U.S. 69 BRIDGES OVER THE MISSOURI RIVER

Platte County, Missouri and Wyandotte County, Kansas
MoDOT Job No. J4P2279B
KDOT Project No. 169-105 KA-2838-01
Federal Aid No. NHPP-A283(801)

ENVIRONMENTAL ASSESSMENT

Submitted pursuant to 42 U.S.C. 4332(2)(c)
and 49 U.S.C. 303 by the
U.S. Department of Transportation
Federal Highway Administration

The Missouri Department of Transportation
and
The Kansas Department of Transportation

and
COOPERATING AGENCIES
U.S. Army Corps of Engineers
U.S. Coast Guard

8/21/13		Program Development Team Lead
Date of Approval	FHWA	Title
8/16/13		Asst. Chief Engineer
Date of Approval	MoDOT	Title
8/20/13		Deputy Secretary
Date of Approval	KDOT	Title

The following persons may be contacted for additional information concerning this document:

Ms. Raegan Ball
Program Development Team Leader
FHWA Missouri Division Office
3220 West Edgewood, Suite H
Jefferson City, Missouri 65109
(573) 638-2620

Mr. Edward Hassinger
Chief Engineer
Missouri Department of Transportation
P.O. Box 270
Jefferson City, Missouri 65102
(573) 751-2803

Mr. Jerry Younger, P.E.
Deputy Secretary and State Transportation Engineer
Kansas Department of Transportation
Dwight D. Eisenhower State Office Building
700 SW Harrison Street
Topeka, Kansas 66603-3745
(785) 296-3285

The MoDOT and KDOT signatures indicate verification that the content of this document and scope of the project are accurate. The FHWA signature gives approval to distribute this information for public and agency review and comment. Such approval does not commit FHWA to approve any future grant requests to fund the preferred alternative.

Table of Contents

List of Tables

List of Figures

Chapter 1

Purpose and Need for Action

1.1 INTRODUCTION

The Missouri Department of Transportation (MoDOT), the Kansas Department of Transportation (KDOT), and the Federal Highway Administration (FHWA) are studying alternatives that would improve the transportation infrastructure at the U.S. 69 crossing of the Missouri River. These alternatives are designed to address the condition of the existing bridges and to address travel, access, and economic needs within northeastern Wyandotte County, Kansas and southeastern Platte County, Missouri. Two separate bridges span the Missouri River, connecting the Fairfax Industrial District and the downtown area of Kansas City, Kansas on the south with Platte County and the city of Riverside, Missouri on the north. The study area, as depicted in Figure 1-1, extends from Kindleberger Road in Wyandotte County, Kansas north to I-635 in Platte County, Missouri.

This Environmental Assessment (EA) is required in accordance with the National Environmental Policy Act (NEPA) and the guidelines outlined in Moving Ahead for Progress in the 21st Century Act (P.L. 112-141; July 6, 2012), known as MAP-21. The U.S. 69 Bridges Over the Missouri River EA will:

- Provide an overview and description of the study area,
- Identify current and future needs,
- Determine potential improvement alternatives to address current and future needs,
- Evaluate the effects of reasonable alternatives on the human and natural environment,
- Reach public and agency understanding of the proposed improvements, and
- Identify a Preferred Alternative and document its approval by FHWA in the form of a Decision Document.

What is a Purpose and Need Statement?
A Purpose and Need Statement identifies the reasons a proposed project is needed.

What is NEPA? NEPA is an environmental law that established national policy promoting the protection, maintenance, and enhancement of the environment. It established requirements for evaluating and addressing the effects a federal project or a federally-funded project may have on the human and natural environment.

What is a Decision Document?
A Decision Document issued by the FHWA can take two forms:

A Finding of No Significant Impact (FONSI) is issued when environmental analyses and interagency reviews during the EA process find a project to have no significant impacts on the quality of the environment. The FONSI document reflects all applicable comments and responses. The FONSI must include FHWA's selected alternative.

A Record of Decision (ROD) is typically issued upon completion of an Environmental Impact Statement (EIS). The ROD outlines all of the alternatives considered during the EIS process, provides the rationale for the alternative selected, and explains why the other alternatives were not chosen.

The intent of the proposed action to be described and evaluated in the U.S. 69 Bridges Over the Missouri River EA, referred to throughout the document as the U.S. 69 Bridges EA, is to seek the most effective improvement alternative to provide a river crossing that satisfies current and future transportation needs in the area while minimizing impacts on the human and natural environment.

Figure 1-1: U.S. 69 Bridges Over the Missouri River Study Area

1.2 DESCRIPTION AND FUNCTION OF THE EXISTING RIVER CROSSING

At its crossing of the Missouri River, U.S. 69 serves to transition the flow of traffic from 7th Street Trafficway in Kansas City, Kansas on the south side of the river to I-635 on the north side. It is classified as a Principal Arterial on the Metropolitan Regional Roadway Functional Classification Map approved by the FHWA and published by the Mid-America Regional Council (MARC). Seventh Street Trafficway is designated as a Class A thoroughfare on the Kansas City, Kansas *Master Street Plan.* In addition to linking with the regional transportation network, U.S. 69 also serves industrial truck traffic originating from or destined to businesses within Fairfax and emerging commercial and industrial development in Riverside.

Both existing through-truss style bridges are more than 50 years old. The Fairfax Bridge, classified as structurally deficient, carries southbound traffic via two 10-foot-wide lanes and has no shoulders. The narrowness of the travel lanes limits the bridge's ability to conveniently accommodate the traffic mix that regularly crosses the bridge. The available vertical clearance also restricts the size of vehicles that can cross southbound into Fairfax. The Platte Purchase Bridge is classified as functionally obsolete due to the narrowness of its shoulders and limited vertical clearance of 15′-4″. Both bridges are load rated well below the 70 ton standard for a commercial zone. The posted speed limit on both bridges is 50 miles per hour (mph).

Safety and Crash History

Crash records provided by MARC indicate a total of 14 crashes occurred on the bridges or on the approaches to both bridges for the five year period between 2007 and 2011.[1] None of the crashes involved a fatality. This relatively minor crash history suggests that there is not a safety issue related to vehicular operations on the bridge. However, due to the narrow lane widths and lack and narrowness of shoulders, some drivers tend to shy into the adjacent lanes which can potentially result in an increase in the number of crashes in the future as traffic volumes increase (see Appendix A-5).

Current and Future Traffic Volumes

Between 2002 and 2012, traffic volumes at the crossing published by KDOT have ranged between 11,500 and 15,600 vehicles per day expressed as average daily traffic (ADT). Heavy trucks make up approximately 16 percent of the traffic mix traveling in both directions. Traffic volumes from year to year vary due to the role this crossing plays as an alternate route when other river crossings are closed or their capacity is reduced because of maintenance. For this project, traffic counts were conducted during periods when the I-635 and U.S. 169 (Broadway Extension) crossings of the Missouri were reduced and closed, respectively. These counts along with historic traffic counts provided by MARC were used to estimate future traffic volumes (see Appendix A-2).

MARC's travel demand model estimates future traffic on the regional roadway network based on expected growth and demographic trends. The MARC model projects that traffic will increase by approximately 35 percent (or approximately 1 percent per year) from 2010 through the project planning horizon of 2040. Applying this growth rate to the current average ADT of 14,500 for this crossing, and considering current and future planned development on both sides of the river that is not accounted for in the MARC model, future traffic volumes could increase above 22,000 ADT by 2040 for the U.S. 69 crossing.

[1] Crash data provided to MARC by MoDOT and KDOT statewide crash databases

Traffic Congestion and Capacity

Level of service (LOS) is a measure of the number of vehicles on the road and speed at which traffic moves along a roadway segment. LOS is expressed using a six-level, A to F, rating system. LOS A is the best, most open traffic flow with no congestion, with LOS F is the poorest traffic flow with stop-and-go conditions. Under current and future 2040 traffic conditions, the bridges serve traffic at acceptable LOS A and B, respectively, which suggests that the current configuration of two lanes in each direction adequately serves current and projected traffic. [2] However, it is highly likely that due to its physical condition, the Fairfax Bridge will need to be closed to traffic permanently before the year 2040 requiring all of the traffic to be carried on the existing two-lane Platte Purchase Bridge. This would result in unacceptable LOS E and F in the northbound and southbound lanes of the Platte Purchase Bridge, respectively.

Truck Operations

The vertical clearance required for barge traffic to navigate the Missouri River established the elevation of the existing bridges. Combined with the existing topography in the area, the roadways approaching each bridge have a slope of approximately five percent. Combined with the predominance of large trucks using U.S. 69, these factors affect the speed and flow of traffic on and approaching the crossing. Because of the relatively high percentage of heavy trucks (16 percent)[3], narrowness of the travel lanes, and narrowness and lack of shoulders, some large truck operators often operate as though there is only one traffic lane in each direction. Many of the larger trucks are carrying petroleum products or other heavy goods. Many of the large truck operators have expressed concerns over traffic safety related to the differential in travel speeds between cars and trucks traveling in both directions.

[2] *Highway Capacity Manual*, Special Report 209; Transportation Research Board, 2010.
[3] MoDOT - 2011 Kansas City District Traffic Volume and Commercial Vehicle Count Map

1.3 PURPOSE AND NEED

The historic Fairfax Bridge (southbound) and historic Platte Purchase Bridge (northbound) provide an important linkage in the regional highway network (Figure 1-2). On average, approximately 15,000 vehicles cross the bridges daily. In addition to serving local and regional travel demands, the bridges also serve an important function in supplementing capacity across the Missouri River during traffic incidents or maintenance activities on nearby I-635 and U.S. 169 (Broadway Extension) bridges. U.S. 69 also plays a major role in supporting the regional distribution of products manufactured and stored in the Fairfax Industrial District; and plays an integral role in both local and regional evacuation and emergency management plans[4]. Although both bridges support mobility across the river, they lack off-travelway accommodations for bicyclists and pedestrians.

Figure 1-2: Fairfax Bridge (right) and Platte Purchase Bridge (left)

The age and condition of both bridges create an on-going need for costly maintenance and scheduled repairs. This is particularly the case for the Fairfax Bridge, which is considered near the end of its useful life. With highway funding limited, both MoDOT and KDOT place great emphasis on spreading financial resources across numerous facilities, increasing the importance of making cost-effective investments to keep the transportation infrastructure in good operating condition over the long-term.

The purpose of the project is to provide an improved river crossing that satisfies the following transportation needs in the region:

Maintain infrastructure – address the physical condition of the historic Fairfax Bridge and the historic Platte Purchase Bridge to manage the long-term cost-effective reliability of the crossing.

Support movement of goods and freight – provide mobility and accessibility to support continued transport of materials and products from the Fairfax Industrial District and southern Platte County to the surrounding region.

Maintain regional transportation linkages – maintain a reliable Missouri River crossing that accommodates regular daily traffic while providing capacity to convey traffic diverted from incidents and maintenance activities on the adjacent bridges.

Support accessibility for non-motorized transportation – accommodate non-motorized modes of travel and connections to regional trail systems.

Support continued economic vitality on both sides of the river – maintain access and capacity to serve current and planned economic development.

[4] *Wyandotte County Emergency Operations Plan*; Wyandotte County Emergency Management. September 2007.

1.3.1 Maintain Infrastructure

This crossing of the Missouri River has been in place since 1935 with the opening of the Fairfax Bridge; and was expanded with construction of the Platte Purchase Bridge in 1957. Both bridges are composed of multiple through-truss spans constructed to accommodate the type, size, and weight of vehicles common at those respective times. Due to the physical condition of both bridges, a considerable amount of effort and money has been expended over the past 20 years to keep them open to traffic.

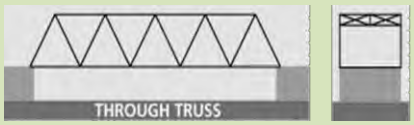
Fairfax Bridge - The 2,595 foot-long Fairfax Bridge carries southbound traffic via two 10-foot wide lanes and no shoulders. The narrow roadway limits the function of the bridge and its ability to conveniently accommodate the traffic mix that regularly crosses the bridge. Because of the condition of the steel truss structure, including rusting and deterioration of the steel elements, the nearly 80-year old Fairfax Bridge is classified as structurally deficient (see Figure 1-3).

Because of the advanced age of the Fairfax Bridge, it is near the end of its useful service life. Repairs will be frequent and costly in order to keep this structure in use. The Fairfax Bridge has a sufficiency rating of 39.9, below the threshold of 50.0 indicating it is eligible for replacement or rehabilitation.[5] Additional information on the condition of the Fairfax Bridge is provided in Appendix A.

Narrow lanes and load limitations restrict the use of the Fairfax Bridge by overweight and oversized vehicles. The bridge has a truck weight limit of 35 tons and single unit tandem rear axle truck limit of 22 tons. These weight limits are below the legal limits in Missouri of 40 tons and 23 tons, respectively, and far below the legal load limit within a commercial zone of up to 70 tons. The vertical clearance between the deck and the overhead truss is 16′-2″ which is below the current American Association of State Highway and Transportation Officials (AASHTO) standard of 17′-6″ for through-truss structures. The narrow lane widths and lack of shoulders tends to cause drivers, (particularly truck drivers), to shy into the adjacent lane, reducing the traffic carrying capacity of the bridge, and could potentially result in an increase in the number of crashes as traffic volumes escalate.

The Fairfax Bridge is also considered to be fracture critical and is inspected on an annual basis. As these types of through-truss bridges age, there is generally an increase in long-term maintenance and repairs, particularly due to steel deterioration. In addition to the cost to taxpayers, the frequency and duration of inspections and closures for repairs inconvenience the travelling public including shippers and employees in Riverside and the Fairfax Industrial District.

What is a through-truss bridge? On a ***through-truss bridge,*** traffic travels through the superstructure (the truss) which is cross-braced above and below the roadway surface.



What is meant by structurally deficient and functionally obsolete? A deficient bridge is one that is defined as either ***structurally deficient*** or ***functionally obsolete*** based on FHWA criteria. A ***structurally deficient*** bridge is one in poor condition or with insufficient load capacity compared with modern design standards. A bridge that is ***functionally obsolete*** has poor roadway alignment, clearance, or width restrictions that no longer meet the usual criteria for the system it serves.

What is meant by fracture critical? A ***fracture critical*** bridge is a steel structure that lacks redundant supporting elements. If any of the main structural components would become damaged or fail, there are no "back-up" components to adequately redistribute the structural load and support the bridge. This designation is a function of the design of the bridge and not of its condition.

[5] Under the FHWA Bridge Replacement and Rehabilitation Program (23 CFR 650.409), bridges with sufficiency ratings of less than 50.0 are eligible for replacement or rehabilitation

Clockwise from top left: (A) under deck inspection in 2011, (B) section loss at bottom chord in 2010, (C) removing and replacing vertical supports in 2009, (D) rusted pin at lower chord in 2011), and (E) upper truss inspection in 2011.

Figure 1-3: Fairfax Bridge – Bridge Condition Photos from Recent Inspections (2009-2012)

Platte Purchase Bridge - The Platte Purchase Bridge (2,602 feet long) carries northbound traffic on two 12-foot-wide lanes with 1-foot wide inside and outside shoulders. This bridge is considered to be functionally obsolete because of its narrow shoulders and limited vertical clearance. The Platte Purchase Bridge has a posted vertical clearance of 15′-4″, also below the current AASHTO standard of 17′-6″. This reduced vertical clearance limits the height of vehicles, particularly freight shippers that wish to cross the bridge in the northbound direction. The Platte Purchase Bridge is also weight limited to 40 tons and single unit tandem rear axle truck limit of 22 tons, well below the 70-ton commercial zone legal load limit. The Platte Purchase Bridge has a sufficiency rating of 44.9, below the threshold of 50.0 indicating it is eligible for replacement or rehabilitation. Additional information on the condition of the Fairfax Bridge is provided in Appendix A.

The Platte Purchase Bridge is also considered to be fracture critical and is inspected on a biennial basis (see Figure 1-4). The bridge superstructure also has a condition rating which is approaching the category of structurally deficient. A major rehabilitation of the Platte Purchase Bridge was performed in 1997, at a cost of $8 million (in 2013 dollars). This 1997 rehabilitation included replacement of the bridge deck, other structural repairs, and recoating of the steel trusses. MoDOT also has spent nearly $200,000 since 2003 for other maintenance, repairs, and inspections of the Platte Purchase Bridge. Another major rehabilitation will likely be required in the next 5-7 years to extend the useful life of the bridge.

Clockwise from top left: (A) height restriction posting (15′-4″) on south truss opening, (B) section loss and pack rust at interior gusset in 2011, and (C) concrete spalling under girder in 2009.

Figure 1-4: Platte Purchase Bridge – Bridge Condition Photos from Recent Inspections (2009-2011)

1.3.2 Support Movement of Goods and Freight

The Fairfax Industrial District (Fairfax) plays a major role in the region's economy (Figure 1-5). Fairfax is home to more than 135 businesses (including General Motors, Sunshine Biscuit, Owens Corning, Central Plains Steel, and CertainTeed) that manufacture and/or distribute a variety of products throughout the Kansas City region as well as the nation. Many of the businesses in Fairfax also receive materials and ship freight via the Union Pacific rail corridor that crosses the study area. As a result of the concentration of industrial and commercial businesses within Fairfax, trucks are an important component of the traffic mix operating in the study area. Approximately 16 percent of the daily traffic that travels over the crossing is trucks.

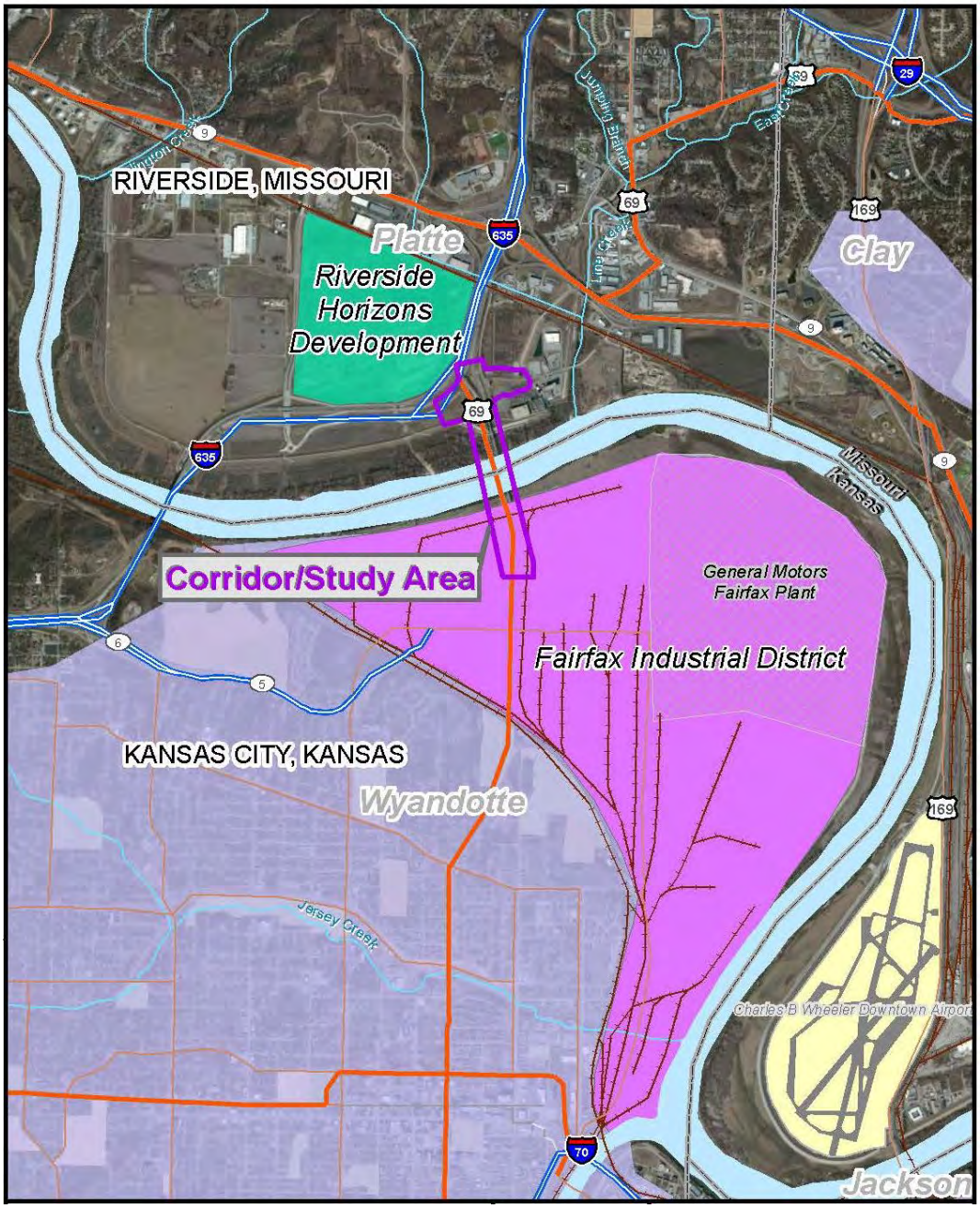


Figure 1-5: Major development areas within the vicinity of the U.S. 69 Bridges EA Study Area.

A number of companies located within Fairfax operate large trucks transporting petroleum products, hazardous materials, and heavy loads. They rely on U.S. 69 to transport these commodities to customers outside of the study area. The weight limit on the Fairfax Bridge restricts its use by large and fully loaded freight trucks, causing them to use I-635 and Kansas Route 5 to access Fairfax, resulting in additional travel time and expense.

Several businesses located in Fairfax also rely on 'just in time' deliveries of goods and supplies from businesses located north of the river. These 'just in time' deliveries allow businesses to minimize inventory and warehouse space while working with outside suppliers and manufacturers to provide essential supplies and materials at a pre-established cost. The concept allows businesses to lower overhead costs and meet demanding project schedules. Furthermore, as previously stated, the narrow lane widths and narrowness or lack of shoulders tends to cause some truck drivers to shy into the adjacent lanes, resulting in potential safety issues and a reduction in overall traffic capacity. This is the case predominantly on the southbound Fairfax Bridge.

1.3.3 Maintain Regional Transportation Linkages

On a regional scale, U.S. 69 and neighboring I-635 and U.S. 169 are part of the region's overall transportation network, moving people and goods and linking population, economic, and educational centers. This network links residents and businesses in the study area with the Kansas City International Airport and Charles B. Wheeler Downtown Airport, along with bi-state employment and economic centers including downtown Kansas City, Kansas, Kansas City, Missouri, the Kansas Speedway, and the Village West, Briarcliff, and Zona Rosa developments. U.S. 69 links many of the major transportation routes to these employment and economic centers by providing connections with I-635, I-70, U.S. 24, and Kansas Route 5, as depicted in Figure 1-6.

As described previously a Missouri River crossing has been in place at this location since 1935. Since construction of the Fairfax Bridge, two additional river crossings have been built within two miles of this crossing, both carrying more regionally-oriented traffic. The I-635 crossing is located roughly 1.5 miles (as the crow flies) to the west and carries approximately 50,000 vehicles per day. U.S. 169 (Broadway Extension) crosses the river approximately 3.7 miles to the east of U.S. 69 (as the crow flies) and carries up to 40,000 vehicles per day, typically expressed as average daily traffic (ADT). U.S. 69 also serves as a secondary access into Fairfax and downtown Kansas City, Kansas when I-70 and I-670 to the south are closed or carry reduced traffic flows due to construction, maintenance, or traffic incidents. When traffic incidents or regular maintenance occur on either the I-635 or U.S. 169 bridges, traffic tends to divert to U.S. 69. Based on traffic counts completed in October 2012, approximately 26,000 vehicles traveled across the U.S. 69 bridges; which is almost twice the number of vehicles that normally cross the river on U.S. 69 (2011 ADT of 14,500 vehicles per day)[6]. During this timeframe, I-635 was reduced to one lane in each direction for maintenance, and U.S. 169 was closed to accommodate a construction project just north of the bridge. The traffic on the U.S. 69 bridges during that period is indicative of its significance as a reliever route within the overall transportation network.

