements. The relocation impacts are discussed in more detail in **Section 3.4 Relocations**.

The Preferred Alternative will not impact any churches, schools, colleges and universities, libraries, hospitals, or park and recreational areas.

The Preferred Alternative will not impact any emergency service facilities. Like the Geometric Improvements Alternative, the improvements proposed as part of the

Preferred Alternative could improve emergency access and response times along I-70. Access to and from I-70 should not be impacted with the Preferred Alternative.



City Union Mission Family Center

The Preferred Alternative will require land from the City Union Mission property. Similar to the other two Build Alternatives, it will require approximately 2,000 square feet of right of way from the southeast corner of the property, but it will not impact the building parking lot, or any recreation areas. Nor will it require relocation.

Like the other two Build Alternatives, the Preferred Alternative will also decrease congestion along I-70. This would improve travel for residents in the Study Area who utilize I-70 to get to work or other destinations. In addition, it would improve travel for residents who ride transit that utilizes I-70 in the Study Area.

By closing the Brooklyn Avenue interchange, the Preferred Alternative eliminates a conflict point between pedestrians/cyclists and vehicles. This improves safety for both pedestrians/cyclists and motorists.

Like the other two Build Alternatives, the Preferred Alternative may also improve the pedestrian facilities in the Study Area by making them more accessible in accordance with ADA as outline in MoDOT's EPG.

The analysis completed by the Study Team of the difference in travel times between the No-Build Alternative and the three Build Alternatives indicated that the Preferred Alternative has six routes that the travel time increases compared to the No-Build Alternative. These increases in travel time range from one to five minutes. These routes are highlighted in yellow in **Table 3.2-7**. Additional information on the changes in travel patterns and accessibility due to the Preferred Alternative is discussed in **Section 3.1 Land Use** and **Section 3.6 Economics**.

The Preferred Alternative may also have Environmental Justice, noise, air quality, and visual effects on residents in the adjacent neighborhoods. These Affects are discussed in more detail in **Sections 3.5 Environmental Justice, 3.7 Visual Affects, 3.10 Noise, and 3.11 Air Quality**.

3.3 Public Lands and Facilities

This section discusses the potential affects the proposed alternatives would have on the public lands and facilities protected under Section 4(f) of the Department of Transportation Act or Section 6(f) of the Land and Water Conservation Act.

3.3.1 Public Parks within the Study Area

Public lands and facilities include parks and community centers. There are five parks located in the Study Area, all owned by the City of Kansas City Missouri Parks and Recreation Department. These parks are shown on **Figure 3.2-4** and include the following:

- The Parade Park is a 20.99 acre park located at Paseo Boulevard and Truman Road. Its amenities include the Parade Memorial, a playground, a lighted ball diamond, an asphalt running track, four lighted tennis courts, and the Black Archives.
- The Grove Park is located at Benton Boulevard and Truman Road. The park is 11.33 acres and its amenities include a playground, a swimming pool, a wading pool, a spray ground, and two ball diamonds (one lighted).
- Indiana Park is located at 25th Street and Indiana Avenue. The park is 2.38 acres and its amenities include a playground and a ball diamond.
- Cypress Park is 5.19 acres located at 29th Street and Cypress Avenue. Amenities include a playground, a pavilion, and parking.
- Van Brunt Park is 13.2 acres located in Van Brunt Boulevard. This park has sidewalks and trees.

All of the parks qualify for protection under Section 4(f) because they are publicly owned. Parade Park also qualifies for protection under Section 6(f).

3.3.2 Community Facilities within the Study Area

There are no community facilities that will be affected by the Build Alternatives.



Playground at Parade Park



Swimming Pool at Grove Park

What is Section 4(f)?

Section 4(f) of the Department of Transportation Act of 1966 states that no transportation project should be approved which requires the use of land from a public park, recreation area, wildlife and waterfowl refuge, or historic site unless there is no feasible or prudent strategy to the use of such land.

3.3.3 What Other Public Lands Are in the Study Area?

What is Section 6(f)?

Section 6(f) of the Land and Water Conservation Act prohibits the conversion of any property acquired or developed with the assistance of the land and water conservation funds to anything other than public outdoor recreation use without the approval of the Secretary of the Department of the Interior.

In addition to the five publicly owned parks, there are three boulevards with segments in the Study Area. These three are part of the Kansas City Parks and Boulevard System that is owned by the City of Kansas City and overseen by the Kansas City Parks and Recreation Department. The Parks and Recreation Department has produced a set of standards for the system, the purpose of which is to preserve, protect, and extend the Parks and Boulevard System as first envisioned by the first board of Park Commissioners and George Edward Kessler in 1893. These standards include landscape and aesthetic guidelines and traffic design and engineering guidelines. The Parks and Boulevard System was designed by George E. Kessler following the City Beautiful Movement and includes 132 miles of boulevards and parkways. The boulevards that are a part of the Parks and Boulevard System qualify for Section 4(f) as a park/recreation facility. The boulevards with segments in the Study Area are:



Benton Boulevard

The Paseo: The Paseo runs from approximately Lexington Avenue to East 79th Street. It covers 19 roadway miles and includes 223 acres of parkland mostly within the median of the parkway. The amenities within The Paseo include several pergola structures and eleven memorial/monuments. The median and its amenities are only accessible to pedestrian traffic. There is no parking lot available. The limits of The Paseo within the Study Area are from approximately East Truman Road north to East 14th Street.

Benton Boulevard: Benton Boulevard runs from St. John Avenue to Swope Parkway. It covers 6 roadway miles and includes 68 acres. The limits of Benton Boulevard within the Study Area are from approximately East 17th Street north to East 13th Street.

Van Brunt Boulevard: Van Brunt Boulevard runs from Gladstone Boulevard to East 31st Street. It covers 5 roadway miles and includes 49 acres. The amenities within Van Brunt Boulevard include one contemporary sculpture. The median and its amenities are only accessible to pedestrian traffic. There is no parking lot available. The limits of the Van Brunt

Boulevard within the Study Area are from East Linwood Boulevard north to near East 28th Street.

In addition, there is one park owned by MoDOT, which does not qualify for protection under Section 4(f), located in the Study Area. This park is the Freeway Park Community Gardens, which is 2.27 acres located at 14th Street and Indiana Avenue. It is not considered a Section 4(f) facility and is owned by MoDOT and leased to the City of Kansas City as a neighborhood garden.



Freeway Park Community Gardens sign

3.3.4 Harry S. Truman Sports Complex

The Harry S. Truman Sports Complex is located in the Study Area at I-70 and Blue Ridge Cutoff. The complex includes Ewing M. Kauffman Stadium home of the Kansas City Royals Major League Baseball team and Arrowhead Stadium home of the Kansas City Chiefs National Football League team. It is owned by Jackson County and managed by the Jackson County Sports Complex Authority.

3.3.5 How Will the Alternatives Affect Public Lands and Facilities and Potential Section 4(f) or 6(f) Properties?

All reasonable attempts were made to avoid effects to Section 4(f) and 6(f) properties. If these properties could not be avoided, efforts were made to minimize effects to these properties. The following provides the effects to The Paseo, Benton Boulevard, Van Brunt Boulevard, and Cypress Park.

No-Build Alternative

The No-Build Alternative will have no effect on any of the properties protected under Section 4(f) or 6(f) or any other public land.



Median Along Van Brunt Boulevard

Geometric Improvements Alternative:

The following are the anticipated affects of the Geometric Improvements Alternative:



The Paseo

- The Paseo - Pushing the angle of the ramp termini out and separating them from the outer road would result in temporary effects to the medians immediately on either side of the bridge. Possible interchange reconfiguration and bridge reconstruction would result in permanent effects to the median under the bridge. These impacts would result in minor right-of-way acquisition, but would not impact any of the amenities in the median nor the use of the parkway or its amenities.
- Benton Boulevard - the on-ramp from Benton Boulevard to westbound I-70 will be removed, but connectivity across I-70 on Benton Boulevard will remain. The removal of the on-ramp will not impact the use of the boulevard.
- Van Brunt Boulevard - Improving the grade of the ramps and removing the outer road access to Van Brunt Boulevard on the north side of I-70 would result in temporary or minor permanent effects to the median immediately adjacent to the ramp termini. The ramps are being replaced in the same location so effects would be minor. Also, improvements would allow for the addition of sidewalks on both sides of Van Brunt Boulevard. These impacts would result in minor right-of-way acquisition, but would not impact any of the amenities in the median nor the use of the boulevard or its amenities.
- Cypress Park - To avoid effects to Cypress Park, walls will be needed at this location; their heights would be minimal.



Van Brunt Boulevard Median

Interchange Consolidations Alternative

The following are the anticipated effects of the Interchange Consolidations Alternative:

- The Paseo - Pushing the angle of the ramp termini out and separating them from the outer road would result

in temporary affects to the medians immediately on either side of the bridge. Possible interchange reconfiguration and bridge reconstruction would result in permanent affects to the median under the bridge. These impacts would result in minor right-of-way acquisition, but would not impact any of the amenities in the median nor the use of the parkway or its amenities.

- Benton Boulevard - the on-ramp from Benton Boulevard to westbound I-70 will be removed, but connectivity across I-70 on Benton Boulevard will remain. The removal of the on-ramp will not impact the use of the boulevard.
- Van Brunt Boulevard - Improving the grade of the ramps and removing the outer road access to Van Brunt Boulevard on the north side of I-70 would result in temporary or minor permanent affect to the median immediately adjacent to the ramp termini. The ramps are being replaced in the same location so effects should be minor. These impacts would result in minor right-of-way acquisition, but would not impact any of the amenities in the median nor the use of the boulevard or its amenities. Also, improvements allow for the addition of sidewalks on both sides of Van Brunt Boulevard.
- Cypress Park - To avoid affects, walls will be needed at this location and their heights should be minimal.

In addition, the Interchange Consolidations Alternative could affect the route persons traveling on I-70 use to reach or leave The Parade Park. With the closure of the Brooklyn Avenue interchange, those traveling I-70 would have to use The Paseo or Prospect Avenue interchanges. There will be no impacts to The Parade Park, its parking lot, or entrance.

Preferred Alternative

The following are the anticipated effects of the Preferred Alternative:

- The Paseo - Pushing the angle of the ramp termini out and separating them from the outer road would result in temporary effects to the medians immediately on

What is a De Minimis impact?

A De Minimis impact under Section 4(f) is one that, after taking into account any measures to minimize harm (such as avoidance, minimization, mitigation or enhancement measures), results in either: a Section 106 finding of no adverse effect or no historic properties affected on a historic property; or a determination that the project would not adversely affect the activities, features, or attributes qualifying a park, recreation area, or refuge for protection under Section 4(f).

either side of the bridge. Possible interchange reconfiguration and bridge reconstruction would result in permanent effects to the median under the bridge. These impacts would result in minor right-of-way acquisition, but would not impact any of the amenities in the median nor the use of the parkway or its amenities.

- Benton Boulevard - The Benton Boulevard Bridge over I-70 will be replaced on fill. The on-ramp to westbound I-70 will tie in at new location and new ramp termini from Truman Road will tie in at this same location. It is possible that a signal will need to be added here, which could change the visual quality of Benton Boulevard. These impacts will not impact the use of the boulevard. This Build Alternative will provide more green space around Benton Boulevard, while connectivity across I-70 including the sidewalks on both sides will remain.
- Van Brunt Boulevard - Improving the grade of the ramps and removing the outer road access to Van Brunt Boulevard on the north side of I-70 would result in temporary or minor permanent effect to the median immediately adjacent to the ramp termini. The ramps are being replaced in the same location so impacts should be minor. These impacts would result in minor right-of-way acquisition, but would not impact any of the amenities in the median nor the use of the boulevard or its amenities. Also, improvements allow for the addition of sidewalks on both sides of Van Brunt Boulevard.
- Cypress Park - To avoid effects, walls will be needed at this location and their heights should be minimal.

In addition, the Preferred Alternative could affect the route persons traveling on I-70 use to reach or leave The Parade Park. With the closure of the Brooklyn Avenue interchange, those traveling I-70 would have to use The Paseo or Prospect Avenue interchanges. There will be no impacts to The Parade Park, its parking lot, or entrance.

How will Project Affects to Public Lands be Mitigated?

The three boulevards are protected under Section 4(f) of the Department of Transportation Act. The Study Team met with representatives of the Kansas City, Missouri Parks and Recreation Department to discuss the impacts and the potential determination of a De Minimis impact. The representatives from the Parks and Recreation Department agreed with the Study Team that the impacts were minor in nature and would not impact the use of the boulevards or their features. This determination will be made prior to the Final EIS after the Preferred Alternative, its impacts to the boulevards, and the Study Team's determination of a De Minimis impact are presented to the Kansas City Parks and Recreation Board. A letter to FHWA stating the Parks and Recreation Department's support of this determination will be signed by Mark McHenry from the board and provided with the Final EIS. Any mitigation needed as a result of the impacts to the three boulevards will be developed through the Section 4(f) De Minimis process.

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3.4 Relocations

This section discusses the relocations the Build Alternatives could require in the Study Area. Relocations include residential, commercial, and community facility relocations. Residential relocations are homes that must be purchased including single-family homes, duplexes, mobile homes, apartments, and condominiums. Commercial relocations are businesses that must be purchased including stores, offices, restaurants, and industrial sites. Community facility relocations include churches, schools, colleges, community centers, and government facilities. Relocations are necessary when a Build Alternative requires enough property that the home, business, or community facility is impacted and can no longer remain at that location.

The assessment of potential relocations was made based on Build Alternative footprints overlaid onto 2010 aerial photography and supplemented using the most recent Jackson County Assessor's data. The number of relocations may be reduced during final design.

What is the Uniform Relocation and Real Property Acquisition Policies Act?

Assistance provided to those being relocated as a result of improvements to I-70 would be in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act (The Uniform Act), as amended.

The Uniform Act, as well as Missouri state law, requires that just compensation be paid to the owner of private property taken for public use. The appraisal of fair market value is the basis of determining just compensation to be offered the owner for the property to be acquired.

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 a displacement dwelling for at least 90 days may also be eligible to receive up to \$31,000

What is an appraisal?

An appraisal is defined in the Uniform Act as a written statement independently and impartially prepared by a qualified appraiser setting forth an opinion of defined value of an adequately described property as of a specific date, supported by the presentation and analysis of relevant market information.

for a replacement housing payment which includes the amount by which the cost of a replacement dwelling exceeds the acquisition cost of the displacement dwelling, and incidental closing costs. A tenant, who has occupied a displacement dwelling for at least 90 days, may be eligible to a payment not to exceed \$7,200 for either a rental or down payment assistance.



Any displaced business, farm operation, or nonprofit organization which qualifies as a displaced person is entitled to payment of their 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 \$25,000 for expenses incurred in reestablishing their 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 one-time payments for actual moving and related expenses, and actual 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 \$40,000.

MoDOT will take into consideration access to public transportation, jobs, and schools during the relocation process.

What are the Relocations Required for Each Alternative?

No-Build Alternative

The No-Build Alternative will not require any relocations of residences, businesses, or community facilities.

Geometric Improvements Alternative

The Geometric Improvements Alternative would require residential, commercial, and community facility relocations. In total, the Geometric Improvements Alternative would require the potential relocation of 42 residences (34 buildings), five businesses, and one community facility. **Figure 3.4-1** at the end of this chapter shows the locations of the potential

relocations caused by the Geometric Improvements Alternative.

The residential relocations include not only single-family residences, but multi-family residences as well. The Geometric Improvements Alternative would cause the potential relocation of eight duplexes, a total of 16 residences. **Table 3.4-1** shows the assessed value of the relocated residences for each of the Build Alternatives.

The five businesses that would be relocated are:

- A-J Manufacturing Co., 3601 E. 18th Street
- US Plating and Surface Finishing, 1341 Montgall Avenue
- Royal Auto Sales, 3816 E. 27th Street
- The Big Lot, 1304 Prospect Avenue
- Aluminum Fabricators Inc., 3416 E. 23rd Street

The Aluminum Fabricators Inc. property is currently vacant. **Section 3.6** Economics discusses the number of employees that will be affected by the business relocations.

The community facility that would be relocated is the New Testament Pentecostal Church.

Table 3.4-2 provides a comparison of the property impacts for each of the Build Alternatives.

Interchange Consolidations Alternative

The Interchange Consolidations Alternative would require residential, commercial, and community facility relocations. In total, the Interchange Consolidations Alternative would require the potential relocation of 62 residences (54 buildings), eight businesses, and one community facility. **Figure 3.4-2** at the end of this chapter shows the locations of the potential relocations caused by the Interchange Consolidations Alternative.

The residential relocations include not only single-family residences, but multi-family residences and manufactured homes. The Interchange Consolidation Alternative would

cause the relocation of eight duplexes, a total of 16 residences and eight manufactured homes in the Bunker Hill Mobile Home Park and the Mayfair Mobile Home Park. **Table 3.4-1** provides a summary of the value of the relocated residences for each of the Build Alternatives.

The eight businesses that would be relocated are:

- Kansas City Police Credit Union, 2800 E. 14th Street
- US Plating and Surface Finishing, 1341 Montgall Avenue
- Car Credit, 2716 E. 14th Street
- Royal Auto Sales, 3816 E. 27th Street
- The Big Lot, 1304 Prospect Avenue
- Aluminum Fabricators Inc., 3416 E. 23rd Street
- Brown Industries, 2323 Indiana Avenue
- Commercial Lithographing Co., 1226 Chestnut Avenue

The Aluminum Fabricators Inc. property is currently vacant. **Section 3.6** Economics discusses the number of employees that will be affected by the business relocations.

The community facility that would be relocated is the Bales Temple Church of God in Christ.

Table 3.4-2 provides a comparison of the property impacts for each of the Build Alternatives.

Preferred Alternative

The Preferred Alternative would require residential and commercial relocations. In total, the Preferred Alternative would require the potential relocation of 31 residences (26 buildings) and six businesses. **Figure 3.4-3** at the end of this chapter shows the locations of the potential relocations caused by the Preferred Alternative.

The residential relocations include not only single-family residences, but multi-family residences. The Preferred Alternative would require the relocation of five duplexes, a total of 10 residences. **Table 3.4-1** provides a summary of the value of the relocated residences for each of the Build Alternatives.

The six businesses that would be relocated are:

- Kansas City Police Credit Union, 2800 E. 14th Street
- US Plating and Surface Finishing, 1341 Montgall Avenue
- Car Credit, 2716 E. 14th Street
- Royal Auto Sales, 3816 E. 27th Street
- The Big Lot, 1304 Prospect Avenue
- Aluminum Fabricators Inc., 3416 E. 23rd Street

The Aluminum Fabricators Inc. property is currently vacant. **Section 3.6** Economics discusses the number of employees that will be affected by the business relocations.

Table 3.4-2 provides a comparison of the property impacts for each of the Build Alternatives.

Table 3.4-1 Assessed Value of Relocated Homes by Zip Code						
		64106	64108	64127	64128	64129
Geometric Improvements Alternative	\$0 to \$50,000	0	0	26	8	0
	\$50,000 to \$100,000	0	0	0	0	0
	\$100,000 to \$150,000	0	0	0	0	0
	\$150,000 to \$200,000	0	0	0	0	0
	\$200,000+	0	0	0	0	0
Interchange Consolidation Alternative	\$0 to \$50,000	0	0	38	7	1
	\$50,000 to \$100,000	0	0	0	0	0
	\$100,000 to \$150,000	0	0	0	0	0
	\$150,000 to \$200,000	0	0	0	0	0
	\$200,000+	0	0	0	0	0
Preferred Alternative	\$0 to \$50,000	0	0	19	7	0
	\$50,000 to \$100,000	0	0	0	0	0
	\$100,000 to \$150,000	0	0	0	0	0
	\$150,000 to \$200,000	0	0	0	0	0
	\$200,000+	0	0	0	0	0
Source: Jackson County Assessor. Note: Assessed values of duplexes are for both sides of the duplex and no assessed values of mobile homes were available.						

Table 3.4-2 Potential Property Impacts			
	Geometric Improvements	Interchange Consolidations	Preferred
Partial Property Takes	140	174	140
Full Property Takes (No Relocations)	26	39	20
Relocations (Residential, Commercial & Community Facilities)	48	71	37
Right of Way (Acres)*	30	51	29
*At this time potential permanent and temporary construction easements are not known.			

What Replacement Property is Available?

The residences and businesses that could be displaced may choose to relocate within or outside the Study Area. There are sites available within the Study Area for both residential and business relocations. During the relocation process MoDOT would work to ensure that the homes persons are relocating to are of comparable quality, size, and price to their existing home.

There are homes throughout the Study Area for sale. As of March 2013, there are a total 287 homes for sale in the five zip codes that encompass the Study Area. This includes single-family homes and multi-family homes. **Table 3.4-3** illustrates the number of houses for sale on the multiple listings service operated by the National Association of Realtors, www.realtors.com. The table lists the houses for sale in the Study Area by zip code; **Figure 3.4-4** at the end of this chapter shows the locations of each zip code.

Table 3.4-3 Houses for Sale					
Housing Price/Type	64106	64108	64127	64128	64129
\$0 to \$50,000	0	4	52	52	17
\$50,000 to \$100,000	1	3	6	4	15
\$100,000 to \$150,000	12	7	1	0	1
\$150,000 to \$200,000	13	23	0	0	0
\$200,000+	29	47	0	0	0
1 Bedroom	14	15	1	0	1
2 Bedrooms	36	50	26	14	5
3 Bedrooms	5	13	23	26	21
4 Bedrooms	0	6	8	8	5
5 Bedrooms	0	0	1	8	1
Source: National Association of Realtors, www.realtors.com , as of March 2013					
* Replacement Property must meet DS&S (decent, safe and sanitary) requirements.					

Table 3.4-3 indicates that there are homes available in the same zip codes and in the same price range as the homes that are being relocated (**Table 3.4-1**). All of the homes being relocated by the Preferred Alternative are assessed at under \$20,000 and according to the search of www.realtor.com there are homes in the same zip codes for sale under \$20,000. Ten of the homes to be relocated appear to be vacant at this time.

According to the 2010 Census, 59 percent of the homes in the Study Area are renter occupied. Assuming the same percentage of the homes relocated by the Preferred Alternative is renter occupied, approximately 18 of the 31 residences would be renter occupied. Based on data provided by the Jackson County Assessor, five of the six businesses that the Preferred Alternative could relocate own the building they are in.

There are also areas within the Study Area that affected businesses could relocate to. According to the Jackson County Economic Development (as of March 2013), there are six buildings for lease in the Study Area that that affected businesses could relocate to. Five of the buildings are for industrial use and range in available space from 6,100 to 22,650 square feet. The sixth building is for office use and has up to 10,000 square feet of available space.

The six businesses that will be relocated by the Preferred Alternative range in building size from approximately 3,000 square feet to 41,000 square feet with the second largest building being approximately 20,000 square feet.

In addition to the buildings for lease there is also commercial land available for sale in the Study Area that affected businesses could relocate to. There are six commercial sites for sale ranging from ½ acre to 15 acres. Four of the sites are zoned for mixed use, one for industrial/warehouse, and one for pad sites.

Figures 3.4-1, 3.4-2, and 3.4-3 show the relocated homes, churches, and businesses are all located within walking distance of the bus system. There are numerous bus routes throughout the Study Area and its general vicinity. If persons relocate within the same areas they are currently located they should remain within walking distance of the bus system

3.5 Environmental Justice

This section discusses the potential human health or environmental affects of the proposed alternatives on minority and low-income populations including those covered by the Executive Order 12898 on Environmental Justice, Title VI, Title VIII, Executive Order 13166, and The Americans with Disabilities Act (ADA).

What is Environmental Justice?

In early transportation projects, many project impacts affected minority and/or low-income populations in greater ways than other populations. This has been partly attributed to these populations and neighborhoods being located near downtowns that were the intended locations of transportation projects. These neighborhoods were lower cost and a as result more attractive for transportation projects. Typically, these neighborhoods are perceived to lack political power and representation. As a result minority and low-income populations and neighborhoods were impacted more often than other populations and neighborhoods.

Environmental Justice Regulations were established to address disproportionately high and adverse human health or environmental affects that projects funded by the federal government may have on minority and low-income populations. The Environmental Justice requirements were established by Executive Order 12898 in 1994 entitled “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations”. This mandates that federal agencies identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of proposed projects on minority and low-income populations. Environmental Justice builds on Title VI of the Civil Rights Act of 1964. Environmental Justice has three guiding principles:

- Avoid, minimize, or mitigate disproportionately high and adverse human health and environmental impacts, including social and economic effects on minority and low-income populations
- Ensure full and fair participation by all potentially affected communities in the decision-making process

What is the Americans with Disabilities Act (ADA) of 1990?

ADA prohibits discrimination based on disability.

What is Title VI of the Civil Rights Act of 1964?

Title VI prohibits discrimination on the basis of race, color, and national origin in programs and activities receiving federal financial assistance.

What is Title VIII of the Civil Rights Act of 1968?

Title VIII (Fair Housing Act) prohibits discrimination in the sale, rental, and financing of dwellings based on race, color, religion, sex, or national origin.

- Prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations

What Groups are Included in the Environmental Justice Analysis?

Environmental Justice Analysis applies to both minority and low-income populations. For the analysis of Environmental Justice, minority populations are defined as any person who is Black, Hispanic, Asian American, American Indian, or Alaskan Native.

The U.S. Census Bureau defines a substantial low-income population as an area where 20 percent or more residents live in a household with annual median income below the poverty level. Median household income is essentially the income earned by the household for whom half of their neighbors make more money and half make less. Following the Office of Management and Budget's (OMB's) Directive 14, the Census Bureau uses income thresholds that vary by family size and composition to detect who is poor. If the total income for a family or unrelated individuals falls below the relevant poverty threshold, then the family or unrelated individuals is classified as being below the poverty level.

Who are unrelated individuals?

Unrelated individuals are people of any age who are not members of families or subfamilies.

Whether or not they fit the definition of an Environmental Justice population, all groups and individuals have the right to access and participate in the transportation decision-making process as protected by Title VI of the Civil Rights Act.

Along with identifying the minority and disadvantaged groups listed above, Executive Order 13166, enacted in 2000, also requires improved access to services for persons with Limited English Proficiency (LEP).

What Minority and Low-Income Populations are in the Study Area?

Based on the demographic profile of the Study Area discussed in **Section 3.2**, the Study Team conducted an analysis to identify Environmental Justice populations using U.S. Census data. U.S. Census Bureau Census 2010 block group and census tract level data was used as the primary data source for the Environmental Justice analyses.

An evaluation of population characteristics indicates that there are Environmental Justice populations of both categories living within the Study Area. The ethnicity/race characteristics are shown in **Table 3.5-1** and the income levels and poverty status profiles are shown in **Table 3.5-2**.