[6] Kansas Department of Transportation 2012 Traffic Flow Map

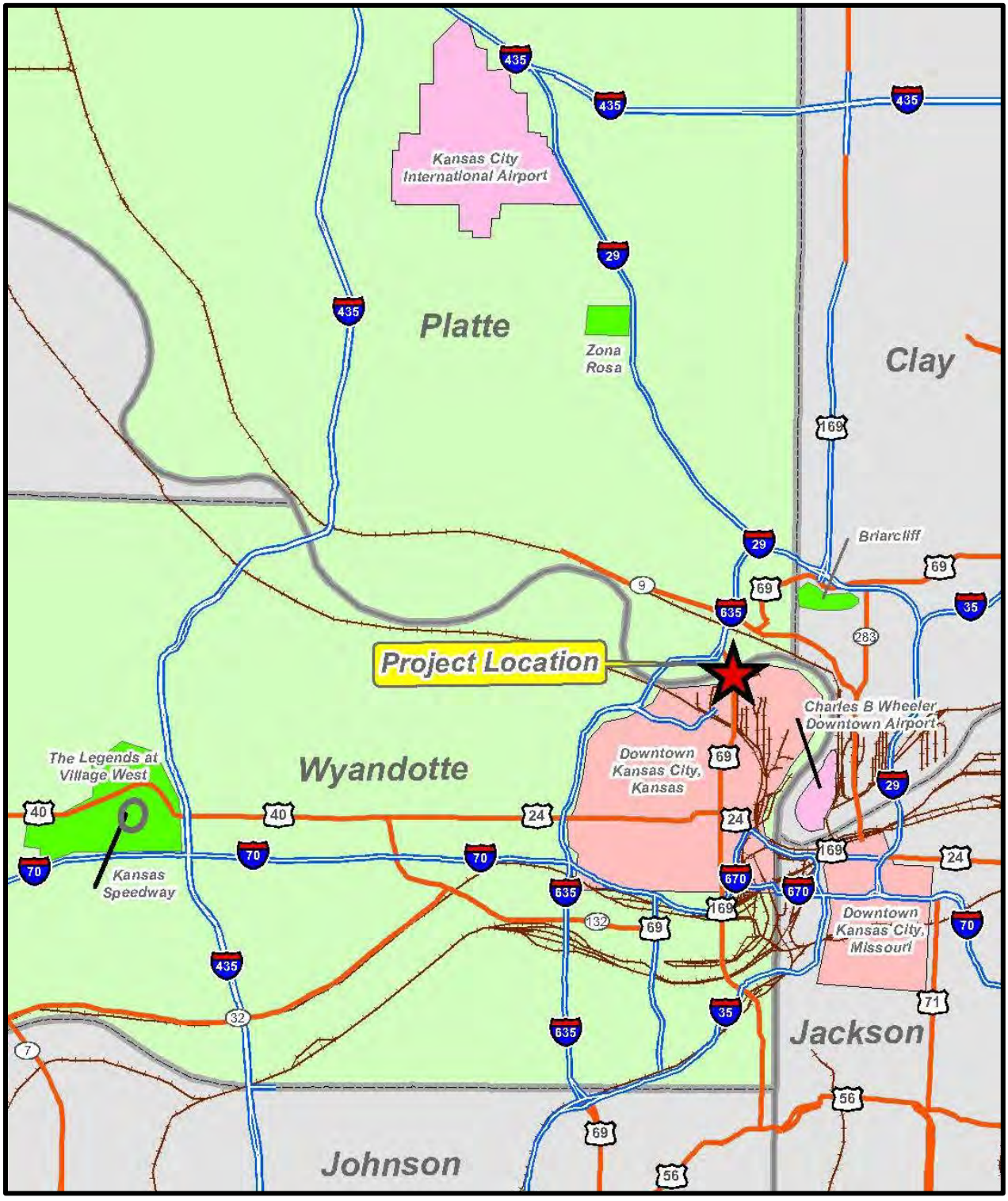


Figure 1-6: Regional Transportation Network and Major Destinations

1.3.4 Support Accessibility for Non-Motorized Transportation

The Missouri River is a natural barrier to travel, including non-motorized transportation. Federal policies require consideration of non-motorized travel as part of federally-funded projects. There are also regional policies that promote consideration of bicycle and pedestrian access across the Missouri River. A portion of the Missouri Riverfront Trail is located along the levee on the north side of the Missouri River and passes under the existing bridges. This trail connects to E.H. Young Riverfront Park, just east of Argosy Casino, and serves as a link to the developing regional trail system within the greater Kansas City metropolitan area. The *Trails KC Plan,* developed by the City of Kansas City, Missouri in January 2010, identifies a number of citywide trails and on-street trails that would connect this section of the Missouri Riverfront Trail with sections of the Riverfront Heritage Trail within downtown Kansas City and North Kansas City, Missouri. The *City of Riverside Trail Plan,* completed in March 2013, (see Figure 3-2) illustrates their network of dedicated bike trails that connect to the Missouri Riverfront Trail along the north side of the river. On the south side of the river, the Unified Government of Wyandotte County and Kansas City, Kansas (Unified Government) has identified 7th Street, Sunshine Road, and Fairfax Trafficway as on-street bike routes in their *Sidewalk and Trail Master Plan,* completed in July 2012 (see Figure 3-3). The Unified Government's plan also provides for consideration of regional multi-purpose trails along U.S. 69, on or in the vicinity of the Fairfax Levee, and along the Quindaro bluff. These trails and on-street bike routes would provide connections to Roswell and Garland Parks in Quindaro and to Kaw Point Riverfront Park near the confluence of the Kansas and Missouri Rivers.

Because of their narrowness or lack of shoulders, neither bridge accommodates off-travelway bicycle or pedestrian traffic very well. Prior to construction of Argosy Parkway at the north ends of both bridges, local roadway and bicycle access in the southbound direction was provided by a loop ramp connecting at the north end of the Fairfax Bridge. The connection was removed to accommodate construction of Argosy Parkway. In addition to serving recreational uses, bicycle/pedestrian facilities would also promote alternative transportation options and healthy lifestyle initiatives for workers on both sides of the river.

1.3.5 Support Continued Economic Viability on Both Sides of the River

In addition to supporting existing businesses, the linkage across the river supports current and planned economic development within Wyandotte County and Platte County. Although the majority of Fairfax is built out, there are a number of parcels that are available and/or planned for development or redevelopment. Existing businesses also continue to expand their facilities, providing additional products and services and hiring additional workers. The General Motors Plant, located in the northeast corner of Fairfax, approximately one mile east of the existing crossing, refer to Figure 1-5) recently announced plans to expand its facilities and hire additional workers. There are also active planning efforts targeting several large parcels which can potentially develop hundreds of thousands of square feet of additional warehouse, distribution, and mixed-use development, further increasing the employment base and resulting travel demand in the area.

In October 2011, the city of Riverside broke ground on the Riverside Horizons Development, including a 250-acre office and industrial center located just north of the U.S. 69 bridges and west of I-635. The Riverside Horizons Business Park, spearheaded by Briarcliff Horizons LLC, is projected to provide more than 2.5 million square feet of office and industrial innovations space and generate more than 5,900 jobs over the next 20 years. Reliable access to existing and new business partners in Fairfax would continue to promote economic vitality for the businesses within the Horizons Business Park and support the 'just in time' deliveries of goods and supplies from businesses located north of the river.

Chapter 2
Alternatives Considered

2.1 STRATEGIES CONSIDERED TO ADDRESS THE TRANSPORTATION NEEDS WITHIN THE STUDY AREA

A variety of transportation strategies were initially considered in order to meet the Purpose and Need as previously described and stated. The strategies considered included:

- No-Build
- Transportation Systems Management and Transportation Demand Management
- Mass transit
- Improving/upgrading one or both existing bridges
- Removal of one or both existing bridges and construction of a new two-lane or new four-lane bridge
- Removal of the Fairfax Bridge with maintenance of the Platte Purchase Bridge

2.1.1 No-Build

Under the No-Build strategy, both existing bridges would be left in place. Only routine maintenance and repair of the existing bridges would occur. There would be no widening of either bridge or their approach roadways, no improvement of the roadway or bridge profiles, and no replacement of either bridge. Due to its deteriorated condition, the Fairfax Bridge would fall into a significant state of disrepair causing the bridge to be closed to traffic before the transportation planning horizon year of 2040. Based on the current condition of the Platte Purchase Bridge and the anticipated rehabilitation, maintenance, and repair it would require, further evaluation is needed to determine whether it could reasonably be kept open to traffic through 2040. Although the No-Build strategy does not satisfy the Purpose and Need for this project, the No-Build strategy is carried forward for comparison with the other reasonable alternatives in accordance with the requirements of NEPA.

2.1.2 Transportation Systems Management and Transportation Demand Management

Transportation Systems Management approaches seek to enhance capacity and operations of an existing system by making improvements such as intersection or signal timing modifications, bottleneck removal, special event management strategies. Transportation Demand Management measures encourage the use of travel options, including transit, non-motorized modes, telecommuting, and varied work and travel schedules to improve congestion, air quality, and the overall capacity of an existing transportation system. They are both identified and described in detail in the Mid-America Regional Council (MARC) Enhanced Congestion Management System (CMS) Toolbox. Because the primary focus of this project is to address the deteriorating condition of both bridges and provide an improved river crossing that meets the transportation needs within the study area, making modifications to how the existing transportation system functions does not address the condition of either bridge nor improve the crossing. Transportation Systems Management and Transportation Demand Management actions were determined not to be reasonable options because of the through-traffic (free-flow) nature of the existing roadway and bridge configurations. Telecommuting, non-motorized modes, varied travel schedules would not

accommodate the transport of goods or may not meet the delivery schedules of industry customers. For these reasons, these strategies were eliminated from further consideration.

2.1.3 Mass Transit

Because this corridor carries primarily freight and industrial traffic, the compatibility of mass transit and the demand for transit service within the study area are relatively low. Existing bus service is provided to the south of the study area by the Kansas City Area Transit Authority (KCATA) and Unified Government Transit. Bus service is provided along 7th Street, Sunshine Road, Funston Road, and Fairfax Trafficway south of the study area, with connections to the larger metropolitan routes at Central Avenue and Kansas Avenue, more than 1.5 miles to the south. The city of Riverside does not have transit service. Review of current transit and transportation plans authored by KCATA, MARC, and the Unified Government indicate there are no future plans to develop transit service along U.S. 69. Because transit service would not satisfy the transportation needs within the study area, it was eliminated from further consideration.

2.1.4 Improve/Upgrade One or Both Existing Bridges

This strategy would improve or upgrade one or both bridges to provide wider travel lanes, shoulders, and/or bicycle/pedestrian facilities. The design of the existing through-truss structures limits the options to widen or strengthen the bridges to meet current design standards. It is possible to widen to the outside of a through-truss using structural brackets. This approach is occasionally used to add pedestrian walkways to a truss structure. However, the corresponding increase in weight of the steel brackets and pedestrian or vehicle load would further reduce the load capacity of the bridge. Neither of the existing bridges can be feasibly widened to accommodate additional travel lanes, shoulders, or bicycle/pedestrian facilities. The deteriorated condition of both bridges cannot be improved to accommodate long-term use without reconstruction or replacement of either structure. Therefore, continued existence of a crossing at this location can only be achieved with replacement of one or both bridges. Therefore, improving or upgrading of either existing bridge is eliminated from further consideration.

2.1.5 Removal of One or Both Existing Bridges and Construction of a New Two-Lane or New Four-Lane Bridge

A series of build strategies were developed to meet the stated Purpose and Need. Under the build strategies evaluated: (1) removal of both bridges and construction of a new two-lane bridge; (2) removal of the Fairfax Bridge with construction of a new two-lane bridge as a companion structure to the existing Platte Purchase Bridge. (The existing bridge would remain in traffic service for an undetermined amount of time but would ultimately require demolition and replacement within the useful lifetime of the newer bridge); and (3) removal of both existing bridges and construction of a new four-lane bridge. These options were carried forward for further study.

2.1.6 Removal of the Fairfax Bridge with Maintenance of the Platte Purchase Bridge

A strategy was also developed to remove the deteriorating Fairfax Bridge while maintaining the Platte Purchase Bridge to carry head-to-head traffic. Under this strategy, the crossing would be reduced to only two lanes. Maintenance of the Platte Purchase Bridge would be continued as long as possible until the bridge would need to be replaced. When this strategy was initially developed, the useful life of the Platte Purchase Bridge was anticipated to last until 2040. This strategy was carried forward for further analysis.

2.2 DEVELOPMENT OF THE INITIAL RANGE OF ALTERNATIVES

The following initial build alternatives were developed in consideration of the transportation needs in the area and the conditions of the existing infrastructure.

2.2.1 Alternative 1 – Remove Historic Fairfax Bridge and Retain Historic Platte Purchase Bridge to Carry Two-Way Traffic

Alternative 1 would remove the Fairfax Bridge. The Platte Purchase Bridge would be retained with maintenance and repairs continued until a point in the future when maintenance is no longer cost-effective and the bridge would need to be replaced. The Platte Purchase Bridge would carry two-way, head-to-head traffic. No on- or off-travelway bicycle/pedestrian facilities would be provided under this alternative.

2.2.2 Alternative 2 - Remove Historic Fairfax Bridge, Retain Historic Platte Purchase Bridge, and Construct New Two-Lane Bridge

Under Alternative 2, the Fairfax Bridge would be removed and a new two-lane bridge would be constructed as a companion to the Platte Purchase Bridge. Maintenance and repair of the Platte Purchase Bridge would continue until a point in the future when maintenance is no longer cost-effective and the bridge would need to be replaced. At that point, a new bridge would need to be constructed to carry the traffic handled by the Platte Purchase Bridge. The new two-lane bridge constructed to replace the Fairfax Bridge would include facilities to accommodate off-travelway bicycle/pedestrian traffic. Alternative 2 includes three options depending on the location of the new two-lane bridge:

Option 2A – Build the new two-lane bridge upstream of the Platte Purchase Bridge. The new bridge would carry southbound traffic.

Option 2B - Build the new two-lane bridge on or very near the alignment of the former Fairfax Bridge. The new bridge would carry southbound traffic.

Option 2C - Build the new two-lane bridge downstream of the Platte Purchase Bridge. The connecting roadways would need to be reconfigured to allow the new bridge to carry northbound traffic with the Platte Purchase Bridge carrying southbound traffic.

2.2.3 Alternative 3 – Remove Historic Fairfax and Platte Purchase Bridges and Construct a New Two-Lane or Four-Lane Bridge

Alternative 3 would remove both existing bridges. A new two-lane or four-lane bridge would be constructed and would accommodate an off-travelway bicycle/pedestrian facility. The new two-lane or four-lane bridge would be provided at one of three locations:

Option 3A - Build the new bridge upstream of the location of the existing bridges. This option would include realignment of U.S. 69 to tie into the bridge.

Option 3B - Build the new bridge on or very close to the locations of the existing bridges.

Option 3C - Build the new bridge downstream of the location of the existing bridges. This option would include realignment of U.S. 69 to tie into the bridge.

Alignments referenced as being built upstream or downstream of the existing bridges means that the new piers can be built in line with the existing piers without causing a conflict with maintaining the existing navigation span opening.

Alignments referenced as being built "on or very close to existing" means that the new bridge would be located within the area or footprint occupied by the existing bridges. The

piers for the new bridge would need to be offset to the north and south of the existing piers to avoid being placed too close to the existing foundations and to maintain minimum navigational clearances for river vessels. Demolition of the existing bridges will remove the piers to below the ground line or below the river bottom, but would not completely remove the foundations, thus requiring the offset.

For the purposes of developing profile concepts for Build Option 3B (on or very close to the locations of the existing bridges), it was assumed that the new piers would be constructed at offset locations. Further detailed analysis would be conducted during final design to determine the feasibility of incorporating the existing foundations and/or piers into the new bridge design.

2.3 QUALITATIVE SCREENING OF INITIAL ALTERNATIVES

A qualitative screening process was used to determine which alternatives would be carried forward for detailed evaluation. A screening matrix was developed using the need statements and various environmental categories to compare the alternatives. The No-Build and initial build alternatives were ranked using open, half-filled, and filled circles to indicate:

- OPEN CIRCLE - the alternative did not or would poorly satisfy the need or result in significant impacts.
- HALF-FILLED CIRCLE - the alternative would satisfy all or part of the need but possibly with trade-offs such as limited capacity, or would result in negative effects that could be mitigated.
- FILLED CIRCLE - the alternative would fully satisfy the need, would result in no or very minor effects, and/or result in potential future benefits

The matrix is shown in Figure 2-1. Additional detail on the screening process is provided in Appendix A.

Completion of the screening matrix included consideration of input received from agencies, the public, and stakeholders during the agency scoping meeting and public meetings conducted in November 2012.

Figure 2-1: Initial Alternatives Screening Matrix

Screening Category	Purpose and Need												Environmental Concerns			
	Maintain Infrastructure		Support Movement of Goods and Freight		Maintain Regional Transportation Linkages				Support Non-Motorized Transportation Modes		Support Continued Economic Vitality on Both Sides of the River					
Qualitative Measure	Physical Condition of the Historic Fairfax Bridge	Physical Condition of Platte Purchase Bridge	Structure supports typical freight vehicle load limits	Structure supports large and oversized freight vehicles	River crossing would remain at this location	Crossing handles current travel demand	Crossing would handle forecast future travel demand	Crossing would be open during construction	Provide off-travelway facilities	Provide linkages to local and regional facilities	Continued access between Riverside and Fairfax supporting business activity and employee travel	Facility would accommodate type and volume of freight traffic forecast in future	Effects on aquatic and terrestrial resources	Effects to known hazardous material and waste sites	Effects to historic properties	Effects to businesses
No Build Alternative Leave existing bridges in place while doing continued maintenance. Fairfax bridge will most likely fall into disrepair and will need to be closed to traffic.	○	○	○	○	○	●	○	N/A	○	○	○	○	●	●	●	○
Alternative 1 Remove historic Fairfax Bridge, Platte Purchase Bridge remains in place with 2-way, head-to-head traffic.	●	○	○	○	○	●	○	N/A	○	○	○	○	◑	◑	○	○
Alternative 2 Remove historic Fairfax Bridge, retain Platte Purchase Bridge, and build new companion bridge.																
Option 2A - new bridge upstream	●	○	◑	◑	●	●	○	◑	●	●	◑	◑	◑	◑	○	◑
Option 2B - new bridge on existing alignment	●	○	◑	◑	●	●	○	◑	●	●	◑	◑	◑	◑	○	◑
Option 2C - new bridge downstream	●	○	◑	◑	●	●	○	◑	●	●	◑	◑	◑	◑	○	●
Alternative 3 Remove both bridges and replace with a new 4-lane bridge																
Option 3A - new bridge upstream	●	●	●	●	●	●	●	●	●	●	●	●	◑	◑	○	●
Option 3B - new bridge on existing alignment	●	●	●	●	●	●	●	◑	●	●	●	●	◑	◑	○	◑
Option 3C - new bridge downstream	●	●	●	●	●	●	●	●	●	●	●	●	◑	◑	○	●

See following page for description of the symbols.

Figure 2-1: Initial Alternatives Screening Matrix, continued

Purpose and Need												Environmental Concerns			
Maintain Infrastructure		Support Movement of Goods and Freight		Maintain Regional Transportation Linkages				Support Non-Motorized Transportation Modes		Support Continued Economic Vitality on Both Sides of the River					
Physical Condition of the Historic Fairfax Bridge	Physical Condition of Platte Purchase Bridge	Structure supports typical freight vehicle load limits	Structure supports large and oversized freight vehicles	River crossing would remain at this location	Crossing handles current travel demand	Crossing would handle forecast future travel demand	Crossing would be open during construction	Provide off-travelway facilities	Provide linkages to local and regional facilities	Continued access between Riverside and Fairfax supporting business activity and employee travel	Facility would accommodate type and volume of freight traffic forecast in future	Effects on aquatic and terrestrial resources	Effects to known hazardous material and waste sites	Effects to historic properties	Effects to businesses

Physcial condition of Historic Fairfax Bridge:
- ○ Does not improve or effectively manage structural deficiency or substandard
- ◐ Takes reasohnable and cost-effective steps to improve or manage condition
- ● Replaces or effectively improves condition of bridge

Physical Condition of Platte Purchase Bridge:
- ○ Does not improve or effectively manage substandard geometrics
- ◐ Takes reasohnable and cost-effective steps to improve or manage condition
- ● Replaces or effectively improves condition of bridge

Struture supports typical freight vehicle load limits:
- ○ Does not support standard commercial load limits
- ◐ Commercial load limits are handled in travel direction or new bridge only
- ● Accommodated standard commercial load limits

Struture supports large and oversized freight vehicles:
- ○ Does not provide appropriate vertical and/or horizontal clearances per AASHTO
- ◐ Provides appropriate vertical and/or horizontal clearances per AASHTO standards in travel direction of new bridge only
- ● Provides appropriate vertical and/or horizontal clearances per AASHTO standards

River crossing would remain at this location:
- ○ Crossing would be eventually closed due to the conditon of the bridges
- ◐ N/A
- ● Crossing would be open and operational in the future

Crossing handles current travel demand:
- ○ Crossing does not accommodate regualr daily traffic
- ◐ N/A
- ● Crossing accommodates regular daily traffic

Crossing would handle forecast future travel demand:
- ○ Crossing would not accommodate future travel demand because of lmited capacity of two-lane bridge
- ◐ N/A
- ● Crossing accommodates regular daily traffic

Crossing would be open during construction:
- ○ No access across the river would be provided during construction
- ◐ Limited lanes and traffic service would be open during construction
- ● All existing lanes would be open during construction

Provide off-travelway facilities:
- ○ Does not
- ◐ N/A
- ● Does

Provide linkages to local and regional facilitie
- ○ Does not
- ◐ N/A
- ● Does

Continued access between Riverside and Fairfax Industrial District supporting business activity and employee travel:
- ○ Would not
- ◐ Maintains access but with limited future capacity at the crossing
- ● Would

Facilty would accommodate type and volume of freight traffic forecast for the future:
- ○ Would not because of weight limits and clearance restrictions
- ◐ Freight movement limited by future capacity at the crossing
- ● Would

Impacts on aquatic and terrestrial resources:
- ○ Significant impacts with anticipated mitigation
- ◐ No significant impacts with/without mitigation
- ● Complete avoidance of impacts

Impacts to known hazardous material and waste sites:
- ○ Direct effect on known site(s)
- ◐ Anticipated footprint adjacent to known site(s)
- ● No effect, site(s) distant from anticipated footprint

Impacts to historic properties:
- ○ Removal of historic property
- ◐ Re-use/rehabilitation of historic bridge, or minor effects/short-term effect during construction, indirect effects
- ● No effect (adverse or indirect)

Impacts to businesses:
- ○ Acquisition/relocation and/or permanent negative long-term effects
- ◐ Short-term effects during construction (including crossing closure); access modification as part of design; and/or potential positive future benefits
- ● No effects or only minor/short-term effects during constructiuon; positive future benefits

2.4 ELIMINATION OF THE TWO-LANE CROSSING STRATEGY

At the completion of the screening process, MoDOT, KDOT, and FHWA eliminated from further consideration options that would only provide a two-lane river crossing. Two-lane options would include continued use of the Platte Purchase Bridge or possible replacement of both existing bridges with a new two-lane bridge. Due to its age and condition, the Fairfax Bridge was not considered a viable option for use as a two-lane crossing. The following factors contributed to the decision:

- ***Traffic Projections and Capacity*** **-** Traffic forecasts indicate that the future ADT of 22,000 approaches the traffic capacity a two-lane bridge can carry before delays and congestion result in a lower level of service, particularly given the high percentage of heavy trucks. If a two-lane river crossing was provided using the existing Platte Purchase Bridge, current and forecast traffic volumes would result in unacceptable LOS E and F, in the northbound and southbound directions, respectively.
- ***Safety and Truck Operations*** **-** If both existing bridges were removed and replaced with a new two-lane bridge with 12-foot lanes and 10-foot shoulders, current and future traffic volumes would result in LOS C and D, respectively, through the 2040 planning horizon. However, as previously stated in Section 1.3.2, many of the trucks are heavily loaded with fuel or other commodities, limiting their ability to accelerate up the five percent slope from a stop condition at the Kindleberger Road intersection. This condition results in potential safety issues related to the differences in operating speeds between cars and trucks in both directions. Reducing the bridge to only one travel lane in each direction would further exacerbate the situation, potentially resulting in car drivers passing the trucks on the outside shoulder or in the opposing traffic lane if not barrier separated.
- ***Maintaining Economic Vitality*** **–** Several major industries in Fairfax and Riverside rely heavily on 'just in time' delivery of parts as part of their manufacturing process. A two-lane bridge would compromise the reliability to meet those demands, particularly during incidents at other Missouri River crossings that would tend to divert traffic to this crossing. In addition, nearly 80 percent of the gasoline products consumed within the Kansas City metropolitan area on a daily basis is transported via truck and pipeline from storage and distribution facilities located within Fairfax, much of it by way of this crossing.
- ***Stakeholder Meetings*** **–** During early coordination meetings with stakeholders, including the City of Riverside, the Unified Government, and major industries within Fairfax, the general consensus was that a four-lane, improved crossing would provide adequate capacity to meet current and future traffic demands. A four-lane crossing would also maintain: (1) safe and reliable traffic operations, (2) regional economic viability, and (3) a reliable linkage between Fairfax and the developing New Horizons Development.

For these reasons, any alternative that would only provide a two-lane crossing were eliminated from further consideration. Elimination of this potentially controversial strategy resulted in the reclassification of the study under the NEPA from an Environmental Impact Statement (EIS) to an EA. Agencies and tribal organizations were notified of the change in February 2013.

2.5 ALTERNATIVES EVALUATION

Alternative 2 and Alternative 3 maintain a four-lane crossing and are therefore carried forward for further evaluation. The No-Build Alternative is also carried forward for evaluation. MoDOT and KDOT have taken a more detailed look at Alternatives 2 and 3 as they relate to the reasonable long-term cost of maintaining infrastructure and the reliability of traffic service into the future. The results of the evaluation follow.

2.5.1 Detailed Evaluation and Elimination of Alternative 2

Alternative 2 would remove the Fairfax Bridge and construct a new two-lane companion bridge either upstream of the Fairfax Bridge alignment, on the alignment of the Fairfax Bridge, or downstream of the Platte Purchase Bridge. The new bridge would also accommodate an off-travelway bicycle/pedestrian facility.

Bridge Condition and Safety - If the Platte Purchase Bridge were to remain in service, the structure would continue to be considered functionally obsolete due to its narrow shoulders, vertical clearance limitations, and weight restrictions. The Platte Purchase Bridge would continue to accommodate northbound U.S. 69 traffic, limiting the height and weight of vehicles crossing the bridge northbound from Fairfax. Trucks traveling from Fairfax would continue to drive centered in the travel lanes at speeds slower than the posted limit, constraining traffic flow and causing other drivers to pass the large trucks using the limited available space. Both the superstructure and substructure of the Platte Purchase Bridge currently have a condition rating of "5-fair" on a scale of 1 to 9 where a condition rating of "9" is considered excellent and a "1" is considered failed and beyond corrective action. A condition rating of "4-poor" qualifies a structure as structurally deficient, similar to the condition rating of the older Fairfax Bridge.

River Hydraulics - Leaving the Platte Purchase Bridge in place as a parallel structure to a new bridge restricts the location of piers to support the new bridge. The existing span lengths of the Platte Purchase Bridge are 417 feet (navigation span at the first Fairfax bank), 475 feet (river channel span), and 417 feet (at Riverside bank), as illustrated in Figure 2-2.

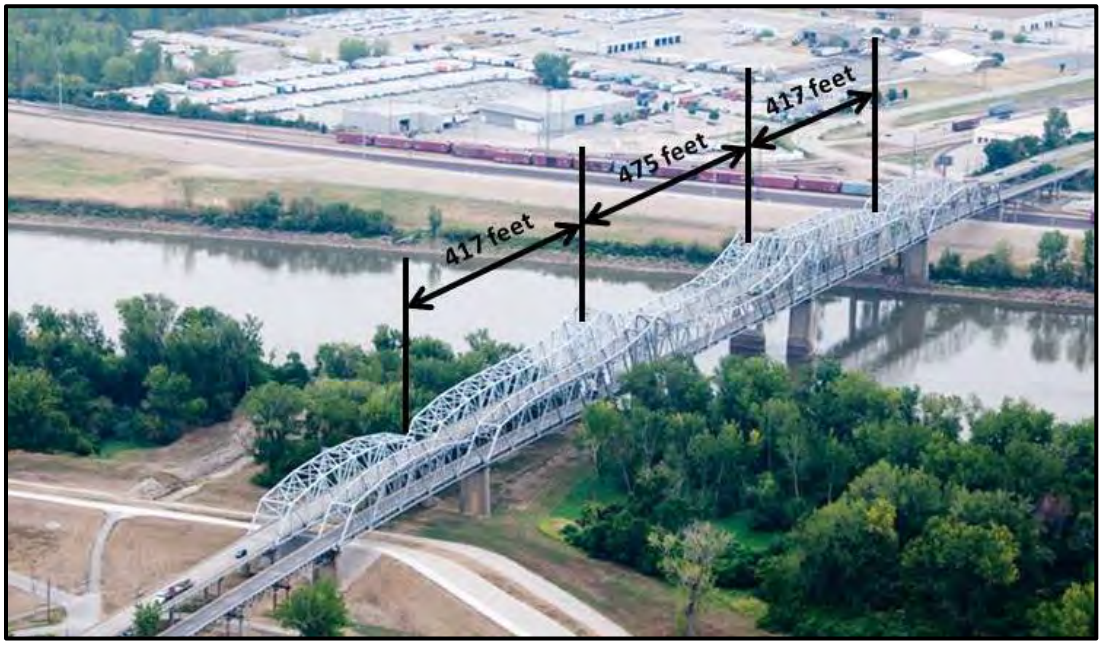


Figure 2-2: Existing Bridge Span Lengths

If the Platte Purchase Bridge were left in place, the new bridge layout would need to match the existing spans to align the piers for both bridges in order to minimize the effect of the piers on river flows (hydraulics) and avoid conflicts with navigation on the river. Changes in the river flow patterns caused by bridge piers, and especially piers that would be offset and in close proximity to each other, would also have an effect on floodwater elevations. The placement of offset piers would make it difficult to achieve "No-Rise" certification with regards to flooding, further complicating the permitting process for the new crossing. The offset piers would also be an obstacle to river navigation, would increase the removal of river sediments (scour conditions), and could result in debris building up around the piers during and following flood events.

Bridge Lifespan and Anticipated Costs - The new two-lane bridge would have an anticipated lifespan of at least 75 years. If completed in the next 4-5 years, the new bridge would most likely have 50 or more years of useable life beyond 2040. The Platte Purchase Bridge is 56 years old now, and would be 83 years old in 2040. Because the Platte Purchase Bridge is classified as functionally obsolete and nearing classification as structurally deficient, on-going maintenance and major repairs would need to be programmed to keep the bridge open for traffic between now and 2040. A major rehabilitation was performed on this structure in 1997, at a cost of $8 million (in 2013 dollars), which included replacement of the bridge deck, a number of other structural repairs, and recoating of the truss steel. In addition, MoDOT has spent nearly $200,000 since 2003 on the Platte Purchase Bridge for maintenance, to complete various repairs, and to complete inspections.

MoDOT projects that a major rehabilitation of the Platte Purchase Bridge will need to occur in the next five to seven years to keep the bridge open to traffic. The anticipated scope of this work would include deck repairs, structural repairs (i.e., bearing replacements and significant gusset plate repairs), sandblasting and recoating the steel, major substructure repairs, and the replacement of expansion joints. In addition, a deck overlay would be considered to extend the life of the bridge. However, the additional weight of a deck overlay would further reduce the load capacity of the bridge. MoDOT predicts that even with this major rehabilitation project, if completed by 2020 at an estimated cost of $14-16 million (in 2013 dollars), the lifespan of the Platte Purchase Bridge could be extended only an additional twelve years to 2032. Figure 2-3 illustrates the lifespan comparison between a new two-lane bridge and maintaining the Platte Purchase Bridge.

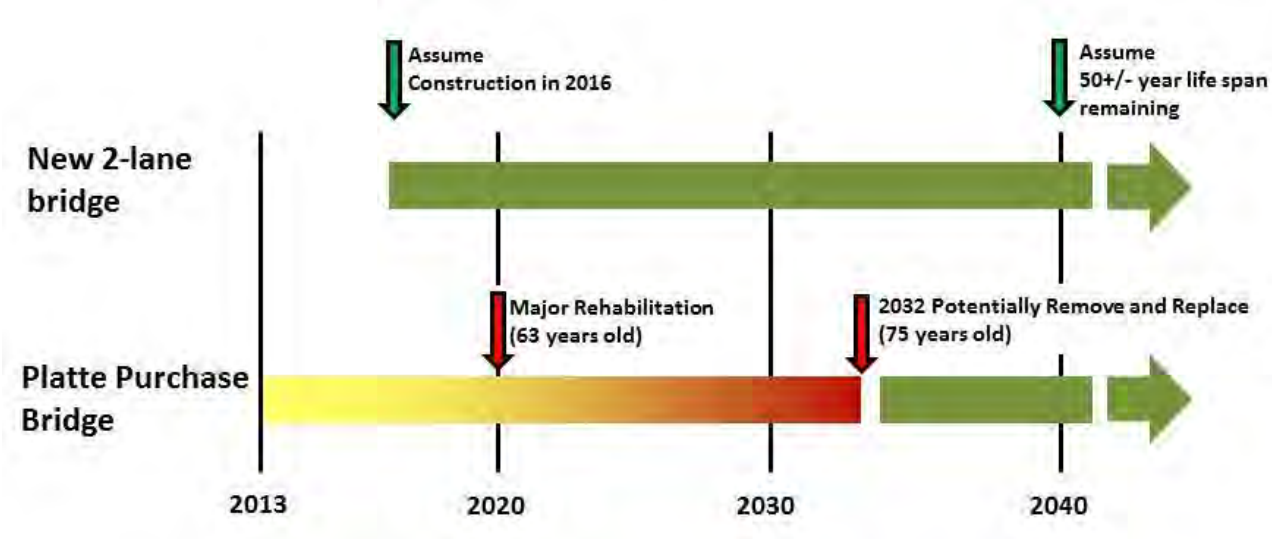


Figure 2-3: Bridge Lifespan Comparison

During recent inspections a significant amount of rust was observed in many of the joints and between the plates of the built-up truss members. Continued deterioration of several of the substructure elements was also noted. In addition, due to the sensitive nature of fracture critical bridges like this one, unexpected and costly repairs outside of routine maintenance and projected rehabilitations are more likely to occur as the bridge ages. These emergency repairs could close the structure to traffic for days or even weeks while a structural solution is investigated and completed. Rehabilitation and repairs can patch or slow the progression of some of the structural deterioration, but MoDOT anticipates that the Platte Purchase Bridge will likely need to be closed to traffic permanently and replaced by 2032. The estimated cost of a new two-lane sister bridge constructed in 2032 would be in excess of $38 million (2013 dollars).

Summary – Because of the significant maintenance and repair costs and traffic closures associated with leaving the Platte Purchase Bridge in place, along with the implications on river hydraulics created by construction of a new parallel structure, Alternative 2 is not carried forward for detailed evaluation in this EA. MoDOT and KDOT recommend that the best value for this project would be to pursue construction of a new four-lane bridge instead of rehabilitating and eventually replacing the existing Platte Purchase Bridge. For these reasons, Alternative 2 is not valued as a viable and reasonable expenditure of public money, is not viewed as a reasonable long-term solution to maintaining infrastructure, and has been eliminated from further consideration.

2.5.2 Detailed Evaluation and Elimination of Option 3C under Alternative 3

Upon development of the roadway alignment needed to connect to a new bridge located downstream from the existing bridges (Option 3C), certain design aspects were identified, including curves that would require design variances that could compromise safe traffic operations. As a result, this option was removed from further consideration.

For the purposes of evaluation in the EA, Alternative 3 is carried forward with two alignment locations – a new four-lane bridge upstream of the Fairfax Bridge (Build Option 3A) or a new four-lane bridge on or near the alignment of the existing bridges (Build Option 3B). Two variations of Build Option 3B have been developed and are described below in greater detail.

2.5.3 Elimination of Continued Use of the Platte Purchase Bridge

As discussed previously, the significant maintenance and repair costs associated with leaving the Platte Purchase Bridge in place, and the implications on river hydraulics and navigation created by construction of a new parallel bridge structure as a companion to the existing bridge prohibit continued use of the Platte Purchase Bridge, regardless of the type of traffic on the Platte Purchase Bridge. The new bridge would be designed to include a barrier-protected bicycle/pedestrian facility that would provide connectivity with existing recreational systems on both sides of the river. Retainage of the Platte Purchase Bridge is not valued as a viable and reasonable expenditure of public money nor as a reasonable long-term solution to maintaining infrastructure, and has been eliminated from further consideration.

2.6 REASONABLE ALTERNATIVE

Based on the results of detailed evaluation, Alternative 3 is carried forward as the reasonable alternative in the EA for comparison with the No-Build Alternative. Alternative 3 includes three Build Options.

Build Option 3A - New Four-Lane Bridge Upstream of the Fairfax Bridge with Argosy Parkway Realignment:

The new bridge would be constructed upstream (west) of the Fairfax Bridge alignment (see Figures 2-4 and 2-5). On the north, the bridge approaches would be constructed to connect with the existing ramps leading to and exiting from I-635. The profile of the southbound ramp from I-635 would be raised to accommodate extension of Argosy Parkway under U.S. 69. The realignment of Argosy Parkway under Build Option 3A is needed because the bridge alignment would encroach upon the existing loop road that provides access to the Southern Star gas regulating station on the north side of the river. The right-out exit from Argosy Parkway to northbound U.S. 69 near its intersection with I-635 would be closed. All traffic on Argosy Parkway would be grade-separated from U.S. 69. The bridges over Argosy Parkway would be relatively short spans as they would only need to cross the realigned two-lane road, and a variety of structure types could be considered in the final design.

An off-travelway bicycle/pedestrian facility would be located on one side of the new bridge to provide continuity with trail systems on both sides of the river.

The new bridge would parallel the alignment of the Fairfax Bridge and U.S. 69/7th Street as it ties into the intersection at Kindleberger Road. Additional right-of-way would be required to accommodate the bridge and roadway alignment south of the river. The main (navigation) span for the bridge would be similar to the existing bridge. The bridge type and actual location of the bridge piers and abutments would be developed during final design. MoDOT would continue to coordinate the design of the bridge with the United States Coast Guard (USCG), United States Army Corp of Engineers (USACE), and both levee districts.

Build Option 3B1 - New Four-Lane Bridge on Existing Bridge Alignment and Maintain Argosy Parkway Loop:

The new bridge would be constructed along the general alignment of the existing bridges (see Figures 2-4 and 2-6). On the north, the bridge approaches would be constructed to connect with the I-635 exit and entrance ramps. Because the bridge alignment would be set within the footprint of the existing bridges, Build Option 3B1 could allow Argosy Parkway to remain as a loop road under the north end of the new bridge. For safety reasons, the right-out exit from Argosy Parkway to northbound U.S. 69 near its intersection with I-635 would be closed due to the expected higher prevailing speeds on the improved bridge and roadway.

As with Build Option 3A, an off-travelway bicycle/pedestrian facility would be located on one side of the new bridge to provide continuity with trail systems on both sides of the river.

The main (navigation) span for the bridge would be longer than the existing bridges because of the need to offset the new piers from the existing bridge foundations that would remain once the bridges are removed. The bridge type and actual location of the bridge piers and abutments would be developed during final design. MoDOT would continue to coordinate the design of the bridge with the USCG, USACE, and both levee districts.

Build Option 3B2 - New Four-Lane Bridge on Fairfax Bridge Alignment with Argosy Parkway Realignment:

This Build Option combines the new bridge alignment from Build Option 3B1 with the Argosy Parkway realignment of Build Option 3A (see Figures 2-4 and 2-7). On the north, the bridge approaches would be constructed to tie into the existing I-635 ramps. The profile of the ramp from I-635 to the bridge would be raised to accommodate extension of Argosy Parkway to the east. The right-out exit from Argosy Parkway to northbound U.S. 69 near its intersection with I-635 would be closed.

The loop road under the north end of the bridge would remain open to provide access to the Southern Star gas regulating station on the west side of the Fairfax Bridge.

As with the other Alternative 3 Build Options, an off-travelway bicycle/pedestrian facility would be located on one side of the new bridge to provide continuity with trail systems on both sides of the river. The bridge type and actual location of the bridge piers and abutments would be developed during final design. MoDOT would continue to coordinate the design of the bridge with the USCG, USACE, and both levee districts.

For all three options, the feasibility of keeping one or both of the existing bridges open to traffic during construction would be determined during final design. Depending on final design details and the construction sequencing, MoDOT could close both bridges to expedite construction.

No-Build Alternative **Alternative 3**

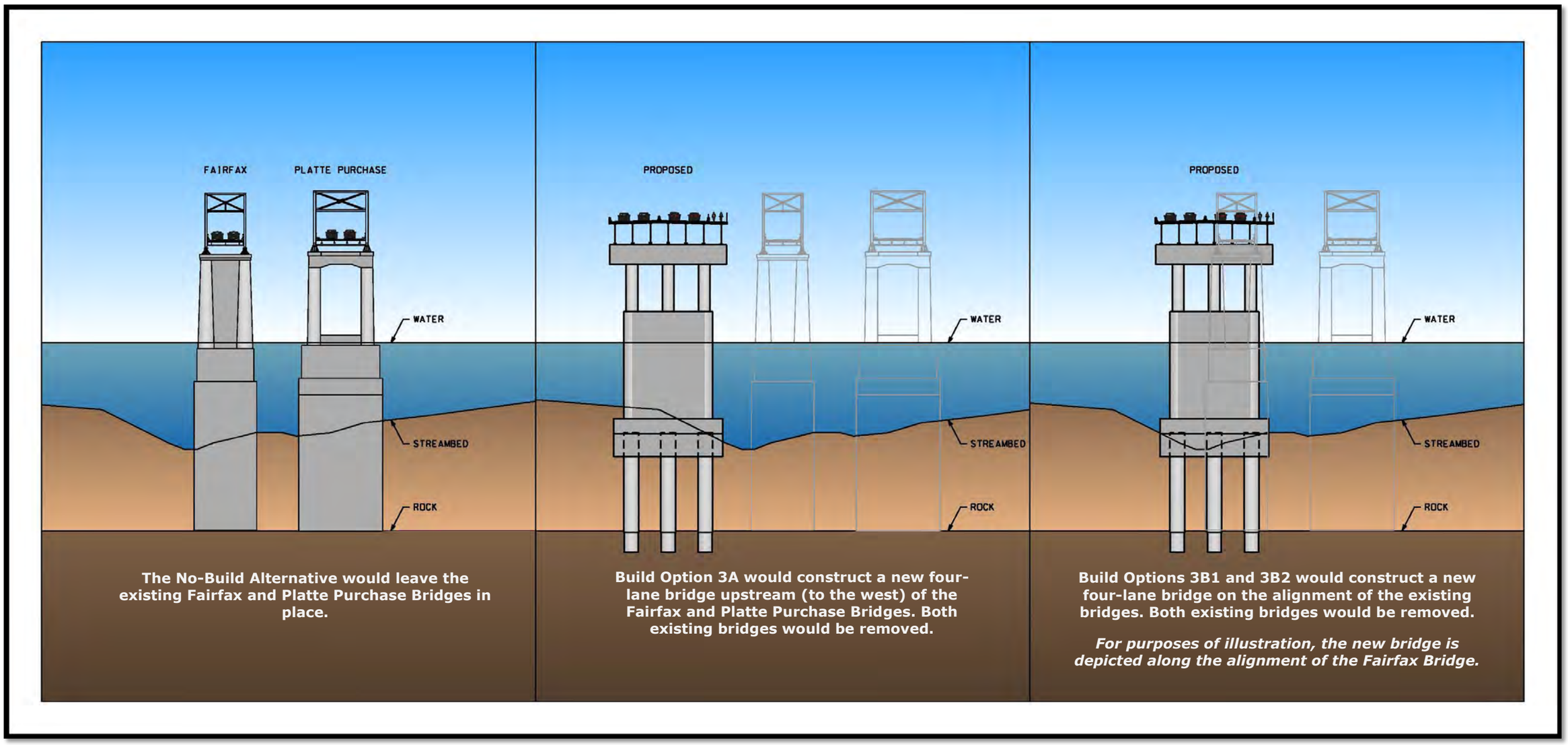


Figure 2-4: Elevations of the No-Build Alternative and Alternative 3 (not to scale)