Table 3.5-1 Ethnicity/Race Assessment				
	Study Area	Kansas City	Jackson County	Missouri
Total Persons	4,175	454,876	666,997	5,922,314
Total Minority Population as a Percent of All Persons	79.7%	44.8%	36.1%	18.6%
White Population (Non-Hispanic) as a Percent of All Persons	20.3%	55.2%	63.9%	81.4%
African American Population (Non-Hispanic) as a Percent of All Persons	61.4%	29.7%	23.9%	11.4%
American Indian Population (Non-Hispanic) as a Percent of All Persons	0.3%	0.4%	0.4%	0.3%
Asian Population (Non-Hispanic) as a Percent of All Persons	0.5%	2.3%	1.6%	1.5%
Hispanic Population (all races) as a Percent of All Persons	13.9%	9.7%	7.9%	3.4%
Other Race Alone as a Percent of All Persons	0.0%	0.1%	0.1%	0.1%
Two or More Races as a Percent of All Persons	3.1%	2.3%	2.1%	1.8%

Source: MARC, 2010 Census Redistricting Data and US Census Bureau, ACS 2006 - 2010 5 Year Estimate

The percent of minorities living in the Study Area is approximately 80 percent. This is significantly higher than the percent of minorities living in Jackson County, 36 percent, and the State of Missouri, 19 percent. **Figure 3.5-1** at the end of this chapter shows the percent of the population that is minority by block. It indicates that the highest concentration of minorities living in the Study Area is between the Downtown Loop and Van Brunt Boulevard. The minority group with highest percentage in the Study Area is Black or African American with 61 percent, followed by Hispanic or Latino with 14 percent.

Table 3.5-2 Economic Characteristics Comparison				
	Study Area	Kansas City	Jackson County	Missouri
Median Household Income	\$25,251	\$44,113	\$46,252	\$46,262
Per Capita Income	\$14,117	\$25,683	\$25,213	\$24,724
Individuals Below Poverty Level	26.8%	18.1%	15.7%	14.0%
Source: U.S. Census Bureau, ACS 2006 - 2010 5 Year Estimate				

What counties are in the Kansas City Metropolitan Statistical Area?

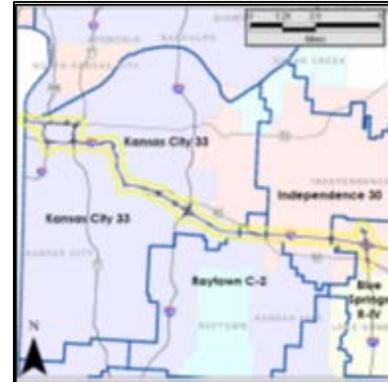
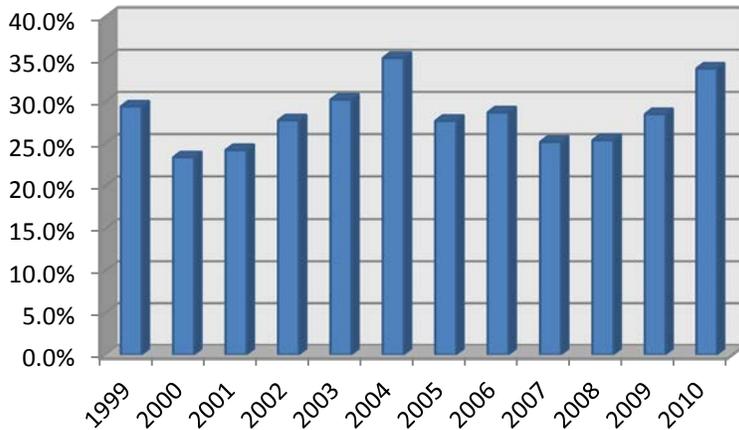
The 15 counties in the Kansas City MSA are: Clinton, Caldwell, Platte, Clay, Ray, Jackson, Lafayette, Cass, and Bates in Missouri and Leavenworth, Wyandotte, Johnson, Franklin, Miami, and Linn in Kansas.

The U.S. Census Bureau defines a substantial low-income population as an area where 20 percent or more residents have an annual income below the poverty level. Median household income for the Study Area is \$25,251 and per capita income is \$14,117. According to the 2010 Census, approximately 27 percent of families in the Study Area are below the poverty level, which is a substantial low-income population by definition. In addition to the Study Area as a whole meeting the definition of a substantial low-income population, all but two of the Census Tracts individually do as well. **Figure 3.5-2** at the end of this chapter shows the percent of the population that is low income by census tract.

This data indicated that all of the Study Area is an Environmental Justice area whether because of minority populations, low-income populations, or both.

The Study Team also analyzed data from Mid-America Regional Council's Metro Dataline, www.metrodataline.org, which provides an estimate of children five to 17 years of age living in poverty by school district. The Study Team analyzed the data from 1999 to 2010 for the Study Area, which is entirely within the Kansas City, Missouri School District. **Figure 3.5-3** shows the percentage of children living in poverty. Since 2007 the percent of children living in poverty in the Kansas City, Missouri School District has been increasing. In 2010, the Kansas City, Missouri School District had the largest percentage of children living in poverty compared to all other school districts within the Kansas City Metropolitan Statistical Area.

Figure 3.5-3 Percent of Children Living in Poverty in the Kansas City Missouri School District



School District Boundaries

The total LEP population in the Study Area is approximately four percent. This is almost equal to the LEP population in Jackson County and slightly less than in the City of Kansas City, Missouri. **Figure 3.5-4** shows the percentage of the population with LEP by census tract. Of the four percent of the population that are considered LEP populations, 43 percent speak Asian and Pacific Island languages and 38 percent speak Spanish or Spanish Creole.

The percent of people living in the City of Kansas City, Missouri with a disability is 12 percent. This is slightly lower than Jackson County and Missouri with 13 and 14 percent.

How did the Study Team Involve Environmental Justice Populations?

Both Federal and State Environmental Justice policies stress that early and ongoing public outreach is a vital component of the Environmental Justice process. Multiple methods of public outreach were used to increase the likelihood of minority and low-income persons’ participation. The distribution of public outreach activities included those areas that are Environmental Justice areas.



Mobile Meeting at the Jazz Museum

The Study Team put together an Environmental Justice Outreach Plan at the beginning of the study. This plan included an initial evaluation of the Environmental Justice population in the Study Area and how the Study Team would

involve them throughout the process. The Study Team held three rounds of public outreach prior to the publication of this Draft EIS. The public outreach was spread throughout the Study Area to ensure that all residents including Environmental Justice populations, LEP populations, and disabled persons had opportunities to participate.

The first round of public outreach was held from March 12 to June 10, 2012 and included one Listening Post, two Mobile Meetings, two Community Connections Team (CCT) meetings, and the on-line town hall meeting hosted through MindMixer at www.metroi70.com. The second round of public outreach was held from July 15 to August 17, 2012. It included one Listening post, two Mobile Meetings, five CCT meetings, and the on-line town hall meeting. The third round of public outreach was held from January 25 to March 8, 2013. It included four Mobile Meetings, 12 CCT meetings, and the on-line town hall meeting.



Mobile Meeting at Pioneer Community College

The Study Team encouraged the public to comment on the study at all meetings. Prior to each round of public outreach, postcards and newsletters were distributed to residents and businesses near the I-70 corridor. The postcards and newsletters included a Spanish translation and a Spanish translator was provided at some of the meetings. During the second round of public outreach, the Study Team put door hangers on 1,500 residences and businesses in the Study Area that announced the dates of the public outreach activities. The door hangers also included a Spanish translation. In addition, MoDOT sent media releases to local media outlets and the Kansas City Scout variable message signs along the corridor directed travelers to the on-line town hall meeting. **Chapter 4** discusses the public outreach efforts in more detail.



CAG Meeting

The Study Team also used a Community Advisory Group (CAG) to supplement the public outreach efforts noted above. The CAG consisted of appointed members of the public by several interested agencies and organizations. Each CAG member was responsible for providing I-70 study updates back to these agencies and organizations.

Low-income, minority, and other community members will have further chances to comment on the study through a well-advertised public hearing process and public comment period during the review process of the Draft EIS document.

What are the Affects Each Alternative will have on Environmental Justice Populations?

Potential Environmental Justice affects are defined as disproportionately high and adverse human health or environmental effects of proposed projects on minority and low-income populations.

No-Build Alternative

The No-Build Alternative would have minimal adverse effects on minority and low-income populations. The primary affects would likely be on-going congestion throughout the corridor along with associated noise and air quality issues as discussed in **Section 3.10** and **Section 3.11**.

Build Alternatives

The Build Alternatives (Geometric Improvements Alternative, Interchange Consolidations Alternative, and Preferred Alternative) would have adverse, but not disproportionately high effects on minority and low-income populations living along the I-70 corridor. All three Build Alternatives require additional right of way and relocations at locations along the corridor that have concentrated populations of minority and/or low-income persons. The Geometric Improvements Alternative and the Preferred Alternative will each require approximately 37 acres of additional right of way, while the Interchange Consolidations Alternative would require 55 acres. **Table 3.5-3** shows the amount of right of way required by each Build Alternative that is within an area with a high concentration of minorities (greater than 40 percent), a substantial low-income area (greater than 20 percent), and within both of these areas. In addition, the table also shows the number of residential relocations for each Build Alternative that are within Environmental Justice areas.

Over 80 percent of the amount of right of way required for each Build Alternative is located within Environmental Justice population areas. This is because many of the people living in the Study Area are minority persons and/or low-income. All of the residential relocations required by each of the Build Alternatives are within Environmental Justice areas. **Table 3.5-3** shows the number of relocations required by each

How is Disproportionately High Defined?

Disproportionately high is defined as the adverse effect is predominately felt by minority and/or low-income populations or the adverse effect is noticeably more severe or greater in magnitude than the adverse effect that will be suffered by non-minority and/or non-low-income populations.

Build Alternative. These impacts will be mitigated through input gathered during public and stakeholder involvement process, specifically through upcoming CAG meetings and the Public Hearing and after the EIS is complete during the design phase.

The Build Alternatives will also provide benefits to all residents in the Study Area including the minority and low-income populations. The Build Alternatives will decrease congestion along I-70. This would improve travel for residents in the Study Area who utilize I-70 to get to work or other destinations. In addition, it would improve travel for residents who ride transit and use I-70 in the Study Area as well as improve safety not only on I-70 but on the local road network around I-70 too. The improved travel times on I-70 would also benefit commuters, who may or may not be Environmental Justice populations.

How will Affects to Environmental Justice Populations be mitigated?

As discussed in **Section 3.4 Relocations**, relocations caused by the Build Alternatives will be mitigated by ensuring that replacement housing is available and fair relocation benefits are provided.

Table 3.5-3 Build Alternative Impacts to Environmental Justice Areas

	Geometric Improvements Alternative	Interchange Consolidations Alternative	Preferred Alternative
Total Acres of Right of Way Required	36.88	55.44	37.17
Total Acres Required in Non EJ Areas	6.08	8.05	6.07
Total Acres Required in EJ Areas	30.8	47.39	31.1
Acres in Minority Areas	3.98	5.9	4.11
Acres in Low-Income Areas	18.66	31.53	21.53
Acres in Both Minority and Low-Income Areas	8.16	9.96	5.46
Percent of Acres Required in EJ Area	83.5%	85.5%	83.7%
Total Residential Relocations Required	42	62	31
Total Relocations Required in Non EJ Areas	0	0	0
Total Relocations Required in EJ Areas	42	62	31
Relocations in Minority Areas	15	27	14
Relocations in Low-Income Areas	0	8	0
Relocations in Both Minority and Low-Income Areas	27	27	17
Percent of Relocations Required in EJ Areas	100.0%	100.0%	100.0%

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3.6 Economics

This section discusses the effects of the proposed I-70 alternatives on businesses, jobs, taxes, and freight movements. It discusses the potential economic benefits of the alternatives along with the potential positive and negative effects on current and future development.

What are the Economic Characteristics of People Who Live in the Study Area?

The population of the Study Area has lower average income levels and a greater percentage of people and families in poverty than the overall populations of the City of Kansas City and Jackson County. **Table 3.2-2** and **Figures 3.2-3** and **3.2-4**, located in **Section 3.2 Community and Neighborhood Affects** provide more detail on the economic characteristics of people who live in the Study Area.

There is no current data available on the level of employment in the Study Area beyond the census data discussed in **Section 3.2**. **Table 3.6.1** shows employment and unemployment information for April 2013 for the jurisdictions in the Study Area.

Table 3.6-1 Local Area Unemployment and Employment Information				
	Labor Force	Employed	Unemployed	Unemployment Rate
Jackson County	330,743	307,345	23,398	7.1%
City of Kansas City	227,263	211,816	15,447	6.8%

Source: Missouri Local Area Unemployment Statistics (LAUS) from Missouri Economic Research and Information Center (MERIC) in cooperation with U.S. Department of Labor, Bureau of Labor Statistics (April 2013).

The unemployment rate in Jackson County has dropped 4.1 percent since its most recent peak of 11.2 percent in November 2010. The unemployment rate in the City of Kansas City has dropped 4.2 percent from the most recent peak in November 2010. As discussed in **Section 3.2 Community and Neighborhood Affects**, the census tracts in the Study Area have historically had an unemployment rate 6 to 7 percent higher than the unemployment rate in the City of Kansas City and Jackson County as a whole (2010 Census). It is reasonable to estimate that the Study Area unemployment rate was approximately 13 to 14 percent in April 2013 based on the employment rates listed in **Table 3.6.1**.

What Types of Businesses are Located in the Study Area?

The Study Area features very diverse business activity including:

- Medium and light industrial facilities
- Local and chain restaurants
- Strip malls
- Small business locations
- A variety of service businesses such as gas stations, auto repair, hair stylists, and small professional offices
- Stadiums for professional football and baseball in the Truman sports complex

Business uses in the Study Area include smaller retail and industrial facilities. The retail facilities include local stores in small plazas, gas stations, restaurants, and service businesses including auto repair, dry cleaning, and hair and nail salons. These retail businesses tend to be scattered among neighborhood and industrial land uses. The industrial facilities include a variety of small scale manufacturing such as plating, printing, cabinets, furniture, dairy, bakery, and metal works. One large facility adjacent to I-70 at the Benton curve is a United States Post Office distribution facility.

The area around the I-70/I-435 interchange features a mix of transportation industry uses and hotels/motels. There are two large trucking company sites along with several truck or equipment rental, repair, or suppliers.



U.S. Postal Distribution Center

How Important is I-70 to the Local, Regional, and National Economies?

I-70 serves a wide variety of transportation and freight uses. It is vital to the local economy as it transports thousands of workers to and from their jobs in the Kansas City area and provides access to hundreds of businesses located along the corridor and in downtown Kansas City. I-70 is also important to the regional and national economies as it provides an important connection for the movement of goods.

Importance of I-70 to Regional and National Freight

I-70 is an important route for the shipment of national and regional freight. Kansas City's mid-continent location makes the region a key location for the movement of goods. I-70 is an important part of that freight movement system. The origin-destination study completed for the I-70 Statewide Study showed that approximately 30 percent of trucks entering the Kansas City area on I-70 from the east were through trips that exited the Kansas City area on I-70 to the west. Similarly, approximately 35 percent of trucks entering the Kansas City area from I-70 on the west were through trips that exited via I-70 on the east. Trucks hauling freight through the area tend to avoid peak hour congestion on routes like I-70 when possible. Nonetheless, congestion delays on I-70 are a cost to national freight carriers as well as local business owners and residents.

Importance of I-70 to Local Businesses

The Study Team completed a survey of businesses in the Study Area. Survey forms were distributed in person to all businesses in the Study Area and those within 1,000 feet of interchanges. This resulted in 126 forms being distributed and follow-up calls were made with those who did not complete the survey in person. A total of 47 businesses completed the survey representing a wide range of retail, service, and industrial businesses and employment of more than 1,000 people. The survey is discussed in full detail along with other economic and community analysis in the I-70 Second Tier EIS Community Impact Assessment Technical Document.

More than half of the businesses surveyed indicated that over 50 percent of their customers and freight traffic use I-70 to reach their business. The highest traffic periods were during the middle of the day. 43 percent of surveyed businesses indicated the time period between 9 am and 4 pm generated the most customer traffic. 68 percent indicated the same time period generated the most freight traffic.

The vast majority of I-70 business customers are those who are familiar with the business and plan to stop. Only 6 percent of businesses surveyed indicated that more than 50 percent of

What is an Origin-Destination Study?

An origin-destination study is a survey of motorists and/or truck drivers who are driving on a particular roadway or set of roadways. Motorists are stopped at a logical point such as a rest area or major intersection and asked questions about their trips. The key questions typically include where they live, where they are coming from, where they are going to and whether they may stop along the way.

their sales are a result of customers seeing the business from I-70 and making an unplanned stop. 40 percent of businesses indicated that unplanned stops accounted for less than 10 percent of their sales.

Businesses were also asked about the origin locations of their customers and freight shipments. **Figure 3.6-1** presents the locations of customers for the businesses located along I-70 according to the survey. The City of Kansas City and the Kansas City Metro Area were the homes of most customers, although 22 percent come from outside of the area.

Figure 3.6-2 shows the origins of freight traffic for the businesses located along I-70 according to the survey. While the City of Kansas City and the Kansas City Metro Area were also the most frequent origins for freight, nearly 40 percent of freight shipments to I-70 businesses surveyed come from outside the Kansas City Area.

Both of these charts along with the other survey results show that I-70, as part of the wider transportation network, is very important to the businesses located along it. Business owners along I-70 stressed the importance of convenient access to their businesses. This echoes what the Study Team heard from business owners and stakeholders on the Community Advisory Group and at local community meetings. Specific business stakeholder comments included:

- Closing the Brooklyn Avenue interchange will negatively impact the businesses at 12th Street and Brooklyn Avenue, including Gates Barbeque and Arthur Bryant's Barbeque.
- Closing the Truman Road and 18th Street interchanges could impact the Post Office distribution facility, particularly trucks going to and leaving the facility that need to access I-70. The closure of the 18th Street interchange would require the re-routing of trucks. Currently, 1,000 trucks are being brought to the facility each day and this number is continuing to increase.
- Closing the Manchester Trafficway interchange would negatively impact the Blue Valley Industrial Area. Substantial investments have been made in the area

and closing this interchange would hurt the existing investments, as well as future investments.

- Closing exit ramps in the urban core will create barriers and will make it difficult to attract businesses to the area.
- People need to understand that the primary function of an interstate is the efficient movement of goods and services and not to accommodate local traffic.
- A lot of small businesses may be affected by changes. During the public comment period on the Draft EIS comments on these impacts will be taken. As result, mitigation measures may be identified. These measures will be discussed in the Final EIS.

Figure 3.6-1: Origins of Customer Traffic to the Surveyed Businesses Along I-70

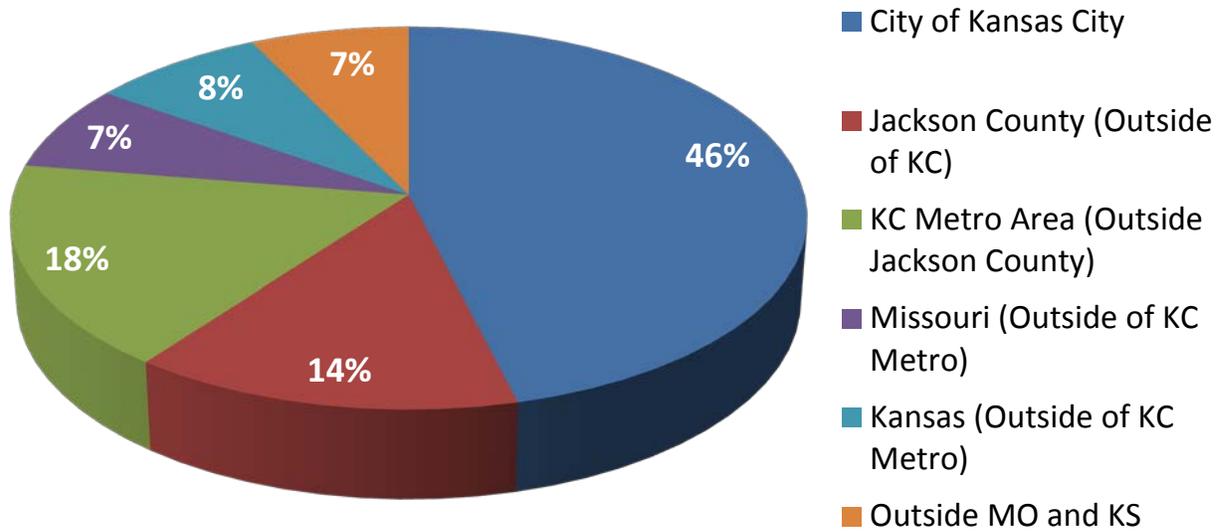
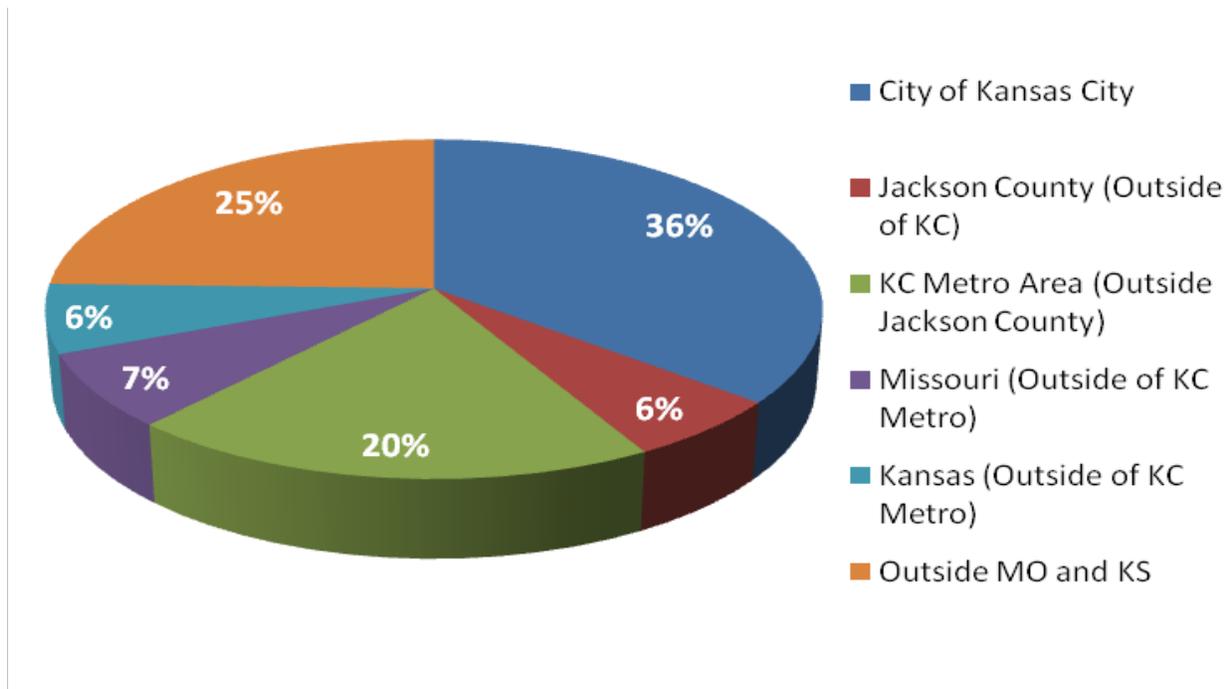


Figure 3.6-2: Origins of Freight Traffic to the Surveyed Businesses Along I-70



How Would the No-Build Alternative Affect Businesses and Jobs in the Study Area?

The No-Build Alternative would not have a direct effect on businesses and jobs as it does not include the relocation of any businesses. However, under the No-Build Alternative, the safety, congestion, bottleneck, and goods movement issues discussed in **Chapter 1** and discussed above would not be addressed. Congestion would continue to grow along I-70 and none of the long-term issues with roadway conditions and access would be addressed. As a result there would be indirect effects on businesses and jobs for the No-Build Alternative.



Congestion would continue to cost residents and businesses with a No-Build Alternative.

The thousands of residents that use I-70 on a daily basis to commute to work would continue to experience increasing congestion on their daily commute. This would result in more difficult access to jobs in the central parts of the Kansas City area and a potential reduction in the attractiveness of downtown as a location for employment. More downtown workers may also seek housing closer to downtown as a result.

The 2012 Texas Transportation Institute Study on Urban Mobility found that the cost of congestion in the Kansas City area was \$640 million in 2011 or \$584 dollars a year for each regular commuter during the peak periods. As a major highway in the Kansas City area, congestion on I-70 is part of this overall regional cost of congestion. The No-Build Alternative will not provide additional relief of the cost of congestion in the Kansas City area.

The No-Build Alternative may negatively affect jobs related to the freight trucking industry and for businesses that rely on I-70 for product delivery. Congestion causes travel time delays for the transportation and delivery of goods. This costs businesses because of increased fuel usage, wages for drivers stuck in traffic, lost productivity of trucks, and a reduction in the number of daily trips that truck drivers can make. Congestion also costs trucking firms and manufacturers because of the uncertainty it creates in the delivery process.

The cost of congestion is felt by trucking companies, manufacturers, and individuals passing through the area. Overall effects on jobs may be minimal but the business costs are ultimately passed on to consumers in the form of higher prices to account for higher transportation costs.

How Would the Build Alternatives Affect Businesses and Jobs in the Study Area?

The Build Alternatives including the Preferred Alternative would affect businesses and jobs in three key ways:

- By changing access near the location of specific businesses that could make it easier or more difficult for customers to reach the business
- By requiring businesses to relocate as part of the acquisition of new right of way
- By improving travel times and goods movement for businesses and workers through reduced congestion

Access Changes:

The primary way that the Build Alternatives would change business access along I-70 would be through the consolidation of ramps, closures of ramps, and ramp location changes. A secondary change would be the closure of direct access from some secondary local roads to I-70 ramps through cul-de-sacs. This occurs at several points along the Build Alternatives, at locations where the local road is immediately parallel to I-70 and ramp improvements require a cul-de-sac on the local road. Businesses on these streets would have their access to or from I-70 re-routed to the major adjacent arterial roadways.

The closure of interchange ramps to or from I-70 will tend to affect a wider number of businesses and business districts due to the changes in familiar driving patterns required for customers and freight shipments. Interchanges also tend to serve a larger number of businesses than individual local streets. The secondary local road cul-de-sacs would tend to only affect a small number of specific local businesses, and the length of re-routed access would be shorter.

These access changes affect not only the businesses but their customers who may have to take a different route to access the goods and services they are trying to obtain. **Table 3.2-7** in **Section 3.2** lists the total difference in travel distance that will change for some key locations in the Study Area with the access changes proposed by the Build Alternatives.

The effects on business access vary greatly between the Build Alternatives and are listed in detail in **Table 3.6-2** below. During the public comment period on the DEIS comments on these impacts will be taken. As result, mitigation measures may be identified. These measures will be discussed in the Final EIS.