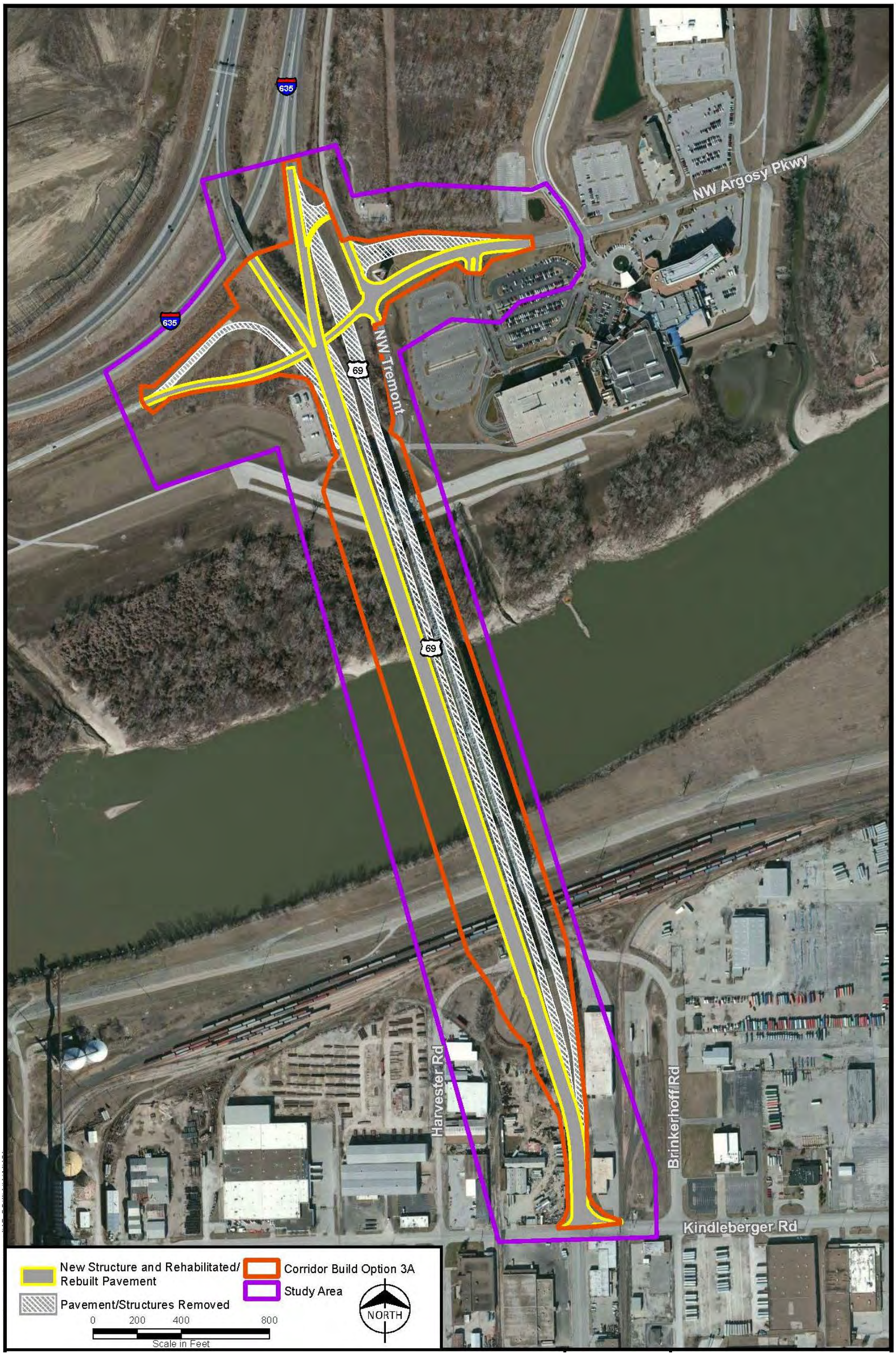


Figure 2-5: Corridor and Potential Alignment for Alternative 3 – Build Option 3A

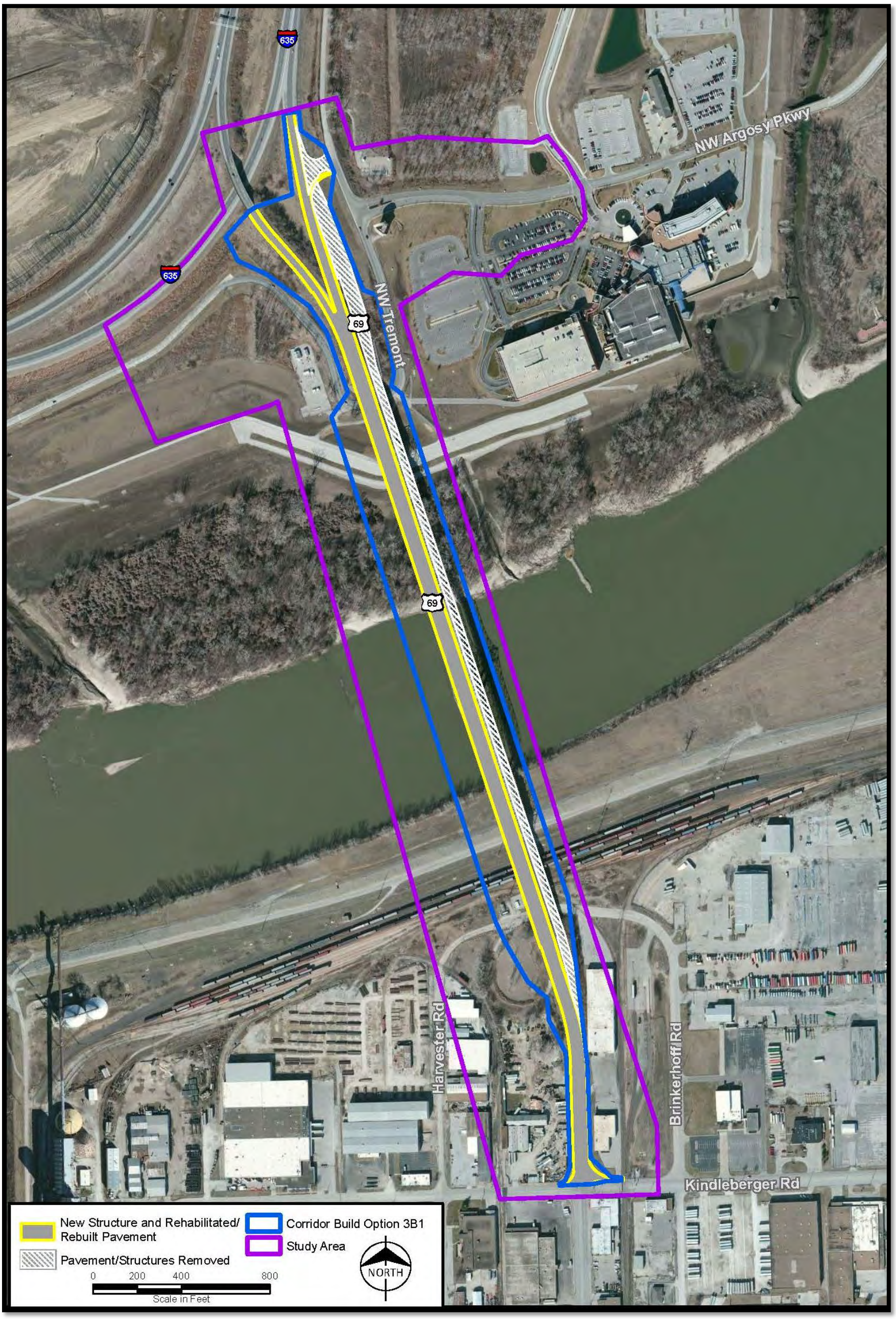


Figure 2-6: Corridor and Potential Alignment for Alternative 3 – Build Option 3B1

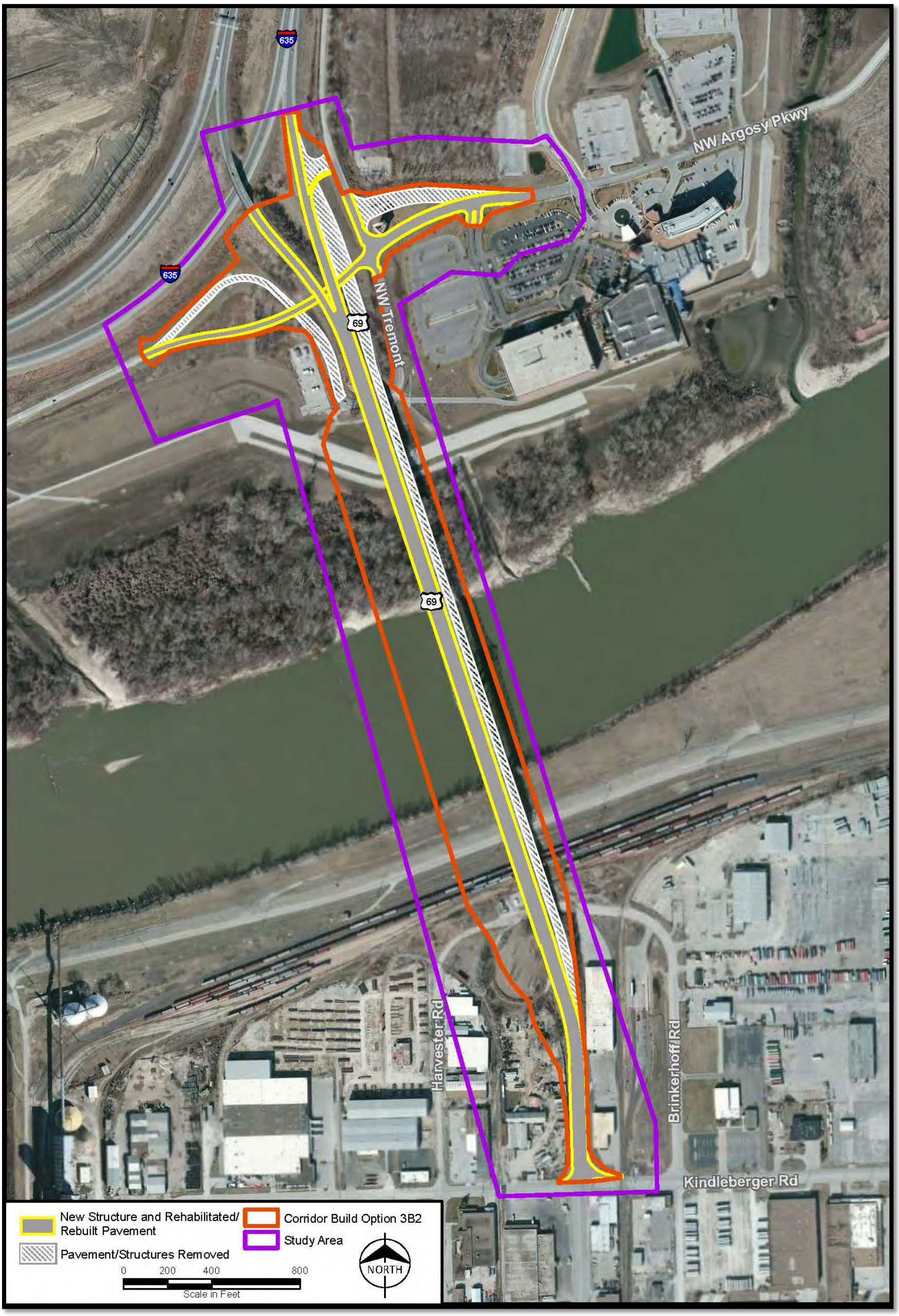


Figure 2-7: Corridor and Potential Alignment for Alternative 3 – Build Option 3B2

2.6.1 Preferred Alternative

The study team has designated Alternative 3 as the Preferred Alternative to address the condition of the existing bridges and to address the transportation needs within the study area. Alternative 3 has three Build Options (3A, 3B1, and 3B2) as described in Section 2.6. The Preferred Alternative provides for construction of a new four-lane bridge either upstream (3B1) or on/near the alignment (3B2 and 3B3) of the existing bridges and approach roadways within a corridor evaluated in this EA. The Preferred Alternative would remove both historic bridges, either at the same time or phased as dictated by the proposed design and construction sequence.

The Preferred Alternative could also include realignment of the portion of Argosy Parkway as described herein, to provide a grade-separated access under the north approach to the new bridge, depending on the Build Option selected. The Preferred Alternative was identified through consideration of the condition of both existing bridges, existing and future traffic forecasts, assessment of environmental and socioeconomic consequences, technical factors relating to construction costs and user operations, and consideration of agency, stakeholder, and public input. The selection of the Preferred Alternative will not be finalized until substantive comments from resource agencies and from the location public hearing are fully evaluated and addressed.

The U.S. 69 Bridges Over the Missouri River project was added to the Kansas City Metropolitan Area Long-Range Transportation Plan, *Transportation Outlook 2040*, on December 18, 2012. MoDOT's 2013–2017 Statewide Transportation Improvement Program (STIP) approved funding for preparation of the environmental document. The design and construction phases of the project are included in the third quarter joint Missouri/Kansas Transportation Improvement Program (TIP) amendment published by MARC and currently out for public review (TIP #490118). The project is included in the 2014-2018 MoDOT STIP, approved July 8, 2013, and the 2014-2018 KDOT STIP, anticipated to be approved in August 2013.

MoDOT, KDOT, and FHWA are considering use of the Design-Build process, rather than the Design-Bid-Build process, to yield transportation solutions for the needs identified and studies in this EA. Design–build is a project delivery system used in the construction industry whereby design and construction services are contracted by a single entity known as the design–builder or design–build contractor. This is in contrast to the more traditional design–bid–build project delivery approach where the successful contractor provides the best bid for a specific design developed by the design engineer.

Table 2-1: Comparison of the No-Build Alternative and Alternative 3 Build Options

Evaluation Criteria	No-Build Alternative	Alternative 3 (replace both existing bridges with a new 4-lane bridge)		
		Build Option 3A Upstream w/Argosy Parkway Realignment	Build Option 3B1 On Existing Location and Maintain Argosy Parkway Loop	Build Option 3B2 On Existing Location w/Argosy Parkway Realignment
Estimated Project Costs (2013 Dollars)				
Estimated Construction Costs (See Appendix A)	N/A	$69,700,000	$68,100,100	$70,700,000
Estimated Utility Relocation Costs *	N/A	$750,000	$500,000	$500,000
Estimated Design Engineering Costs	N/A	$4,000,000	$4,000,000	$4,000,000
Estimated Construction Engineering Costs	N/A	$2,400,000	$2,400,000	$2,400,000
Estimated Right of Way Costs	N/A	$1,000,000	$300,000	$400,000
TOTAL PROJECT COSTS		$77,850,000	$75,300,100	$78,000,000
Engineering Considerations				
Use of existing bridge piers and/or foundations	Yes	No	No	No
Construction Affected by Existing Bridge	No	Least	Somewhat	Most
Traffic Impacted by Bridge Construction	N/A	Least	Most	Most
Utility Impacts		Most	Some	Some
Horizontal Alignment	Current	Meets Criteria	Meets Criteria; Small Design Exception May be Required for Superelevation NB	Meets Criteria; Small Design Exception May be Required for Superelevation NB
Accommodates Bicycle-Pedestrian Facilities	No	Yes	Yes	Yes
Minimizes levee impacts (to extent practicable)	N/A	Yes	Yes	Yes
Impacts to NRHP-Eligible Resources				
Removal of NRHP-Eligible Fairfax Bridge and/or Platte Purchase Bridge	None short-term Both Bridges long-term	Both Bridges	Both Bridges	Both Bridges
Impacts (direct or indirect) to other NRHP-Eligible Properties	No	Former GE Corporation Building – indirect Permatex Corporation Building – indirect	Former GE Corporation Building – indirect Permatex Corporation Building – indirect	Former GE Corporation Building – indirect Permatex Corporation Building – indirect
Potential Environmental Impacts within Corridor				
Wetland Impacts (acres)	None	5.08 ac forested / 0.90 ac emergent	3.76 ac forested / 0.56 ac emergent	5.08 ac forested / 0.90 ac emergent
Floodplain Impacts (fill in acres, crossing in linear feet)	0.18 ac / 5,700 lf	0.28 ac / 3,300 lf	0.28 ac / 3,000 lf	0.28 ac / 3,300 lf
Floodway Impacts (fill in acres, crossing in linear feet)	0.07 ac / 1,980 lf	0.14 ac / 990 lf	0.14 ac / 990 lf	0.14 ac / 990 lf
Threatened/Endangered Species and/or Habitat	None	None	None	None
Pallid sturgeon	None	None	None	None
Indiana Bat	None	None	None	None
Potential Hazardous Material/Waste Sites	None	1	1	1
Socioeconomic and Community Considerations				
Future travel time and capacity (reduced / same as today / some benefit or improved)	Reduced	Some benefit/improved	Some benefit/improved	Some benefit/improved
Emergency access and circulation (reduced / same as today / some benefit or improved)	Reduced	Some benefit/improved	Some benefit/improved	Some benefit/improved
Business access and cross-river linkages (reduced / same as today / some benefit or improved)	Reduced	Some benefit/improved	Same as today	Some benefit/improved
Provides linkages to local and regional bicycle and pedestrian trails	No	Yes	Yes	Yes
Consistent with existing and proposed Land Use and Local/Regional Plans	No	Yes	Yes	Yes

* Costs associated with relocation of major utility lines on the existing bridges are the responsibility of the representative utility companies.

Chapter 3
How the Proposed Project Would Affect the Environment

3.1 INTRODUCTION

This chapter describes the existing social, economic, and environmental conditions in the U.S. 69 Bridges EA study area. Existing conditions serves as a baseline for evaluating the probable beneficial and adverse social, economic, and environmental effects of the No-Build Alternative and Alternative 3. For Alternative 3, impacts have been assessed within a corridor that would accommodate construction of Build Options 3A, 3B1, and 3B2.

3.2 RESOURCE CATEGORIES WITH NO EFFECTS

Because of the limited geographic extent of the study area and the focused purpose of the project, impacts in a number of categories are not anticipated. Resources or features under these categories either are not present within the study area but are not present in the vicinity of the project, or are not be directly or indirectly affected by the proposed project. Temporary and short-term minor impacts would occur under some of these categories during construction. They are discussed in Section 3.15.

3.2.1 Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, issued in 1994, directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. While the immediate study area is dominated by industrial and commercial uses with no residential populations, minority and low-income populations are located within the general project vicinity.

The Quindaro neighborhood of Kansas City, Kansas, located more than one-half mile southwest of the U.S. 69 crossing, has a high percentage of persons of African American and Hispanic descent. In addition, more than 50 percent of the residents in this neighborhood live below poverty (see Appendix E). Because of the distance of the study area from the Quindaro neighborhood, the project would have no direct or adverse effects on its residents. The proposed project would not route traffic through the neighborhood during construction. All users of the existing U.S. 69 crossing could experience travel delays or be required to use detours during construction, regardless of where they live. Therefore, because no minority or low-income populations have been identified that would be adversely affected or displaced by the project, and those minority and low-income populations identified in the project vicinity would not experience disproportionately high and/or adverse effects, no further environmental justice analysis is required.

3.2.2 Relocations

Land use in the study area is dominated by industrial, warehousing, commercial uses, and levee protection areas south of the river and by undeveloped areas (levee protection areas and interstate right-of-way), and a casino north of the river. No relocations of residences or businesses are required for construction of any of the Build Options under Alternative 3. Narrow strips of new right-of-way adjacent to the existing right-of-way both north and

south of the river would be needed to construct any of the Build Options and to realign Argosy Parkway under Build Options 3A and 3B2. Acquisition of right-of-way from the business property located in the northwest corner of U.S. 69/7th Street and Kindleberger Road would not result in relocation of the existing business.

3.2.3 Farmland

The project is located in developed portions of Wyandotte County, Kansas and Platte County, Missouri and extends over the Missouri River. Land areas are dominated by industrial and transportation uses and flood control structures. None of the area is used for agricultural purposes. The study area, which is located within the city boundaries of Riverside and Kansas City, Kansas, is considered committed to development. Because no farmland is present, review of the project under the Farmland Protection Policy Act is not required.

3.2.4 Section 6(f) Public Lands

According to reviews of the National Park Service (NPS) Land and Water Conservation Fund database, and coordination with the Missouri Department of Conservation (MDC) and the Kansas Department of Wildlife, Parks, and Tourism (KDWPT), there are no properties acquired and/or developed with Land and Water Conservation Fund monies within or adjacent to the study area. Therefore, the proposed project would not affect any Section 6(f) Public Lands.

3.2.5 Air Quality

Under the Clean Air Act (CAA, the federal government established the National Ambient Air Quality Standards (NAAQS), to protect public health, safety and welfare from known or anticipated effects of six pollutants: sulfur dioxide, particulate matter, carbon monoxide, nitrogen dioxide, ozone, and lead. The State of Missouri established additional criteria for hydrogen sulfide and sulfuric acid. Transportation can contribute to four of the six NAAQS pollutants: ozone, carbon monoxide, particulate matter, and nitrogen dioxide. Conformity (or compliance) with the NAAQS, as required by the CAA, ensures that federally-funded or approved transportation plans, programs, and projects conform to the air quality objectives established in State Implementation Plans (SIPs). MoDOT is responsible for implementing the conformity regulation in nonattainment and maintenance areas.

In May 2005, the Environmental Protection Agency (EPA) redesignated the Kansas City metropolitan area an attainment area under a new eight-hour ozone standard, indicating that the region complies with federal clean air standards.[7] The Kansas City region is currently designated as an attainment area for air quality. Therefore, the conformity requirements of 40 CFR Part 93 do not apply to this project. No further action is required.

The U.S. 69 Bridges project was added to the Kansas City Metropolitan Area Long-Range Transportation Plan (LRTP), *Transportation Outlook 2040*, on December 18, 2012.[8] An air quality analysis was conducted by MARC for the projects listed in the LRTP. This analysis indicated that regional mobile source emissions of volatile organic compounds and nitrogen

[7] Federal Register Vol. 70, No. 84; Tuesday, May 3, 2005 (40 CFR Part 81), *Air Quality Redesignation for the 8-hour Ozone National Ambient Air Quality Standard; for Some Counties in the States of Kansas and Missouri*.

[8] Mid-America Regional Council, Amendment No. 3 to *Transportation Outlook 2040*; on December 18, 2012.

oxides remain below the levels budgeted in the regional SIP, while accounting for the roadway capacity projects listed in the LRTP as being operational by 2040.[9]

3.2.6 Noise

MoDOT's Noise Policy is derived from the FHWA noise policy. These policies require that potential noise effects be considered for Type I projects. Type I projects involve construction of new highways or new alignments, lane additions, or significant changes in vertical or horizontal alignments of existing facilities. A change in vertical or horizontal alignment is considered significant if it causes a highway noise increase of at least three decibels, roughly the threshold at which the human ear can perceive a change in noise levels. Normally halving the distance between a noise source (i.e., the roadway) and a noise receiver (i.e., a residence) causes a three decibel increase in noise level. The FHWA has determined Noise Abatement Criteria (NAC) for different land uses. Noise-sensitive receivers include, but are not limited to residences, day care centers, hospitals, libraries, parks, places of worship, and schools (classified under NAC B and C). Argosy Casino including its restaurants, bars, and hotel are classified under NAC E. Areas dominated by industrial and commercial uses, rail yards, and utilities are typically not affected by changes in noise and are classified under NAC F.

Noise Abatement Criteria are described as follows:

Activity Category	Sound Level*	Types of Uses
A	57 dBA	Lands where preservation of serenity and quiet are essential to continued use of those lands for their designated purpose.
B	67 dBA	Single and multi-family residences
C	72 dBA	Non-residential use areas – parks, sport complexes, cemeteries, schools, etc.
D	52 dBA	Auditoriums, day-care centers, churches, hospitals, libraries, etc.
E	72 dBA	Developed lands less sensitive to noise – hotels, offices, restaurants, etc.
F	N/A	Agriculture, airports, industrial, manufacturing, warehousing, rail yards, utilities, etc.
G	N/A	Undeveloped lands not permitted for development
* sound levels are measured in A-weighted decibels (dBA), typically outdoors with the exception of NAC D.		

Under any of the Build Options, no significant changes would be made in the horizontal or vertical alignment and no additional capacity would be provided on U.S. 69. Although Build Options 3A and 3B2 would modify the alignment of Argosy Parkway, this shift is not considered to be significant in accordance with the MoDOT Noise Policy. The study area is dominated by the Missouri River and land uses not typically sensitive to noise. Under the MoDOT Noise Policy, these areas do not require any action for noise abatement.

The main building of Argosy Casino, which houses the hotel, restaurants, and bars, is shielded from U.S. 69 by a large, multilevel parking garage. The main building is also more than 1,000 feet away from U.S. 69 and would not be affected by traffic noise. Because of the predominance of industrial uses and undeveloped land within the study area and the

[9] The metropolitan and statewide planning regulations that govern MARCs LRTP and TIP require projects within both documents to be financially constrained for the time periods each plan covers. Regionally significant roadway projects and fixed-guideway transit projects must provide sufficient detail to permit an air quality analysis. Projects both in the LRTP and TIP have been analyzed as a group to determine that their project air quality impacts are lower than a budgeted amount to ensure that the region's air quality is not adversely affected by mobile-source pollution. (SOURCE: *Transportation Outlook 2040*; Appendix G: Air Quality Analysis).

distance of Argosy Casino from U.S. 69, no noise analysis is required in accordance with MoDOT Noise Policy.

3.2.7 Coastal Barriers and Zones and Wild and Scenic Rivers

Because of the location of the project in northeastern Kansas and northwestern Missouri, no coastal barriers or coastal zones are present. No wild or scenic rivers or Nationwide Rivers Inventory streams designated by the NPS are located within or adjacent to the study area. For these reasons, effects on these resources are not discussed in this EA.

3.3 RESOURCES CATEGORIES WHERE IMPACTS WOULD OCCUR

The following sections describe the impacts of the No-Build Alternative and Alternative 3 Build Options 3A, 3B1, and 3B2.

3.4 LAND USE

Current land use within and adjacent to the study area consists of industrial and commercial development, as depicted in Figure 3-1. The Fairfax Industrial District is located south of the river and Argosy Casino and the Riverside Horizons Development are located north of the river. Fairfax is zoned heavy industrial (M-3). Permitted uses in the M-3 zoning district include manufacturing, warehousing, repair services, storage yards, and other types of heavy industrial land uses. The area north of the river and in the city of Riverside is zoned General Planned Development – Industrial District (GP-I). The "GP" zoning district is intended to be a holding district until the property has been rezoned to a different district. The "I" zoning district is intended to accommodate basic manufacturing industries and related industrial activities. The study area also includes land adjacent to and on both side of the Missouri River that is maintained as flood control structures by the Riverside-Quindaro Bend Levee District along the north riverbank and the Fairfax Levee District along the south riverbank. The northern portion of the study area also includes existing right-of-way for I-635.

At least nine petroleum and communications companies operate utility lines that are attached to the existing bridges. These lines carry a variety of fuels, products, and cable/fiber optics that serve local, regional, and nationwide customers. The majority of these utility lines are located underground as they approach the levee and then are carried up and over the river along the bottom of each bridge. The utilities are allowed to attach to the bridges under permits issued by MoDOT. In addition to the pipelines, there are three pipeline regulating stations in close proximity to the existing bridges on both sides of the river. These regulating stations are connected to the utility lines located on both bridges.

3.4.1 No-Build Alternative

Because no construction would take place, the No-Build Alternative would have no direct effect on existing land uses within or adjacent to the study area. With a river crossing in place at this location since 1935, closure of one if not both bridges in the coming years could affect some businesses' decision to stay in Fairfax. Businesses north and south of the river would need to use I-635 and I-70 as the main routes in and out of the area to transport goods. Without direct access to the regional highway system, development and redevelopment within Fairfax would most likely slow and area could become a less attractive location for industry.

3.4.2 Alternative 3

The Build Options under Alternative 3 have similar impacts on land use. Depending on the Build Option selected, minor amounts of new right-of-way could be needed to accommodate the bridge approach within Fairfax, but no direct changes in land use would result. Access to the Missouri Riverfront Trail and trailhead would be maintained (see more detailed

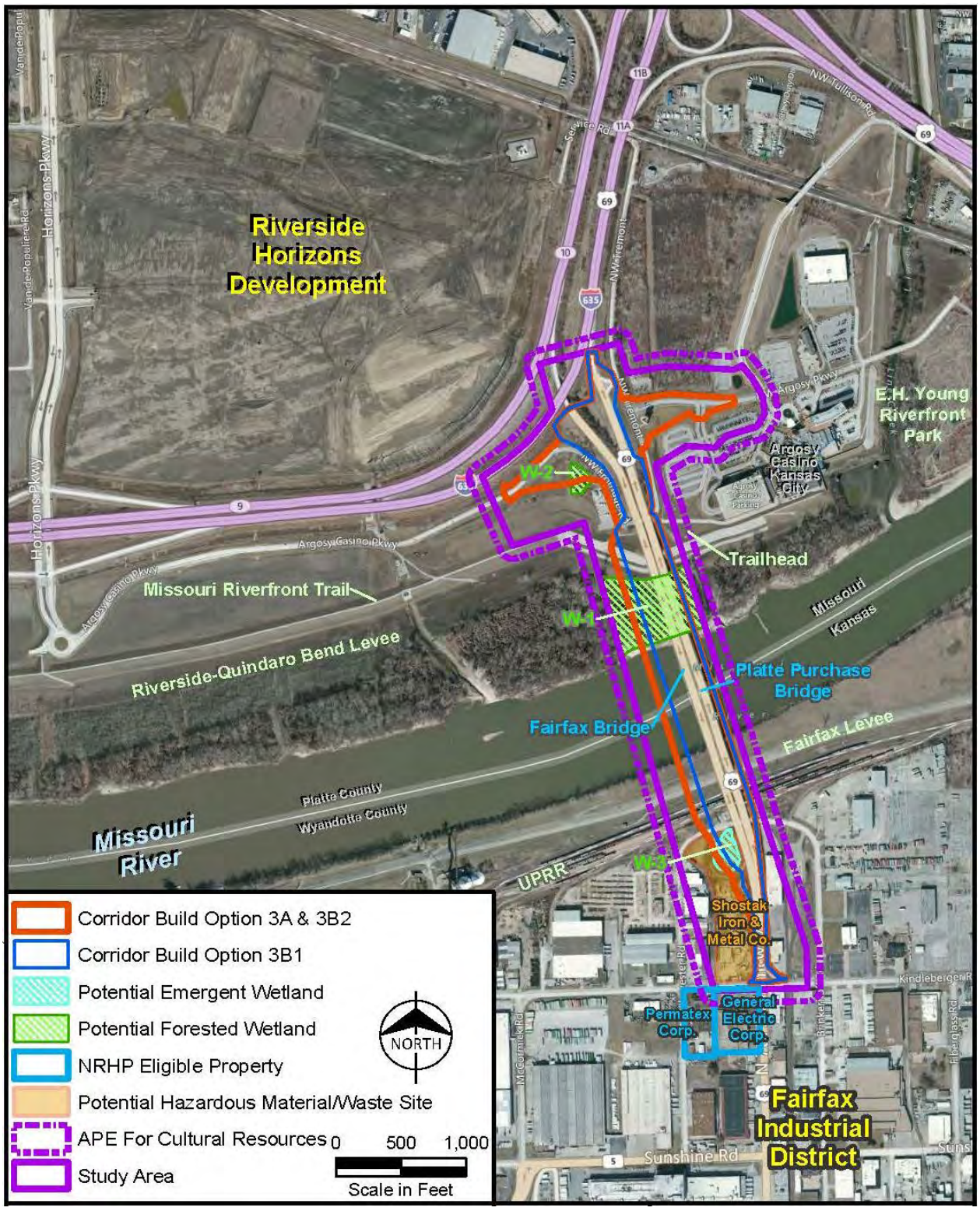


Figure 3-1: Study Area Features

discussion in Section 3.5). With realignment of Argosy Parkway (Build Options 3A and 3B2), portions of the area designated for stormwater detention and of an on-site vineyard on the Argosy Casino property would be affected. The amount of new right-of-way needed in these areas would be minimized and coordination with the casino and the city of Riverside to address mitigation for these effects. None of the Build Options is expected to result in zoning changes or changes in land use patterns on either side of the river.

3.5 COMMUNITY EFFECTS

U.S. 69 connects the communities of Riverside and Kansas City, Kansas as well as numerous regionally-important industries and commercial business centers. The heart of the city of Riverside is located along Missouri Route 9, approximately 1.75 miles north of the study area. The Quindaro neighborhood of Kansas City, Kansas is located approximately 0.75 miles southwest of the study area along the river bluff. Community effects of the proposed project were assessed based primarily on data from the U.S. Census Bureau, 2007-2011 American Community Survey 5-Year Estimates, with supplemental data from MARC, Platte County, the city of Riverside, and the Unified Government (see Appendix E-1).

Economic Growth and Development

Businesses located within Fairfax and Riverside manufacture and distribute goods throughout the Kansas City metro as well as the nation. More than 140 businesses are located in the vicinity of the study area including General Motors, Conoco Phillips, Sunshine Biscuit, Owens Corning, International Paper, Central Plains Steel, CertainTeed, Central Solutions, Peerless Conveyor, and Johnson Controls. Businesses within Fairfax employ more than 6,500 people. Riverside Horizons Development, under construction north and west of the study area, is projected to provide more than 2.5 million square feet of office and industrial innovations space and generate more than 5,900 jobs over the next 20 years. In November 2012, General Motors announced plans to expand its paint facility at the Fairfax Assembly Plant and hire additional workers. Several large land parcels within Fairfax are also under consideration for development of hundreds of thousands of square feet of additional warehouse, distribution, and mixed-use businesses, which would further increase the employment base and travel demand within the study area. Overall growth also continues as regional employment and economic centers expand on both sides of the river including Village West/The Legends, Briarcliff, and Zona Rosa retail and commercial developments.

Public Facilities and Emergency Services

Although there are no public facilities located within or immediately adjacent to the study area, U.S. 69 plays a major role in providing access to downtown Kansas City, Kansas and Riverside where there are a number of schools, churches, parks and recreational facilities, medical facilities, government offices, and emergency service providers. Fire, police, and emergency management personnel access the study area via U.S. 69/7th Street, Kansas Route 5 (K-5), and I-635 from downtown Kansas City, Kansas, and via I-635 and Route 9 from Riverside. U.S. 69 also serves as an evacuation route as identified in the *Wyandotte County Emergency Operations Plan* (2007). School districts do not cross the state line, so there are no school bus routes that travel through the study area.

There are a number of parks and community centers in the project vicinity that are connected by the trail systems described previously, including: Missouri Riverfront Trail, E.H. Young Riverfront Park, Renner Brenner Park, Homestead Park, and the Riverside Community Center in Riverside; and Fairfax (Roswell) Park, Parkwood Park, Edgerton Park, and Kaw Point Riverfront Park in Kansas City, Kansas. The closest of these are the Missouri Riverfront Trail, under the north end of the existing bridges, and E.H. Young Riverfront Park located approximately one-quarter miles east of the existing bridges.

Bicycle and Pedestrian Facilities

Pursuant to FHWA Policy on *Pedestrian and Bicycle Accommodations and Projects* (23 CFR 652.5), an inventory of existing bicycle routes and pedestrian walkways was conducted within the study area. The Missouri Riverfront Trail, located along the top of the Riverside-Quindaro Bend Levee, extends along the Missouri River from just east of the Platte Purchase Bridge to Route 9 just east of Parkville (see Figure 3-2). The Missouri Riverfront Trail was developed through an agreement among the city of Riverside, Platte County, Missouri, and the Riverside-Quindaro Bend Levee District. The city of Riverside is responsible for the maintenance and operation of the Missouri Riverfront Trail. The trail is part of the city of Riverside's developing trail network, illustrated in Figure 3-2. An extension of the Missouri Riverfront Trail is proposed from its current terminus at Route 9 to English Landing Park along the river in Parkville. These trails are an integral part of the overall Kansas City metropolitan trail network identified in the *Trails KC Plan*, published by the city of Kansas City, Missouri in January 2010.

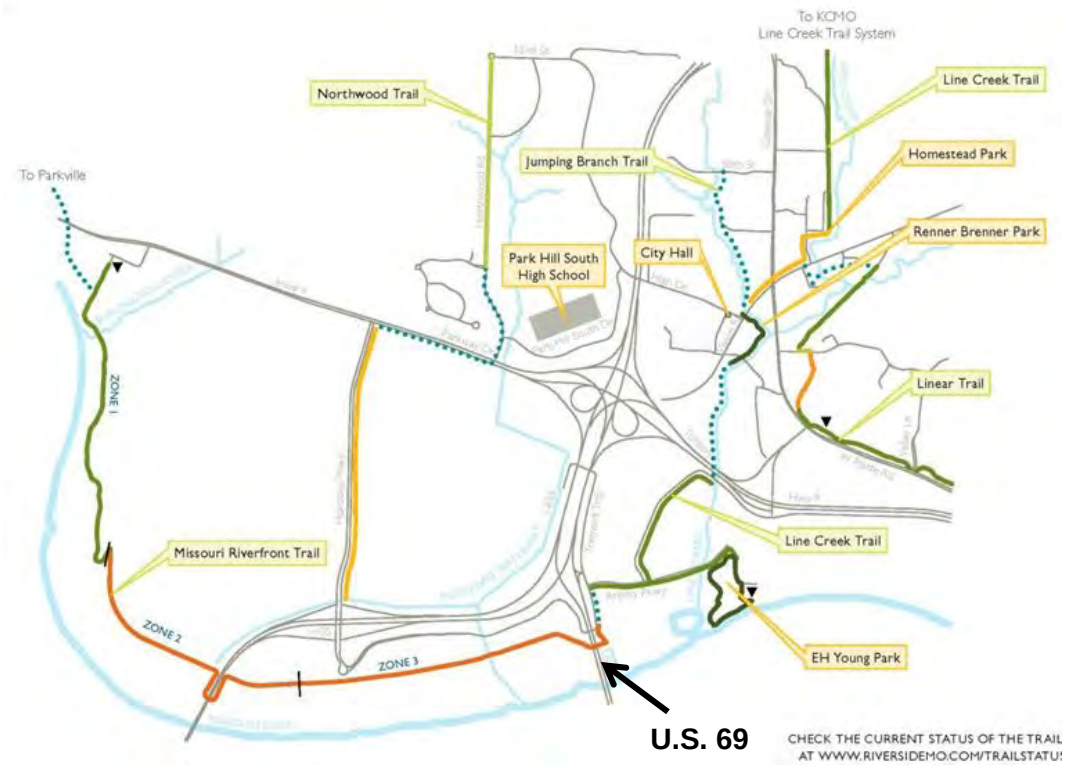


Figure 3-2: Riverside Trails (*City of Riverside Trail Plan*, March 2013)

On the south side of the river, the Unified Government has identified 7th Street, Sunshine Road, and Fairfax Trafficway as on-street bike routes in their *Sidewalk and Trail Master Plan*, completed in July 2012 (see Figure 3-3). The Unified Government is currently seeking funding to make bike lane improvements along U.S. 69/7th Street and Kindleberger Road. The Unified Government's plan also provides for consideration of regional multipurpose trails along U.S. 69, on or in the vicinity of the Fairfax Levee, and along the Quindaro bluff.

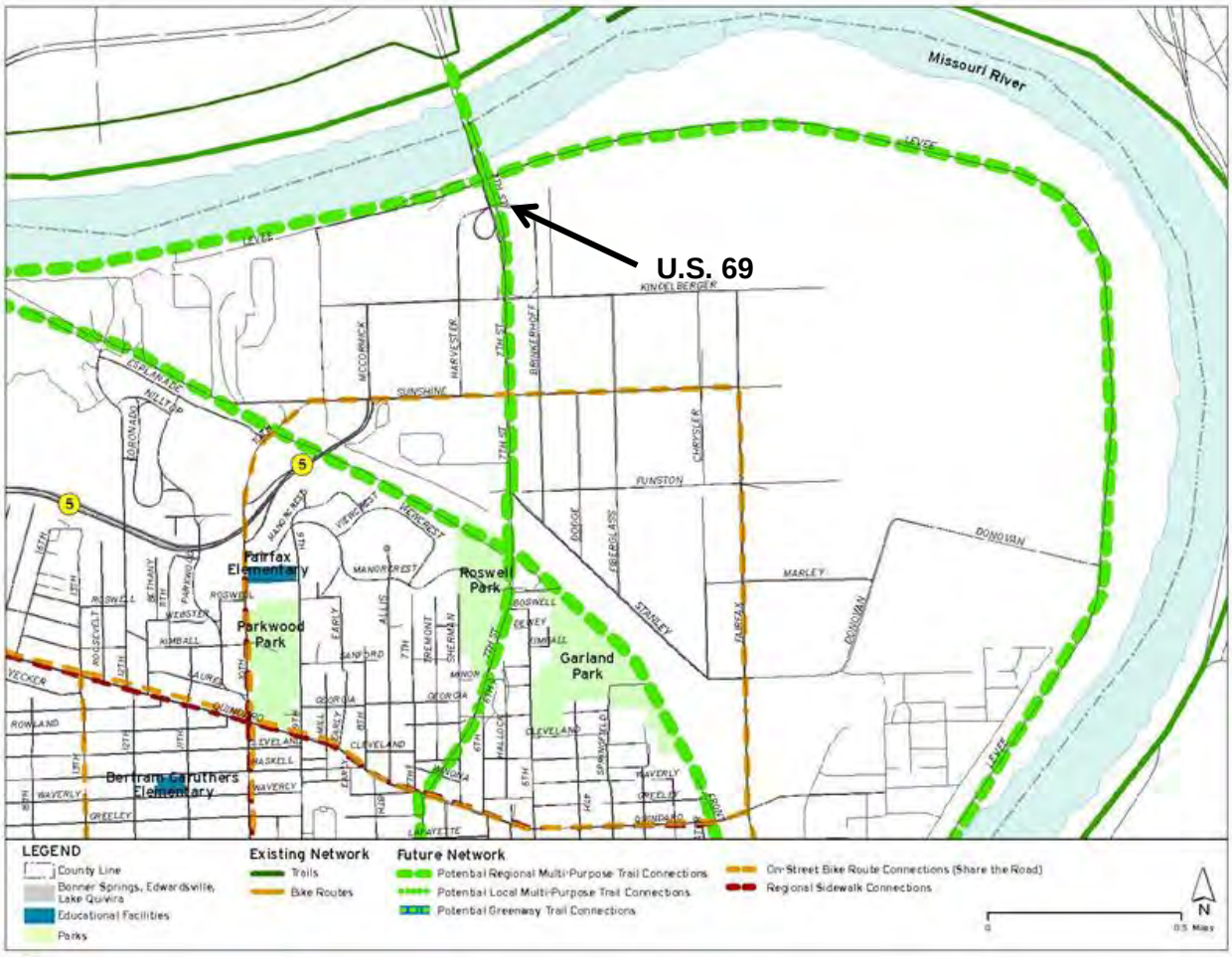


Figure 3-3: Future Trails in Kansas City, Kansas (*Kansas City, Kansas Sidewalk and Trail Master Plan*, July 2012)

Community Cohesion

The Missouri River has always been a physical barrier between Riverside and Kansas City, Kansas. The business and industrial areas that have developed as extensions of each community serve as a link between the two jurisdictions. Businesses on both sides of the river rely on each other for general services, manufacturing components, goods storage, and freight distribution. Employees from both states work in businesses located on both sides of the river.

3.5.1 No-Build Alternative

The No-Build Alternative would negatively affect the communities of Riverside and Kansas City, Kansas. As both bridges continue to deteriorate, bridge closures to accommodate maintenance and repairs would become more frequent and last for a longer period of time. Transport of materials and products across the existing bridges would continue to be constrained by narrow shoulders and/or travel lanes and low vertical clearances, the steepness of the roadway approaches, and the posted weight limits. Traffic incidents and maintenance activities would continue to limit access across the bridges at certain times, which would contribute to increases in emergency response times and periods of increased traffic congestion.

Keeping both bridges in place would only maintain accessibility and linkages between the two communities for a limited time until both bridges would need to be closed to traffic

because of their deteriorated condition. At that time, emergency response agencies, public services, businesses, and employees as well as employers would need to access the areas on either side of the river from alternate routes. Shippers and distribution companies in Fairfax would need to rely on I-670/I-70 to the south and K-5/I-635 to the west to access the regional transportation network. Employees would also need to make alternate plans to maintain access to their jobs. Increased expenses incurred by businesses due to increases in travel time and distance could negatively impact the viability of the businesses and/or would be passed along to consumers.

In addition, bicycle/pedestrian access across the river would not be accommodated due to the narrowness of the existing bridges. Connectivity with trail systems on both sides of the river would not be provided.

3.5.2 Alternative 3

Because the Build Options under Alternative 3 would be constructed within the same footprint and on or very close to the alignment of the existing crossing, no permanent changes are anticipated to neighborhoods or community cohesion, travel patterns and accessibility, community facilities, or to any special groups such as elderly, disabled, minority, low-income, or transit-dependent persons. There would be very few direct community and social effects.

Economic Growth and Development

None of the Build Options would have any permanent, adverse impact on economic growth and development, nor would they negatively impact the region's competitive position. A new bridge would provide mobility and accessibility to support the continued transport of goods and freight from Fairfax and Riverside to the surrounding region. The Build Options would support continued economic vitality on both sides of the river by maintaining access and capacity to serve current and planned economic development.

No businesses or properties slated for development or redevelopment would be directly affected under Alternative 3. Depending on the Build Option constructed, travel over the existing bridges could be limited or closed during construction of the new bridge. The effect would be short-term and temporary. Because there are a number of alternate routes in the vicinity of the project, maintaining access during construction could be accommodated with minimal disruption. Traffic along U.S. 69 would be rerouted to I-70 to the south and to Kansas Route 5 and I-635 to the west to cross the Missouri River. Using I-635 as an alternate route would add approximately four miles and ten minutes travel time for trips between Riverside and Fairfax depending on the origin/destination and time of day. A Traffic Management Plan would be developed to define a set of coordinated traffic management strategies to manage traffic during construction. Further discussion of the Traffic Management Plan is included in Section 3.15. In addition, MoDOT and KDOT will continue coordination between this project and construction of the Lewis & Clark Viaduct Improvements along I-70 to the south to minimize traffic disruptions.

The proposed action would create construction-related jobs. Positive economic effects may be realized during the construction period due to the expenditure of public funds within the study area. This includes direct income for construction workers which would be expended for goods and services within the area. Local materials suppliers would benefit from providing goods to the construction contractor for the project. The level at which these positive impacts would occur is determined to a great degree by the contractor, based upon the extent that local labor and materials are used in the construction project.

Public Facilities and Emergency Services

Alternative 3 would not directly affect the use of or access to public facilities in the project vicinity. Maintenance of a four-lane crossing at this location would facilitate continued access to facilities and services located on both sides of the river.

A new bridge would provide wider travel lanes and shoulders to enhance access by emergency services by improving travel efficiency and reliability at this river crossing. The wider roadway would provide space for disabled vehicles and sufficient room to maintain traffic flow around most traffic incidents. Although minor short-term delays and temporary disruptions in travel patterns and travel time would occur during construction, the long-term benefits of a new bridge should far outweigh short-term impacts. Potential detours and travel times were described in the section above. Overall, the Build Options would enhance emergency response times by eliminating delays caused by traffic incidents or bridge maintenance activities.

Build Options 3A and 3B2 provide for realignment of Argosy Parkway at the north end of the study area. The realignment would eliminate the at-grade right-out exit from NW Tremont Trafficway onto northbound U.S. 69, improving safety at the north end of the new bridge. Realignment of Argosy Parkway would also improve travel times and access by emergency vehicles to the casino and surrounding areas. Build Option 3B1 would not realign Argosy Parkway.

Bicycle and Pedestrian Facilities

Alternative 3 includes a dedicated and barrier-protected off-travelway bicycle/pedestrian facility along one side of the new bridge. The facility would provide connectivity with the Missouri Riverfront Trail and the on-street bike lanes proposed along U.S. 69/7th Street and Kindleberger Road by Kansas City, Kansas. MoDOT will continue to coordinate the layout and location on the bridge of the off-travelway bicycle/pedestrian facility with stakeholders through the final design process.

All of the Build Options under Alternative 3 would temporarily require closure of a section of the Missouri Riverfront Trail under the existing bridges and its trailhead during construction. The closure would be coordinated through the city of Riverside. No other parks or recreational facilities would be affected by the proposed project. An evaluation of the temporary impacts to the Missouri Riverfront Trail in compliance with Section 4(f) is provided in Section 3.11.

Community Cohesion

Replacing the existing bridges would maintain connectivity across the river and support the movement of goods, services, and people between Riverside and Kansas City, Kansas.

3.6 WATER QUALITY

Surface Water

Water quality is defined for a particular body of water by comparing the physical, chemical, and biological characteristics of the water with a set of standards. The EPA sets water quality standards based on what the water is being used for. Under Section 303(d) of the federal Clean Water Act, each state is required to identify waters not meeting water quality standards and for which adequate water pollution controls have not been required. Water quality standards protect such beneficial uses of water as whole body contact (such as swimming), maintaining fish and other aquatic life, and providing drinking water for people, livestock, and wildlife. The Missouri River is listed on the EPA-approved Missouri 2012 303(d) List as an impaired waterbody. The portion classified as impaired extends from Atchison County to the north, to the confluence with the Kansas River southeast of the study area. The pollutant of concern in this stretch of the Missouri River is *Escherichia coli*

(W) which affects river use for secondary contact and whole body recreation. No waters within the study area are listed in the EPA-approved Kansas 2012 303(d) List.

Section 402 of the Clean Water Act provides for the regulation of pollutant discharges into waters of the U.S. The EPA has authorized states to issues permits under the National Pollutant Discharge Elimination System (NPDES) program provided for under Section 402. For this project, the Missouri Department of Natural Resources (MDNR) and the Kansas Department of Health and Environment (KDHE) would share responsibility for regulating pollution discharges resulting from construction activities within the study area through the issuance of NPDES permits. Water quality is also regulated at the state level under Section 401 of the Clean Water Act. Water quality certifications are issued in conjunction with Section 404 Permits issued by the USACE for the placement of dredged or fill materials in wetlands and/or waters of the U.S., as described in Section 3.7.