As part of the survey, business owners/managers were asked to discuss the potential effect of the proposed alternatives of on their businesses. This survey was conducted to help determine the Preferred Alternative so specific questions were not asked about the Preferred Alternative as it had not been defined at the time of the survey. **Figure 3.6-3** shows the results of the business owner/manager survey of the potential effects of the alternatives on future business.

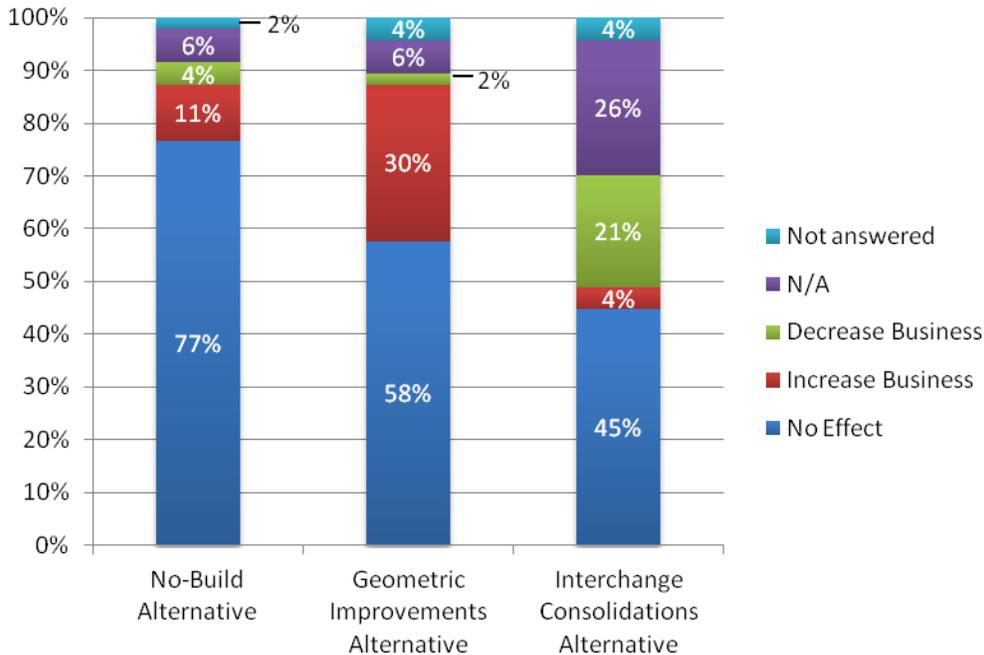
Table 3.6-2 Summary of Access Changes with Potential Effects on Businesses and Customers

Proposed Access Change Locations and Type		Potential Effects on Businesses and Customers
Geometric Improvements Alternative		
A	Cul-de-sac and local road closure at Wabash Avenue, along 14 th Street from Olive Avenue to Wabash Avenue, and 14 th Street between Prospect Avenue and Montgall Avenue	Businesses and customers for businesses backing onto this section of 14 th Street will need to use Truman Road and Prospect Avenue to access I-70. Potential back door business access mitigation will be discussed with property owners and developed in detail during the design process.
B	Closure of Benton Boulevard on-ramp to Westbound I-70	Businesses and customers will need to use the Prospect Avenue or Truman Road ramps to access I-70. As this is an on-ramp closure, its effect on customer attraction should be minimal. It would represent an increase of 0.6 miles of travel distance on city streets for customers and trucks leaving businesses in that area.
C	Cul-de-sacs on Askew Avenue between 18 th Street and 23 rd Street	Businesses and customers can no longer use Askew Avenue between interchanges. This is a residential street. They will likely use Indiana Avenue instead. The visibility of businesses would not be affected and the access change is approximately 0.2 miles of travel distance on city streets.
D	Closure of Raytown Road direct access to Van Brunt Boulevard on-ramp to Westbound I-70.	Businesses and customers will have to access I-70 directly off of Van Brunt Boulevard. The visibility of businesses would not be affected and the access change is approximately 0.2 miles of travel distance on city streets.
Interchange Consolidations Alternative		
Items A and D above apply to this alternative as well.		
E	Closure of Brooklyn Avenue interchange at I-70 (two ramps)	Businesses and customers using this interchange would now have to access I-70 through The Paseo or Prospect Avenue interchanges and the local road network. This would create a change for customers currently using the Brooklyn Avenue interchange to access local businesses although the businesses themselves are not visible from I-70 at the Brooklyn Avenue interchange. The Prospect Avenue interchange is closest and would represent a change of 0.6 miles of travel distance on city streets.
F	Closure of ramps to access I-70 to/from Benton Boulevard and Truman Road (three ramps)	Businesses and customers using these ramps would now have to access I-70 through the Prospect Avenue interchange and the local road network. This would create a change for customers currently using these interchanges to access local businesses. The Benton Boulevard and Truman Road on-ramp closures would have minimal effect on customer attraction/visibility as they are on-ramps although a couple of businesses adjacent to the Truman Road on-ramp could have slightly less traffic pass by. It would represent an increase of 0.1 miles of travel distance for customers and

		trucks leaving businesses in those areas; however 0.6 miles would be traveled on city streets instead of I-70. Customers using the off-ramp to Truman Road would actually have a decrease in travel distance of 0.3 miles but 0.6 miles of the new route would be on city streets instead of I-70. Existing businesses have poor visibility from this off-ramp. At local meetings the access loss from these ramps has been specifically cited as a local business concern.
G	Closure of ramps to access I-70 to/from 18 th Street and Indiana Avenue (near 18 th Street)	Businesses and customers using these ramps would now have to access I-70 through the Prospect Avenue interchange or the 23 rd Street interchange and the local road network. A connector route is proposed on Askew Avenue between 18 th Street and 23 rd Street. This would add approximately 0.1 miles of city street driving. Although visibility of local businesses from I-70 is poor other than the United States Postal Service Facility, at local meetings the access loss from these ramps has been specifically cited as a local business concern.
H	Closure of ramps to access I-70 to/from 27 th Street (two ramps)	Businesses and customers using these ramps would now have to access I-70 through a full interchange at Jackson Avenue and the local road network. This change would add approximately 0.5 miles of travel distance to customers and trucks accessing businesses at 27 th Street. The visibility of these businesses from I-70 is poor but there is a small cluster of personal service/education businesses around I-70 and 27 th Street that would be affected by this change in access.
I	Closure of Manchester Avenue interchange at I-70 (four ramps)	Businesses and customers using this interchange would now have to access this area from one of several points including U.S. 40 interchanges on I-70 and I-435. Improvements are proposed along Manchester Boulevard, its connection to U.S. 40 and Stadium Drive to facilitate this access. Some of the businesses at the Manchester Avenue interchange have good visibility from I-70. These are predominantly trucking/goods movement related businesses. The change in access would result in up to 1.7 miles of additional travel distance, approximately half of which would be on Highway 40 and city streets. At local meetings the access loss from these ramps has been specifically cited as a local business concern.
Preferred Alternative		
Items A, C, D, and E above apply to this alternative as well.		
J	Consolidation of Benton Boulevard and Truman Road on-ramps to Westbound I-70	No real change in access but businesses and customers would travel through an additional traffic signal.
Source: Study Team Analysis		

The greatest concerns of business owners were with the Interchange Consolidations Alternative, where 21 percent indicated it would result in a decrease for their future business. This compared to only 4 percent for the No-Build Alternative and 2 percent for the Geometric Improvements Alternative. On the positive side, 30 percent of respondents indicated that the Geometrics Improvements Alternative would increase their future business, compared to 11 percent for the No-Build Alternative and 4 percent for the Interchange Consolidations Alternative. The most common response for all alternatives was that the project would have no effect on future business.

Figure 3.6-3: Potential Effects on Businesses as Indicated by Business Survey Participants



The Preferred Alternative is relatively similar to the Geometric Improvements Alternative with one additional interchange closure at Brooklyn Avenue. It is reasonable to conclude that the result for the Preferred Alternative would be in-between those of the Geometric Improvements Alternative and the Interchange Consolidations Alternative. It is important to note that these are the results from a relatively small number of businesses along I-70, but ones that stand to be the most affected.

Business and Job Relocations:

All Build Alternatives would affect businesses and jobs through relocations in the Study Area as discussed in Section 3.4. The Geometric Improvements Alternative has the fewest anticipated business relocations with five and the fewest anticipated job relocations with 40.

The Interchange Consolidations Alternative would have higher business and job relocations. The Interchange Consolidations Alternative would relocate an estimated eight businesses with an estimated 167 jobs.

The Preferred Alternative would relocate six businesses with an estimated 51 jobs.

The estimated number of relocations has been substantially reduced for all Build Alternatives compared to the First Tier EIS, which estimated 32 business relocations for the Preferred Strategy in the portions of I-70 under study in this Second Tier EIS.

How would the Build Alternatives Affect the Tax Base of the Communities in the Study Area?

Each of the Build Alternatives including the Preferred Alternative would directly affect the tax base of the local communities, including the City of Kansas City, Jackson County, and local school districts by removing land used for improvements from the property tax rolls. MoDOT would not pay property taxes on property purchased for improvements to I-70. The Build Alternatives include a substantial number of relocations of homes and businesses which would represent a decrease in available property tax base. **Table 3.6-3** shows the size of the property tax base for the Study Areas communities.

What is the Property Tax Base?

The property tax base of a community is the combined assessed value of all properties in the community. This includes the assessed value of real estate and of personal property such as equipment owned by businesses. The property tax base is different from property taxes collected. Property taxes are calculated by multiplying the property tax base by factors to develop a taxable value and then by the property tax rates for the community.

Table 3.6-3 Total Assessed Value of Taxable Property for Study Area Communities

	Total Assessed Value in 2011/2012	10-Year Average Growth per Year
Study Area	\$45,439,274	Not Available
Jackson County (2011)	\$9,201,363,000	2.2%
City of Kansas City (2012)	\$6,814,623,000	2.5%
Kansas City School District	\$2,310,512,000	1.0%

Sources: Budget and Comprehensive Annual Financial Report Information for City of Kansas City, Missouri, Jackson County, and Kansas City School District. Percentages calculated.

Jackson County currently has approximately 296,000 taxable parcels. The Build Alternatives would relocate 37 to 71 properties while acquiring small amounts of land from approximately 150 to 200 additional parcels. The Build Alternatives would acquire parcels with a taxable value that is higher to the average taxable parcel value for Jackson County of approximately \$31,100. This is mostly due to some large commercial properties from which smaller amounts of land are needed. However, given the magnitude of taxable value available to the Study Area communities, the value lost would be less than 1 percent for any community and less than the average growth rate per year in assessed value. **Table 3.6-4** shows the taxable value of parcels affected and relocated by the alternatives.

Table 3.6-4 Assessed Value of Parcels Affected

	Total Assessed Value of Parcels Fully Acquired	Total Assessed Value of All Parcels Affected	Number of Parcels Affected	Average Assessed Value of All Parcels Affected
No-Build	\$0	\$0	0	\$0
Geometric Improvements	\$453,668	\$19,651,243	206	\$95,394
Interchange Consolidations	\$1,135,852	\$21,409,593	271	\$79,002
Preferred Alternative	\$773,877	\$19,419,860	193	\$100,621

Source: Calculated based on Jackson County Assessors Data from March 2012.

The City of Kansas City has a 1 percent earnings tax. If relocated businesses or residents chose to move out of the city entirely, there would be a loss of earnings tax revenue. The Build Alternatives with higher numbers of relocations would have a higher probability of businesses and residents leaving the city entirely.

The City of Kansas City and Jackson County each have local option sales taxes. Revenue from sales taxes could be marginally reduced if relocated homes or business owners moved entirely out of these communities.

What are the Job Impacts of the Investment of Construction Dollars?

The investment of construction dollars to improve I-70 would result in the creation of new jobs. When an investment is made in the construction of a transportation facility, the companies and individuals receiving payment for building the project would in turn spend the money they receive on other goods and services. Companies and individuals receiving the benefit of reduced travel time and crash costs would also invest portions of these savings in local and state economies.

Based on the estimated construction cost ranges for the Build Alternatives from \$205 million to \$245 million (not including right-of-way), the Study Team estimates that between 2,665 and 3,185 job years would be created over the construction period for improvements. These job estimates are based on a standard ratio used by FHWA based on Recovery Act projects that a job-year is created by every \$76,923 in spending on transportation infrastructure. Most of these jobs would be short-term construction related positions. The No-Build Alternative equivalent would be 556 job years spread between 2015 and 2040.

Local job benefits for construction would depend in part on the availability of local materials and workers. MoDOT seeks the best possible value from its investments when tendering construction projects and, like any other project, there is no guarantee local firms would be selected or local materials used.

How Would Businesses Benefit from Improved Travel Times and Goods Movement?

Local businesses, trucking companies, and freight shippers would using I-70 would benefit from the reduced travel times provided by the Build Alternatives, as discussed in **Chapter 2, Alternatives Considered**. Businesses benefit from reduced time that drivers and goods spend on this stretch of I-70. The benefits also include greater predictability of travel times due to fewer bottlenecks and reduced costs from reduced number of crashes due to enhanced safety. **Chapter 2** discusses the extent of these travel and safety benefits for the Build Alternatives.

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3.7 Visual Impact Assessment

The Federal Highway Administration's (FHWA) Technical Advisory T6640.8A (TA) dictates that whenever a potential for visual impacts exists from a proposed transportation project, the environmental study should identify the potential visual impacts to the adjacent land uses as well as measures to avoid, minimize, or mitigate these potential visual impacts.

The visual assessment process consists of four study components. These include:

- Determining the Existing Landscape View Shed
- Analyzing the Landscape Character and Experience
- Predicting Baseline Impacts
- Identifying Mitigation Options

The visual assessment process provides an analysis of the landscape character for the Study Area. It is also used to determine the type and degree of visual impact for various viewers, such as the interstate user, the recreational tourist, and the local resident.

What Does the Existing Project Area Look Like?

The visual quality of an area may depend on the preferences and subjective values of the viewer. FHWA produced a manual titled "Visual Impact Assessment for Highway Projects" to assist in evaluating the visual qualities of a project area. The assessment of the visual quality of an area consists of an evaluation of the vividness, intactness, and unity of the landscape.

The Study Area was divided into three areas that display consistent visual characteristics and a uniform visual experience which are called "Visual Assessment Units" (VAU). Each VAU may be thought of as an outdoor room that has a direct relationship to the natural layout of the area and associated land uses. The boundaries of these visual environments occur where there is a change in visual character. The strongest determinations of the visual boundaries are topography and landscape components.

What is a view shed?

A view shed is the area of land, water, or other environmental element that is visible from a fixed vantage point.

What is vividness?

Vividness is the relative strength of the seen image, the visual impression received from contrasting landscape elements as they combine to form a striking and distinctive pattern.

What is intactness?

Intactness is the integrity of visual order in the natural and human-built landscape, and the extent to which the landscape is free from visual encroachment.

What is unity?

Unity is the overall visual harmony and degree to which various elements combine in a coherent way.

The three VAUs (**Figure 3.7-1** at the end of this section) within the I-70 Second Tier EIS corridor have the following characteristics:

- **VAU-1, Urban Commercial Area** – The area in and around this VAU is dominated by constructed elements. Between The Paseo and 18th Street, the views from the roadway are of a commercial activity. Overall, the built environment is close to the highway.
- **VAU-2, Urban Neighborhood Area** – The area in and around this VAU is dominated by constructed elements. Between 18th Street and U.S. 40, the views from the roadway are of single-family homes and a pocket of commercial activities near Van Brunt Boulevard and U.S. 40. Overall, the built environment is close to the highway which produces the sense of a narrowed, constricted travel corridor.
- **VAU-3, I-435 Area** – VAU-3 provides a contrast to the previous VAU sections in regards to the developed environment. This VAU is primarily floodplain and professional sports stadiums



VAU-1 Benton Boulevard
looking west

The visual quality rating of the visual environment in each VAU can be collectively defined using the attributes of vividness, intactness, and unity each of which is evaluated independently. The visual landscape is also divided into three parts for the evaluation:

- Foreground zone – 0.25 to 0.5 miles from the viewer
- Middle ground zone – extends from the foreground zone to three to five miles from the viewer
- Background zone – extends from the middle ground zone to as far as anyone can see

Each VAU's visual quality is based on a rating from 1-7. On this scale, 1 = very low, 4 = average/moderate, and 7 = very high. **Tables 3.7-1** and **3.7-2** display the ratings assigned to the existing visual quality for each VAU for both viewers from and viewers of the roadway.

Existing Routes

Existing Routes VAU-1 urban commercial section (The Paseo to 18th Street) – This urban section of I-70 has primarily commercial development very close to the highway. Looking south from the highway the view is generally of the backside of buildings. Much of the mid and background experiences are blocked by the foreground built environment. The key features of this VAU are the downtown skyline, the large United States Postal Service Distribution Center and the Benton Curve. The westbound traveler does experience the Kansas City skyline from a number of locations on I-70.



VAU-1 Westbound near Brooklyn Boulevard looking northwest



VAU-1 U.S. Postal Service Distribution Center



VAU-1 Eastbound near The Paseo looking south



VAU-1 Westbound I-70 at The Paseo



VAU-1 Woodland Avenue street under I-70

The view of the roadway is typical for a six lane freeway. The relatively wide swath of pavement requires similarly wide

bridges to span cross streets. Traveling over or under the freeway can appear visually imposing for some travelers.



VAU-2 Lister Street view of I-70

Existing Route VAU-2 urban residential section (18th Street to U.S. 40) – This section is mostly residential with commercial nodes around the Van Brunt Boulevard and U.S. 40 interchanges. VAU-2 provides travelers the sense of tight, narrow roadway due to the steep embankments with other areas providing a slightly more open feel. VAU-2 has residential development very near the roadway in several locations. The mid and background views are intermittently blocked by the foreground built environment. The key feature of this VAU includes the Jackson Curve.



VAU-2 Residences near Jackson Avenue close to I-70

The viewers of the roadway are generally limited to the foreground view of the roadway due to the built environment. The view of the roadway is of a heavily traveled roadway with three lanes in each direction.



VAU-2 Eastbound I-70 approaching 27th Street with steep embankments



VAU-2 27th Street view of I-70

Existing Route VAU-3 the I-435 section (U.S. 40 to Blue Ridge Cutoff) – This section is primarily floodplain and professional sports stadiums. VAU-3 provides a generally open feel. The westbound traveler receives one of the best views of the Kansas City skyline framed by the Stadium Drive Bridge.

The viewers of the roadway are generally limited to the foreground view of the roadway due to the built and natural environment. The view of the roadway is a typical six lane interstate. With the number of lanes, the structure width required to span a cross street or the length of a structure over

the interstate can be extensive and appear visually imposing. The visual quality rating for the No-Build Alternative is shown in **Table 3.7-1** and **Table 3.7-2**.



VAU-3 Westbound I-70 near Stadium Drive

Table 3.7-1 Visual Quality of Surrounding Environment (Viewers from the Highway) Existing / No-Build				
Factor	Zone	VAU-1	VAU-2	VAU-3
Vividness	Foreground	3	3	4
	Midground	3	4	3
	Background	2	2	5
Intactness	Foreground	2	3	4
	Midground	4	4	4
	Background	3	3	5
Unity	Foreground	3	3	3
	Midground	3	4	4
	Background	3	3	5

Visual Quality Scale: 1= Very Low, 4= Average/Moderate, 7= Very High

**Table 3.7-2 Visual Quality of I-70
(Viewers of the Highway)
Existing / No-Build**

Factor	Zone	VAU-1	VAU-2	VAU-3
Vividness	Foreground	2	3	3
	Midground	2	3	4
	Background	2	2	3
Intactness	Foreground	3	3	3
	Midground	2	3	4
	Background	3	3	3
Unity	Foreground	2	3	3
	Midground	2	3	3
	Background	3	3	3

Visual Quality Scale: 1= Very Low, 4= Average/Moderate, 7= Very High



VAU-2 Residences near Van Brunt Boulevard close to I-70



VAU-3 Westbound I-70 looking north over Blue River

Build Alternatives

Since the differences between the Geometric Improvements Alternative and the Interchange Consolidations Alternative are primarily interstate ramp consolidations, there is not a significant difference between these Build Alternatives and the Preferred Alternative from a visual assessment perspective.

The general alignment of I-70 will remain much the same throughout the entire Study Area. As a result, both the Build Alternatives and the Preferred Alternative will have the same visual views from and of the highway.



VAU-1 Westbound west of Prospect Avenue looking northwest

Likewise, the views from the highway will be the same to the No-Build Alternative. Minor widening of the shoulders, longer on- and off-ramps, and potential interchange ramp consolidations is not expected to change the views from highway. The visual quality rating for the Build and Preferred Alternatives are shown in **Table 3.7-3** and **Table 3.7-4**.

**Table 3.7-3 Visual Quality of Surrounding Environment
(Viewers from the Highway)
Build and Preferred Alternatives**

Factor	Zone	VAU-1	VAU-2	VAU-3
Vividness	Foreground	3	3	4
	Midground	3	4	5
	Background	2	2	3
Intactness	Foreground	2	3	4
	Midground	4	4	5
	Background	3	3	3
Unity	Foreground	3	3	3
	Midground	3	4	5
	Background	3	3	4

Visual Quality Scale: 1= Very Low, 4= Average/Moderate, 7= Very High

The views of the highway will be very similar to the No-Build Alternative. The minor widening of the shoulders, longer on- and off-ramps, and potential interchange ramp consolidations are not expected to dramatically change the views of highway. The view of the highway will go mostly unchanged, similar to the view from the highway.

**Table 3.7-4 Visual Quality of the Build and Preferred Alternatives
(Viewers of the Highway)**

Factor	Zone	VAU-1	VAU-2	VAU-3
Vividness	Foreground	2	3	3
	Midground	2	3	4
	Background	2	2	3
Intactness	Foreground	3	3	3
	Midground	2	3	4
	Background	3	3	3
Unity	Foreground	2	3	3
	Midground	2	3	3
	Background	3	3	3

Visual Quality Scale: 1= Very Low, 4= Average/Moderate, 7= Very High

The overall alignment and view of I-70 would remain much the same throughout the entire Study Area with the Build and Preferred Alternatives.

A final visual quality rating for each VAU was determined by taking the sum of all of the ratings (foreground, midground, background) and averaging them. **Table 3.7-5** shows the final ratings. These ratings are meant to provide a relative overall value of the visual quality of the existing landscape. All of the VAU units had an overall final rating of two to three. This indicates that the overall visual quality of the Study Area is low to average when compared to the visual resources that might be found elsewhere such as on a nature preserve or State or National Park.

Table 3.7-5 Visual Quality Rating for each VAU		
Visual Assessment Units	Existing Routes	Build and Preferred Alternatives
VAU-1 – Urban Commercial	2.6	2.6
VAU-2 – Urban Neighborhood	3.1	3.1
VAU-3 – I-435 Area	3.6	3.6
A final visual quality ranking for each VAU was determined by averaging the sum of all three rankings.		

As noted previously in more detail, an initial assessment of existing visual quality was made by breaking the Study Area into three VAUs, and assigning rankings for the vividness, intactness, and unity of foreground, midground, and background views. These rankings were made both for views from the highway and views of the highway. The assessment above looks primarily at the impact from a conceptual perspective.

Are There Mitigation Measures Needed?

The overall view from the roadway and the view of the roadway would remain essentially unchanged. When considering the overall presence of I-70, there is little visual difference between the existing and Preferred Alternative. As such, there are no visual assessment mitigation measures needed.

3.8 Hazardous Waste

This section discusses the known and listed hazardous waste sites in the Study Area and the potential for the alternatives to affect or disturb hazardous wastes at these sites.

What is Hazardous Waste?

Hazardous wastes as regulated by the Environmental Protection Agency (EPA) are defined as “waste with properties that make it dangerous or potentially harmful to human health or the environment. Hazardous wastes can be liquids, solids, contained gases, or sludges. They can be the by-products of manufacturing processes or simply discarded commercial products, like cleaning fluids or pesticides”. In order for a waste to be considered hazardous, it must exhibit at least one of the four characteristics of hazardous waste: ignitability, corrosivity, reactivity, or toxicity. If the waste exhibits just one of these characteristics, it is given the title of hazardous waste.

How did the Study Team Identify Hazardous Waste Sites in the Study Area?

The Study Team completed a modified environmental site assessment for the Study Area based on data received from Environmental Data Resources, Inc. (EDR). Based on the data from EDR, the Study Team completed inspections at sites where a potential for environmental impact was noted and a site visit was recommended. The site inspections consisted primarily of a windshield survey. At some locations a more thorough inspection was completed to identify evidence of hazardous waste or hazardous materials storage.

Where are the Hazardous Waste Sites located within the Study Area?

Based on the data from EDR, 79 hazardous waste sites were identified in the Study Area and recommended for a site investigation. During the site investigations, 24 of the sites were not located and it was determined that the I-70 corridor had already cleared these sites. This left 55 sites that were

What do the four characteristics of hazardous waste mean?

Ignitability - Ignitable wastes can create fires under certain conditions, are spontaneously combustible, or have a flash point less than 60 °C. Examples include waste oils and used solvents.

Corrosivity - Corrosive wastes are acids or bases that are capable of corroding metal containers, such as storage tanks, drums, and barrels. Battery acid is an example.

Reactivity - Reactive wastes are unstable under normal conditions. They can cause explosions, toxic fumes, gases, or vapors when heated, compressed, or mixed with water. Lithium-sulfur batteries are an example.

Toxicity - Toxic wastes are harmful or fatal when ingested or absorbed (e.g., containing mercury, lead, etc.). When toxic wastes are land disposed, contaminated liquid may leach from the waste and pollute ground water.

investigated in the Study Area. No Superfund sites, disposal facilities, or landfills are located within the Study Area. Only one site, 1301 Prospect Avenue, was identified as contaminated. The remaining 54 sites were identified as potentially contaminated.

What is Resource Conservation and Recovery Act (RCRA)?

RCRA's primary goals are to protect human health and the environment from the potential hazards of waste disposal, to conserve energy and natural resources, to reduce the amount of waste generated, and to ensure that wastes are managed in an environmentally sound manner.

The EDR report identified three facilities by ownership at 1301 Prospect Avenue. Two are previous facilities located at the site listed by their owners name; US Fuel #2 and Service Oil/Inner City Oil Company Incorporated. The third is the current owner US Fuels LLC. US Fuel #2 facility is listed as an AST site, the EDR report did not contain any additional information for this facility. The Service Oil/Inner City Oil Company Incorporated facility is listed as a Resource Conservation and Recovery Act (RCRA) Non-Generator/No Longer Regulated (NLR). No issues for this facility were noted in the EDR report. The current facility, US Fuels LLC, is listed in both the Underground Storage Tank (UST) and Leaking Underground Storage Tank (LUST) databases. Five USTs have been removed, two are currently in use. During closure activities of the USTs, contaminants of concern were found at concentrations exceeding target goals although the EDR report does not specify if these exceedances were in soil, groundwater, or both. Comments in the EDR report indicates that both soil and groundwater samples have been collected and groundwater monitoring wells have been installed. A work plan was approved in November 2012 for additional activities. From the EDR report, it appears that cleanup activities are still in progress.