Groundwater

The study area crosses an unconfined alluvial aquifer located along the Missouri River. The Missouri River floodplain is underlain by deposits of clay, silt, sand, gravel, cobbles, and boulders. These deposits lie atop shale, limestone, and sandstone bedrock that form the alluvial aquifer. Within the study area and project vicinity, groundwater generally flows towards the Missouri River. Many Missouri and Kansas municipalities (including Kansas City, Kansas) depend on the alluvial aquifers found along the Missouri River for their drinking water supply. Based on information reviewed for the study area, no groundwater contamination is likely to be present within the study area. There are no public water supply wells within or adjacent to the study area.

3.6.1 No-Build Alternative

Existing water quality conditions would continue under the No-Build Alternative. Road and bridge maintenance would continue, resulting in periodic and short-term decreases in local surface water quality as the result of paving or surface grinding activities and application of roadway deicing compounds during severe winter weather. These pollutants would be carried in storm water runoff from the bridges and adjacent roadway network resulting in a potential short-term increase in pollutant load to the river. Continued use of the existing bridges and roadway network would not change the potential for traffic incidents that could result in the accidental release of chemicals or petroleum products that would affect water quality.

Eventual closure of the crossing and removal of the bridges would result in increased turbidity and sedimentation within the Missouri River at the time the bridges and piers are removed. As described below under Alternative 3, a number of permits would need to be obtained from the USCG, USACE, MDNR/KDHE for removal of the bridges.

3.6.2 Alternative 3

Alternative 3 would result in the removal of the two existing bridges, piers, and abutments (earth embankments at the ends of the bridges), and construction of a new bridge and associated roadway improvements. Bridge construction-related impacts to water quality would be primarily the result of storm water runoff. Water quality impacts resulting from construction of the new bridge and removal of the existing bridges would be relatively short-term due to the nature of the construction process.

Bridge construction at the river's edge makes it possible for soil to wash into the Missouri River. Over time, increased amounts of sediment can damage the river ecosystem by lowering oxygen levels and covering food sources and fish spawning areas. Soil and rock washed away around bridge piers can change the river bottom, affecting those species that use the bottom for food or habitat. Without on-site pollution controls, sediment-laden runoff from construction sites could flow directly to the river and degrade water quality. In

addition, storm water could pick up other pollutants such as concrete washout, paint, used oil, pesticides, solvents, or other debris potentially harming or killing fish and wildlife, degrading aquatic habitat, and affecting drinking water quality.

To protect water quality and reduce impacts during and after completion, construction of the new bridge shall be completed in conformance with Missouri State Operating Permit (M0R100) and Kansas Stormwater Runoff from Construction Activities General Permit. MoDOT will require the contractor to implement Best Management Practices to prevent erosion and provide sediment and storm water management during construction. These measures are described in Section 3.15. In accordance with the requirements of the NPDES program, the contractor will be required to develop a project-specific Storm Water Pollution Prevention Plan (SWPPP) to describe the Best Management Practices to be implemented during construction. The SWPPP would include MDNR- and KDHE-approved components to reduce suspended solids, turbidity, and downstream sedimentation that may degrade water quality and adversely impact aquatic life.

All of the Build Options would increase storm water runoff after construction as the area of impermeable pavement (i.e., widened bridge deck, bicycle/pedestrian facility access, and Argosy Parkway realignment (Build Options 3A and 3B2)) would increase. There would be no change in the methods or compounds used to deice bridge and roadway surfaces in the study area once the project is completed. Use of these chemicals takes place primarily during wet seasons when the precipitation acts to reduce their concentration.

No groundwater contamination is anticipated as a result of construction activities. Accidental spills of fuels or hazardous chemicals could occur during construction. The contractor will be required to minimize the potential for spills and accidental releases through development and implementation of spill prevention plans and responding quickly to spills when they occur.

3.7 WETLANDS AND WATERS OF THE U.S.

Wetlands

Wetlands serve a variety of beneficial uses such as floodwater retention, groundwater recharge, and providing essential fish and wildlife habitat. Executive Order 11990, *Wetlands Protection*, established a "no net loss policy" requiring federal agencies to avoid destruction or modification of wetlands unless there are no practicable alternatives, and all practicable measures to minimize harm to wetlands have been implemented. Missouri's Executive Order 96-03 calls for similar wetland protection at the state level. An Only Practicable Alternative Finding in response to Executive Order 11990 would be included in the decision document published by the FHWA.

Section 404 of the Clean Water Act authorizes the USACE to regulate impacts to wetlands and waters of the U.S. through a permitting process. Waters of the U.S. is an inclusive term that covers streams, rivers, wetlands, and other aquatic sites that are under the USACE's jurisdiction. If permanent impacts to wetlands are greater than one-tenth of an acre, mitigation is generally required as a part of Section 404 permit.

Wetlands are defined by the USACE as *those areas that are inundated or saturated by surface or groundwater at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil condition*.

Wetlands within the study area classified as emergent and forested based on hydrology, location in the landscape, and the dominant vegetation:

- ***Palustrine emergent wetlands (PEM)*** primarily consist of herbaceous, grass-like, plants.
- ***Palustrine forested wetlands (PFO)*** are typically dominated by tree species. Palustrine forested wetlands would be typical of the wooded areas within the Missouri River floodplain.

National Wetland Inventory mapped wetlands and other potential wetlands identified by windshield survey located within the study area are summarized in Table 3-1 and shown on Figure 3-1. MoDOT will complete field delineations and obtain jurisdictional determinations through coordination with the USACE Kansas City District prior to initiating final design. This information will be used to obtain a Section 404 permit for construction of the project.

Table 3-1: Wetland Inventory

Wetland Number	Location and Description	NWI Map Classification	Wetland Type	Approximate Wetland Area (ac) (within study area)
W-1	NWI-mapped forested area of 100 Year Floodplain north of and abutting the Missouri River	PF01A	PFO	8.33
W-2	Forested area within 100 Year Floodplain north of the Riverside-Quindaro Levee, west of U.S. 69, and south of Argosy Casino Parkway	N/A	PFO	0.64
W-3	Depression dominated by grassy vegetation just south of Harvester Road and east of U.S. 69 in Wyandotte County	N/A	PEM	1.01

SOURCE: URS Corporation, 2013

Missouri River

The only and most prominent water resource in the study area is the Missouri River. The Missouri River is classified as "perennial" which means it maintains permanent flow during drought conditions.[10] Based on recent aerial mapping and a windshield survey, the Missouri River is approximately 850 feet wide within the study area. The determination of the jurisdictional limit of a river or stream is based upon the presence of an Ordinary High Water Mark (OHWM). The OHWM for a river or stream is usually determined through examination of recent physical evidence of surface flow in the stream channel. The OHWM is visible on both banks of the Missouri River, marked by flow lines and debris.

Ponds

There were no ponds identified within the study area.

Navigable Waterways

The Missouri River is classified as a navigable waterway. The USCG regulates and maintains traffic within the navigational channel of the river, which is located along south (Fairfax) bank within the study area. The USACE has the responsibility of physically maintaining the Missouri River for navigation, and provides a navigable channel 9 feet deep and 300 feet wide. The USACE is responsible for dredging, structure maintenance (i.e., weirs, damns, etc.), and flood management. The USACE also works with local levee districts to manage the river flows during flood events (see Section 3.8 for a discussion of the levee system). Modification of the Missouri River to facilitate navigation has been a federal responsibility since 1884, but serious efforts to stabilize the banks and deepen the channel did not begin until the establishment of a channel 6 feet deep and 200 feet wide as authorized by

[10] Missouri's Water Quality Standards - 10 CSR 20-7.031

Congress in 1912. The authorized dimension of the navigation channel was increased to the current depth of 9 feet and width of 300 feet in 1945.

In 2010, the latest year of reporting, more than 4,595,000 tons of commodities were barged up and down the Missouri River between Kansas City (upper Quindaro Bend − just west of the study area) and the confluence with the Mississippi River at St. Louis. In the same year, more than 803,000 tons of commodities were moved up and down the river between Omaha and Kansas City. Aggregates (e.g., soil, sand gravel, and rock), petroleum and chemical products (e.g., coal, tar/pitch, asphalt, fertilizers), and farm products made up the majority of the commodities transported by river.[11] Typical tow sizes on the Missouri River are 4−7 barges between Omaha and Kansas City and 9−12 barges below Kansas City.[12]

Between Omaha and Kansas City from 2007 to 2010 the total trips in both directions ranged from 4,800 to 7,200 for all vessel types. Vessels with a 6-9 foot draft accounted for approximately 10 percent of the trips. Total tonnage transported ranged from 706,700 to 1,252,000 tons in the same period. Between Kansas City and the mouth from 2008 to 2010 the total trips in both directions ranged from 26,800 to 29,900 for all vessel types. Approximately 9,000 of the trips per year were by vessels with a 6-9 foot draft. Total tonnage ranged from 4,600,000 to 6,400,000 tons in the same period.[13] No forecast of future vessel traffic has been identified.

In additional to commercial traffic, the river is used by recreational boats and other watercraft. Recreational use (particularly fishing) occurs throughout the course of the Missouri River. Construction of a new bridge and removal of existing bridges within navigable waterways requires a permit under Section 9 of the Rivers and Harbors Act and the General Bridge Act of 1946, issued by the USCG.[14] Under a Section 9 Permit only the absolute minimum amount of temporary obstruction to the navigation channel is allowed with no permanent impacts to the navigational channel.

3.7.1 No-Build Alternative

Under the No-Build Alternative nothing would be constructed that places fill or dredged materials into wetlands or waters of the U.S. At the time the bridges would be closed to traffic and would be removed, demolition methods could involve construction of temporary causeways, the use of mats or gravel to obtain access to the bank, and/or mooring of equipment in or near the navigational channel in order to remove the piers and foundations. Sediments removed from the river would need to be placed on a barge and transported to an upland disposal location. Areas along the bank determined to be jurisdictional wetlands would need to be restored following bridge removal.

---

11 USACE Navigation Data Center; http://www.ndc.iwr.usace.army.mil//wcsc/webpub10. Waterborne Commerce Statistics Center. Accessed March 13, 2013.

12 Past and Future Grain Traffic on the Missouri River; July 2003

13 USACE Navigation Data Center; http://www.ndc.iwr.usace.army.mil//wcsc/webpub10. Waterborne Commerce Statistics Center. Accessed June 28, 2013.

14 Although a USCG Bridge Permit is often referred to as a Section 9 permit (because years ago bridges were approved under Section 9 of the Rivers and Harbors Act of 1899), the primary authority relied on by the USCG now for issuance of such permits is the General Bridge Act of 1946. This Act requires USCG approval to construct a new bridge or reconstruct or modify an existing bridge over navigable waters of the United States. The purpose of the act is to preserve the public right of navigation and prevent interference with interstate and foreign commerce. USCG policy is to protect the freedom of navigation and the quality of the environment, meeting the "reasonable needs" both of navigation and land traffic Section 9, Rivers and Harbors Act of 1899, 33 USC 401; Bridge Act of 1906, 33 USC 491 et seq.; General Bridge Act of 1946, 33 USC 525 et seq.; and Federal Aid Highway Act of 1987, Section 123(b), 23 USC 144(h).

3.7.2 Alternative 3

Wetlands and the Missouri River

Construction of the new bridge and removal of the existing bridges would result in placement of fill material within the Missouri River and wetlands within the study area. MoDOT will complete field delineations prior to initiating final design. Once the jurisdictional limits of the wetlands have been established, the anticipated impacts of each Build Option will be revised. The assessment of impacts presented in Table 3-2 represents the anticipated worst case scenario.

Table 3-2: Wetland and Waters of U.S. Impacts

	Wetlands Impacts (ac) (by type)		Streams and Rivers		
	PFO	PEM	Type	Length (L.F.)	Surface Area (ac)
No-Build	N/A	N/A	Perennial	N/A	N/A
Alternative 3					
Option 3A	5.08*	0.90	Perennial	0	0.29**
Option 3B1	3.76	0.56	Perennial	0	0.29**
Option 3B2	5.08*	0.90	Perennial	0	0.29**

NOTES:
* Includes 0.35 acres of wetland impact for the Argosy Parkway realignment.
** Each new bridge pier is estimated to affect approximately 2,176 square feet.
Impacts noted are based on desktop evaluation. Impact calculations will be revised following completion of field delineations.
SOURCE: URS Corporation, 2013

Because one bridge would be constructed, the same number and size of piers would be constructed under any of the Build Options. Construction would be conducted as to not unreasonably interfere with free navigation of the river or impair present navigable depths. Depending on the final design layout of the bridge, piers would be located within the river channel and within the floodplain on either side of the river.

Through coordination with the USACE, it is anticipated that a Nationwide Permit (NWP) #15 (U.S. Coast Guard-Approved Bridges) will be issued to authorize construction of the bridge, and a NWP #14 (Linear Transportation Projects) will be issued to authorize construction on the roadway approaches. Issuance of the Section 404 permits by the USACE is contingent on obtaining water quality certification issued under Section 401 of the Clean Water Act from the MDNR and KDHE. In addition to the USACE permits, MoDOT will obtain a Section 9 Permit from the USCG to construct the new bridge and to remove the existing bridges over a navigable waterway prior to initiating demolition and construction.

Navigation

The new bridges would not impact current or forecast future river traffic because the USCG will require that a new bridge meet or exceed the horizontal clearance of 406 feet provided by the existing bridges. The navigation channel is designated along the south (Fairfax) bank through the study area. The contractor's bridge erection scheme and falsework (i.e., framing to support the construction of the bridge piers and foundations which is removed once construction is complete) would need to provide adequate horizontal clearance within the navigational channel span to allow for safe passage of river traffic during construction. Temporary interference with navigation during construction would be minimized because the new pier locations would be at a similar distance away from the centerline of the navigation

channel as the existing piers. Temporary cofferdams or erection falsework may encroach upon the navigation clearance for short periods of time, and are subject to approval by the USCG prior to the start of construction. Construction impacts are further discussed in Section 3.15.

All Build Options would also require demolition of both existing bridges, with the potential to impact river users and river-based commerce by blocking the navigational channel for a short period of time. It is anticipated that the existing spans would be dropped into the river and then salvaged (unless other arrangements are made as part of the mitigation commitments under Section 106 to reuse all or a portion of either or both bridges). Demolition of either or both bridges could occur before, during, or following construction of the new bridge, depending on the alignment selected and the proposed method of construction. It may be possible to time the demolition activities to occur outside of the navigation season (March 28-November 27 for Kansas City, Missouri)[15]. If one or both bridges were demolished during the navigation season, commercial use of the river in the vicinity of the bridges would be slowed, but use of the navigation channel would only be restricted for a 24-hour period while the navigation span is dropped and salvaged. Because the USCG would monitor the demolition on-site to provide a safe environment during the process, the demolition operation is anticipated to have a minimal effect on commercial river traffic.

Recreational use of the river near the crossing may be reduced during certain construction and demolition activities. Neither commercial nor recreational use of the river in the vicinity of the project would be impeded once construction is completed.

Mitigation

The recommended mitigation action for all Section 404 Permits is avoidance. However, if total avoidance is not practicable, compensatory mitigation would be required. During the Section 404 Permit process, MoDOT will coordinate directly with the USACE, the EPA, and the MDNR/KDHE to determine the appropriate mitigation for any unavoidable impacts to jurisdictional wetlands, including use of in-lieu fee programs or purchase into a mitigation bank.

3.8 FLOODPLAINS AND FLOODWAYS

Floodplains are low-lying, flat or nearly flat areas of land adjacent to rivers, streams, and other water courses, that are periodically inundated with water due to natural events (depicted in Figure 3-4). A 100-year flood is defined as a flood which has a one percent chance of being equaled or exceeded in magnitude in any given year. The 100-year floodplain is any area that would be covered by water during a 100-year flood event. The 500-year floodplain designates the area that would be inundated by a flood that has a 0.2 percent chance of being equaled or exceeded in magnitude in a given year.

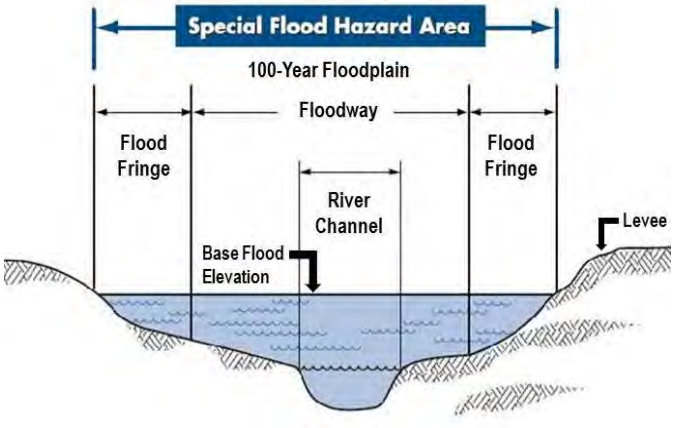


Figure 3-4: Diagram of a Floodplain

[15] http://www.nwd-mr.usace.army.mil/rcc/tenmost/tenmosth11.html; accessed March 13, 2013.

The Federal Emergency Management Agency (FEMA) under their National Flood Insurance Program (NFIP) prepares Flood Insurance Rate Maps (FIRM) for areas prone to flooding. These maps are used to identify special flood hazard areas and to determine the limits of the 100-year (base) floodplain and the extent of possible floodplain encroachment.

A regulatory floodway is defined as the channel of a stream plus the adjacent area that will be inundated with water during a 100-year flood event and must remain free of encroachment to avoid increasing the base flood elevation during a 100-year flood event. FEMA has mandated that projects can cause "no rise" in the flow within the regulatory floodway, and no more than a one-foot cumulative rise of the flood elevation within the 100-year floodplain. FEMA and FHWA guidelines (23 CFR 650) identify the base (100-year) flood as the flood having a one-percent probability of being equaled or exceeded in any given year.

In Missouri, the State Emergency Management Agency (SEMA) issues a floodplain development permit for any project located within a special flood hazard area. This permit requires a "No-Rise" certification. The certification indicates that a project will cause no rise in the regulatory floodway of a given flooding source. In Kansas, the Water Resources Division of the State Board of Agriculture supports local governing bodies for floodplain management. Each agency has the regulatory authority to issue their own floodplain development permit which, like Missouri, requires a "No-Rise" Certification for construction within a flood hazard area. Based on review of the Flood Insurance Rate Maps (FIRMs) the base (100-year) flood elevation within the study area is 756 feet. There are no SEMA flood buyout properties in the study area.

What are the natural and beneficial values of floodplains?

In natural systems, floodplains provide a number of important functions:

- create wildlife habitat
- provide temporary storage of flood water
- prevent heavy erosion caused by fast moving water
- recharge and protect groundwater
- support vegetative buffers to filter contaminants
- accommodate natural movement of stream flows

Floodplains store excess water during floods and slow down the speed of the flowing water which protects areas farther downstream. Slower water velocities help reduce erosion and allow sediments in the water to settle, often providing nutrients to fertile floodplains.

Executive Order 11988, *Floodplain Management*, directs federal agencies to take action to reduce the risk of flood loss, minimize the impact of floods on human safety, health, and welfare, and restore and preserve the natural and beneficial values served by floodplains (see inset to the right). Federal agencies are to provide public notice of proposed actions in floodplains and make a finding that there is no practicable alternative before taking action that would encroach on a 100-year floodplain. U.S. Department of Transportation (DOT) Order 5650.2, *Floodplain Management and Protection*, outlines the DOT policies and procedures for implementing Executive Order 11988. An Only Practicable Alternative Finding in response to Executive Order 11988 would be included in the decision document published by the FHWA.

The FHWA's floodplain encroachment policy requires the avoidance of longitudinal encroachments wherever practicable. If longitudinal floodplain encroachments cannot be avoided, the degree of encroachment should be minimized to the extent practicable. Generally, any increase in the 100-year water-surface elevation produced by a longitudinal encroachment on a NFIP-mapped floodplain should not exceed the one foot allowed by federal standards. Obtaining appropriate floodplain permits from the SEMA/State of Kansas are an environmental commitment of this project.

Levees

Levees are present along both sides of the Missouri River within the study area. The levee along the north bank is operated by the Riverside-Quindaro Bend Levee District. The levee along the south bank is operated by the Fairfax Drainage District. Construction of the original levees along both banks was initiated after the 1903 flood.

The Riverside-Quindaro Bend Levee consists of 4.7 miles of earthen levee along the left bank of the Missouri River at Riverside, Missouri. The levee system averages about 20 feet in height, varying from 15 feet to 23 feet. The Riverside-Quindaro Bend Levee District is responsible for maintaining the structural integrity of the levee system. The Fairfax Drainage District was formed in 1922 as a new taxing authority creating a more organized and unified flood control program to keep the Missouri River within its banks and remove storm water from inside the levee on the Kansas side.

Levee critical zones are designated 300 feet riverside and 500 feet landside of both levees. Both levee systems include components such as drainage systems and pressure relief wells that are critical to the flood protection provided, and conflicts with these components should be avoided. Improvements proposed in close proximity to either levee must be reviewed and approved by the representative levee district in close coordination with the USACE. For example, excavation for bridge foundations would most likely be required to have emergency backfill provisions. Any reconstruction of the levee after foundations are in place would restore the levee to its original level of protection.

3.8.1 No-Build Alternative

The No-Build Alternative would have no impact on the mapped floodplain and floodway as it does not alter the structures currently in those special hazard areas. The No-Build Alternative would have no effect on the long-term or beneficial floodplain values. Removal of the existing bridge piers and foundations at some point in the future would need to be coordinated within the levee districts, the USACE, and the USCG.

3.8.2 Alternative 3

The Build Options under Alternative 3 would have minimal impact on the existing floodplain and floodways (see Table 3-3). All of the options would replace the existing bridges and remove the piers located within the floodplain and floodway. Although the new bridge piers would most likely have a larger individual footprint than the existing piers, a single pier at each location would reduce the build-up of debris during flood events that can affect the flow and velocity of floodwaters and contribute to the development of scour areas at the base of the bridge piers and along the base of the adjacent levees. MoDOT will conduct a hydraulic analysis during final design to document that the new bridge will result in "no rise" in the flow within the regulatory floodway. MoDOT will also obtain required floodplain development permits prior to initiating construction. The following table summarizes each alternative and quantifies their impacts to the base floodplain and floodway.

Table 3-3: 100-Year Floodplain and Floodway Encroachments

	100-Year Floodplain Crossing (linear feet)	100-Year Floodplain (acres)	Floodway (acres)	Floodway (linear feet)
No-Build	5,700	0.18	1,980	0.07
Alternative 3				
Build Option 3A	3,300	0.28	990	0.14
Build Options 3B1	3,000	0.28	990	0.14
Build Options 3B2	3,300	0.28	990	0.14

SOURCE: URS Corporation, 2013

During construction the size and duration of temporary obstructions within the floodplains and floodway can be minimized by effective construction sequencing and construction methodology.

3.9 BIOLOGICAL RESOURCES AND THREATENED AND ENDANGERED SPECIES

The Endangered Species Act (ESA) of 1973 (16 USC 1531 et seq.) attempts to ensure that proposed activities do not jeopardize the continued existence of any threatened or endangered species or result in the destruction or adverse modification of species habitat. As provided in the ESA, the Fish and Wildlife Coordination Act, as amended, also applies to projects that affect water resources. The U.S. Fish and Wildlife Service (USFWS) administers both of these acts.

Burns & McDonnell has initiated contacts by phone and email with the USFWS, the Missouri Department of Conservation (MDC), and the Kansas Department of Wildlife, Parks and Tourism (KDWPT) to evaluate the potential for this project to affect any protected species. In addition, a review of MDC's Heritage Database has been completed and Burns & McDonnell conducted on-site visits to review the study area. The proposed study area is very narrow and is occupied primarily by the Missouri River, associated floodplain areas, and undeveloped public rights-of-way. Copies of correspondence are included Appendix E-3.

Terrestrial and Aquatic Habitats

Much of the land within and adjacent to the study area is designated as transportation right-of-way, managed as open space for flood control purposes, or developed for industrial and commercial use. The presence and condition of existing terrestrial and aquatic habitats are a product of the current uses in the area. No unique or rare habitats have been documented within or adjacent to the study area. Burns & McDonnell conducted a windshield-level qualitative evaluation of the study area in January 2013 to identify the dominant habitat types, plant species, extent of the riparian area, and observations of habitat usage by wildlife species. Species observed during the windshield review are listed in Appendix E-3.

Vegetation in the study area is dominated by managed grasses within public rights-of-way and wooded riparian areas along the Missouri River. Managed grassy areas are dominated by fescue (*Festuca* spp.) and brome (*Brome* spp.). There are numerous annual weed species are also present during the growing season in the open areas and woodlands. Woody species include eastern cottonwood (*Populus deltoides*), sycamore (*Plantanus occidentalis*), American elm (*Ulmus americana*), common hackberry (*Celtis occidentalis*), and black willow (*Salix nigra*), among others. Tree sizes ranged mostly from small to medium, with also larger representatives and a few snags in the riparian area. Poison ivy (*Toxicodendron radicans)*, Virginia creeper (*Parthenocissus quinquefolia*), and greenbrier species (*Smilax* spp.) were present in the understory and shrubby layers.

Because of the developed nature of the study area, terrestrial wildlife is not likely relatively abundant with the exception of seasonal migratory bird species. Various waterfowl and other migratory species may use the river and riparian habitats on a seasonal basis. Most common wildlife species are typically tolerant of human activity and disturbance and are capable of adapting and occupying developed areas.

There are no backwaters, tributaries, or other smaller or slower flowing waters adjoining or flowing into the Missouri River within or adjacent to the study area. High flow velocities, sediment loads, and relatively little fluctuation in the river level, except during flood and drought events, are common for this reach of the Missouri River. Debris and river bottom contour changes around the existing bridge piers may provide suitable seasonal habitat for a number of fish species.

Table 3-4: Protected Species Potentially Occurring Within the Study Area

Common Name	Scientific Name	Federal Listing	State Listing	
			MO	KS
Mammals				
Indiana bat	*Myotis sodalis*	E	E	NL
Birds				
Bald eagle	*Helianthus leucocephalus*	NL	SOC	NL
King rail	*Rallus elegans*	NL	E	NL
Fish				
Pallid sturgeon	*Scaphirhynchus albus*	E	E	E
Chestnut lamprey	*Ichthyomyzon castaneus*	NL	NL	T
Flathead chub	*Platygobio storeriana*	NL	E	T
Plains minnow	*Hybognathus placitus*	NL	NL	NL
Sicklefin chub	*Macrhybopsis meeki*	C	NL	E
Silver chub	*Macrhybopsis storeriana*	NL	NL	E
Silverband shiner	*Notropis shumardi*	NL	NL	T
Sturgeon chub	*Macrhybopsis gelida*	C	NL	T
Western silvery minnow	*Hybognathus argyritis*	NL	NL	T

C = Candidate E = Endangered T = Threatened NL = Not Listed SOC = Species of Concern

SOURCE: USFWS, MDC, and KDWPT July 2013

Threatened and Endangered Species and Species of Concern

The USFWS has indicated that the habitat capable of supporting pallid sturgeon (*Scaphirhynchus albus*), listed as endangered under the ESA, may be present in the vicinity of the proposed project.[16,17] Pallid sturgeon are a long-lived fish species that prefers large, silty rivers with diverse bottom habitat, depths, and velocities such as those created by braided streams, wing walls, and sand bars. The section of the Missouri River crossed by the study area generally includes river bottom habitat that is uniform and deep in the areas with consistent velocity.[18] The river bottom around the existing bridge piers has been reinforced

[16] USFWS. 2013. IPaC − Information, Planning, and Conservation System. http://ecos.fws.gov/ipac/

[17] USFWS, 2013. USFWS Environmental Conservation Online System: Platte County, Missouri. http://ecos.fws.gov/tess_public/countySearch!speciesByCountyReport.action?fips=29165

[18] Reuter, J.M., Jacobson, R.B., Elliot C.M., Johnson, H.E., III, and DeLonay, A.J. 2008. Hydraulic and substrate maps of reaches used by sturgeons (genus *Scaphirhynchus*) in the Lower Missouri River, 2005-07: U.S. Geological Survey Data Series 386, 442 p.

during maintenance activities to attempt to prevent significant scouring. Based on recently published data[19] consultation with researchers studying sturgeon in the Missouri River with MDC, USFWS, and the USGS[20]; and a query of the available MDC data[21], sturgeon have been located in the Missouri River in the Kansas City area, but they have not selected habitat around the existing bridge infrastructure in the study area.

The Indiana bat (*Myotis sodalis*), listed as endangered under the ESA and by the MDC, may be present in the vicinity of the proposed project during the summer. Maternity colonies of Indiana bats have not been documented in the study area and the study area is not within the home range of a maternity colony, based on the currently available information. Indiana bats may use riparian areas along the Missouri River for summer roosting and foraging. Summer roosting areas require trees with a diameter at breast height (dbh) greater than 5 inches (12.7 centimeters), have exfoliating bark, cracks, crevices, or other hollows, in addition to wetlands, interspersed non-forested habitat, and field edges The nearest documented occurrence of Indiana bats is at least 70 miles from the project.[22]

Bald eagles are no longer listed as protected under the ESA; however, they are protected under the Bald and Golden Eagle Protection Act (BGEPA) (16 USC 668) and the Migratory Bird Treaty Act (MBTA) (16 USC 703). Bald eagles often prefer mature trees near large water bodies for foraging, roosting, and nesting. There are no known active, alternate, or inactive bald eagle nests within or near the study area. As part of the January 2013 windshield evaluation of the study area, no bald eagles or bald eagle nests were observed. The project vicinity is not a winter feeding and sheltering congregation area for wintering bald eagles. The study area is not currently a nesting location for this species.

Most bird species in the United States are also protected by the MBTA. The MBTA prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests. It is possible that barn swallows (*Hirundo rustica*), other swallow species, or similar species use the current bridges for nesting during the nesting season. The general restricted nesting season, applicable to barn swallows, is April 1 to July 31; however, birds could be nesting before or after this period as a result of individual variations and weather triggers on migration and nesting. Precautions would be implemented for prior to initiating construction or demolition activities to determine if any nests are present.

3.9.1 No-Build Alternative

The No-Build Alternative would have no impact on biological resources or threatened, endangered, and rare species or their habitats that may be present within the study area and the project vicinity. Prior to conducting repairs to either bridge or the eventual removal of the bridges, surveys would need to be conducted to determine if bird species protected under the MBTA are nesting in the bridge superstructure during the dates of April 1 to July 31. If impacts to species protected by the MBTA were anticipated, alteration of the project activities and/or additional consultation with USFWS would be completed.

19 Ibid.

20 Travnichek, V., Niswonger, D., and Delonay, A. 2013. Communication with Vince Travnichek (MDC), Darby Niswonger (MDC), and Aaron Delonay (USGS) regarding the Pallid Sturgeon Population Assessment Project in the Missouri and Kansas Rivers, 2005-2012 by Bryan Gasper (Burns & McDonnell).

21 MDC. 2013. Missouri Department of Conservation Heritage Database Inquiry by MoDOT. July 2013.

22 Ibid.

3.9.2 Alternative 3

Prior to demolition of the existing bridges, MoDOT will conduct surveys to determine if bird species protected under the MBTA are nesting in the bridge superstructure. If nests are present and impacts were anticipated to species protected by the MBTA, precautions would be implemented for the project activities to avoid impacts and/or additional consultation with USFWS would be completed. Generally, these efforts would be completed during the period of April 1 and July 31.

Prior to initiating construction, field surveys would be conducted of the riparian habitat along the river to determine whether there is a potential of use of the area by Indiana bats based on the tree species present, size classes, and condition of the trees. If suitable habitat trees are present, and habitat protection measures are warranted to avoid negative impacts to Indiana bats, suitable habitat trees will only be removed between November 1 and March 31.

Because terrestrial habitats are present within and adjacent to the study area, temporary displacement of bird and mammal species common to the area would occur during construction. Based on the corridors evaluated for the Build Options, approximately 14 acres of riparian forest habitat could be removed if the entire corridor were cleared. Open areas under the new bridge structures would repopulate overtime with woody and herbaceous species.

MoDOT will require removal of existing bridge pier and foundation materials in accordance with accepted construction methods and Best Management Practices. The contractor will be required to haul away all debris and sediments removed from the river bottom for disposal at an upland location. The new bridge foundations and piers would be constructed following similar methods. Overtime, the new bridge piers would most likely provide in-water habitats similar to those of the existing bridge piers. Human activity and noise generated during construction would temporarily displace resident wildlife and fish. Existing upland, riparian, and river habitats in the project vicinity would be able to accommodate displaced fish and wildlife. The continued and long-term use of de-icing compounds on the new bridge would not adversely affect the quality or use of aquatic habitats within or adjacent to the study area. Consultation with the MDC and KDWPT for state protected species may include seasonal fish usage of habitat in the study area, thereby resulting in precautions implemented to minimize potential impacts.

Normal construction methods and seeding of disturbed areas will be stabilized using plantings and appropriate Best Management Practices to reduce erosion during grass establishment and to reduce the potential for disturbed areas to be populated by invasive species.

3.10 CULTURAL RESOURCES

Cultural resources are the physical remains of human activity. They can include archaeological sites, buildings, structures, and objects that show evidence of previous human activity. Before a federal agency approves spending money or issues a permit or license for a project, Section 106 of the National Historic Preservation Act (NHPA) requires agencies to consider how the project would affect historic properties. Section 106 defines historic properties as resources eligible for listing in the National Register of Historic Places (NRHP). The federal agency must involve the State Historic Preservation Office (SHPO) and other consulting parties in the Section 106 process.

The NHPA mandates that agencies perform the following actions:

- **Initiate the Section 106 process** by first determining whether the agency has an undertaking that is the type of activity that may affect historic properties. If so, the agency must identify the appropriate State Historic Preservation Office (SHPO)/Tribal Historic Preservation Office (THPO) to consult with during the process. It should also plan to involve the public and identify other potential consulting parties. If it determines that there is no undertaking, or that its undertaking is a type of activity that has no potential to affect historic properties, the agency has no further Section 106 obligations.
- **Identify historic properties** that may be affected by a project, including historic sites that either are listed in the NRHP or have been determined through a consensus process to be eligible for listing in the NRHP.
- **Assess adverse effects** including the nature and extent of the expected effects on the qualities of the property that resulted in its listing in the NRHP or the determination that it is eligible for listing in the NRHP.
- **Resolve adverse effects** by considering measures to avoid, minimize, or mitigate those effects.

Adverse effects An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association.

Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the NRHP. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.

Section 106 encourages, but does not require, the preservation of historic properties. When adverse effects on historic properties are unavoidable, those adverse effects must be mitigated. A Memorandum of Agreement (MOA) is prepared specifying the mitigation measures that will be completed. The MOA is legally binding on all signing parties.

Section 4(f) of the Department of Transportation Act of 1966 (discussed in greater detail in the next section) also protects historic properties. Federally-funded actions cannot impact Section 4(f) properties unless there is no feasible and prudent way to avoid the property. Section 4(f) is discussed in more detail in Section 3.11.

Area of Potential Effects (APE)
The APE is the geographic area where a project may, directly or indirectly, cause changes in the character or use of any historic properties that may be present. The APE is influenced by the scale and nature of the project.

Different kinds of effects have different APEs – for example there is a different APE for archaeological resources than for architectural resources.

The APE for this project includes a 100-foot buffer area along the outside edge of the study area to assess indirect effects to architectural resources.

The area of potential effects (APE) for this project includes the study area which extends from the intersection of U.S. 69/7th Street and Kindleberger Road in Kansas City, Kansas to the intersection of U.S. 69 and I-635 in Platte County, Missouri. As depicted in Figure 3-5 on the following page (and in Figure 3-1), the study area (solid purple line) is 700 feet wide, extending 500 feet to the west and 200 feet to the east of the centerline between the two bridges. The APE includes an additional 100 feet on all sides of the study area (indicated by the dashed purple line) that was examined for the project's effect on architectural resources due to the proximity of proposed improvements. An APE for archaeological effects was defined as the presumed maximum limits of existing and new

right-of way needed for construction of any of the Build Options including anticipated permanent and temporary easements.

The findings of the cultural resources investigation are provided in the Cultural Resources Technical Report, dated February 28, 2013, provided in Appendix C. This report, along with MoDOT's recommendations, was submitted to the Missouri and Kansas SHPOs on March 5, 2013.

3.10.1 Archaeological Resources

Several cultural resources surveys have been conducted on both sides of the Missouri River within and near the study area between 1975 and 2005 for various improvements including the I-635 interchange, modification of the Riverside-Quindaro Bend Levee, and development of Argosy Casino. No archaeological or historic sites were identified during these surveys within the study area/APE. No prehistoric sites have been recorded near the river channel in the floodplain on either side of the river within or in close proximity to the study area/APE.

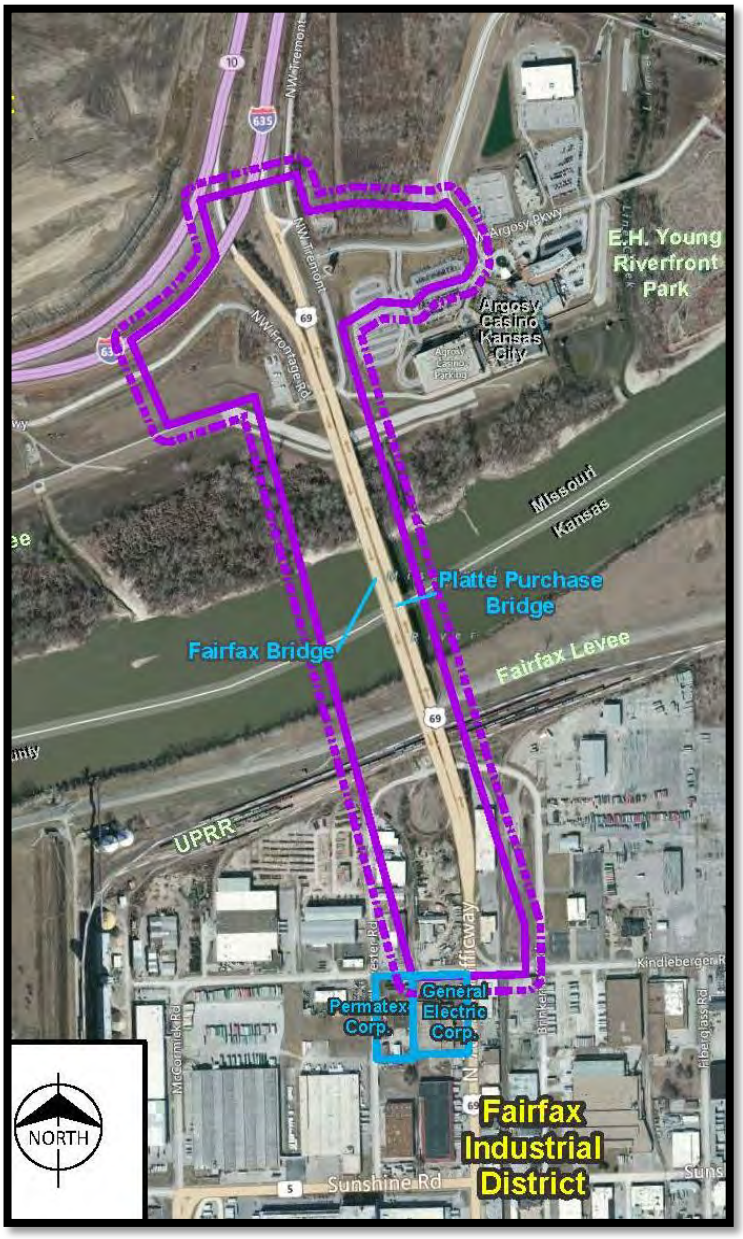


Figure 3-5: Study Area and APE
(see also Figure 3-1)

In Platte County, Missouri, two low-density historic artifact scatters were recorded on the floodplain to the northwest of the study area. The sites are not included in the MDNR database but were recorded during the Phase I survey for the I-635/Van de Populiere interchange project. They are considered not eligible for listing in the NRHP. Clusters of prehistoric sites have also been recorded on the bluffs above the river northwest of the study area, including the NRHP-listed Renner Site. Prehistoric activity sites may have been located on the Missouri River floodplain, but development of the levee system has obscured or eradicated any evidence of such activity.

In Wyandotte County, Kansas, it is unlikely that historic features remain along the river due to development of the Fairfax Levee (since 1903), the Fairfax Industrial District (since 1940), and the railroad corridor along the south bank. Overlay maps of the Missouri River channel at the existing U.S. 69 crossing indicate that the river channel has changed little over time. No steamboat wrecks have been documented

within or immediately adjacent to the study area. The nearest documented wreck occurred more than one-half mile downstream in 1838.

3.10.2 Historic and Architectural Properties

Two existing bridges are located in study area: Bridge No. K0456, the Fairfax Bridge erected in the 1930s, and Bridge No. A0450, the Platte Purchase Bridge, built two decades later. The Fairfax Bridge has been previously evaluated and determined eligible for listing on the NRHP. MoDOT recommended the Platte Purchase Bridge eligible for listing in the NRHP. Both the Missouri SHPO (on March 5, 2013) and the Kansas SHPO (on March 7, 2013) concurred with MoDOT's determinations of eligibility for the Fairfax and Platte Purchase Bridges. Therefore, both structures are considered historic properties and eligible for listing in the NRHP. Copies of the Cultural Resources Technical Report and agency correspondence as part of the Section 106 process is included in Appendix C.

Fairfax Bridge

The southbound Fairfax Bridge (K0456), depicted in Figure 3-6, was built in 1933-1935 to carry vehicular traffic over the Missouri River where no previous road or bridge was located. Although long desired, a crossing connecting Kansas and Missouri over the wide expanse of the river at this locale was not realized until adequate funds could be secured to build the bridge. The engineering firm Sverdrup and Parcel, from St. Louis, Missouri, designed the bridge. The Kansas City Bridge Company of Kansas City, Missouri, was the fabricator and contractor. The bridge was completed in 1934 for a cost of $511,500 and operated as a toll bridge for almost two decades until the construction loan was paid off.

Figure 3-6: Historic Fairfax Bridge (K0456) (in front, closed pier)

The bridge is comprised of 15 spans, measuring 2,595 feet in length. Its symmetrical design employs five steel Warren trusses that range from 301 to 474 feet each. From south to north, the Fairfax Bridge consists of three steel wide flange I beams, three simple steel deck

trusses, and one 301' steel simple Warren through trusses all constituting the approach span; three rigid-connected continuous cantilevered steel camelback Warren through trusses channel spans measuring 416, 474, and 416 feet respectively, creating the main span; one 301 foot-long steel simple Warren through trusses; three simple steel deck trusses; and one simple steel wide flange girder approach span. It is supported on two reinforced concrete abutments, wingwalls, eight bents, and six piers. The bridge is 20 feet wide, curb-to-curb, and carries two lanes of one-way traffic.

The bridge was evaluated for its NRHP eligibility in 1996 and is included in *Missouri Historic Bridge Inventory*. Rated with a score of 62, it was considered possibly eligible for its significance as a monumental, multiple-span, steel truss river crossing, a "superlative example of its type," that was among the first of a series of great river bridges for Missouri. More recent evaluations involving the MoDOT and the Missouri SHPO have affirmed the significance of the bridge, recognizing it as a historic property.

Platte Purchase Bridge

Because of its age, the Platte Purchase Bridge was not included in the 1996 *Missouri Historic Bridge Inventory* which only examines bridges and culverts built before 1951. The northbound Platte Purchase Bridge (A0450), as depicted in Figure 3-7, was built as a sister bridge to the Fairfax Bridge in 1957 to increase traffic flow across the river. Despite the twenty-three year gap in their creation, the two bridges appear like twins in scale, form, and materials - their central trusses aligning almost exactly when viewed in silhouette.

Figure 3-7: Historic Platte Purchase Bridge (A0450) (in front, open pier)

Like the Fairfax Bridge, the Platte Purchase Bridge is comprised of 15 spans; however, it is seven feet longer, for a total length of 2,602 feet. Other differences are notable in the approach spans, roadway width, and substructure. The symmetry of the Fairfax Bridge design is echoed by the Platte's composition featuring five steel Warren trusses that range

from 302 to 474 feet each. From south to north, the Platte Purchase Bridge consists of six simple span, steel plate girders; one 302 foot-long steel simple Warren through truss forming the approach span; three rigid-connected continuous cantilevered camelback steel Warren through trusses measuring 417, 474, and 417 feet respectively and creating the main channel span; one 302 foot-long steel simple Warren through truss; and four simple steel wide flange girder approach spans. It is supported on two reinforced concrete abutments, wingwalls, eight bents, and six piers. The bridge is 25 feet 10 inches wide, curb-to-curb, and carries two lanes of one-way traffic. As with the Fairfax Bridge, the Platte Purchase Bridge was designed by Sverdrup and Parcel, Inc., St. Louis, Missouri, and constructed by the Kansas City Bridge Company.

The Platte Purchase Bridge is among eleven surviving Missouri River bridges built during the 1950s. Formerly there were thirteen 1950s-era Missouri River bridges; however, one in North Dakota and one Missouri-Kansas bridge no longer exist. Three of the eleven extant 1950s Missouri River bridges are located in South Dakota; three serve both Nebraska and Iowa; three span the Kansas-Missouri borders, and two are in Missouri. Of these eleven bridges, four are Warren trusses, two of which are known to be historic bridges. The Forest City Bridge, a cantilevered Warren through truss in Dewey County, South Dakota, was erected from 1957 to 1959 and listed on the NRHP in 2001, although it was less than 50 years old at the time of its listing. The Blanchette Bridge in St. Louis, County Missouri, is a Warren through truss erected in 1958 that was determined eligible for listing on the NRHP in 2010. These two historic bridges, recognized for their engineering significance, have characteristics similar to the Platte Purchase Bridge.

Although the Platte Purchase Bridge is not as old and perhaps not as exceptional as the Fairfax Bridge, it is historically noteworthy in its own right. The Fairfax Bridge established the first highway crossing, while the Platte Purchase Bridge expanded the transportation corridor, providing an important auxiliary crossing to accommodate greater traffic and promote the local economy. Removed in time by more than two decades from the initial opening of the Fairfax Bridge, the Platte Purchase Bridge was built during the more prosperous postwar era, yet still depended on funding from sponsors and tolling. The design and construction methods used for the bridge were borrowed from the earlier structure; thus, it was not an innovative, but rather a late example of its type. While it may not rival the early achievements of the Fairfax Bridge, it is MoDOT's opinion that the Platte Purchase Bridge also fulfills NRHP eligibility criteria under Criterion C for its significance in the area of Engineering. Both bridges serve as monumental examples of steel truss construction crossing a major river and their cantilevered, camelback Warren through trusses represent a distinct form.

Like the Fairfax Bridge, the main span length of the Platte Purchase Bridge approaches nearly 500 feet and its overall length exceeds 2,500 feet. Multi-span truss structures like these are becoming rarer as deficient structures age and are candidates for replacement. While a number of major bridges (structures greater than 1,000 feet) exist in Missouri, few cantilever highway trusses over the Missouri River survive in Missouri. According to April 2012 data provided by MoDOT's Bridge Division, there are 27 major through truss highway bridges in Missouri. Fourteen of these bridges cross the Missouri River, nine of which are 50 years old or greater. Without the Fairfax and Platte Purchase Bridges, the list would be reduced to seven major state bridges of this type (through truss Missouri River highway bridges more than 1,000 feet in length built in Missouri prior to 1964). Historic cantilever through truss bridges have been removed in Miami, Hermann, and St. Louis County (the Blanchette Bridge), while the Washington Bridge, the Daniel Boone Bridge in St. Louis-St. Charles counties, and the Amelia Earhart Bridge connecting Winthrop, Missouri and Atchison, Kansas, are slated for demolition.