The site investigation at 1301 Prospect Avenue determined that the current occupant of the facility is Prospect Food Mart Convenience Shop and BP Gas Station. Monitoring wells were identified at various locations on the property. Two 55-gallon drums containing purge water were staged behind the building. One 4-inch diameter PVC well casing was identified sticking up from the ground behind the building. The purpose of the casing could not be determined. Based on the site visit it appears cleanup and/or monitoring activities are in progress.

One additional site was identified through the separate Categorical Exclusion (CE) documentation for the Manchester

Bridge project. This site is a permitted Resource Conservation Recovery Act (RCRA) facility permitted under the authority of the Missouri Department of Natural Resources (MDNR). The site is permitted and owned under the name Beazer East Incorporated and was formally known as the Koppers Wood Treating Site. Chemicals of concern at the site are primarily creosote and pentachlorophenol.

As a part of the Manchester Bridge project, MoDOT has coordinated with MDNR and the owners of the Beazer East property. Through this coordination it was decided that construction plans will be submitted to MDNR and Beazer East for review and comment on the foundation design and construction methods. In addition, if the foundation design or construction methods will generate spoils, a sampling plan will be developed and submitted to MDNR and Beazer East.

Do the Alternatives have any Effects on Hazardous Waste Sites?

The alternatives were reviewed with respect to how they may impact the 55 hazardous waste sites identified. The hazardous waste sites anticipated to be potentially affected by each alternative are discussed below.

The Study Team attempted to contact businesses owners of the sites that may be impacted and those owners/managers that were reached on the phone were briefly interviewed. The purpose of the interviews was to ascertain the current and historical condition of the property with regard to environmental problems such as spill or releases of hazardous materials. In addition, the property owners were asked about current or previous site remediation. There were no incidences of spills, releases, or site remediation reported during the interviews. The results of each phone interview are provided in the tables below. This informal interview process is not considered to be a completed assessment of each property but rather an additional tool used to assess the risk of each construction alternative. MoDOT will coordinate with MDNR and Beazer East during the pre-design phase to provide a concept of the design and to get their review of the design concept.

No-Build Alternative

The No-Build Alternative would not impact any of the identified hazardous waste sites, except the Beazer East site (**Map ID 67**). The impacts to this site will result solely from the improvements associated with the Manchester Bridge project. As discussed in the CE document for this project, the severity of the impacts to the site will depend on the type of construction for the bridge piers. At this time, the type of construction and mitigation to limit impacts to the site is unknown. Remediation activity may be warranted in the future if it is determined that the Manchester Bridge project has negatively impacted the site. The type of remediation will be determined at that time.

Geometric Improvements Alternative

The Geometric Improvements Alternative could impact 16 identified hazardous waste sites, through right-of-way acquisition. **Table 3.8-1** at the end of the chapter lists these sites and **Figure 3.8-1** at the end of this chapter shows their location.

The Geometric Improvements Alternative will potentially require a partial take of approximately 2,200 square feet of right-of-way from the 1301 Prospect Avenue site (**Map ID 5**). While the likelihood of encountering hazardous materials on the site is high, the potential impact is low because of the small amount of right-of-way needed. Some level of remediation may be needed if the site is impacted by construction activities, which will be determined during design of the project. At this time, the type of construction and mitigation to limit impacts to the site is unknown. Remediation activity may be warranted in the future if it is determined that the project has negatively impacted the site. The type of remediation will be determined at that time. MoDOT will coordinate with MDNR and EPA during the design phase including providing design drawings at the locations of identified sites and get their input and concurrence. As participating agencies, MDNR and EPA attended two scoping meetings for I-70 Second Tier EIS and provided scoping materials to the Study Team. Both agencies will have the

opportunity to review and comment on this Draft EIS and the alternatives during the comment period.

Like the No-Build Alternative, the Geometric Improvements Alternative will also impact the Beazer East site (**Map ID 67**). The impacts to this site will result solely from improvements associated with the separate Manchester Bridge project.

The remaining listed sites including drycleaner sites, RCRA generators, and storage tanks would not normally be expected to impact construction activities unless an unreported release has occurred. Dry cleaning operations may result in solvent, typically perchloroethylene, contamination of soil and groundwater. USTs located on a site have a minimal probability to have impacted the soil or groundwater. The LUSTs, however, possess a moderate risk to human health and the environment. It is assumed that the LUSTs have resulted in only localized soil contamination from the contents of the tanks. It is most likely that these tanks contained gasoline or fuel oils. Risk to the health of local residents or users of the roadway are minimal, however there could be a risk to the health of workers during construction. No other environmental concerns were identified during the site visits. Based on these observations, there is a relatively low risk of encountering hazardous waste sites within the Geometric Improvements Alternative. If hazardous waste sites are encountered within it, the relative cleanup effort is likely low to medium depending on the extent of the cleanup. If storage tanks are encountered, they would need to be removed and soil sampling would occur. If impact to the soil or groundwater is encountered then additional remediation would be required.

Interchange Consolidations Alternative

The Interchange Consolidations Alternative could impact 16 identified hazardous waste sites, through right-of-way acquisition. **Table 3.8-2** at the end of the chapter lists these sites and **Figure 3.8-1** at the end of this chapter shows them.

The potentially impacted sites are similar to those in the Geometric Improvements Alternative except they do not include the spill site at Police Headquarters (**Map ID 7**), but do include the site at 2710-2718 E 14th Street (**Map ID 51**).

The Interchange Consolidations Alternative will impact the 1301 Prospect Avenue site (**Map ID 5**) and the Beazer East site (**Map ID 67**) in the same manner as the Geometric Improvements Alternative. These specific impacts are discussed under the Geometric Improvements Alternative.

Like the Geometric Improvements Alternative, the remaining listed sites including drycleaner sites, RCRA generators, and storage tank sites would not normally be expected to impact the construction activities unless an unreported release has occurred. Typical impacts from these types of sites are discussed under the Geometrics Improvement Alternative. No other environmental concerns were identified during the site visits. Based on these observations there is a relatively low risk of encountering hazardous waste sites within the Interchange Consolidations Alternative. If hazardous waste sites are encountered within this alternative, the relative cleanup effort is likely low to medium depending on the extent of the cleanup.

Preferred Alternative

The Preferred Alternative could potentially impact 16 identified hazardous waste sites, through right-of-way acquisition. **Table 3.8-3** at the end of the chapter lists these sites and **Figure 3.8-1** at the end of this chapter shows them.

The potentially impacted sites are similar to the other two Build Alternatives, except it does not include the White Swan Laundry (**Map ID 44**) or Brown Industries (**Map ID 45**). It does include the spill site at 1328 Agnes (**Map ID 7**) and the BP Gas Station at 3027 Van Brunt (**Map ID 55**).

The Preferred Alternative will impact the 1301 Prospect Avenue site (**Map ID 5**) and the Beazer East site (**Map ID 67**) in the same manner as the Geometric Improvements Alternative and Interchange Consolidations Alternative. These specific impacts are discussed under the Geometric Improvements Alternative.

Like the other two Build Alternatives, the remaining listed sites including the drycleaner sites, RCRA generators and

storage tank sites would not normally be expected to impact the construction activities unless an unreported release has occurred. Typical impacts from these types of sites are discussed under the Geometrics Improvement Alternative. No other environmental concerns were identified during the site visits. Based on these observations, there is a relatively low risk of encountering hazardous waste sites within the Preferred Alternative. If hazardous waste sites are encountered within this alternative, the relative cleanup effort is likely to be low to medium depending on the extent of the cleanup.

How will Hazardous Wastes be Handled if found during Construction?

If regulated solid or hazardous wastes are found during construction activities, the MoDOT construction inspector will direct the contractor to cease work at the suspect site. The construction inspector will contact the appropriate environmental specialists to discuss options for remediation. The environmental specialist, the construction office and the contractor will develop a plan for sampling, remediation, and continuation of project construction. Independent consulting, analytical, and remediation services will be contracted if necessary. The MDNR and EPA will be contacted for coordination and approval of required activities.

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3.9 Cultural Resources

This section discusses cultural resources including historic properties and archaeological sites within the area of potential affects (APE) and the potential impacts the alternatives will have on them.

How did the Study Team identify Cultural Resources in the APE?

The Study Team’s objective was to reevaluate previously recorded architectural resources and to identify any unknown resources (i.e., buildings, structures, objects, bridges, districts, landscapes, and cemeteries) within or immediately adjacent to the APE. The APE for the architectural survey is defined as all properties that touch the I-70 project footprint where the footprint is outside the existing interstate right of way plus a 100 foot buffer on either side of the project footprint, which could have visual impacts due to the proposed alterations of I-70. The APE is different from the Study Area. The Study Area includes the area from The Paseo to Blue Ridge Cut-off within 300 feet of the center of I-70 on either side. It has been determined that there will be no potential for impacts in areas where the project footprint remains within the existing right of way.

The Study Team reviewed previous cultural resource investigations performed within or near the APE and archival sources to develop an understanding of the types of cultural resources that currently exist within the APE. Based on this information, a predictive model was prepared, which estimates the possibility of other potentially eligible unrecorded cultural resources, particularly archaeological sites and their possible location. The Study Team then performed an architectural survey within the APE. All buildings over 45 years old were photographed, but architectural forms were only completed on those buildings deemed significant and eligible for inclusion into the National Register of Historic Places (NRHP) under one of its four criteria.

A windshield survey review of all potential NRHP properties and their eligibility was completed on May 16, 2013. Included in this windshield survey review and the discussions were

What is a Cultural Resource?

Cultural resources include both tangible and intangible cultural materials including such things as, artifacts, archaeological sites, buildings, ships, cemeteries, bridges and dams, paintings, sculptures, folklore storytelling, and drama.

What is an area of potential affects?

The area of potential affects (APE) is the geographic area or areas within which a project may directly or indirectly cause modification in the character or use of cultural resources, if any exist. The area of potential affect is influenced by the size and nature of the project.

How are properties evaluated for fulfilling NRHP eligibility criteria?

To be considered eligible, a property must meet the National Register Criteria for Evaluation, which involves examining the property's age, integrity, and significance.

Age and Integrity - Is the property old enough to be considered historic (generally at least 50 years old) and does it still look much the way it did in the past?

Significance - Is the property associated with events, activities, or developments that were important in the past? With the lives of people who were important in the past? With significant architectural history, landscape history, or engineering achievements? Does it have the potential to yield information through archeological investigation about our past?

representatives from MoDOT, the SHPO, the Landmarks Commission of Kansas City, and the consultant team. During the windshield survey, all potentially eligible properties were reviewed and their integrity, context, significance, and eligibility under criteria A, B, and C and D were discussed. Additional eligibility under Criterion D will be evaluated during the Phase I archaeology survey that will be performed after the Recommended Alternative is determined. Criterion D eligibility will be evaluated during the Phase I archaeology survey that will be performed after the Recommended Alternative is determined.

Are there Historic Properties within the APE?

The archival review of the I-70 corridor indicated that the APE was settled starting in the late 19th century to the present time. It further suggested that the western portion of the APE was more likely than the eastern portion to have NRHP eligible properties due to how land uses developed. The architectural survey confirmed the conclusions of the archival review with its evaluation of 509 properties and one bridge. The survey identified 239 potentially historic properties, corridors, structures, and bridges. It revealed that the APE consisted of residential, commercial, industrial, public, and religious buildings constructed over a 120 year period, beginning in the late 19th century and continuing to the early 21st century, with the earliest properties located in the western portion of the APE. Although construction was continuous, which was evident in the diverse building forms and styles, the most prolific building periods for residential properties were 1900 to 1910 and for commercial and industrial buildings it was 1920 to 1940. The area south of I-70 consists of mostly commercial and industrial buildings with a few enclaves of residential neighborhoods. This is particularly true within the southeastern portion of the APE, which is predominately modern commercial/industrial. North of I-70, the area is generally residential, however, many of the early residences have been removed and their parcels left vacant or replaced with modern homes. Vacant lots are most common within the APE, but new construction has generally located within a block of the investigated properties. Additionally, several of the buildings within the APE are boarded up and abandoned.

The potential significance of these cultural resources was assessed as part of these investigations. The determination of a cultural resource's significance is predicated on criteria established for the evaluation of properties to the NRHP.

A key location for potential cultural resources was the Paseo/Troost Multiple Resource Area that consisted of 19 contributing properties, seven of which were located directly within the APE. The survey revealed that these seven properties are no longer standing and thus not eligible for the NRHP.

The survey determined that the majority of the buildings in the APE, as well as a structure (a stone wall) and a bridge have been significantly altered. The few buildings in the APE that remain unaltered are in poor condition and are not distinctive examples of architecture. None of these properties is considered eligible to the NRHP for Criterion C, architecture.

Historical research also has not revealed any events or persons of significance associated with any of the residential, commercial, religious, and public properties within the APE with the possible exception of St. Stephen Baptist Church. Secondary resources state that St. Stephen Church was very active in the planning, organization, and participation in the Kansas City Civil Rights Movement and the local community throughout the 1960s. However, no primary resources could be found to verify this information. Brad Wolf from the Kansas City Landmark Commission and Jesse Barnes from the Bruce R. Watkins Cultural Heritage Center also were unable to verify any specific events that St. Stephen Church organized and participated in during the Civil Rights Movement. It is known that Dr. Martin Luther King, Jr. spoke at St. Stephen Church, but no information on his sermon was accessible. Based upon the insufficient archival evidence available, St. Stephen is not recommended eligible to the NRHP for Criteria A or B.

The Paseo, Benton Boulevard, and Van Brunt Boulevard were part of the overall parks and boulevards system designed by George Kessler in 1893 and 1913. The Kansas City Parks Department has decided that George Kessler's Parks and Boulevards System is important and are in the process of

What are the five criteria for inclusion NRHP?

The five criteria are:

(A) That are associated with events that have made a significant contribution to the broad patterns of our history

(B) That are associated with the lives of persons significant in our past

(C) That embody distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction

(D) That have yielded, or may be likely to yield, information important in history or prehistory.



St. Stephen Baptist Church

nominating it as a district to the NRHP under Criterion A, for community planning, and Criterion C, for landscape design. It has been determined, during the nomination process that the portions of the boulevards within the APE contribute to the district; however, these portions have been altered. Due to the changes and proposed minimal project impacts, the proposed modifications to I-70 will have no adverse effect on the boulevards.

The Section 106 Review for historical and architectural resources concluded that no additional resources in the APE other than The Paseo, Benton Boulevard, and Van Brunt Boulevard are eligible to the NRHP as part of a proposed historic district. They, and numerous associated resources outside the APE, comprise the Kansas City Parks and Boulevard System, for which a National Register nomination is presently being prepared. Only a small portion of these three boulevards lie within the APE and each has been altered, thus affecting the historic integrity of these sections and the project effects determination. The "Cultural Resource Archival and Architectural Review" report details these findings and was submitted to the SHPO for review. Further consultation among the SHPO, the KC Parks and Boulevard NRHP nomination preparer, MoDOT historic preservation staff, and the consultant Study Team has resulted in the identification of only minor impacts to these boulevards which will have no adverse effect to the historic parks and boulevard system. The SHPO's concurrence with this assessment is provided in **Appendix D.3**.

How did the Study Team identify Archaeological Resources in the Study Area?

During the I-70 First Tier EIS, the Study Team completed a First Tier archival study for the I-70 First Tier EIS Study Area. The study consisted of a literature and records review as well as a windshield cultural resource survey. The area studied covered 300 feet on either side of the shoulder of I-70 along an 18 mile corridor stretching from just east the Missouri-Kansas border to the eastern edge of the I-470 interchange. The Study Team utilized the results of this First Tier archival study to identify archaeological resources in the Study Area. After the final determination of the Recommended Alternative, a Phase

I archaeological survey will be completed for the I-70 Second Tier EIS APE for the archeological survey, which may be different than the APE for the architectural survey.

What Known Archaeological Sites are within the Study Area?

The First Tier archival study identified 18 known archaeological sites previously recorded within the I-70 First Tier EIS Study Area. None of these sites are within the I-70 Second Tier EIS Study Area.

The First Tier archival study revealed nine areas of moderate to high potential for archaeological sites all within the eastern portion of the I-70 First Tier EIS Study Area. Three of the areas, one designated high potential and two of moderate potential, fall within the eastern extent of the I-70 Second Tier EIS APE in the I-435 interchange area. The study stated that not all potential archaeological sites could be identified with this study and that a Phase I archaeological survey would be necessary to identify any remaining cultural resources before construction activities began. This Phase I archaeology survey will take place after the final determination of the Recommended Alternative and will be documented in the Final EIS.

Do the Alternatives have any Effects on the Historic Properties in the APE?

No-Build Alternative

The No-Build Alternative will not affect any of the properties.

Geometric Improvements Alternative:

The Geometric Improvements Alternative will impact the three Boulevards. At The Paseo, it will push the angle of the I-70 ramps out and separate them from the outer road, which would result in temporary effects to the medians immediately on either side of the bridge. A possible interchange reconfiguration and bridge reconstruction would result in permanent effects to the median of The Paseo under the bridge.

At Benton Boulevard, the Geometric Improvements Alternative will remove the on-ramp from Benton Boulevard to westbound I-70, but connectivity across I-70 on Benton Boulevard will remain.

The Geometric Improvements Alternative at Van Brunt Boulevard will improve the grade of the ramps and remove the outer road access to Van Brunt Boulevard on the north side of I-70. This would result in temporary or minor permanent effects to the median immediately adjacent to the ramp termini. The ramps are being replaced in the same location so effects should be minor. Improvements allow for the addition of sidewalks on both sides of Van Brunt Boulevard.

None of the features that make the boulevards historic will be impacted. Because the portions of the three Boulevards within the APE have been previously altered, the Geometric Improvements Alternative will have no adverse effect on the boulevards.

Interchange Consolidations Alternative

The Interchange Consolidations Alternative will impact the three Boulevards. At The Paseo, it will push the angle of the I-70 ramps out and separate them from the outer road, which would result in temporary effects to the medians immediately on either side of the bridge. A possible interchange reconfiguration and bridge reconstruction would result in permanent effects to the median of The Paseo under the bridge.

At Benton Boulevard, the Interchange Consolidations Alternative will remove the on-ramp from Benton Boulevard to westbound I-70, but connectivity across I-70 on Benton Boulevard will remain.

The Interchange Consolidations Alternative at Van Brunt Boulevard will improve the grade of the ramps and remove the outer road access to Van Brunt Boulevard on the north side of I-70. This would result in temporary or minor permanent effects to the median immediately adjacent to the I-70 ramp. The ramps are being replaced in the same location so effects should be minor. Improvements allow for the addition of sidewalks on both sides of Van Brunt Boulevard.

None of the features that make the boulevards historic will be impacted. Because the portions of the three Boulevards within the APE have been previously altered, the Interchange Consolidations Alternative will have no adverse effect on the boulevards.

Preferred Alternative

The Preferred Alternative will impact the three Boulevards. At The Paseo, it will push the angle of the I-70 ramps out and separate them from the outer road, which would result in temporary effects to the medians immediately on either side of the bridge. A possible interchange reconfiguration and bridge reconstruction would result in permanent effects to the median of The Paseo under the bridge.

At Benton Boulevard, the Preferred Alternative will replace the Benton Boulevard bridge over I-70 on fill. The on-ramp to westbound I-70 will tie in at new location and a new connector road from Truman Road will tie in at this same location. It is possible that a signal will need to be added here, which could change the visual quality of Benton Boulevard. The Preferred Alternative will provide more green space around Benton Boulevard, while connectivity across I-70 including the sidewalks on both sides will remain.

The Preferred Alternative at Van Brunt Boulevard will improve the grade of the ramps and remove the outer road access to Van Brunt Boulevard on the north side of I-70. This would result in temporary or minor permanent effects to the median immediately adjacent to the I-70 ramp. The ramps are being replaced in the same location so effects should be minor. Improvements allow for the addition of sidewalks on both sides of Van Brunt Boulevard.

None of the features that make the boulevards historic will be impacted. Because the portions of the three Boulevards within the APE have been previously altered, the Preferred Alternative will have no adverse effect on the boulevards.

Do the Alternatives have any Effects on the Archaeological Resources in the APE?

No-Build Alternative

The No-Build Alternative will have no effect on the potential unknown archaeological resource locations.

Build Alternatives

Potential unknown archaeological resource locations could be affected by the Build Alternatives. This will be determined through a Phase I archaeological survey for the Recommended Alternative to be included in the Final EIS.

How will Project Effects to Historic Properties and Archaeological Resources be Mitigated?

The three boulevards are protected under Section 4(f) of the Department of Transportation Act as both park and recreation facilities and historic properties; see **Section 3.3** for the discussion of the boulevards as park and recreation facilities. The Study Team met with representatives of the Kansas City, Missouri Parks and Recreation Department to discuss the impacts and the potential determination of a De Minimis impact. The representatives from the Parks and Recreation Department agreed with the Study Team that the impacts were minor in nature and would not impact the use of the boulevards or their features. This determination will be made prior to the Final EIS after the Preferred Alternative, its impacts to the boulevards, and the Study Team's determination of a De Minimis impact are presented to the Kansas City Parks and Recreation Board. A letter to FHWA stating the Parks and Recreation Department's support of this determination will be signed by Mark McHenry from the board and provided with the Final EIS. Any mitigation needed as a result of the impacts to the three boulevards will be developed through the Section 4(f) De Minimis process.

Mitigation for any impacts to archaeological sites will be developed after the Phase 1 survey and for the Final EIS.

3.10 Noise

This section discusses the potential effects of improvements to I-70 on noise levels in the Study Area. Studies have shown that some of the most common sources of urban and rural noise are associated with transportation. Traffic noise is one of the most dominant concerns expressed by the public during development and expansion of transportation systems.

In 1982, the Federal Highway Administration (FHWA) established regulations under Title 23 of the Code of Federal Regulations, Part 772 to evaluate the effects of highway traffic noise. This guidance commonly known as 23 CFR 772 provides guidelines for highway noise mitigation and abatement. To conform to 23 CFR 772, the Missouri Department of Transportation (MoDOT) created their own Traffic Noise Policy in 1972. MoDOT's policy provides guidance for determining the feasibility and need of noise abatement measures. FHWA has approved MoDOT's Traffic Noise Policy.

Fundamentals of Noise

Noise can be defined as unwanted sound. Traffic noise (or any noise) can disrupt normal activities when the noise reaches certain levels and when the noise is distinctly louder than the typical ambient noise environment. Sound is caused by vibrations of air molecules given off when an object moves. The vibrations travel through the air like ripples on water until they eventually lose energy. When the vibrations reach a human's ear, they hear what is called sound.

The strength of sound is measured with a metering instrument that uses units called "decibels". A decibel (dB) is a logarithmic unit that is the ratio of a sound pressure level to a standard reference level. Sound is measured on a logarithmic scale because the human ear is responsive to an intense range of frequencies; therefore, the sensitivity of the ear is more logarithmic than linear.

What is dB(A)?

Since sound is made up of varying frequencies, sound level meters will use the weighting system to filter out frequencies the human ear cannot detect. The most common filter is called the A-weighted scale and is expressed as "dB(A)".

What is meant by a Logarithmic Scale?

Since decibels are measured on a logarithmic scale, noise levels do not follow a linear progression. A doubling of noise energy creates an actual increase of about 3 dB(A). For example, if one source of noise is at a 50 dB(A) level, a doubling of the noise intensity (two identical 50 dB(A) sources) would create a combined level of about 53 dB(A), not 100 dB(A).

When considering highway noise, an adjustment or weighting of high and low frequencies is made to approximate how the average human hears sounds. Since sound is made up of varying frequencies, sound level meters use a weighting system to filter out frequencies the human ear cannot detect. The most common filter is called the A-weighted scale and is expressed as dB(A). **Figure 3.10-1** shows examples of noise levels associated with highways and other common activities in dB(A).

The decibel scale is very useful but it can be somewhat confusing since the mathematical operations differ from the normal arithmetic scale. On a logarithmic scale the sound combined from two identical noise sources will create a 3 dB(A) increase over the sound created from one source operating alone. In other words, two 50 dB(A) sources together would result in a sound level measuring 53 dB(A), not 100 dB(A). Also on a logarithmic scale, an increase or decrease of 10 dB(A) in sound level is perceived as a doubling or halving of sound level to a listener. For example, a sound level of 50 dB will be heard as twice as loud as a sound level at 40 dB(A), but only half as loud as a sound level at 60 dB(A).

Highway noise is not constant; it varies over time with the number, type, and speed of the vehicle which produces the noise. To measure the changing levels of noise, a calculated average noise level is used that represents the steady-state noise level during any given amount of time. This calculated average is referred to as the *energy-equivalent sound level*, or L_{eq} , and represents all noise levels averaged over a given time period.

Noise levels in this analysis are based on a L_{eq} descriptor. One of the most common descriptors of noise is described as $L_{eq}(h)$ or hourly L_{eq} . This represents the average A-weighted sound level over one hour. An additional descriptor sometimes used is called L_{10} and represents an A-weighted sound level that is exceeded 10 percent of the time. The hourly L_{eq} is the most common descriptor of highway noise used by many state highway agencies (including MoDOT) and the FHWA.

What is Equivalent Sound Level (L_{eq})?

Equivalent Sound Level (L_{eq}) is a calculated average of the changing levels of noise during a given amount of time for a location.

Figure 3.10-1 Illustrated Comparison of Noise Levels

COMMON SOUND/NOISE LEVELS		
Outdoor	dB(A)	Indoor
	110	Rock band at 5 meters
Jet flyover at 300 meters		
Pneumatic hammer	100	Subway train
Gas lawn mower at 1 meter		
	90	Food blender at 1 meter
Downtown (large city)	80	Garbage disposal at 1 meter
		Shouting at 1 meter
Gas Lawn mower at 30 meters	70	Vacuum cleaner at 3 meters
Commercial area		Normal speech at 1 meter
Air conditioning unit	60	Clothes dryer at 1 meter
Babbling brook		Large business office
Quiet urban (daytime)	50	Dishwasher (next room)
Quiet urban (nighttime)	40	Library
	30	
	20	
	10	
		Threshold of hearing
	0	

Source: FHWA 1980

A key concept in evaluating potential noise impacts is the perceived effect of incremental increases in existing noise levels. The relationships between changes in sound levels, loudness, and acoustic energy are presented in **Table 3.10-1**. For example, the table shows that an increase of 3 dB(A) is barely perceptible, an increase of 5 dB(A) is readily perceptible, and a 10 dB(A) increase would be perceived by someone to be a doubling of the noise level (loudness).

Table 3.10-1 Relationships between Changes in Sound Levels, Loudness, and Acoustic Energy		
Sound Level Change	Change in Loudness^{1,2}	Relative Change in Acoustic Energy³
+30 dB(A)	Eight Times as Loud	1,000
+20 dB(A)	Four Times as Loud	100
+10 dB(A)	Twice as Loud	10
+5 dB(A)	Readily Perceptible	~3
+3 dB(A)	Barely Perceptible	2
0 dB(A)	No Change	0
-3 dB(A)	Barely Perceptible	1 / 2
-5 dB(A)	Readily Perceptible	~1 / 3
-10 dB(A)	Half as Loud	1 / 10
-20 dB(A)	1/4 as Loud	1 / 100
-30 dB(A)	1/8 as Loud	1 / 1000

Source: FHWA 2011

¹ Loudness pertains only to the perceived magnitude of a sound.

² Relative to the loudness of an initial sound level.

³ Relative to the acoustic energy of an initial sound level.

The degree of disturbance or annoyance of unwanted sound depends essentially on three things:

- The amount and nature of intruding noise
- The relationship between the ambient noise and the intruding noise
- The type of activity occurring when the intruding noise is heard

It is important to note that individuals have different hearing sensitivity to noise. Loud noises are bothersome more than others and some individuals become angered if an unwanted noise persists. The time patterns of noise also enter into a person's judgment of whether or not a noise is objectionable. For example, the blowing of a car horn at night, when ambient noise levels are approximately 45 dB(A), would generally be much more objectionable than the blowing of a car horn in the afternoon, when ambient noise levels might be 55 dB(A).

Over a period of time, individuals tend to accept the noises that intrude into their daily lives, particularly if the noises occur at predicted intervals and are expected. Attempts have been made to regulate many types of noises including airplane noise, factory noise, railroad noise, and highway traffic noise.

What are the Sources of Highway Noise in the Study Area?

Highway noise depends largely on the volume of traffic, the speed of the traffic, and the number of trucks in the traffic flow. Highway noise will increase with heavier traffic volumes, higher speeds, and a greater numbers of trucks on the highway. The noise is typically produced from a vehicle's engine, exhaust, and tires; however, the loudness of highway noise can be increased by a vehicle's faulty equipment and defective mufflers. In addition, any condition such as a steep incline that causes heavy use of the engines will also increase vehicle noise levels along the highway.

How are Noise Impacts Determined?

To determine if highway noise levels are compatible with various land uses, the FHWA has developed noise abatement criteria and procedures to be used in the planning and design of highways. These abatement criteria and procedures are in accordance with Title 23 Code of Federal Regulations (CFR), Part 772, U.S. Department of Transportation (DOT), FHWA, Procedures for Noise Abatement of Highway Traffic Noise and Construction Noise. A summary of the MoDOT Noise Abatement Criteria (NAC) for various land uses is presented in **Table 3.10-2**.

A receptor is defined as a discrete or representative location of a noise sensitive area(s), for any of the land uses listed in **Table 3.10-2**. Receptors are impacted if noise levels increase over the Noise Abatement Criteria as defined by MoDOT. Impacted receptors would benefit from noise mitigation measures that lower noise levels at the location. In addition to the NAC criteria, MoDOT uses a substantial increase criterion to define noise increase using an existing level. Based on MoDOT noise policy, a 15 dB(A) increase of future predicted noise levels above existing noise levels is considered a "substantial increase".

What are Noise Abatement Criteria?

Noise abatement criteria are the FHWA standards for highway noise levels affecting specific nearby noise sensitive land uses.

Table 3.10-2 Noise Abatement Criteria Hourly A-Weighted Sound Level in Decibels

Activity Category	Activity Leq(h) (dB(A))	Evaluation Location	Receptor Description
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B1	67	Exterior	Residential
C1	67	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreational areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E1	72	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F.
F	NA	NA	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, ship yards, utilities (water resources, water treatment, electrical), and warehousing.
G	NA	NA	Undeveloped lands that are not permitted for development.

Source: 23 CFR Part 772

Note: ¹ Includes undeveloped lands permitted for this activity category

What Noise Monitoring Was Done?

What is Ambient Noise?

Ambient noise is from natural and mechanical sources as well as human activity that are typically heard outside.

The initial step in a noise analysis involves measuring ambient noise levels at various locations throughout the Study Area. Noise from natural and mechanical sources and human activity typically constitute the ambient noise in an area. The purpose of the ambient noise level measurement is to quantify the existing acoustic environment and provide a baseline for

assessing the impact of future noise levels on the receptors in the vicinity of the proposed action resulting from increased traffic and the new roadway alignment. Field measurements will also assist in evaluating the level of noise reduction that may be provided by existing elements such as fences and scattered vegetation that cannot be precisely modeled by the computer. This information will be an important consideration in the determination of noise impacts and the evaluation of any associated noise abatement measures for the project.

Noise levels were measured at 25 locations within the Study Area, as shown in **Figure 3.10-2** at the end of this chapter. Outdoor measurements were taken on March 12, 2013 and March 13, 2013. The noise meter was placed 5 feet above the ground level. Noise levels were measured for 20 minutes at each location and the equivalent steady-state sound level (L_{eq}) was collected for each site logged in one minute intervals. One minute data log is important to determine any abnormal noise events at each site. Traffic counts were recorded concurrently at 12 monitoring locations. No interior noise level measurements were performed.

What are the Noise Monitoring Results?

A summary of measured noise levels is provided in **Table 3.10-3**. Measured L_{eq} (20 minute) noise levels ranged from 52.8 dB(A) to 72.4 dB(A). Meteorological data collected in Kansas City, MO less than 0.5 miles north of I-70 at Manchester Trafficway shows light to moderate winds and no precipitation during the monitoring period.

Noise Modeling Software

FHWA's Traffic Noise Model version 2.5 (TNM 2.5) traffic noise prediction and analysis software is capable of predicting highway traffic noise. Released in April 2004, TNM 2.5 is the latest version currently available and is the required noise analysis software on all federal-aid highway projects. TNM predicts noise levels at receptor location based on vehicle volume, speed, fleet mix, distance to receiver, and area terrain.

Table 3.10-3 Measured Noise Levels

Monitoring Location	Monitored Period	Location	Land Use	L_{eq} (dB(A))
1	3/12/13 09:25-09:45	Vine St/E 14 th St	Residential	67.6
2	3/12/13 09:51-10:11	Woodland Ave/E 14 th St	Residential	69.0
3*	3/12/13 08:25-08:45	Euclid Ave/E 14 th St	Residential	71.8
4	3/12/13 10:20-10:40	E 15 th Ter./Michigan Ave	Residential	57.7
5	3/12/13 10:49-11:09	E 13 th St/Park Ave	Residential	58.8
6*	3/12/13 07:50-08:10	E 14 th St/Park Ave	Residential	71.2
7	3/12/13 11:25-11:45	Grove Park	Recreational	59.7
8*	3/12/13 08:55-09:15	E 13 th St/Bellefontaine Ave	Residential	72.4
9	3/13/13 07:12-07:32	Indiana Ave/E 14 th St	Residential	52.8
10*	3/13/13 07:12-07:32	Bales Ave/E 24 th St	Church	67.7
11	3/13/13 14:58-15:18	E 26 th St/Askew Ave	Residential	56.6
12*	3/13/13 17:40-18:00	Askew Ave/E 22 nd St	Residential	66.3
13	3/13/13 13:36-13:56	Askew Ave/E 19 th St	Church	60.1
14	3/13/13 14:17-14:37	Cleveland Ave/E 25 th St	Residential	65.6
15*	3/13/13 17:10-17:30	E 28 th St/Myrtle Ave	Residential	69.9
16	3/13/13 15:39-15:59	E 28 th St/Wenzel Ave	Residential	61.2
17	3/13/13 11:49-12:09	Kensington Ave/E 30 th St	Residential	66.6
18*	3/13/13 16:04-16:24	Kensington Ave/E 29 th St	Residential	68.3
19	3/13/13 11:19-11:39	Cypress Park	Recreational	63.0
20*	3/13/13 16:38-16:58	Brighton Ave	Residential	61.2
21	3/13/13 10:22-10:42	E 30 th Ter./Oakley Ave	Residential	59.6
22*	3/13/13 08:12-08:32	E 30 th St/Topping Ave	Residential	71.4
23*	3/13/13 08:43-09:03	S Corrington Ave	Residential	62.8
24*	3/13/13 09:15-09:35	Marsh Ave/E 32 nd St	Residential	70.5
25*	3/13/13 09:45-10:05	Laurel Ave/E 38 th Ter.	Residential	54.1

Note: Traffic counts were collected at the locations denoted with an asterisk (*)

The traffic noise scenarios evaluated in this analysis were the following:

- Existing loudest-hour noise levels (2013)
- Design year (2040) No Build loudest-hour noise levels
- Design year (2040) Build loudest-hour noise levels

All noise-sensitive land uses and terrain features within the study area of the proposed facility were included in the noise model.

Predicted Noise Levels

Noise levels were predicted for the existing year (2013) and the design year (2040) loudest-hour traffic volumes at 1,274 receptor locations that represented existing land uses. The number and types of predicted traffic noise impacts in each scenario and impact type are shown in **Table 3.10-4**. The magnitude of the predicted noise levels and their increase over existing levels determines if a noise impact occurs and the type of impact such as receptors exceeding FHWA NAC or substantial noise level criteria.

Predicted noise levels for the Build Alternatives were calculated and compared to the No-Build Alternative and to the existing condition noise levels. The effect of future traffic volumes on noise levels within the Study Area would result in noise levels higher than the existing conditions. The results are shown in **Figure 3.10-3** at the end of this section. The average increase in noise levels by 2040 was approximately 3 dB(A) over existing.

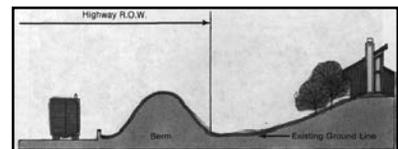
Noise Abatement Measures

Noise abatement measures are considered when predicted noise levels approach or exceed the FHWA noise abatement criteria or when predicted noise levels would substantially exceed existing noise levels.

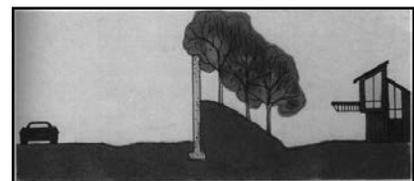
A noise abatement measure is any positive action taken to reduce the impact of traffic noise on an activity area. MoDOT has established criteria for the noise abatement evaluation process. Feasibility and reasonableness of a noise abatement measure must be considered. Feasibility is primarily concerned with the ability of the proposed measure to reduce noise levels while considering engineering and safety issues. For example, a noise barrier should be located beyond the clear recovery zone or be incorporated into needed safety devices. Feasibility of the noise barrier should also consider access, drainage and safety requirements. The topography of the area should be such that a barrier can be built. Reasonableness is based on socioeconomic and environmental factors. Both feasibility and reasonableness should be achieved for the noise abatement to be justified and constructed as part of the highway project.

What is a Noise Abatement Measure?

A noise abatement measure is any positive action taken to reduce the impact of traffic noise on a noise receptor.



FHWA Drawing showing an Earth Berm



FHWA Drawing showing an Earth Berm with a Noise Wall

Table 3.10-4 Noise Impact Summary										
Alternative	Approximate Number of Receptors Approaching or Exceeding FHWA NAC							Substantial Noise Level Increase*	Impacts Due to Both Criteria	Total Impacts Per CFR 772
	A	B	C	D	E	F	G			
Existing	0	667	10	0	6	0	-	N/A	N/A	683
No-Build	0	863	15	0	11	0	-	N/A	N/A	889
Geometric Improvements	0	890	15	0	12	0	-	N/A	N/A	917
Interchange Consolidations	0	884	15	0	12	0	-	N/A	N/A	911
Preferred	0	894	15	0	13	0	-	N/A	N/A	922

*Predicted MoDOT "substantial increase" traffic noise model impact

How Does Horizontal Alignment Relate to Noise?

Horizontal alignment as it relates to noise refers to the distance between the roadway and the noise receptor.

Abatement measures, such as noise walls, earth berms, and depressed roadway segments, are intended to reflect or absorb highway traffic noise to reduce noise to acceptable levels. The MoDOT noise policy discusses various measures can be considered as a means for reducing or eliminating traffic noise impacts.

The following is a discussion of potential noise abatement measures to be considered for the impacted receptors within the Study Area.

How Does Vertical Alignment Relate to Noise?

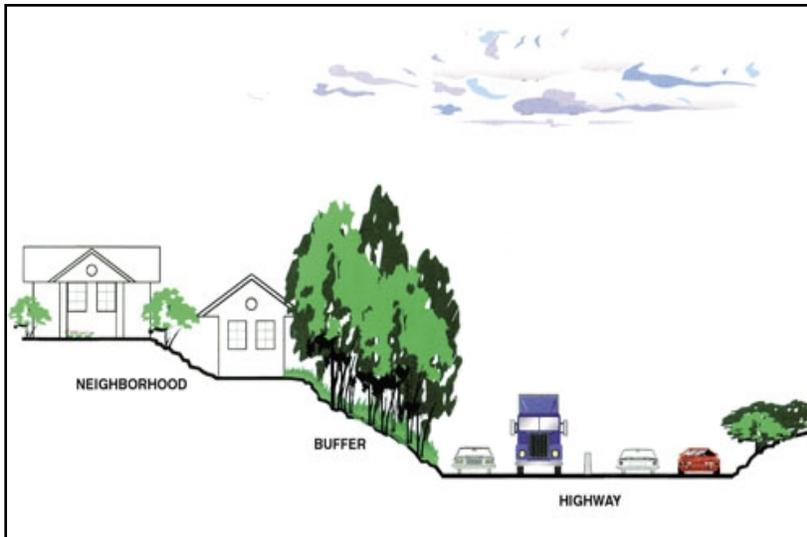
Vertical alignment as it relates to noise refers to whether the roadway is lower or higher than the noise receptor.

Traffic System Management Measures - Traffic system management measures that limit vehicle type, speed, volume, and time of operations are often effective noise abatement measures. However, these types of measures are not considered appropriate for this project due to their effect on the capacity and level of service of the alternatives and the fact that they would not meet the purpose of and need for the proposed project.

Roadway Alignment Selection - The selection of roadway alignments for noise abatement purposes should consider the balance between noise impacts and other engineering and environmental factors. For noise abatement, horizontal alignment selection is primarily a matter of locating the roadway at a sufficient distance from noise sensitive areas.

Changes in vertical alignment can be effective in limiting noise impacts of certain roadway facilities. Depressing or raising the highway elevations can create cut and fill slopes which may block the line of sight from a receiver to a road and provide shielding from traffic noise. Modifications to the proposed alignment for the reduction of traffic noise levels and traffic noise impacts will not be reasonable for this project given the limited right of way available in a highly urbanized area.

Buffer Zones - In areas of impacted receptors where abatement measures were considered and found to be not reasonable, a vegetative barrier could be considered for psychological and aesthetic screening. Vegetation that is high enough, wide enough, and dense enough so that it cannot be seen through can decrease highway traffic noise. Studies have shown that a 200-foot (61-meter) width of dense vegetation can reduce noise levels by ten dB(A)_{Leq}. However, it is often impractical to plant this quantity of vegetation to achieve such reductions. This measure can be considered in certain situations during the final design for I-70.



Sample of a Buffer Zone



Noise Walls

Noise Walls - This measure involves construction of solid barriers to effectively diffract, absorb, and reflect highway traffic noise. A noise barrier must be high enough and long enough to shield the receptor from significant sections of the highway in order to provide sufficient noise reduction. Access openings in the barrier severely reduce the noise reduction provided by the barrier. It then becomes economically unreasonable to construct a barrier for a small noise reduction.

Safety at access openings (driveways, crossing streets, etc.) due to restricted sight distance is also a concern. Furthermore, to provide a sufficient reduction, a barrier's length would normally be eight times the distance from the barrier to the receptor. For example, a receptor located 50 feet from the barrier would normally require a barrier 400 feet long. An access opening of 40 feet (10 percent of the area) would limit its noise reduction to approximately four dB(A).

During final design of the Preferred Alternative, it is recommended that noise barriers be evaluated for feasibility and reasonableness for the abatement of all predicted traffic noise impacts identified in the traffic noise analysis. The location, length, height, cost, and receptors studied and benefited should be included in the study. The final decision to construct the proposed noise barrier should be made upon completion of the project design and the public involvement process taking into consideration the opinions of benefited property owners and residents, and upon FHWA approval.

What will be the Noise Impacts from Construction?

The major construction activities for this project are expected to be earth removal, hauling, grading, and paving. Temporary and localized construction noise impacts will likely occur as a result of these activities. Temporary speech interference for passersby and individuals living or working near the project can be expected. Noise levels in the Study Area will be increased during construction. The sound levels resulting from construction activities at nearby noise-sensitive receivers will be a function of the types of equipment utilized, the duration of the activities, and the distances between construction activities and nearby land uses.

If meeting the project schedule requires that earth removal, grading, hauling, and/or paving must occur during evening, nighttime and/or weekend hours in the vicinity of residential neighborhoods, the contractor shall notify MoDOT as soon as possible. In such instance(s), all reasonable attempts shall be made to notify and to make appropriate arrangements for the mitigation of the predicted construction noise impacts upon the affected property owners and/or residents.

Generally, low-cost and easily implemented construction noise control measures should be incorporated into the project plans and specifications to the extent possible. These measures include, but are not limited to, work-hour limits, equipment exhaust muffler requirements, haul-road locations, elimination of “tail gate banging,” ambient-sensitive backup alarms, construction noise complaint mechanisms, and consistent and transparent community communication.

What are the Next Steps?

A copy of this traffic noise analysis will be available to local officials to ensure, to the maximum extent possible, future developments are planned, designed, and programmed in a manner that will avoid traffic noise impacts.

Noise abatement measures that are feasible and reasonable are likely to be incorporated into this project for the benefit of all predicted traffic noise impacts identified in the traffic noise analysis. Prior to the approval or issuance of the Final Environmental Impact Statement, a detailed noise analysis will be conducted for the preferred alternative to identify the locations where noise abatement is feasible and reasonable and the locations that have no feasible and reasonable abatement. The analysis will include preliminary locations, receptors studied and benefited, length, and average height of the proposed barriers.

The final decision to construct the proposed noise barrier should be made upon completion of the project design and the public involvement process taking into consideration the opinions of benefited property owners and residents, and upon FHWA approval.

Construction noise impacts, some of them potentially extreme, will occur due to the close proximity of numerous noise-sensitive receptors to project construction activities. It is the recommendation of this report that all reasonable efforts should be made to minimize exposure of noise-sensitive areas to construction noise impacts. The contractor shall notify MoDOT if construction activities are required in the vicinity of one or more residential neighborhoods.

3.11 Air Quality

This section discusses the potential effects of I-70 alternatives on air quality. Air quality is regulated by the U.S. Environmental Protection Agency (EPA) under jurisdiction of the Federal Clean Air Act of 1970 and its amendments. Three sets of air pollutants would be of concern with the I-70 Second Tier EIS: Criteria pollutants regulated under the National Ambient Air Quality Standards (NAAQS), Mobile Source Air Toxics (MSATs), and general carbon emissions from motor vehicles.

What are the National Ambient Air Quality Standards (NAAQS)?

The NAAQS were formulated to protect public health, safety, and welfare from known or anticipated air pollutants. The most recent amendments to the Clean Air Act (CAA) contain criteria for sulfur dioxide (SO₂), particulate matter (PM₁₀, ten-micron, and smaller; and PM_{2.5}, 2.5 micron, and smaller) carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), and lead (Pb). **Table 3.11-1** shows the NAAQS as of December 2012.

Locations that do not meet these standards are designated by the EPA as “nonattainment” areas for each pollutant that does not meet the standards. Amendments to the Clean Air Act have established time schedules for the states to reduce pollutant levels to comply with the NAAQS in nonattainment areas.

For transportation projects, ground-level ozone, carbon monoxide, and particulate matter are the most important pollutants to consider. These pollutants are monitored on a regional level from several stations around the Kansas City Metropolitan Area.

What Measuring Units are Used for Air Quality Measurements?

When chemical compounds are in tiny concentrations, they are often represented with one of the following:

Parts Per Million (ppm): This is a ratio of the number of molecules of a pollutant compared to a million molecules of air. So 3 ppm concentration of CO means 3 CO molecules per million air molecules.

Parts Per Billion (ppb): This is a ratio of the number of molecules of a pollutant compared to a billion molecules of air.

Micrograms (µg): A microgram is a millionth of a gram. µg/m³ is shorthand for micrograms per cubic meter. (Similarly, mg/m³ is milligrams per cubic meter; one thousandth of a gram.)

Microns: are millionths of a meter. The classes of particulate pollution of concern are particulate matter smaller than ten microns in size (PM₁₀) and particulates smaller than 2.5 microns in size (PM_{2.5}).

Table 3.11-1 National Ambient Air Quality Standards (NAAQS) as of December 2012

Pollutant	Averaging Time	Primary Standard¹	Secondary Standard²
Sulfur Dioxide (SO₂)	1 – Hour	0.075 ppm (365 µg/m ³)	No Secondary Standard
	3 – Hour	No Primary Standard	0.5 ppm (1300 µg/m ³)*
Particulate Matter (PM_{2.5})	Annual (Arithmetic Mean)	12 µg/m ³	15 µg/m ³
	24 – Hour	35 µg/m ³	Same as Primary
Particulate Matter (PM₁₀)	24 – Hour	150 µg/m ³ *	Same as Primary
Carbon Monoxide	8 – Hour	9 ppm (10 mg/ m ³)*	No Secondary Standard
	1 – Hour	35 ppm (40 mg/ m ³)*	No Secondary Standard
Ozone (O₃)	8 – Hour ³ (1997 std)	0.08 ppm (157 µg/m ³)	Same as Primary
	8 – Hour (2008 std)	0.075 ppm	Same as Primary
Nitrogen Dioxide (NO₂)	Annual (Arithmetic Mean)	0.053 ppm (100 µg/m ³)	Same as Primary
	1 – Hour	0.100 ppm	No Secondary Standard
Lead (Pb)	Quarterly Average ⁴ (1978 std)	1.5 µg/m ³	Same as Primary
	Rolling 3 Month Average (2008 std)	0.15 µg/m ³	Same as Primary

¹ Primary Standard means the level of air quality, which provides protection for public health with an adequate margin of safety.

² Secondary Standard means the level of air quality, which may be necessary to protect welfare from unknown or anticipated adverse effects.

³ The 8 – hour primary and secondary are met when the 3-year average of the 4th highest average concentration is less than or equal to 0.08 ppm (1997 std).

⁴ The 1978 standard remains in effect until one year after an area is designated for the 2008 standard.

* Concentration not be exceeded more than once per year.

Source: United Environmental Protection Agency, www.epa.gov/air/criteria.html, December 2012

Ozone

Ozone is of substantial concern for transportation projects in the Kansas City region. Ozone occurs naturally in the upper levels of the atmosphere, about 10 to 30 miles above the earth's surface and blocks out harmful ultraviolet radiation from the sun. However, ground-level ozone is a man-made pollutant that irritates the respiratory system and can cause serious health problems.

Ground-level ozone forms when volatile organic compounds (VOC) mix with nitrogen oxides in the presence of heat and sunlight. Both VOC and nitrogen oxides are products of vehicle exhausts and vapor release during refueling among other sources. As a result, this is a concern regarding highway projects that may encourage additional driving, reduce congestion, and/or reduce vehicle idling.

EPA's 8-hour ozone standard of 0.075 parts per million (ppm) is designed to protect against longer ozone exposure periods. As the existing environmental regulations are modified or new environmental regulations are put in place, MoDOT will address those ramifications for this study accordingly.

Carbon Monoxide and Particulate Matter

Although ozone concentrations are of substantial concern in the Kansas City region, projects developed along I-70 will also have to undergo other air quality analyses. Traffic volumes on all segments of I-70 already exceed the threshold of an average daily traffic volume of 54,000 for federally funded projects that require an air quality analysis according to an interagency agreement developed by MoDOT, Missouri Department of Natural Resources (MDNR) and FHWA.

Carbon monoxide is a colorless and odorless gas which is the product of incomplete combustion, and is the major pollutant from gasoline-fueled motor vehicles. Carbon monoxide is harmful because it reduces oxygen delivery to the body's organs and tissues. It is most harmful to those who suffer from heart and respiratory disease. Carbon monoxide emissions are greatest from vehicles operating at low speeds and prior to complete engine warm-up (within approximately

What Other Vehicular Air Pollutants are covered by the NAAQS but not discussed at length?

Lead: Lead (Pb), a toxin, has steadily declined since the 1970s with the introduction of unleaded fuels.

VOC: Volatile Organic Compounds (VOC) come from vehicles and industrial sources. The term VOC encompasses thousands of compounds, including petroleum constituents as well as industrial thinners, solvents, etc. VOC are of interest primarily from their role in ozone formation, a regional pollutant and a precursor of PM_{2.5}.

NO_x: The term "Oxides of Nitrogen" (NO_x) covers a number of chemical compounds containing both nitrogen and oxygen. Like VOC, NO_x also are ozone and PM_{2.5} precursors and are generated by motor vehicles. NO₂ (nitrogen dioxide) is a specific type. NO (nitric oxide) is also an irritant and ozone precursor, which reacts with oxygen to form NO₂.

SO₂: SO₂ (sulfur dioxide) is the main product from the combustion of sulfur compounds. It is produced by volcanoes and in various industrial processes. Since coal and petroleum contain various amounts of sulfur, their combustion generates SO₂.

What Air Toxics are of the Most Concern?

Six air toxins have been called out as “priority toxins”:

Benzene is a known human carcinogen.

Acrolein’s carcinogenicity has not been determined based on inadequate data on oral inhalation exposure

Formaldehyde is a probable human carcinogen, based on limited evidence in humans, and sufficient evidence in animals.

1,3-butadiene is carcinogenic to humans by inhalation.

Acetaldehyde is a probable human carcinogen based on tumors in lab rats and hamsters after inhalation exposure.

Diesel exhaust (DE) is likely to be carcinogenic to humans by inhalation. DE is the combination of diesel particulate matter and diesel exhaust organic gases. DE is also likely associated with chronic respiratory and pulmonary problems.

eight minutes of starting), particularly in colder winter months. Congested urban intersections tend to be the principal problem areas for carbon monoxide.

Particulate matter is the term for solid or liquid particles suspended in the air. Some particles are large or dark enough to be seen as soot or smoke, but fine particulate matter is generally not visible to the naked eye. Two types of particulate matter are of concern. PM₁₀ (ten microns or smaller) particulates are coarse particles, such as windblown dust from fields and unpaved roads. PM_{2.5} covers finer particulates smaller than 2.5 microns in size. PM_{2.5} particulates are generally emitted from activities such as industrial and residential combustion and from diesel truck exhaust. PM_{2.5} is a health concern because fine particles can reach the deepest regions of the lungs. Health effects include asthma, difficult or painful breathing, and chronic bronchitis, especially in children and the elderly.

What are Mobile Source Air Toxics (MSATs)?

MSATs are becoming an air quality issue of increasing concern for major transportation projects. MSATs are a subset of the 188 air toxics defined by the Clean Air Act. MSATs are compounds emitted from highway vehicles and non-road equipment. Some are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Others are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or impurities in oil or gasoline.

The EPA and other agencies have several programs to improve gasoline and lower vehicle emissions. These programs are helping to lower the sulfur content of fuel, especially diesel fuels, and are lowering the emissions of key MSATs. Between 2010 and 2050, FHWA projects that even with a 102 percent increase in vehicle miles traveled (VMT), these programs will reduce on-highway emissions of key MSATs by 83 percent.

On December 6, 2012 FHWA issued [Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA](#), which outlines

procedures for addressing air toxic analysis in the absence of a comprehensive and technically sound modeling approach.

Why are Carbon Emissions from Vehicles a Concern?

The burning of fuel by vehicles releases carbon dioxide (CO₂), a greenhouse gas, into the atmosphere. Greenhouse gases trap heat in the atmosphere, which contributes to climate change. Decreasing the time vehicles spend on I-70 because of congestion and delays will decrease the amount of CO₂ released into the atmosphere.

What is the Current Status of Air Quality?

The Kansas City area air quality monitoring region is currently designated in attainment (of the NAAQS) for all criteria pollutants. This ozone status includes Platte, Clay and Jackson counties in Missouri. On March 12, 2008, the EPA announced that it was tightening the primary 8-hour ozone standard to 0.075 ppm or 75 ppb. States must have approved state implementation plans to address nonattainment areas in 2013 and areas will be required to meet the new standard between 2013 and 2020. It is expected that the Kansas City region will be re-designated as nonattainment.

Part of the new region requirements will include compliance of the 2040 Long Range Transportation Plan (LRTP) with targets for regional emission reductions. The Mid-America Regional Council (MARC) has voluntarily conducted an unofficial conformity analyses for projects because of the continued likelihood of future violations of air quality standards; however, with a potential nonattainment designation and the more stringent ozone standards, the overall emission goals of the LRTP may become more restrictive on the types of future transportation improvements allowed. Priority and funding will flow towards projects that reduce congestion and reduce vehicle miles traveled in order to reduce emissions. Future I-70 improvements will require clearance within this more restrictive regulatory environment.

In 2005, MARC and its partners prepared a Clean Air Action Plan (CAAP) which represented a comprehensive, community-based voluntary strategy for

reducing ground-level ozone pollution in the Kansas City Metropolitan Area. A key purpose of the plan was to help keep the region in compliance with air quality standards, especially ozone. MARC and its partners prepared a Clean Air Action Plan 2011 Update to strengthen the 2005 document and to address sustainability-related co-benefits.

Monitor readings in 2012 indicate that Kansas City has violated the new eight-hour standard for ozone of 75 ppb and the previous standard of 80 ppb. **Table 3.11-2** lists the fourth highest values and the design values for ozone concentrations at monitors in the Kansas City region.

Table 3.11-2 Fourth-High Readings and Design Values, 2006-2012

Station	Fourth-High Eight-Hour Values (PPB)							Design Values - 3-Year Average (PPB)				
	06	07	08	09	10	11	12	06-08	07-09	08-10	09-11	10-12*
Liberty	93	81	66	72	70	79	84	80	73	69	73	77
Watkins Mill	91	73	69	74	73	80	86	77	72	72	75	79
Rocky Creek	87	89	69	72	76	78	86	81	76	72	75	80
Richards-Gebauer	78	72	66	64	67	71	78	72	67	65	67	72
Trimble	85	83	70	75	76	79	85	79	76	73	76	80
JFK (KCK)	81	73	63	62	58	62	82	72	66	61	60	67
Heritage Park	76	71	62	63	71	73	84	69	65	65	69	76
Leavenworth	74	80	64	63	70	74	80	72	69	65	69	74

Source: 2012 Ozone Season Summary for the Kansas City Region, Mid-America Regional Council

*The 2012 eight-hour monitored ozone readings have not been quality assured and may contain errors. Readings in bold represent design values above the 75 ppb standard.

As **Table 3.11-2** shows, the 2006-2012 design values exceed the 75 ppb standard for eight-hour ozone at the Liberty, Watkins Mill, Rocky Creek, Trimble, and Heritage Park monitors.

Although five monitoring stations exceed the 8-hour ozone standards in the Kansas City area, this area has not been redesignated based on these exceedances at this time. It is possible that the Kansas City region's status for ozone may be updated because it exceeds the current standard for ozone and more stringent standards for 8-hour ozone concentrations. When the EPA designates the region as nonattainment in the future, a new regulatory plan for reducing emissions will be put in place. A new regulatory plan could substantially affect the alternatives developed and the requirements for environmental clearance for future improvements to I-70.

Temporary construction related emissions that could affect concentrations of ozone, carbon monoxide, and particulate matter including fugitive dust due to potential improvements to I-70 are evaluated in the **Section 3.23 Construction Impacts** section of this document. Additionally, asbestos release prevention efforts would follow National Emission Standards for Hazardous Air Pollutants (NESHAP) and other state and federal laws for asbestos prior to any building being demolished.

How will the Alternatives Affect Air Quality?

For each alternative, the amount of MSAT emitted would be proportional to the vehicle miles traveled, or VMT. The MSAT analysis that follows assumes that fleet mix will not change and is the same for each alternative.

No-Build Alternative

Motor vehicle exhaust contains many toxic emissions that contribute to poor air quality. The No-Build Alternative will be worse for air quality when compared to any of the Build Alternatives because motor vehicle exhaust is expected to increase with the increase in traffic, congestion, and delays in the No-Build Alternative. The increasing congestion will result in increased air pollutions such as MSATs and carbon emissions. Although the No-Build Alternative would be worse for air quality than any of the Build Alternatives, air quality will likely improve over time due to improvements in vehicle efficiency and reduction in emissions between now and 2040.

Build Alternatives

Motor vehicles are the major source of CO in the Study Area. There are no existing violations of CO in the Study Area. Since the study area is in attainment for CO, no additional analysis is required. The Build Alternatives, including the Preferred Alternative include horizontal and vertical improvements to increase the average design speed throughout the corridor. Because carbon monoxide emissions are greatest from vehicles operating at low speeds, the faster

and consistent speed associated with all Build Alternatives has the potential to decrease carbon monoxide emissions throughout the corridor. This project is not expected to produce a projected violation of the CO NAAQS. The nearest air quality monitor downwind of the summer west/southwest air flow is in Liberty, approximately 15 miles to the northeast.



Locations of Air Quality Monitors

All of the Build Alternatives will be coordinated with improvements as part of the Jackson County Commuter Corridors Alternatives Analysis and transit service improvements over time. All Build Alternatives include improved existing and/or consideration of additional bicycle and pedestrian access across I-70 to allow increased opportunities to bike or walk. These improvements promote alternate commuting options and therefore aim at reducing the VMT in the corridor, as compared to the No-Build Alternative. By reducing the VMT, particulate matter would be reduced and both VOC and nitrogen oxides (NO_x), ingredients in ozone formation, would be reduced as compared to the No-Build Alternative. However, this minor reduction in VOC and NO_x may be offset because NO_x emissions increase when traffic speeds are high and consistent. An increase in traffic flow would cause a higher emission of NO_x which could worsen ozone levels in the Kansas City metropolitan area.

Because the estimated VMT for each of the Build Alternatives is nearly the same, varying by less than one percent, it is expected there would be no appreciable difference in overall MSAT emissions among the various Build Alternatives. Regardless of the alternative chosen, MSAT emissions will likely be lower than present levels in the design year, 2040, as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by over 80 percent between 2010 and 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures; however, the magnitude of the EPA projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the Study Area are likely to be lower in the future in nearly all cases. In FHWA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a

proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation, rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

Motor vehicles are sources of HC and NO_x. HC and NO_x emitted from vehicles are carried into the atmosphere where they react with sunlight to form O₃ and NO₂. Automotive emissions of HC and NO_x are expected to decrease in the future due to the continued installation and maintenance of pollution control devices on new cars. However, regarding area-wide emissions, these technological improvements may be offset by the increasing number of cars in the area. The photochemical reactions that form O₃ and NO₂ require several hours to occur. For this reason, the peak levels of O₃ generally occur ten to twenty kilometers (approximately 6 to 12 miles) downwind of the source of HC emissions. Urban areas as a whole are regarded as sources of HC, not individual streets and highways. The emissions of all sources in an urban area mix in the atmosphere, and, in the presence of sunlight, this mixture reacts to form O₃, NO₂, and other photochemical oxidants.

Motor vehicles are not regarded as significant sources of PM₁₀, PM_{2.5}, and SO₂. Nationwide, highway sources account for less than seven percent of particulate matter emissions and less than two percent of SO₂ emissions. PM₁₀, PM_{2.5}, and SO₂ emissions are predominantly the result of non-highway sources (e.g., industrial, commercial, and agricultural). Because emissions of PM₁₀, PM_{2.5}, and SO₂ from automobiles are very low, the traffic on the project will not cause air quality standards for PM to, PM_{2.5}, and SO₂ to exceed the NAAQS.

Additionally, as compared to the No-Build Alternative, all Build Alternatives are expected to decrease the time vehicles spend on I-70 because of less congestion and fewer delays. In addition, the number of hybrid and electric vehicles in the overall vehicle fleet will continue to increase. These factors will decrease the amount of greenhouse gases such as CO₂ released into the atmosphere. However, the expected increase in traffic volumes will negate some or all of these benefits.

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3.12 Groundwater, Stormwater, and Surface Water Quality

This section presents the effects of the alternatives on the groundwater, stormwater, and surface water quality within the Study Area.

What is the Condition of Groundwater within the Study Area?

The Study Team reviewed materials supplied by the Natural Resources Conservation Service of Jackson County, Missouri for information regarding groundwater, water tables, and bedrock. The recharge of groundwater is by way of runoff from the impervious surfaces of the urban environment and subsequent percolation through the soils, although much of the runoff flows to underground storm sewer systems. The entire Study Area relies on public water supplied by the city of Kansas City, Missouri.

What are the Potential Effects of Proposed Alternatives on Local Groundwater Resources?

There are no public drinking wells or sole-source aquifers within the Study Area; therefore no effects to those types of groundwater supplies are anticipated. With any of the Build or Preferred Alternatives, the use of vegetated slopes and swales as well as runoff detention systems in appropriate locations can provide treatment of potentially polluted runoff from the roadway, thereby avoiding or minimizing impacts to groundwater quality.

What are the Surface Waters in the Study Area?

The Study Area surface water resources include the Blue River and some of its tributaries; Round Grove Creek and some of its tributaries; and some small wetlands. All surface runoff in the Study Area flows into these water resources, and eventually into the Missouri River. The quality of these resources currently vary depending upon such factors as water permanence, type of shoreline/bank and surrounding vegetation, soils, presence or absence of in-flowing streams, and

surrounding land use. In this type of urban environment, existing concerns include channelization or other alteration of natural stream channels, construction site erosion, and residential and commercial use of pesticides and fertilizers.

What Other Water Bodies are Found within the Study Area?

There are no significant lakes within the Study Area. However, there are a few small wetland areas, including small ponds, which are identified and described in **Section 3.14 Wetlands**. There are no existing Outstanding National or State Resource Waters within the Study Area.

What is a Total Maximum Daily Load?

According to the U.S. Environmental Protection Agency, Total Maximum Daily Load is a calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards.

What are the Beneficial Uses of Surface Waters in the Study Area?

Listings of the beneficial uses of stream segments within the Study Area were provided in the Total Maximum Daily Load documentation by the Missouri Department of Natural Resources. The beneficial uses of the Blue River downstream of the I-70 crossing include:

- Livestock and wildlife water source
- Warm water aquatic life
- Human health associated with fish consumption
- Industrial water source
- Boating and canoeing

Are There Existing Surface Water Concerns?

The federal Water Pollution Control Act, Section 303(d), requires that each state identify those waters that are not meeting the state's water quality standards. For these waters, states are required to establish total maximum daily load according to a priority ranking.

The Missouri Department of Natural Resources' 2012 303(d) List of impaired waters (approved by the Environmental Protection Agency) was reviewed, and it was determined that the only impaired water body on the 303(d) list within the study corridor is the Blue River. It is shown as having the Escherichia coli (E. coli) pollutant from urban runoff and storm sewers, and is impaired for whole body contact recreation.

What is the Quality of Existing Stormwater Drainage in the Study Area?

Throughout the Study Area, habitat and flood zones have been modified by the construction of housing, commercial districts, urbanization, and the construction of the interstate highway system, especially I-70. The development in the drainage basins adjacent to the Study Area has altered the hydrology from its original mostly permeable forest and prairie to mostly impermeable urban and suburban surfaces. This has affected water quality. Water flows more quickly on paved surfaces increasing erosion and sediment movement. Lawn fertilizers, pesticides, and herbicides have also increased contamination. Septic systems and domestic animals have increased contamination from wastewater.

Runoff from the Study Area ultimately drains to the Blue River. The Study Area crosses the Blue River approximately 7.2 stream miles upstream of the confluence with the Missouri River. The Blue River from the confluence with the Missouri River upstream for 22 miles is affected by urban runoff.

How Will the Alternatives Affect Water Quality?

The No-Build Alternative likely will not affect the water quality in the Study Area. The proposed alignment for I-70 Build Alternatives is generally the same as the existing alignment. Consequently, the impacts associated with any proposed Build Alternative include all the impacts associated with the existing I-70 highway:

What is E. coli?

Escherichia coli (abbreviated as E. coli) are a diverse group of bacteria that live in all warm blooded animal's intestines. Some kinds of E. coli are used as markers for water contamination. E. coli are not themselves harmful, but indicate the water is contaminated.

Why does urbanization degrade water quality?

Urbanization, by definition, increases the density of human habitation. More humans in an area means more waste products are being generated in that area. In addition, human developments alter the natural landscape from prairie and forest, which are able to absorb and retain water, to streets, sidewalks and roofs which repel water. Water is no longer held and tends to "run-off" faster carrying contamination into the local drainage. Not only is more contamination generated in urban areas, contamination is carried to the drainage before it has a chance to decompose.

- Pollution of the river system as a result of fuel, oil, and debris carried from the road surfaces by stormwater runoff.
- Exposure of the river system to airborne particulates and combustion gases from traffic.

The Build Alternatives, including the Preferred Alternative, will slightly increase the impervious surface and result in increased rainwater runoff of the roadway. MoDOT is the holder of a Municipal Separate Storm Sewer System (MS4) general permit. As part of that MS4 permit, MoDOT is required to “prevent or minimize water quality impacts by reasonably mimicking pre-construction runoff conditions on all affected new development projects and by effectively utilizing water quality strategies and technologies on all affected redevelopment projects, to the maximum extent practicable”.

What Mitigation is Needed for Groundwater and Surface Water Resources?

Use of Best Management Practices for erosion and sedimentation control is recommended at all construction sites. Movement of sediment and pollutants into waters of the state, including wetlands, as a result of construction and demolition activities can potentially affect water quality and habitat during construction. Pollutants travel with and sometimes bind to sediment. To protect the environment from sedimentation and construction pollutants during the building phase, the control of water pollution is to be accomplished by the use of MoDOT’s Stormwater Pollution Prevention Plan and Best Management Practices. Control measures could include temporary berms, ditch checks, slope drains, sediment basins, straw bales, silt fences, erosion control blankets, seeding, and mulching. In addition, disturbance to stream banks and riparian zones should be minimized and limited to only that which is necessary to construct the project. Permanent Best Management Practices, such as retention or detention basins, rock check dams, vegetated swales, seeding, and mulching should be considered where appropriate, to minimize water quality impacts by trapping sediment and other contaminants, while reducing erosive storm surges and stormwater runoff from the site.

What is the National Pollutant Discharge Elimination System permit?

The National Pollutant Discharge Elimination System permit program controls water pollution by regulating point sources that discharge into waters of the United States. Point sources are typically pipes or man-made ditches with discharge directly into surface waters such as a stream, river, or wetland.

The National Pollutant Discharge Elimination System permit, administered by Missouri Department of Natural Resources, requires that slopes and ditches be properly designed to prohibit or reduce erosion. MoDOT operates under the provisions of a general Missouri State Operating Permit issued for road construction statewide. In addition, the project would comply with specific conditions of Section 401 Water Quality Certification, which also become conditions of the Section 404 permit. This includes methods to minimize water quality impacts such as seeding and mulching graded areas as soon as possible using native planting and seeding recommendations; minimizing disturbance to stream banks and riparian zones; and installing all standard erosion protection devices such as ditch checks and silt fences at the outset of construction and maintaining them throughout the construction period.

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3.13 Floodplains, Streams, and River Crossings

This section presents the benefits of floodplains, identifies the locations where the Study Area crosses or encroaches on floodways, streams, and rivers and identifies the potential effects of the No-Build and Build Alternatives. The floodplains, streams, and river crossings within the Study Area are shown in **Figure 3.13-1**.

3.13.1 What are the Benefits of a Floodplain?

The benefits of the floodplains within the Study Area are:

- Reduction of downstream flooding by providing temporary space for flood waters.
- Reduction of downstream erosion by providing areas for flood water to spread thereby reducing the flood water energy and providing the opportunity for sediment to settle out of the flood water.
- Provide temporary habitat for aquatic and semi-aquatic species.
- Provide open areas or green spaces that provide aesthetic or recreational value to a community.

Highway construction activities in a floodplain should avoid reduction of the area and volume available for flood storage. Also, highway construction activities in a floodplain should not increase upstream flooding by increasing the depth of flooding. Aquatic habitat may be harmed by increasing the velocity of flood water through the floodway.

3.13.2 Who Is Responsible For Managing Activities In The Floodplain?

The State of Missouri delegated the responsibility of regulating floodplain management “designed to protect the health, safety, and general welfare” to local units of government. The Study Area is entirely contained within the jurisdictional boundaries of the City of Kansas City, MO. The local units of government have adopted the recommended Federal Emergency Management Agency (FEMA) regulations for floodplain management.

What is a floodplain?

A floodplain is the land adjacent to a stream or river that experiences occasional or periodic flooding.

What is a floodway?

A floodway is the stream or river and the floodplain which is required to carry the 100 year floodwater.

The City of Kansas City has adopted the following definitions and requirements:

What is a “100-year flood?”

A “100-year flood” is a short way of saying “a flood with a probability of occurring in any 100-year period”. The 100-year flood is equivalent to a one percent flood and both are used interchangeably.

How does development change floodways?

Development directly affects floodways when it encroaches on floodway boundaries, narrowing the path water must follow. This can occur when developers pave channel bottoms, alter the sides of a channel, or straighten water the channel. Developments also reduce the amount of stormwater able to be retained by increasing hard surface coverings such as asphalt, concrete, and roofs. All of these changes can increase the elevation, force, and damage of flood water.

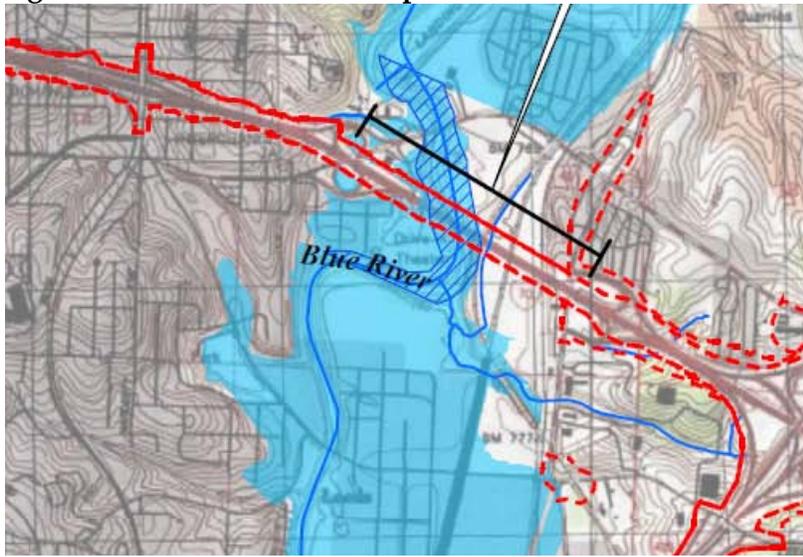
- The base flood defined by the Federal Insurance Administrator’s Flood Insurance Study (FIS), that is, “a flood which could be expected to have a one percent (1%) chance of occurrence in any one year”.
- The “regulatory floodway” is the floodway required to convey the base flood without increasing flood height more than one foot. No development is permitted within the limits of the floodway that would cause any increase in flood height.
- The flood fringe is defined as the “area outside the floodway encroachment lines, but still subject to inundation by the base flood”.

3.13.3 Where are the Floodplains and Regulatory Floodways in the Study Area?

The only floodplain areas that occur within the Study Area are located adjacent to the Blue River and Round Grove Creek. The U.S. Army Corps of Engineers (USACE) has completed the Blue River Channelization Project which has significantly changed the 100-year floodplain in the vicinity of the I-70 bridge crossing. In 1999, the USACE and the City of Kansas City, Missouri completed the portion of the Blue River Channel Modification Project in the study corridor, the purpose of which was to reduce flood damage in the area. The project included channel widening, the elimination of several severe bends, and a combination of rock-protected slopes and vegetation.

Although the official updates to the FEMA flood hazard maps are not yet available, the revised base 100-year floodplain and the regulatory floodway boundaries, based on a Letter of Map Revision dated May 4, 2006, are shown in the Study Area in **Figure 3.13-1**.

Figure 3.13-1 Blue River Floodplain



The width of the 100-year floodplain at the I-70 crossing of the Blue River is approximately 1,370 feet. Within that floodplain the regulatory floodway is approximately 750 feet wide. Isolated portions of the floodplain also occur within the I-70 and U.S. 40 interchange. The Blue River floodplain area is comprised of ground vegetation with a mix of shrubs and small to medium size trees. However, the Blue River flows under the I-70 Manchester Bridge, which is not included as part of the project being studied in the I-70 Second Tier EIS. The area around the existing I-70 Manchester Bridge, and the I-70 bridge over U.S. 40 are being cleared and permitted in a separate project.



Blue River Floodplain



Blue River Floodplain

3.13.4 What Are the Potential Impacts to Floodplains and Streams?

The No-Build Alternative would have no impacts on floodplains and floodways, with the exception of minimal impacts that would occur in conjunction with the replacement of the Manchester Bridge over the Blue River, the I-70 bridge over U.S. 40, and the U.S. 40 bridge over the Blue River, all of which will be done as a separate project from the improvements proposed in the Geometric Improvements Alternative and the Interchange Consolidations Alternative (Build Alternatives) of the Second Tier EIS.

The Build Alternatives and Preferred Alternative will have the same impacts to the Blue River floodplain. The impacts to the 100-year floodplain would be the result of additional fill required for highway widening and modifications of interchanges, and are described.

The Build and Preferred Alternatives will affect approximately 1.65 acres of floodplain in the vicinity of the U.S. 40 interchange and between the west end of the Manchester Bridge and the U.S. 40 interchange.

The regulatory floodway of the Blue River would continue to be bridged in conjunction with a separate project, and is not included in this analysis.

What Are the Flooding Risks?

The footprint of the proposed roadway fill placed in the floodplain is minor when compared to the total floodplain area and the area of existing paved roadway surface. Thus, impacts resulting from any of the Build Alternatives on natural and beneficial floodplain values would be minimal, and vegetation would be re-established within disturbed areas of the floodplain.

FEMA has mandated that all project impacts can cause “no-rise” in the regulatory floodway, and a one-foot cumulative rise for all projects in the base (100-year) floodplain. The State Emergency Management Agency (SEMA) issues floodplain development permits for state projects. In the case of projects proposed within regulatory floodways, a “no-rise” certification, if applicable, is required prior to issuance of a permit. Since the regulatory floodway of the Blue River would not be impacted by the construction of any of the Build Alternatives, a “no-rise” certificate would not be required.

Measures to prevent adverse impacts from runoff as a result of increased impervious pavement areas would be addressed in detail during the roadway design process. The proposed roadway modifications of any of the Build Alternatives would be set above 100-year flood elevations and would be designed so that runoff is not redirected onto adjacent properties.

3.14 Wetlands

The section discusses the potential effects of the I-70 alternatives on wetlands. Information for this section was collected from National Wetlands Inventory (NWI) mapping and field investigations. The NWI maps were reviewed to determine locations of potential “vegetated wetlands” within the Study Area. The review of the NWI maps indicated that there are only two NWI-mapped areas within the Study Area. Field investigations revealed that these two areas, as well as six other areas contained potential wetlands.

The Study Team conducted wetland impact analysis at potential wetland areas. Potential wetland areas were photographed and assessment forms were filled out to determine which wetland criteria (hydric soils, hydrophytic vegetation, wetland hydrology), if any, were met. At each data collection point, soil samples were taken, hydrology was evaluated, and vegetation was characterized and listed. On-site measurements were taken to determine the location and extent of wetland boundaries.

Why are Wetlands Important?

Wetlands are recognized as important features in the landscape that provide numerous beneficial functions for people and for fish and wildlife. Some of these functions include protecting and improving water quality, providing fish and wildlife habitats, storing floodwaters, and maintaining surface water flow during dry periods. Wetlands also provide recreational opportunities, aesthetic benefits, sites for research and education, and commercial fishery benefits. These beneficial functions are the result of the inherent and unique natural characteristics of wetlands.

As a result of the importance of wetlands and all water resources, these resources are regulated under the Clean Water Act (CWA). Section 404 is the primary Federal statute that implements federal regulatory policies concerning the protection of wetlands and other waters of the U.S. Section 404 of the CWA prohibits the discharge of material into

What is a wetland?

Wetlands are areas where water covers the soil, or is present either at or near the surface of the soil all year or for varying periods of time during the year.

What is the National Wetlands Inventory?

The National Wetlands Inventory is an inventory of the nation's wetlands.

What are hydric soils?

Hydric soils are saturated long enough during the growing season to deprive the root system of oxygen, likely indicating a wetland.

What is hydrophytic vegetation?

Hydrophytic vegetation, or hydrophytes, includes the vegetation that has adapted to life in water or in waterlogged soils.

What are Jurisdictional Wetlands?

Jurisdictional wetlands are those wetlands under the regulatory jurisdiction of the U.S. Army Corps of Engineers as defined by the Clean Water Act.

What is the Clean Water Act?

The Clean Water Act (CWA) is the primary Federal statute that implements federal regulatory policies concerning the protection of wetlands and other waters of the U.S. Section 404 of the CWA prohibits the discharge of dredged or fill material into "Waters of the U.S." unless exempted or authorized by the U.S. Army Corps of Engineers (USACE).

"Waters of the U.S." unless exempted or authorized by the U.S. Army Corps of Engineers (USACE).

What Wetlands are Located in the Study Area?

The U.S. Fish and Wildlife Service (USFWS) NWI maps indicate that a total of eight vegetated wetland areas with wetland features exist in the Study Area. The U.S. Army Corps of Engineers (USACE) is the primary regulatory agency with jurisdiction over wetlands. Thus, areas identified as USFWS NWI wetlands are considered by the USACE, only as potential wetlands. **Table 3.14-1** identifies each of the wetlands jurisdictional potential in meeting USACE criteria. These wetlands are described in the paragraphs and shown on exhibits that follow the table.

Identification Number	Jurisdictional or Non-jurisdictional Potential	Wetland Size by Type		
		Emergent (acres)	Scrub-Shrub (acres)	Forested (acres)
W-1	Non-jurisdictional	0.028	0.0	0.042
W-2	Non-jurisdictional	0.102	0.0	0.0
W-3	Jurisdictional	0.082	0.033	0.0
W-4	Non-jurisdictional	0.053	0.0	0.0
W-5	Non-jurisdictional	0.005	0.0	0.0
W-6	Non-jurisdictional	0.017	0.0	0.0
W-7	Non-jurisdictional	0.061	0.0	0.0
W-8	Non-jurisdictional	0.031	0.0	0.0
Totals		0.379	0.033	0.042

How are Jurisdictional Wetlands Determined?

Wetlands are under the regulatory jurisdiction of the USACE if they are located near navigable water ways, contain relatively permanent water, and flow into navigable water ways. If these conditions are not met, then USACE will determine if the wetland is jurisdictional.

Wetlands are potentially jurisdictional until the USACE makes a final jurisdictional determination. USACE is currently reviewing the Study Team's findings and should make the final jurisdictional determination before the Final EIS.

Wetland W-1 consists of both emergent and forested wetland vegetation, and is located within the north loop of the I-70/U.S. 40/East 31st Street interchange.



Wetland W-1

Wetland W-2 contains an emergent wetland area (predominantly cattails) in a drainage ditch within the south loop of the I-70/U.S. 40/East 31st Street interchange.

Wetland W-3 is a Palustrine Emergent (PEM) designated wetland area consisting of both emergent and scrub-shrub wetland vegetation, and abuts a tributary of the Blue River, which is considered to be a potential jurisdictional stream.



Wetland W-3

Wetland W-4 is a PEM designated emergent wetland area containing cattails. It is located adjacent to a drainage ditch within the northwest loop of the I-70/I-435 interchange.



Wetland W-4

Wetland W-5 is a small emergent wetland area containing cattails, adjacent to a drainage ditch in the northwest quadrant of the I-70/I-435 interchange.

Wetland W-6 is an emergent wetland area containing cattails. It is located within a drainage ditch within the southeast loop of the I-70/I-435 interchange.



Wetland W-6

Wetlands W-7 and W-8 are emergent wetland areas containing cattails. They are located on the northeast side of the northeast quadrant of the I-70/I-435 interchange. Both appear to receive runoff from a large paved parking lot just to the east.

What is an Emergent Wetland?

Emergent Wetlands are characterized by erect, rooted, herbaceous hydrophytes. The vegetation is present for most of the growing season in most years. These wetlands are usually dominated by perennial plants



Wetland W-7 – Emergent Wetland

How Will the Alternatives Affect Wetlands?

The potential for wetland loss was measured by estimating the area of wetlands within the boundaries of the construction limits. **Table 3.14-2** shows the breakout of potential wetland areas affected by the Build Alternatives.

Table 3.14-2 Acres of Potential Wetland Impacts by Alternative											
Wetland ID	Potentially Jurisdictional	Geometric Improvements			Interchange Consolidations			Preferred Alternative			
		EM (ac.)	SS (ac.)	FOR (ac.)	EM (ac.)	SS (ac.)	FOR (ac.)	EM (ac.)	SS (ac.)	FOR (ac.)	
W-1	No	0	0	0	0	0	0	0	0	0	0
W-2	No	0.015	0	0	0.015	0	0	0.015	0	0	0
W-3	Yes	0	0	0	0.028	0.021	0	0	0	0	0
W-4	No	0	0	0	0.053	0	0	0	0	0	0
W-5	No	0.005	0	0	0.005	0	0	0.005	0	0	0
W-6	No	0	0	0	0.017	0	0	0	0	0	0
W-7	No	0	0	0	0.033	0	0	0	0	0	0
W-8	No	0	0	0	0.015	0	0	0	0	0	0
Subtotals		0.02	0	0	0.166	0.021	0	0.02	0	0	0
Totals		0.02			0.187			0.02			

EM = Emergent; SS = Scrub-shrub; FOR = Forested

The No-Build Alternative will not affect any wetlands. The Geometric Improvements Alternative potentially may affect 0.02 acres of wetlands. None of impacts are to jurisdictional

wetlands. The Interchange Consolidations Alternative would impact 0.187 acres of wetlands (0.166 acre of emergent wetland and approximately 0.021 acre of scrub-shrub wetland). Only 0.049 acres are contained within the potentially jurisdictional wetland W-3 as a result of the placement of embankment fill. If fill material is to be placed below the ordinary high water mark of jurisdictional water, a Section 404 Permit application will be submitted to the USACE.

How will the Preferred Alternative Affect the Wetlands?

The Preferred Alternative will mirror the effects of the Geometric Improvements Alternative. The Preferred Alternative is anticipated to impact 0.02 acres of wetland. None of impacts are to jurisdictional wetlands.

How will Wetland Impacts be Mitigated?

Mitigation for wetland impacts occurs in specific steps. The first step is to avoid impacts to wetlands to the extent possible. The second step is to minimize impacts as much as possible. The last step of mitigation is compensation.

After an alternative is selected through the NEPA process, and as the project proceeds into design, construction limits of the proposed improvements will be determined in more detail and impacts to jurisdictional Waters of the U.S. will be further analyzed. If required, mitigation will be from the Blue Springs Bank.

3.15 Wildlife, Plants, and Threatened and Endangered Species

This section discusses the potential effects of the alternatives on wildlife, plants, and protected species.

The Endangered Species Act of 1973 assigned the Department of the Interior, U.S. Fish & Wildlife Service (USFWS) to establish a list of federally protected species. The Endangered Species Act states that each federal agency must insure that "any action authorized, funded, or carried out" by that agency "is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification" of officially designated critical habitat of these species.

Who Supplied the Information in this Section?

The Missouri Department of Conservation is responsible for the determination of the state-level protection status of wildlife and plants in Missouri. They maintain a Natural Heritage Database for occurrences of natural heritage resources, including habitats of rare, threatened, or endangered plant and animal species, and unique or exemplary natural communities.

According to various on-line databases including the Natural Heritage Database and the USFWS Threatened and Endangered Species System, a variety of threatened and endangered species are listed for Jackson County, Missouri.

The Study Team wildlife biologist verified habitat for identified threatened and endangered species through field observation. The wildlife biologist also verified the locations of forest, wetlands, streams, and other important habitat features.

What Wildlife Species Are Likely Found in the Study Area?



Striped Skunk

The Study Area is located in a highly urbanized/developed area, and the original natural habitat has been extensively disturbed. A wide variety of animal species have adapted to the remaining fragmented forested areas and habitats. Some of the species of wildlife that have adapted to living in this urbanized area include many species of birds. Some of the mammals that have adapted to the area include the Virginia opossum, the striped skunk, the gray squirrel, the eastern cottontail rabbit, and the raccoon.



Eastern Tiger Salamander

The water resources in the Study Area serve as habitats and provide drinking water for wildlife. The Blue River provides habitat for some common fish species such as the carp, the green sunfish, and the channel catfish. The wetland and damp environments in the Study Area can provide habitat for amphibians such as the eastern American toad, the southern leopard frog, western chorus frog, and the eastern tiger salamander. Some of the reptiles include the western painted turtle, the five-lined skink, the northern fence lizard, and the eastern hognose snake.



Bald Eagle

According to the USFWS, the bald eagle was removed from the federal list of threatened and endangered species on August 9, 2007, and is no longer protected under the Endangered Species Act. The bald eagle is also listed as 'vulnerable' by the Missouri Department of Conservation because it is still rare and uncommon. Bald eagles remain protected under the *Migratory Bird Treaty Act* and the *Bald and Golden Eagle Protection Act*. However, bald eagles have not been observed within the study corridor, to date.

What Natural Plant Communities Are Likely Found in the Study Area?

The majority of the Study Area is urban built land. The only vegetative natural communities occurring in the Study Area are a few small pockets of remnant upland and riparian wooded areas.

The few woodland areas in the Study Area are isolated small tracts that are the result of previous fragmentation or alteration. The small woodland remnants occur on steeper slopes that are not conducive to development, along some of the stream corridors, or in or adjacent to highway right of way. Grassed areas are mainly along highway right of way, in residential areas, and commercial/industrial areas. These grassed areas are not native, natural plant species.



Pallid Sturgeon

High quality natural communities are unique and undisturbed areas that possess defining characteristics of a specific type of natural community that may also provide habitat for rare species, and are important to the natural heritage of the region. The Natural Heritage Database indicated there are no high quality natural communities present in the Study Area.

What Threatened and Endangered Species Are Likely Found in the Study Area?

An initial review of the USFWS list of federally threatened and endangered species for Jackson County indicated that there are three species that could occur in the county: the endangered pallid sturgeon (*Scaphirhynchus albus*), the threatened western prairie fringed orchid (*Plantantera praeclara*), and the endangered Indiana bat (*Myotis sodalis*). A review of the Natural Heritage Database indicated that there are three state-listed endangered species that could occur in Jackson County: the pallid sturgeon (*Scaphirhynchus albus*), the lake sturgeon (*Acipenser fulvescens*), and the peregrine falcon (*Falco peregrinus*).



Prairie Fringed Orchid

The Study Team coordinated with the USFWS and the Missouri Department of Conservation to determine if there are any federally listed or state listed species that could occur in or near the Study Area. The correspondence with USFWS and the Missouri Department of Conservation is located in **Appendix D.3**. The USFWS determined that there are no federally listed species, candidate species, or designated critical habitat within the Study Area. The Missouri Department of Conservation stated that the only state-listed species present is the peregrine falcon, which is nesting on tall buildings in the downtown area, northwest of the Study Area.



Peregrine Falcon

What are the Expected Impacts?

The Missouri Department of Conservation reviewed the Study Area and determined that it did not contain any high quality natural communities. Wooded areas aid in protecting water resources from excessive runoff; stabilizing stream banks; inhibiting soil erosion; and providing aesthetic value, wildlife habitat, and plant and animal diversity. **Table 3.15-1** provides the potential number of acres affected by each alternative.

Table 3.15-1 Potential Woodland Area Loss	
Alternative	Impacts (acres)
No-Build	0.00
Geometric Improvements	2.86
Interchange Consolidations	15.60
Preferred Alternative	2.86



Woodland Area

The pallid sturgeon and the lake sturgeon can occur in the Missouri River which is outside the study corridor, and the western prairie fringed orchid can occur in wet prairies and sedge meadows which are not present in the Study Area. The Indiana bat was not a stated concern of the USFWS or the Missouri Department of Conservation. There are no threatened or endangered species likely present within the Study Area and thus no impacts to threatened and endangered species.

What Mitigation Measures are Necessary?

Based coordination with MDC Policy Coordination Section in November 2013 there are no impacts from this project on the Peregrine Falcon. No further analysis of this issue is needed. No conditions as to protection of this state endangered species of the Migratory Bird Treaty Act are necessary.

Where bridges occur, there is also the potential for swallows to build nests under the structures. In regard to the Migratory Bird Treaty Act, there are date restrictions on when demolition of a bridge containing nests can take place. In Missouri, the swallow nesting season is typically from April 1 to August 1. If nests exist, and demolition or construction activities have to take place after the start of the nesting season, the nests have

to be removed prior to the start of the nesting season and kept from becoming re-established until demolition and construction activities are complete. Bridges will be checked by MoDOT prior to letting and again by contractors prior to construction to determine the absence or presence of swallow nests.

Clearing and grading during construction will likely affect the adaptive habitat areas for some of these species. Nearby areas of similar habitat are expected to support the wildlife potentially relocated by the project. Clearing of trees and other vegetation would be confined to construction limits to preserve as much existing natural growth as possible.

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3.16 Farmland and Soils

The entire Study Area is located in the urbanized city of Kansas City, MO. Over time, development has transformed farmland in this area to urban uses including homes and businesses. As a result, there are no farmlands located within the I-70 Second Tier EIS Study Area.

How Will the Alternatives Affect Farmland?

There are no farmlands or prime agricultural soils remaining undeveloped within the Study Area. As a result, none of the alternatives will impact farmland or prime agricultural soils. A farmland conversion impact rating form is not needed for this project.

What Types of Soils Exist in the Study Area?

The Study Area soils were formed during the time when glaciers existed in the area. The general geology is characterized by rolling hills and valleys. The Blue River Valley consists of mostly clay deposits in depths of 40 to 60 feet. The west end limit of the Study Area to about 18th Street is sand and gravel of over 240 feet before reaching bedrock. The remaining portion of the Study Area is typically 10 feet or less of clay type soils.

The Study Area varies in elevation from the low point near 750 feet above sea level in the Blue River Valley to near 950 feet above sea level at two locations. The two locations are near 27th Street and near Blue Ridge Cutoff.

How Will the Alternatives Affect Soils?

Each of the Build Alternatives, including the Preferred Alternative, is along the existing I-70 roadway alignment. There are no significant differences between the alternatives as they relate to soils and geology. The Build and Preferred Alternatives do not vary significantly in their proposed alignments.

The Kansas City area has a long history of underground limestone mining. The mines are room and pillar with entry points horizontally from the hills usually along the upper limits of the Blue River valley in the study area. Although Bethany Falls limestone runs throughout the study area and remains a mineral resource, permitting and other readily available sources of mining outside the study area would make it almost impossible to economically mine today. The closest abandoned mine is located north of U.S. 40 between Manchester Trafficway and I-435. There are no active or abandoned mines within the Build and Preferred Alternatives Study Area.

What Mitigation will be Needed?

There is no mitigation needed due to the absence of farmland in the Study Area. Because soils will be disturbed during construction Best Management Practices will be used as described in **Section 3.23 Construction**.

3.17 Energy

This section discusses the effects of the proposed alternatives on the consumption of energy. The primary energy consumption activity of highway mobility is vehicle operation.

3.17.1 How will the Alternatives Affect Energy Consumption?

All alternatives, other than the No-Build, will improve traffic flow and reduce vehicle fuel consumption on a per vehicle basis. The improved flow will in turn cause additional trips and increase vehicle miles traveled (VMT). This is a direct effect of increasing travel efficiency through the Study Area and attracting trips from other routes in the local transportation network.

Overall, the increase in the amount of trips and VMT resulting from each Build Alternative would have a slightly larger effect on energy use than the No-Build Alternative. However, increasing the travel efficiency through the Study Area, in addition to advancements in vehicle technology (hybrid and electric vehicles) would improve the average miles-per-gallon of the vehicle fleet which in turn will reduce energy consumption as more hybrid and electric cars are purchased by consumers. The anticipated improvements to vehicle fuel efficiencies will also reduce the energy usage throughout the Study Area for each Build Alternative.

The Improve Geometrics Alternative and Interchange Consolidations Alternative include provisions such as bus on shoulder and potential enhanced express bus service that may increase the use of transit within the Study Area and reduce the energy per traveler.

3.17.2 No-Build Alternative

The No-Build Alternative will not improve traffic flow or reduce fuel consumption. An increase in congestion will lead to more fuel consumption as vehicles are in stop and go traffic for a longer period of time. Also, the No-Build Alternative would likely require more frequent maintenance, which typically requires temporary lane closures and rerouting

resulting in additional traffic congestion and increased energy consumption.

3.17.3 Build Alternatives

The Geometric Improvements Alternative, Interchange Consolidations Alternative, and the Preferred Alternative will reduce energy consumption for vehicles on I-70 and adjacent streets. Improvements in these alternatives include, but are not limited to, adding acceleration lanes, improving the curvature of the roadway in specific locations, extending the weave areas where possible, and removing the connection of ramps to local roads in multiple locations. Construction will likely require lane restrictions or closures which would lead to a temporary increase in congestion and energy use.

3.18 Utilities

The Study Team conducted a review to determine the impacts of the alternatives on the existing utilities in the Study Area. The Study Team reviewed I-70 as-built plans, contacted utility companies, and held discussions with MoDOT utility specialists to develop a comprehensive list of potential utility relocations.

The available As-Built plans of I-70 show existing utilities from Chestnut Avenue to U.S. 40. These plans note that during the initial construction of the I-70 corridor:

“all utilities **except sewers** located within the I-70 right of way have been removed or abandoned by their owners unless otherwise noted.”

The utilities identified on these plans that remain in place are as follows:

- A 16 inch gas line, a 12 inch water line and an 18 inch power duct line all crossing I-70 at 21st Street.
- A relocated 30 inch water line crossing I-70 between York Avenue and Brighton Avenue.
- A ¾ inch water line crossing I-70 between Oakley Avenue and the U.S. 40 interchange.

Missouri Gas Energy has approximately 3,600 feet of pipe that crosses I-70 from Paseo Avenue to Blue Ridge Cutoff. Most of the pipe is large diameter (10 inch, 12 inch, and 16 inch). The pipe was laid prior to 1960.

Level 3 Communications has two fiber optic runs under I-70: one at The Paseo and the other at Woodland Avenue. Both are under the sidewalk on the east side of these streets. These are major fiber optic runs containing fiber for Sprint, AT&T, and Verizon. The fiber optic run at Woodland Avenue is in a six inch steel conduit.

Qwest Communications has a fiber optic run within the Burlington Northern Railroad right of way under I-70. This should not be a problem for MoDOT as long as I-70 bridge footings do not encroach on railroad right of way.

There is a KCP&L multi-tile duct for power on the Stadium Drive over I-435 at the south end of the I-70/I-435 interchange.

Lightcore, a Centurylink Company, has a fiber optic run the entire length of the project. Relocation of this run would likely be between The Paseo and the west end of the Manchester Bridge.

The City of Kansas City likely also has sanitary sewer and water lines in the Study Area. MoDOT will coordinate with the City of Kansas City, MO during final design of the project.

The Build Alternatives (Geometric Improvements Alternative, Interchange Consolidations Alternative, and Preferred Alternative) would result in temporary impacts to utility services. The greatest impacts will most likely be to electrical and communication lines. Public and private owners with utility easements for aboveground or underground utilities on their property could be restricted from certain uses on the portion of the property where the easement is located. Prior written consent from an easement grantee would be required in order to place temporary or permanent structures or other improvements or to alter terrain on the property. The easement grantee would also retain the right of access to that portion of the property. Utility easements, and their use, are not expected to deny property owners reasonable economic use of their property.

3.19 Indirect and Cumulative Affects

This section analyzes indirect and cumulative effects of the proposed project under the four alternatives under consideration: the No-Build Alternative, the Geometric Improvements Alternative, the Interchange Consolidations Alternative, and the Preferred Alternative.

Direct affects are those specifically caused by construction of the project. These are simple cause and affects instances. Affects that are caused by the project that become evident later in time or are farther removed in distance than direct affects, but are still reasonably foreseeable are referred to as indirect effects.

Cumulative effects may occur when combining the effects of the proposed project with the effects of other past, present and foreseeable future projects. The incremental effects of a specific project may be minor. The overall affect when added to affects from other projects over time could be considerable. Cumulative effects can be positive or negative for many potential resources.

3.19.1 Indirect Affects

The primary potential indirect affects for the All Build Alternatives, including the Preferred Alternative, are related to changes in access. However, due to the project's location in an urbanized area, any development changes related to access changes would not cause any indirect effects on natural resources such as wetlands, farmland, or species. All Build Alternatives are expected to draw up to one percent more traffic to the corridor compared to a No-Build Alternative. This increase in traffic could provide a minor increase in business for businesses visible from I-70.

No-Build Alternative

The indirect effects of a No-Build Alternative are restricted to those that will result from deficiencies of the current roadway network in the future. This includes the Study Area and surrounding areas as well. Any indirect effects are expected to be minor but include motorists seeking alternate routes to avoid congestion.

What are Direct Impacts?

Direct impacts are caused by the construction of the project. Direct impacts are covered mostly in Chapter 3 and are a simple cause and effect.

Example: A wetland is filled to accommodate construction of a roadway.

What are Indirect Effects?

Effects that are caused by the project that become evident later in time or are farther removed in distance than direct effects, but are still reasonably foreseeable are referred to as Indirect effects.

Geometric Improvements Alternative

Rerouting of some local traffic patterns around local road cul-de-sacs resulting from the various geometric improvements are the main causes of potential indirect effects of this alternative. None of these access changes are expected to cause substantial changes on development patterns. Direct effects on businesses are discussed in **Section 3.6 Economics**.

This alternative would remove connections from ramps to local roadways at a number of locations between The Paseo and Prospect Avenue. This action would include the addition of cul-de-sacs on 14th Street both north and south of I-70 and the closure of 14th Street between the Prospect Avenue on-ramp and Montgall Avenue. This would have the indirect effect of changing local traffic circulation patterns in this portion of the Study Area. This would reduce the number of access points to I-70 but improve safety and the traffic flow at those remaining.

This alternative recommends closing the Benton Boulevard on-ramp to westbound I-70, causing a rerouting of that traffic flow to other access points, most likely the Prospect Avenue interchange. Realignment of the 18th Street ramps and closure of Askew Avenue between 18th and 19th Streets will affect access to the two churches on the east side of Askew Avenue north and south of 19th Street. Primary access for these churches will likely shift to Cleveland Avenue to the east.



Eastbound I-70 at the Jackson Curve

Improvements to the interchange at 23rd Street will necessitate cul-de-sacs on Askew Avenue both north and south of 23rd Street. This will have the effect of rerouting local traffic eastward to access the interchange and 23rd Street.

Improvements to the Jackson Avenue Curve will include closure of the Myrtle Avenue off-ramp and adding a cul-de-sac on Myrtle Avenue north of 27th Street. These actions will reroute some local traffic around these points. Improving the Jackson Avenue interchange will also require cul-de-sacs closing access to the south at Spruce Avenue, Cypress Avenue, and Elmwood Avenue north of I-70. Closure of 29th Street between Wenzel Avenue and the westbound I-70 off-ramp, and between Cypress Avenue and Elmwood Avenue will all affect local traffic circulation in those neighborhoods. The

traffic levels are not substantial and the intersection and interchange improvements will contribute to improved traffic flow between I-70 and the neighborhood. The alternative includes the closure of Raytown Road between 29th Street and Van Brunt Boulevard. East of Van Brunt Boulevard, this alternative includes placing a cul-de-sac on 29th Street Terrace would redirect some traffic north to 29th Street.

Figure 2.1 in **Chapter 2** shows the improvements discussed above.

Interchange Consolidations Alternative

The main cause of potential indirect effects of this alternative includes rerouting of some local traffic patterns around the proposed interchange closures and cul-de-sacs. Development opportunity changes may result from altered traffic patterns. Direct effects on businesses are discussed in **Section 3.6 Economics**.

This alternative proposes closing the Brooklyn Boulevard access to and from I-70. The closure of this interchange will redirect traffic to other nearby interchanges, predominantly to the Prospect Avenue interchange. Removal of 14th Street between Olive Avenue and Wabash Avenue and installation of cul-de-sacs on Wabash Avenue both north and south of I-70 will have the indirect effect of shifting local traffic flow in the immediate area of the closures. As will the addition of cul-de-sacs on 14th Street both north and south of I-70 and the closure of 14th Street between the Prospect Avenue on-ramp and Montgall Avenue.

The closure of the Brooklyn Avenue interchange and Truman Road westbound on-ramp may change traffic flows on adjacent segments of Truman Road, which has a variety of commercial businesses. Closure of the Benton Boulevard westbound on-ramp, the westbound Truman Road on-ramp, and the eastbound Truman Road off-ramp will all redirect local traffic movement to some extent.

This alternative recommends closure of 18th Street and Indiana Avenue access to and from I-70. The alternative recommends improvements to Askew Avenue between 18th and 23rd Streets to provide improved access to other freeway interchanges.



Westbound I-70 at the Benton Curve



U.S. Postal Service Facility at 18th Street and Indiana Avenue

This could significantly increase traffic flows along that residential roadway and in front of the two churches there. Significant rerouting of truck traffic from the U.S. Post Office regional facility on 18th Street to I-70 will occur. Cul-de-sacs on 24th Street on both sides of I-70 will also redirect some local traffic.

Closure of 27th Street ramps to and from I-70 will redirect traffic to and from I-70 to other interchange locations. Closing the Myrtle Avenue off ramp from I-70, and adding cul-de-sacs at Norton, Spruce, Cypress, and Elmwood Avenues north of I-70 will also redirect local traffic flows. Similar affects will occur from the closure of 29th Street between Wenzel Avenue and the westbound I-70 off-ramp, and 29th Street between Cypress and Elmwood Avenues.

The alternative includes the closure of Raytown Road between 29th Street and Van Brunt Boulevard. No properties have direct access to this section of the road, and the only indirect affects will be some redirection of traffic from Raytown Road to the north of the closure to Van Brunt Boulevard via other routes. Placing a cul-de-sac on 29th Street Terrace would redirect some traffic north to 29th Street.

The alternative includes closure of ramps between Manchester Trafficway and I-70. Rerouting of traffic would be by improvements at the U.S. 40 and Manchester Trafficway intersection and a new ramp from Stadium Drive to eastbound I-70 collector distributor lanes. This would redirect traffic flows in the area of the sports complex and require improvements to a low clearance bridge on Stadium Drive.

Figure 2.2 in **Chapter 2** shows the improvements discussed above.

Preferred Alternative

As the Preferred Alternative is a combination of the Geometric Improvements Alternative and the Interchange Consolidations Alternative, many of the indirect affects will be the same as those laid out above. The main cause of potential indirect effects of this alternative includes rerouting of some local traffic patterns around the proposed interchange closures and cul-de-sacs. Rerouting of some local traffic patterns around

the proposed ramp closures or consolidations and local road cul-de-sacs and resulting from the various improvements are the main causes of potential indirect effects of this alternative. Development opportunity changes may result from altered traffic patterns. Direct effects on businesses are discussed in **Section 3.6 Economics**.

The Brooklyn Avenue interchange ramps to and from I-70 will be removed. Nearby interchanges will accommodate increased traffic as a result of this closure. The Paseo interchange will remain as is. The closure of the Brooklyn Avenue interchange may change traffic flows on adjacent segments of Truman Road, which have a variety of commercial businesses. Closure of segments of 14th Street between Olive Street and Wabash Avenue and cul-de-sacs on 14th Street both north and south of I-70 will reroute some local traffic through the neighborhood. Closure of 14th Street between the Prospect Avenue on-ramp and Montgall Avenue to avoid ramp conflicts will not limit property access to any notable degree. Rerouting of traffic will be minimal.

The Benton Boulevard and Truman Road on-ramps will be consolidated into one on-ramp using a partial split-diamond configuration. A connector road will be built from Truman Road to Benton Boulevard resulting in an improved weaving area length with the Prospect Avenue off-ramp.

The alternative recommends closing Askew Avenue between 18th and 19th Streets. This will redirect some traffic to the two churches there from the east. Cul-de-sacs on Askew Avenue at both sides of 23rd Street are recommended as part of improvements to the interchange at 23rd Street. This will redirect some residential traffic through the area.

Adding connections to achieve a split diamond interchange between 27th Street and Jackson Avenue will improve access to I-70 at those locations. The addition of a cul-de-sac on Mersington Avenue south of 27th Street will redirect some local traffic to Cleveland Avenue to the west. Closure of 29th Street between Wenzel and the westbound I-70 off ramp will redirect some local traffic but it should be slight. Adding cul-de-sacs at Spruce, Cypress and Elmwood Avenues north of I-70 will redirect some local traffic. This will also be the effect of the closures of eastbound Myrtle Avenue off-ramp and 29th Street between Cypress Avenue and Elmwood.

The alternative includes the closure of Raytown Road between 29th Street and Van Brunt Boulevard and placing a cul-de-sac on 29th Street Terrace would redirect some traffic north to 29th Street.

Figure 2.3 in **Chapter 2** shows the improvements discussed above.

What are Cumulative Effects?

Cumulative effects may occur when combining the effects of the proposed project with the effects of other past, present and foreseeable future projects.

3.19.2 Cumulative Affects

Several other projects could contribute to cumulative effects of this project; these include:

- The long term effects of I-70 construction from dating its initial construction in the 1950s and 1960s
- Additional I-70 improvements for other sections of independent utility including sections to the east and west of the Study Area
- I-29/35 kcICON (Christopher S. Bond Bridge) project. This project, completed in 2011, upgraded Interstate 29/35 to six lanes from just north of the Route 210/Armour Road interchange to the downtown loop and included replacement of the bridge over the Missouri River.
- U.S. 71 Improvements (Bruce R. Watkins). This was a freeway constructed from I-435 to I-70 at the southeast corner of the downtown loop. Bruce R. Watkins Drive is primarily six lanes with a transition to four lanes near the south end of the freeway.
- I-470 improvements. A purpose and need study was completed for I-470 in 2009. This project identified the need for several near-term and long-term improvements for I-470. Several near-term improvements have been implemented in the past four years.
- Proposed South Loop Link (Over I-670). The City of Kansas City, Missouri studied the potential to develop over I-670. The proposed project would cover I-670, creating an enclosed tunnel for I-670 and expanding the development opportunities above the highway. This potential project would still need further environmental study.

- Jackson County Commuter Corridors Alternative Analysis. The local preferred alternative begins with short term bus transit improvements with the ultimate goal of commuter rail service.
- Kansas City Downtown Streetcar. The modern electric streetcar is early in construction phase and expects to be operational in 2015. It will run a two mile route between the River Market and Crown Center.
- Ongoing City of Kansas City projects including planning efforts in the Study Area and the long-term improvement project on the 22nd and 23rd Street Corridor. The City of Kansas City planners have divided Kansas City into 18 unique geographical sub areas, four of which are within the Study Area, and developed an area plan for each. The area plans that affect the Study Area are; Greater Downtown Area Plan, Heart of the City Area Plan, Truman Plaza Area Plan, and Stadium Complex Area Plan. Each of these plans has goals for how that area will be developed. **Section 3.1 Land Use and Zoning** discusses these plans in further detail.

The cumulative affects identified for the proposed I-70 improvements are relatively similar for all Build Alternatives. Differences in the potential cumulative effects for the Build Alternatives are discussed in the paragraphs below. There are no identified cumulative effects for the No-Build Alternative although the cumulatively beneficial affects discussed below would not be realized.

The cumulative affects identified by the Study Team include:

- The cumulative benefit for regional traffic and freight circulation and safety.
- The cumulative effect of access changes on neighborhoods in the vicinity of the Study Area.
- The cumulative effect of improvements on neighborhoods adjacent to I-70 from relocations, noise, and neighborhood continuity.
- Potential cumulative impacts on regional air quality.



Trucks on I-70 near Blue Ridge Cutoff

There are no cumulative affects expected to natural resources such as wetlands, farmland, species, floodplains/floodways and water quality.

Cumulative Affect for Regional Traffic Circulation, Safety, and Freight

Several of the roadway projects listed above are intended to move increasing levels of traffic through and around the Kansas City metropolitan area. Improvements proposed for the Build Alternatives will assist the region in meeting similar goals. Cumulatively these projects reduce regional travel time and increase safety for freight, transit, and personal vehicles helping to achieve goals in MARCs 2040 Long Range Transportation Plan to:

- Maximize mobility and access to opportunity for all area residents.
- Support an innovative, competitive 21st-century economy.
- Improve safety and security for all transportation users.
- Ensure transportation system is maintained in good condition.
- Manage the system to achieve reliable and efficient performance.



Vehicle Damage from a Crash

MARC has set several regional performance measures that the proposed improvements to I-70 under the Build Alternatives, when combined with other key transportation projects will help to improve upon regionally. These include:

- Tonnage of goods moved
- Annual cost of congestion per auto commuter (reduction of cost sought)
- Number of annual crash fatalities (cut 2010 number in half by 2040)
- Number of annual disabling injuries (cut 2010 number in half by 2040)
- Road pavement and bridge conditions
- Average travel speed on highways
- Percent of urban roadways congested
- Travel time index
- Annual hours of delay per auto commuter

As discussed in **Chapter 2**, the Build Alternatives including the Preferred Alternative are expected to address all of these issues. A cumulative benefit is created when this is considered with the other regional projects. Each I-70 Second Tier Alternative was independently included in the regional travel demand model. The resulting model analysis shows improved travel times. This will also result in improvements to other regional performance measures.

Cumulative Effect of Access Changes

The Interchange Consolidations Alternative and the Preferred Alternative in combination with the I-29/35 kcICON project will result in cumulative affects to access to the Northeast Neighborhood. The Interchange Consolidations Alternative proposed closing five interchanges, three of which are in the Northeast Neighborhood area and would affect access to that area. The I-29/35 kcICON project changed the access to the Northeast Neighborhood and in combination with the Interchange Consolidations Alternative would result in a cumulative effect on access to these parts of the City of Kansas City.

The Preferred Alternative in combination with the I-29/35 kcICON project would result in a cumulative effect to access to the Northeast Neighborhood to a lesser extent than the Interchange Consolidations Alternative. The Preferred Alternative proposes closing one interchange, the Brooklyn Boulevard interchange.

Cumulative Effect on Neighborhoods

The Build Alternatives in combination with the other transportation projects would have a cumulative effect on the neighborhoods in the Study Area. All three Build Alternatives would require the acquisition of lands and the relocation of homes and businesses in the Study Area. This is an area where previous construction on I-70 already removed a substantial number of homes and businesses. The Improve Geometrics Alternative would require the potential relocation of 42 homes. The Interchange Consolidations Alternative would require the potential relocation of 62 homes. The Preferred Alternative would require the potential relocation of



Apartment Building at 27th Street and Benton Boulevard

31 homes. The number of relocations in the other three sections of independent utility covered in the I-70 First Tier EIS was estimated at 108 homes and 23 businesses. The relocation estimates for the other sections of independent utility may also be reduced when those sections of I-70 are studied in more detail. These potential relocations along with the potential relocations of the Build Alternatives represent a cumulative relocation impact due to overall I-70 improvements.

Many of the homes relocated would be classified as affordable housing and are located in the urbanized areas surrounding the core of the City of Kansas City, Missouri. Several of the other projects considered above, including the I-29/I-35 improvements, the original construction of the U.S.-71 Bruce R. Watkins, and original I-70 construction affected similar types of housing in central Kansas City neighborhoods through the removal of several hundred homes. In combination with the other transportation projects which would also require the relocation of homes, the Build Alternatives would have a cumulative effect on affordable, central housing. The contribution of the Build Alternatives to that overall cumulative number of homes affected is minimal.

What does Non-Attainment for Air Quality Mean?

Non-attainment means that a region has exceeded maximum allowable emissions of one or more air quality pollutants covered by the federal Clean Air Act (CAA) and according to the regulations set by the Environmental Protection Agency under the (CAA). A region that is designated as non-attainment must develop and execute a plan for moving the region back to meeting the standards.

Cumulative Effect on Air Quality

Compared to the No-Build Alternative, all Build Alternatives are expected to decrease the time vehicles spend on I-70 because of less congestion and fewer delays. This would decrease the amount of greenhouse gasses such as CO₂ released into the atmosphere as well as emissions of ozone related pollutants, carbon monoxide and particulate matter. This analysis is discussed in detail in **Section 3.11**. Combined with other regional projects, that also reduce congestion and idling, there would be cumulative benefits to air quality over time. As the MARC region has not been designated as non-attainment for any air pollutants under the Clean Air Act, regional modeling of air quality of this project along with other projects was not completed.

The No-Build alternative would result in increased congestion in the I-70 corridor and would not have cumulative regional air quality effects when combined with other projects. In an attempt to find alternatives, through traffic would seek alternative routes, including a number of the major arterial routes in the Study Area. The increased congestion and cut through traffic would worsen local and regional air quality due to the increase in congested vehicle travel hours.

Some local residents have raised concerns with the health effects of emissions on neighborhoods adjacent to I-70. To the extent that unusual concentrations of air quality issues exist, this would most likely be a cumulative effect of vehicle emissions both on and off of I-70, rail related emissions, and industry related emissions. All of these are more heavily concentrated in central areas of the Kansas City region including the Study Area. As all of the Build Alternatives' effects on air quality are expected to improve over time, any cumulative effects would be reduced through the implementation of I-70 improvements compared to the No-Build Alternative.

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3.20 Joint Development

A joint development or multi-use concept proposes that roadway right of way be used for purposes other than the movement of traffic. Uses could include utility lines and services, parks, bicycle and pedestrian trails, parking facilities, and other uses. The I-70 right of way could potentially incorporate the multi-use concept through the accommodation of water and sanitary sewer lines, telephone conduits and poles, natural gas lines, electric cables and poles, and fiber optic lines. The Build Alternatives (Geometric Improvements Alternative, Interchange Consolidations Alternative, and Preferred Alternative) do not include any specific joint proposals for utilities, trails, parks, parking lots, or any other uses.

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3.21 The Relationship between Local Short-Term Uses of the Human Environment and the Maintenance and Enhancement of Long-Term Productivity

The Build Alternatives being evaluated (Geometric Improvements Alternative, Interchange Consolidations Alternative, and the Preferred Alternative), as well as the No-Build Alternative, would involve short-term and long-term effects. The proposed transportation improvements are based on State and/or local comprehensive planning which considers the need for present and future traffic requirements within the context of present and future land use development. As such, the short-term local impacts and use of resources by the proposed improvements are consistent with the maintenance and enhancement of long-term productivity for the State and local area.

The Build Alternatives have substantial costs associated with them, which includes money, labor, and construction materials for implementing the project. The monetary costs associated with the Build Alternatives have been evaluated to determine that their benefits justify the initial costs. Other costs to consider are items that are difficult to quantify such as driver stress reduction, improved safety conditions, economic impacts, as well as others.

“Short-term” uses refer to the immediate direct consequences of the project and “long-term” will refer to direct or indirect effects of the project on future generations.

The No-Build Alternative will have fewer short-term consequences on the human environment than the Build Alternatives; however, congestion would increase, air quality emissions would more than likely increase (even with the trend of purchasing more fuel efficient/battery powered cars), and costs of vehicular delay would continue to increase. Therefore, the No-Build Alternative would not provide any long-term benefits.

For the Build Alternatives, short term uses of the human environment would include:

- Temporary noise, air, water pollution, and visual effects during construction
- Increased cost to travelers in time and fuel efficiency due to construction delays and detours
- Relocation of homes and businesses, including expenses that would be incurred as these individuals and businesses are compensated
- Potential loss of property that does not require a relocation
- Use of public funds to construct the project

Many of the long-term benefits from implementation of the Build Alternatives are addressed in this chapter. The primary benefits include:

- Improved safety and emergency response times
- Improved mobility (travel time) along the I-70 corridor
- Enhanced economic opportunities for local contractors in the region
- Conversion of wetlands to transportation uses
- Reduction in property tax revenues resulting from relocation of homes and businesses

3.22 Irreversible and Irretrievable Commitments of Resources

This section discusses the irreversible and irretrievable commitments of resources involved in the selection and construction of the No-Build and Build Alternatives (Geometric Improvements Alternative, Interchange Consolidations Alternative, and Preferred Alternative). Irreversible commitments of resources occur when a resource such as a wildlife habitat is converted to a transportation project. At some point it could be converted back or an attempt could be made to replace it; however, it would never be the same. Irretrievable commitments of resources include resources such as money, materials, and labor that were expended for the project. Some of these could be recycled, such as materials, but some resources would be lost forever.

3.22.1 How Will the Alternatives Affect Irreversible and Irretrievable Resources?

No-Build Alternative

The irretrievable commitments of the No-Build Alternative include money, travel delay, and personal inconvenience related to increased congestion. As the travel time continues to increase, air emissions, safety, and noise would continue to be exacerbated and have a negative effect on the local/regional environment.

Build Alternatives - Geometric Improvements, Interchange Consolidations, and Preferred Alternative

Construction of the Build Alternatives would involve the commitment of a range of natural, physical, human resources, and public tax dollars. Land used for construction of the proposed improvements is considered a permanent commitment during the time period that the land is used for a highway facility. For right of way, land resources would be converted from natural, residential, and commercial areas. However, if a greater need arises for the use of the land or if the highway facilities are no longer needed, the land can conceivably be converted to another use. At present, there is no reason to believe such a conversion would ever occur.

Construction of any Build Alternatives would utilize considerable amounts of fossil fuels, labor, and construction materials such as cement, stone, and asphalt materials. Such a resource use would be generally permanent, although it would be possible to retrieve and reuse these resources to a limited extent. Any construction would also require a substantial onetime expenditure of both state and federal funds, which are irretrievable.

3.23 Construction Impacts

This section discusses the potential effects of the alternatives during construction. Actual construction activities often have additional short-term environmental effects that differ from the permanent environmental effects of the project.

What are the Construction Impacts of the Build Alternatives?

Construction of any of the Build Alternatives (Geometric Improvements, Interchange Consolidations, and the Preferred Alternative) would result in certain short-term environmental impacts associated with construction activities. These impacts are discussed in the following sections.

Noise

Noise from heavy construction equipment and haul trucks is a short-term but nonetheless disturbing impact upon sensitive land uses near the construction site. To minimize the adverse effects of the construction period, noise abatement measures should be considered as described in MoDOT's Engineering Policy Guide.

Air Quality

Air quality would also be subjected to short-term impacts in the construction areas. Grading operations and the transportation and handling of materials, such as earth and aggregates, would result in the release of dust into the air. Emissions from construction machinery would add to the motor vehicle classes of air pollution. If practical, the use of off road construction equipment that has been retrofitted with air pollution control devices would further reduce the emissions related to the project. During construction, the contractor would be responsible for adequate dust-control measures to avoid causing detriment to the safety, health, welfare, or comfort of the neighboring population and to avoid causing damage to any property, residence, or business.



MoDOT Construction



MoDOT Construction



MoDOT Work Zone

What is a Haul Road?

A haul road is a road used by construction vehicles.

What is a Borrow Site?

A borrow site is a staging area used during the construction process, which may be outside the project's footprint. Borrow sites can also provide fill dirt for a project.

Contractors involved with the construction would be required to comply with MoDOT's Engineering Policy Guide. Specifically, adherence to the sections concerning fugitive dust, visible emissions, and permits would be required in the construction contracts in an effort to minimize the short-term effects upon air quality within the Study Area.

If practical, the project should consider limiting the use of heavy construction equipment on days with orange or red air quality alerts.

Water Quality

Construction activities and soil disturbance will create sediment which should be managed with carefully maintained sediment control practices. Some bridge replacements over sections of rivers and floodplains will require special diligence to prevent contaminants from entering the drainage and surface waters. Tributary crossings also require diligence to prevent sediment and contaminants from entering drainage and potentially entering water resources. The Blue River Bridge will be replaced (as a separate project) and other stream crossings will utilize new culverts or culvert extensions that maintain the low-flow characteristics of the streams.

To reduce impacts on water quality, contractors would be required to minimize the amount of area cleared during a given time period and would employ erosion control measures at all stages of construction in accordance with MoDOT's Engineering Policy Guide. Control measures would include silt fences, silt basins, temporary berms, dikes, drains, gravel, mulches, and grasses as appropriate. These measures would apply to haul roads and borrow sites as well as the permanent right of way. Sanitary facilities would be required at the construction sites. Suitable storage areas and careful handling of potentially harmful materials would be required by the contractor.

Floodplains

The construction of the Preferred Alternative would incorporate those features necessary to meet FEMA and SEMA standards. Work within the Blue River floodplain would also

fall under the jurisdiction of the USACE, as they have sponsored the Blue River Channelization Project to alleviate flooding in the area and will issue the Section 404 permits as required. All practical measures to minimize impacts to the floodplain will be incorporated into the project design.

Traffic Circulation

Traffic patterns and existing access points near the proposed improvements would be affected by construction activities. Construction schedules would be coordinated in advance to minimize the effects of such disruption. Suitable detours would be required to maintain traffic circulation, and areas under construction would be controlled to limit the extent of disruption to traffic flow. Access within a specified distance of any inhabited areas to assure continued fire protection and emergency services should be maintained during construction. Maintaining proper traffic circulation is particularly important to the surrounding businesses and freight carriers, who count on the reliability of the transportation system to conduct business and maintain profit. MoDOT will complete a traffic management plan for the construction phases of the selected alternative. This would include keeping two lanes open on I-70 in both directions at all times to the extent possible.

Disposal of Surplus or Waste Material

Construction of the Preferred Alternative or any of the Build Alternatives will generate surplus and waste material including excess dirt, remnants of demolished structures, old pavement, and removed vegetation. Inert debris may be used for fill material as applicable at other locations of the project. MoDOT will consider the use of recycled materials, when possible, particularly those materials resulting from demolition of buildings and existing pavement. Surplus and waste material will be handled and disposed of according to standard provisions contained in MoDOT's Engineering Policy Guide and Section 260.210 RSMo of the Missouri Solid Waste Management Law and Regulations. The contractor shall obtain written permission for any disposal of material on private land and no temporary or permanent disposal of material will occur in any public or private wetland, water

What is Inert Debris?

Inert debris is solid waste, such as brick, concrete, rock, gravel, and clean soil.

course, or floodplain without prior approval and permit by the appropriate regulatory agencies.

In the event that unexpected buried wastes are discovered, contractors will follow MoDOT's technical bulletin "Managing Solid Waste Encountered during Excavation Activities".

3.24 Proposed Project Commitments

The following is a compiled list of MoDOT's proposed project commitments. MoDOT will implement all project and regulatory commitments. Federal authorization for construction will not be granted until the necessary regulatory obligations have been satisfactorily completed.

- MoDOT will acquire all properties needed for this project in accordance with the Uniform Relocation Assistance and Real Property Acquisition Act as amended (Uniform Act; 42 U.S.C 4601), and other regulations and policies as appropriate.
- MoDOT will implement its Pollution Prevention Plans to prevent or minimize adverse stormwater and construction impacts to streams, water courses, lakes, ponds, or other water impoundments within and adjacent to the project area.
- All construction activities will comply with the existing rules and regulations of governmental agencies having jurisdiction over streams and water supplies in the area.
- If suitable roost trees for the Indiana bat are present and need to be removed for construction, MoDOT will only allow clearing of potentially suitable roost habitat between November 1st and March 31st.
- Any previously unknown hazardous waste sites (see known sites listed in Table 3.8-1) that are found during project construction will be handled in accordance with federal and state laws and regulations. If regulated solid or hazardous wastes are found during construction activities, the MoDOT construction inspector will direct the contractor to cease work at the suspect site. The construction inspector will contact the appropriate environmental specialist to discuss options for remediation. The environmental specialist, the construction office, and the contractor will develop a plan for sampling, remediation, and continuation of project construction. Independent consulting,



Emergent Wetland

analytical, and remediation services will be contracted if necessary. The MDNR and the EPA will be contacted for coordination and approval of required activities.

- MoDOT will obtain jurisdictional determinations for wetland/waters of the U.S. through coordination with the USACE Kansas City District prior to initiating final design. This information will be used by MoDOT to obtain a Section 404 Permit for construction of the project, if required.
- Painted structures shall be tested prior to painting and demolition to determine proper disposal for the waste generated during the project. The inspection reports must be included in the construction bid proposal.
- Bridge work involving removal of lead or non-lead paint by sandblasting or power washing must follow the procedures outlined in MoDOT Standard Specification 1081, "Coating of Structural Steel, for proper removal and disposal of paint, blast residue or wash water".
- All structures, including bridges that will be renovated or demolished will be inspected for asbestos. The reports from these hazardous material inspections must be included in the construction bid proposal. Demolition or renovation is a three-step process under the asbestos regulations. All structures that meet the criteria as described above must be inspected by an Asbestos Building Inspector. Following the inspection, regardless of whether asbestos is present or not, an Asbestos Demolition Notification shall be made to MDNR no fewer than 10 working days prior to beginning the project. If regulated amounts of asbestos are present, an Asbestos Project Notification will also be submitted and an Asbestos Post-Notification will be filed after the work is completed. If abatement is necessary, a certified Contractor Supervisor will be present during the abatement and a licensed asbestos contractor will do the abatement. MoDOT would ensure these materials, depending on their condition

and quantity, are removed and disposed of according to current regulations and procedures.

- A Transportation Management Plan (TMP) will be developed and include:
 - A Traffic Operations Plan will be developed during project design and be included in the construction contract. A TMP will lay out a set of coordinated traffic management strategies to manage the work zone impacts.
 - MoDOT will send a news release out to local newspapers and radio stations giving local commuters information about construction activities that could impact their daily travels. This information will be also be posted on MoDOT's website.
- Pollution control measures outlined in the Missouri Standard Specifications for Highway Construction will be used to minimize impacts associated with the construction of any alternative; these measures pertain to air, noise, and water pollution as well as traffic control (e.g., detours) and safety measures. Best management practices will be employed to minimize or mitigate potential impacts.
- Emissions from construction equipment will be controlled in accordance with emission standards prescribed under state and federal regulations.
- MoDOT's utility engineers and representatives of the utilities will work out details of individual utility relocations on a case-by-case basis.
- MoDOT contractors will locate and protect all temporary storage facilities for petroleum products, other fuels, and chemicals to prevent accidental spills from entering the streams within the project vicinity. The contractor will clean-up any such spills to prevent the possibility of pollution due to runoff.



Overhead electric power lines across I-70

- MoDOT contractors will avoid disposing of cement sweepings, washings, concrete wash water from concrete trucks, and other concrete mixing equipment, treatment chemicals, or grouting and bonding materials into streams, wetlands, or into any location where water runoff will wash pollutants into streams or wetlands.



1 Noise Walls

- The contractor will identify all borrow and waste sites prior to initiating construction. The contractor shall be responsible for obtaining all necessary environmental clearances, approvals, and permits for use of all borrow and/or waste sites.
- The location, size, and cost of proposed noise abatement will be discussed in the Final EIS and MoDOT will make a final noise abatement determination after final design and public involvement is completed.
- If meeting the project schedule requires that earth removal, grading, hauling, and/or paving must occur during evening, nighttime and/or weekend hours in the vicinity of residential neighborhoods, the contractor shall notify MoDOT as soon as possible. In such instance(s), all reasonable attempts shall be made to notify and to make appropriate arrangements for the mitigation of the predicted construction noise impacts upon the affected property owners and/or residents.
- Prior to demolition of existing bridges, MoDOT will conduct surveys to determine the absence or presence of swallow nests in the bridge superstructure. If nests are present and impacts are anticipated to species protected by the Migratory Bird Treaty Act, precautions will be implemented to avoid impacts and/or additional consultation with USFW will be completed. These efforts will be completed between April 1 and July 31.
- Clearing and grading during construction will likely affect the adaptive habitat areas for some species. Nearby areas of similar habitat are expected to support the wildlife potentially relocated by the project.

Clearing of trees and other vegetation would be confined to construction limits to preserve as much existing natural growth as possible.

- MoDOT will prepare a Section 4(f) De Minimis determination for the three boulevards within the Study Area that are part of the Kansas City Parks and Boulevards System.
- If cultural resources that may be eligible for listing on the NRHP are encountered during construction, the Contractor shall first stop all work within a 50-foot buffer around the limits of the resource, and secondly, shall notify the appropriate MoDOT Resident Engineer or Construction Inspector who will contact the MoDOT's Historic Preservation (HP) section. MoDOT HP shall contact the appropriate staff at the FHWA and the SHPO to report the discovery after a preliminary evaluation of the resource is made and reasonable efforts to see if it can be avoided. If it is determined that the cultural resource is a historic property that will be adversely affected by the undertaking, MoDOT will immediately notify the FHWA and SHPO of this finding and provide recommendations to minimize and/or mitigate the adverse effect. FHWA will notify the Advisory Council on Historic Preservation and any Indian tribe that might attach religious and cultural significance to the affected property within 48 hours of this determination. FHWA shall take into account Council and Tribal recommendations regarding National Register eligibility and proposed actions, and then direct MODOT to carry-out the appropriate actions. MoDOT will provide FHWA and SHPO with a report of the actions when they are completed. FHWA shall provide this report to the Advisory Council and the Indian tribes

What Permits Will be Required?

The following permits and approvals will be required for construction of the proposed project based on current anticipated impacts:

Section 404 Permit and Section 401 Water Quality Certification under the Clean Water Act – A Section 404 Permit from the USACE and Section 401 Water Quality Certification from MDNR will be required to authorize placement of fill materials within jurisdictional wetlands and the Missouri River. For the Final EIS, a preliminary jurisdictional wetland and stream delineation is conducted in the project area for the preferred alternative and expected impacts are documented. At that time, the type of Section 404 Permit will be determined in consultation with the USACE.

Section 402 of the Clean Water Act – Authorization for the discharge of storm water from construction activities is required in Missouri in compliance with the National Pollutant Discharge Elimination System requirements of Section 402. A Notice of Intent would need to be filed with the MDNR to request authorization under the Missouri State Operating Permit (reissued February 8, 2012). MDNR requires the development of a storm water pollution protection plan in conjunction with the permit authorization. Once construction is complete, a Notice of Termination will be submitted to the MDNR.