The Platte Purchase Bridge has been altered little since it was erected in 1957. In 1997, a major rehabilitation project included redecking, new expansion joints, painting, substructure repairs and some structural steel repairs. In 2008, more structural steel repairs of the trusses were needed to combat deterioration. This type of minor rehabilitation involves the addition of steel plates and bolts to select members and their limited applicability does not affect the character-defining features of the bridges. The bridge is considered to retain its historic integrity of location, design, setting, materials, workmanship, feeling, and association, aspects which contribute to its eligibility for listing on the NRHP.

Other Historic and Architectural Structures

Architectural resources within the study area in Platte County, Missouri, other than the Fairfax and Platte Purchase Bridges, are limited and are post-1963. These include a gas line system located on the northwest side of the Missouri River just below the Fairfax Bridge, and Argosy Casino, northeast of the bridges, which was constructed in the 1980s. Neither resource is eligible for listing in the NRHP.

In Wyandotte County, Kansas, all of the identified architectural resources are located within the Fairfax Industrial District. These resources include 10 properties (13 industrial buildings) listed in Table 3-5 - the Union Pacific Railroad, Missouri Pacific Railroad, and a number of petroleum and utility pipelines managed by a variety of national and local supply companies including Magellan, Southern Star, Kansas Gas Company, and the Board of Public Utilities.

While the Fairfax Industrial District is rich in cultural history, the properties that are located within the APE do not appear to be eligible for listing on the NRHP. There are, however, two properties at the edge of the APE that may possess either architectural or historical significance, but would not be adversely affected by proposed project activities. These properties are: the General Electric Corporation Building (3260 7th Street Trafficway; vacant) constructed in 1955 (KS Historic Inventory No. 209-244) and the Permatex Corporation building (3255 Harvester Road; vacant), built in 1954 (KS Historic Inventory No. 209-2453) (see Figure 3-1). The buildings inventoried on these two properties appear to possess architectural and industrial significance and are considered eligible for listing in the NRHP. On March 7, 2013 the Kansas SHPO concurred with MoDOT's determinations of eligibility for the General Electric Corporation and Permatex Corporation properties. Both properties are eligible for listing in the NRHP.

At this time, the eligibility of the Fairfax Industrial District as a historic district has not been evaluated or determined. No historic or architectural properties listed in or determined eligible for listing in the NRHP (other than the two historic bridges) would be affected by the proposed action.

3.10.3 Traditional Cultural Properties

No traditional cultural properties or properties of tribal significance have been identified within or adjacent to the study area.

3.10.4 No-Build Alternative

The No-Build Alternative would keep both historic bridges in place until a time in the future when they would be closed to traffic and may need to be removed for navigational safety reasons.

Table 3-5: Architectural Resources within the Study Area Wyandotte County, Kansas

KS Historic Inventory No.	Address	NRHP Eligibility	Date of Construction	Original Occupant / Current Occupant
7th Street Trafficway				
209-2444	3260	Yes	September 1955	General Electric Corporation / Vacant
209-2443	3299	No	April 1937, January 1960	Mid-West Conveyor Company / Tire Company
209-2445	3327	No	1971	
209-2454	3341	No	1971	
Kindleberger Road				
209-2447	601	No	August 1950	The Peterson Corporation / Dupont
209-2448	700	No	November 1950	PureCarbonic Air Reduction / Shostak
209-2449	720 / 750	No	September 1953	Kansas City Supply Company / Vacant
209-2450	820	No	August 1967	Ceco Steel Products/Office Bldg. / Brown-Strauss Corporation
Harvester Road				
209-2453	3255	Yes	April 1954	Permatex Corporation / Permatex Corporation
209-2454	3341	No	September 1957	Peerless Conveyor Company / Hydraulic Parts and Service
209-2455	3349	No	January 1963	Hudson-Odum Tires / Environmental Solutions, Inc.
Miscellaneous Resources				
	Southern Star (KS) and Southern Star (MO)	No		Southern Star pipe lines are located within the APE on both sides of the Missouri River. May supply KS Gas Service with its gas supply.
	KS GAS Service	No		Local customer service for KS / MO in the greater KC area.
	Rail Road Lines	?		Union Pacific runs parallel to MO River. Missouri Pacific runs horizontally and parallel to industrial Blvd., south of the APE.
	Levee	No	c. 1940s	The historic portion may have been destroyed.
	Drainage lines	No	c. 1920-1940	

SOURCE: Architectural & Historical Research, LLC; February 2013

3.10.5 Alternative 3

Alternative 3 would remove both historic bridges. No archaeological sites would be affected by Alternative 3. Two properties (General Electric Corporation and Permatex Corporation) adjacent to the APE have been determined eligible for listing in the NRHP. No physical changes would be made to these properties, nor to the abutting road network. The roadway approaches leading to and from the new bridge would be designed to tie into the existing grade and alignment of the U.S. 69/7th Street and Kindleberger Road intersection where these properties are located. Because they are adjacent to the APE and within the additional area under evaluation for indirect effects, the Kansas SHPO concurred with MoDOT that they would not be affected by the proposed project. No further coordination or mitigation is required for these properties under Section 106.

3.10.6 Mitigation

MoDOT will develop a Memorandum of Agreement (MOA) to describe the specific mitigation measures to be implemented (a preliminary draft MOA is included in Appendix C). The MOA must be executed before FHWA can finalize the decision document. The MOA would also stipulate the measures to be completed to document both historic bridges. These measures include photo documentation and development of full histories and preservation of original design and construction plans. MoDOT will circulate the MOA for review and signature by the following consulting parties: FHWA, MoDOT, KDOT, Missouri SHPO, and Kansas SHPO.

As part of the mitigation process, MoDOT would market the existing bridges to encourage the relocation and reuse of all or part of one or both historic bridges.

3.11 SECTION 4(f)

Section 4(f) of the DOT Act of 1966 was designed to preserve the natural beauty of the countryside, public park and recreation lands, wildlife and waterfowl refuges, and historic sites. A Section 4(f) eligible property must be publicly owned, except for historic sites, which could be either public or privately owned. Federally-funded DOT actions cannot impact Section 4(f) properties unless there is no feasible and prudent alternative.

Historic Bridges

The Fairfax Bridge and the Platte Purchase Bridge are historic properties eligible for listing in the NRHP. Because any of the Build Options under Alternative 3 would have an "adverse effect" on both of the bridges, a Programmatic Section 4(f) evaluation would be included with the NEPA decision document (see Appendix D).

Historic and Architectural Properties

As presented in Section 3.10.2, two properties adjacent to the APE have been determined eligible for listing in the NRHP. The Build Options under Alternative 3 would result in no effect to these two properties.

Missouri Riverfront Trail

The Missouri Riverfront Trail was developed through an agreement among the city of Riverside, Platte County, Missouri, and the Riverside-Quindaro Bend Levee District. The city of Riverside is responsible for the maintenance and operation of the Missouri Riverfront Trail and the trailhead located just east of the Platte Purchase Bridge (see Figure 3-1). Although the primary purpose of the trail is for public recreation, the city, through coordination with the levee district, can close portions of the trail (by designated zone, see Figure 3-2) to accommodate levee maintenance activities.

On April 24, 2013, the City of Riverside, Platte County, and the Riverside-Quindaro Bend Levee District submitted a letter to FHWA describing the Missouri Riverfront Trail and stating

that the primary use of the trail is for recreation. A copy of the letter is included in Appendix D.

3.11.1 No-Build Alternative

The No-Build Alternative would leave both existing historic bridges in place for a number of years. As their respective conditions continue to deteriorate, both bridges would be closed to traffic. Removal of both bridges would most likely need to occur in the future to maintain safe navigation on the Missouri River. As presented in Section 2.5.1, based on the age and condition of both bridges, continued maintenance and future rehabilitation are not cost effective solutions to maintain their long-term viability to carry vehicular or pedestrian/bicycle traffic. The No-Build Alternative would result in removal of the Platte Purchase Bridge by approximately 2032 and the Fairfax Bridge even earlier.

3.11.2 Alternative 3

Historic Bridges

Alternative 3 would remove both historic bridges. As presented in Section 2.5.1, based on the age and condition of both bridges, continued maintenance and future rehabilitation are not cost effective solutions to maintain their long-term viability, even if it were feasible for them to be adaptably reused to accommodate only bicycle/pedestrian traffic.

It is anticipated that the Fairfax and Platte Purchase Bridges will qualify for Nationwide Programmatic Section 4(f) Evaluation for Historic Bridges. As described under Section 3.10.6 above, a MOA has been developed stipulating the measures to be completed to document both historic bridges as mitigation for the adverse effect determination under Section 106 and the use of both resources under Section 4(f).

Historic and Architectural Properties

Alternative 3 would result in no use under Section 4(f) of the two NRHP-eligible historic architectural properties identified adjacent to the APE.

Missouri Riverfront Trail

The Missouri Riverfront Trail is a recreational facility open for public use. Under all three Build Options, an off-travelway bicycle/pedestrian facility would be provided along one side of the new bridge. This facility would provide connectivity between the Missouri Riverfront Trail and the on-street bike routes designated by the city of Kansas City, Kansas in their *Sidewalk and Trails Master Plan*.

The section of the Missouri Riverfront Trail that passes through the study area (Zone 3 on Figure 3-2) and the trailhead located east of the Platte Purchase Bridge, would need to be closed during construction of the new bridge. This closure would be temporary and would not result in any permanent modification or use of the trail. Alternative 3 would not result in the incorporation of any part of the trail or trailhead into the proposed transportation facility.

To determine the applicability of Section 4(f) use with regards to temporary occupancy of the Missouri Riverfront Trail during construction of the proposed project, all of the following conditions listed in 23 CFR 774.13(d) would need to be satisfied:

(1) *Duration must be temporary, i.e., less than the time needed for construction of the project, and there should be no change in ownership of the land* - Depending on the Build Option selected and the construction method proposed, Zone 3 of the Missouri Riverfront Trail and the trailhead would need to be closed to recreational use when construction was occurring at the north end of the study area. This would include, but not be limited to construction of the north bridge abutment, construction of bridge piers and the bridge deck in proximity to the Riverside-Quindaro Bend Levee, during paving of U.S. 69, and during construction of the Argosy Parkway realignment (Build Options 3A and 3B2). Depending on the construction schedule, it may be possible that closure of the trail could coincide with the winter season and would have less of an effect on trail users. Zone 3 of the trail and the trailhead could potentially remain open during the rest of the construction process.

(2) *Scope of the work must be minor, i.e., both the nature and the magnitude of the changes to the Section 4(f) property are minimal* – no permanent physical changes to the trail would occur as a result of the project.

(3) *There are no anticipated permanent adverse physical impacts, nor will there be interference with the protected activities, features or attributes of the property, on either a temporary or permanent basis* – The city of Riverside and the Riverside-Quindaro Bend Levee District work together to accommodate levee maintenance activities by closing the trail by zone. Closing of the trail for construction of the proposed project would not differ from the process use to close it for levee maintenance and during major flood events. The remainder of the Missouri Riverfront Trail and other connecting trails in Riverside as well as access to neighboring E.H. Young Riverfront Park would not be affected by the construction of the proposed project. A temporary trail access could be established west of the study area at the Horizons Parkway roundabout south of I-635. Once completed, the proposed on-bridge bicycle/pedestrian facility would benefit the developing trail systems of both the cities of Riverside and Kansas City, Kansas by connecting the two trail systems and serving as a linkage to other recreational areas on both sides of the river.

(4) *The land being used must be fully restored, i.e., the property must be returned to a condition which is at least as good as that which existed prior to the project* – Any disturbance of the trail surface, trailhead area, or levee surface would be restored to pre-project conditions following completion of the proposed project.

(5) *There must be documented agreement of the official(s) with jurisdiction over the Section 4(f) resource regarding the above conditions* – The city of Riverside, Platte County, and the Riverside-Quindaro Bend Levee District submitted a letter to the FHWA on April 24, 2013 (see Appendix D).

Based on the above analysis, the proposed project would not result in a temporary use of the Missouri Riverfront Trail under Section 4(f). The design and construction of the selected alternative would include all reasonable measures to minimize harm to the Missouri Riverfront Trail.

3.12 VISUAL RESOURCES AND EFFECTS

This section describes the visual characteristics and aesthetic resources within the study area, the visual quality, and the potential viewers affected by the proposed project.

Existing Visual Environment

The study area is located in the Missouri River floodplain, within the developed area of the Kansas City metropolitan region. The existing bridges are through-truss designs, with the bridge structure extending approximately 60 feet above the roadway. The visual environment of the surrounding area varies from the fully developed Fairfax area to the south, to the undeveloped Missouri River riparian corridor, parkland, agricultural, and developing areas to the north.

Visual Assessment Units

The visual impacts of a project may be quite varied in different areas of a project corridor because the areas themselves can be visually distinct, can exhibit unique and consistent visual characteristics, and can possess varying degrees of visual quality. The study area was divided into separate visual assessment units where visual characteristics are consistent and provide a uniform visual experience, as described in the box at the right.

The boundaries of these areas occur where there is a change in visual character, and the strongest determinations of these visual boundaries are topography and landscape components.

Visual Quality Rating

The quality of the visual environment can be collectively defined using the attributes of vividness, intactness, and unity.

- **Vividness** – the relative strength of the seen image
- **Intactness** – the visual integrity of the natural or man-made landscape and its freedom from encroaching elements
- **Unity** – the overall visual harmony of a composition and the degree to which the various elements combine in a coherent way

The visual quality rating is scored low, moderate, or high. Utilizing these attributes, each of the visual assessment units described at the right were analyzed to determine a visual quality rating as shown in Table 3-6.

The following visual assessment units were identified in the vicinity of the proposed project based on the presence of major topographic features and landscape components:

Fairfax Industrial District – This industrial area, in Kansas City, Kansas is located in the Missouri River floodplain and bounded by the Missouri River on the north and east and by bluffs on the southwest. It is characterized by older light to heavy/general industrial buildings, storage yards, and railroad tracks.

The Argosy Casino Area – The Argosy Casino area is located north of the Missouri River and east of U.S. 69 and I-635. It is characterized by a multi-story hotel and casino structure, surface and garage structure parking, and extensive landscaping.

The Missouri River – The Missouri River is contained by levees along both north and south banks and is crossed by the existing U.S. 69 bridges. The water surface is approximately 870 feet wide. The north bank is characterized as wooded (riparian). The Missouri Riverfront Trail is located along the top of levee on the north side of the river. The 3.5-mile long trail runs from the E. H. Young Riverfront Park, west to the Riverside/Parkville City boundary.

Riverfront Park Area – E. H. Young Riverfront Park is located on the north side of the Missouri River and east of the Argosy Casino. The park is characterized by grassed open areas, walking trails, play equipment, an amphitheater, and a baseball field.

I-635 Corridor Area – I-635 is located to the northwest of the study area and crosses the Missouri River approximately 2.5 miles to the west of the U.S. 69 crossing. The I-635 Corridor in the vicinity of the study area is characterized by the divided four-lane roadway which is elevated above the surrounding floodplain area.

Table 3-6: Visual Quality and Visual Receptors

	Visual Assessment Units	Visual Quality Rating	Relative Concentration of Sensitive Receptors
1	Fairfax Industrial District	Low	Low
2	The Argosy Casino Area	Moderate	Moderate
3	The Missouri River	High	Low
4	Riverfront Park Area	High	Moderate
5	I-635 Corridor Area	Moderate	Moderate

SOURCE: URS Corporation, 2013

Visual Resources

There are several visual resources within the study area that are scenically significant and contribute to the visual identity of the environment. The most notable natural scenic area is the Missouri River. The water surface and adjacent riparian wooded areas provide a sharp contrast with the character of the urban environment. Other notable visual resources located in the viewshed of the study area include natural or landscaped areas such as E.H. Young Riverfront Park and the exterior landscaped areas of Argosy Casino. In addition, the built environment can also provide aesthetically pleasing visual resources, including the historic Fairfax and Platte Purchase Bridges.

Visual Impacts

Visual quality impacts are determined by the degree of change in the visual environment as related to viewer response. There are two distinct categories of viewers, or viewer response, to be considered: (1) viewers who are users of U.S. 69 and who have views of the surrounding environment (i.e. views *from* the bridge); and (2) the "visual receptors", or people who can observe the highway and bridge from an adjacent vantage point (i.e. views *of* the bridge). The most sensitive visual receptors are those individuals in residential areas who would have the potential for undesirable views of the bridge. Views of the bridge are usually not undesirable to commercial and industrial receptors. In addition, roadway encroachments have the potential to negatively affect the visual quality of the surrounding environment if a high degree of change occurs to a high quality environment. Although the notable visual resources within the study area possess the high visual quality that provides scenic viewing opportunities for users of the bridge (views *from* the bridge), those resources are also potentially sensitive to the visual impacts resulting from encroachment of the roadway.

3.12.1 No-Build Alternative

Under the No-Build Alternative the existing bridges, highway and street facilities, and surrounding built-up and natural areas would remain. Therefore, the No-Build Alternative would not physically alter the existing visual environment, views *of* the bridge or views *from* the bridge for the near term. In the future, both existing bridges would be closed to traffic. At that time the bridges would be removed and either replaced with newer, and most likely less architecturally detailed structures.

3.12.2 Alternative 3

The visual impacts would be similar for any of the Build Options.

Views of the Bridge and Visual Quality - The Build Options would most likely result in a moderate visual change in the environment with replacement of both large metal truss bridges with a new, low profile bridge with no structural elements above the roadway. As an example, a low-profile, girder-type structure has typically been an economical solution for bridges in the range of span length needed for this crossing. This bridge style could be considered less visually imposing than the existing Fairfax and Platte Purchase Bridges. Modification of the bridge approaches and adjacent roadways needed to accommodate the Build Options would result in minimal visual change. The new bridge would remain a dominant visual structure in the area as the single feature spanning the Missouri River.

Views from the Bridge - views from the new bridge would remain relatively unchanged. The new bridge would most likely be a less visually pronounced bridge type that would provide a more open view of the surrounding landscape.

3.12.3 Aesthetic Considerations, Visual Enhancements, and Mitigation

As final bridge and roadway design plans are developed, MoDOT would give consideration to baseline aesthetic applications that enhance the project design but that also represent a minimal cost to the project, can be reasonably maintained, and do not compromise safety. MoDOT would coordinate with stakeholders, such as the city of Riverside and the Unified Government, to identify applications that would blend with the character of the area and reflect the natural and cultural values of the communities served by the bridge.

Decorative bridge features and finishes, pedestrian railings, aesthetic lighting, paving, and other potential elements and amenities may be given consideration by MoDOT. These design elements could also be used to further distinguish the off-travelway bicycle/pedestrian facility from the vehicular portion of the bridge. These types of aesthetic applications would require funding and/or maintenance support from the stakeholders and would require development of an agreement between the stakeholders and MoDOT.

3.13 HAZARDOUS MATERIALS AND WASTE SITES

A database search, field reconnaissance, and review of historical aerial photographs were performed to identify potential hazardous material/waste sites and to evaluate the likelihood of soil and/or groundwater contamination within the study area. Additional information on the search is provided in Appendix E-4. Historically the Missouri portion of the study area was undeveloped because it was in an area prone to flooding. However since construction of the levee system, development has started to occur in this area. Given this recent history of development there is less potential for historical contamination issues.

The Kansas portion of the study area is located in a section of Kansas City, Kansas that has a long history of industrial use. Many of these industries are of environmental concern due to documented environmental contamination and/or the length of time they have been engaged in activities that may have used hazardous materials and/or produced hazardous wastes during a time period when there was little or no regulation of such materials/wastes. In addition, the hydrogeologic regime of the study area and surrounding area is dynamic. Changes in direction of groundwater flow, quality, and composition is common. Because of the dynamic nature of the hydrogeologic regime, spills and leaks of potentially hazardous materials from off-site sources have the potential to contaminate underlying groundwater resources.

A field reconnaissance, limited to a "windshield" survey, was conducted to identify potential sites of concern that may not have been listed in the database report, plus verify select site

locations judged to have moderate to high potential for environmental contamination. Properties were not accessed and no interviews were conducted with owners or operators during the field reconnaissance.

Potential Sites

The results of the database search, historical reviews, and field reconnaissance were used to prioritize the likelihood of soil and/or groundwater contamination present on or in the study area. Priorities were assigned based on the following definitions:

"**None-to-Low**" – After a review of available database information, there is no indication that the proposed project would impact the site. It is possible that potential contaminants could have been generated or handled on the site; however, all information indicates potential impact to a proposed alternative would be minimal. These sites include things such as Resource Conservation and Recovery Act (RCRA) small quantity generators or UST sites for which releases of hazardous constituents have not been documented.

"**Low-to-Moderate**" – These sites include any former or current operations identified as large quantity hazardous waste generators. Also included in the category are locations where releases of hazardous materials or petroleum products have been reported and remediation has been completed. These sites include leaking UST sites that have been listed in the database as closed following completion of remediation.

"**Moderate-to-High**" – A review of available information indicates that known soil and/or groundwater contamination is present and that the site is either undergoing remediation or continued groundwater monitoring. Additional sites may include unmappable sites in close proximity of the study area listed in the database search. Further assessment would be required if a "Moderate-to-High" priority site is affected by the selected alternative to determine the actual presence and/or levels of contamination, the contaminated medium and the need for mitigation/remediation. Actual physical assessment would not begin until the final selected alternative is defined.

At least 17 sites were identified during the government database search as having a "Moderate-to-High" potential for contamination in the vicinity of the study area. These sites primarily consist of industrial or ancillary facilities and are located further away from the study area. However, as previously mentioned the hydrogeologic regime of the study area and surrounding area is dynamic. Changes in direction of groundwater flow, quality, and composition is common. Because of the dynamic nature of hydrogeologic regime, spills and leaks of potentially hazardous materials from off-site sources have the potential to contaminate groundwater resources underlying the study area.

In addition to sites and properties with potential contamination, both existing bridges could contain lead-based paint or asbestos-containing materials that would need to be identified and assessed to determine their impact on the environment prior to removal of either structure.

3.13.1 No-Build Alternative

No construction would occur and no new right-of-way would be acquired under the No-Build Alternative. Therefore, the No-Build Alternative would not affect potential hazardous waste sites. Eventual closure and removal of both existing bridges would require evaluation of the potential presence of lead-based paint and/or asbestos containing materials prior to demolition of the bridges. These materials, depending on their condition and quantity, would need to be removed and disposed of according to current regulations and MoDOT/KDOT procedures as described under Alternative 3.

3.13.2 Alternative 3

Six sites were identified by the database search as being located within the study area (see Table 3-7). Three of the sites ranked "Moderate-to-High" to indicate those with a past or present use with the potential for hazardous materials or waste contamination of soils and possibly groundwater.

Because the southern portion of the study area has a long history of industrial land use, soil and groundwater contamination may be present in that area. Encountering soil and groundwater during construction without prior knowledge can affect the project in terms of cost, schedule, and agency and public relations. In addition, acquisition of properties with contaminated soil and groundwater can lead to liability concerns related to remediation of those properties. Minor variations in the alignment of the selected Build Option made during final design could avoid some of these sites; however, many of them could require further investigation to evaluate potential contamination of soils or groundwater.

Table 3-7: "Moderate-to-High" Rank Potential Hazardous Waste Sites

Site ID	Site Location	Federal/State Program List	Comments	Potential for Impacts
Grief Brothers Corp.	3341 N. 7th Street Trafficway, Kansas City, KS	RCRA-NonGen FINDS	Small quantity generator in the past; no evidence of current activity and no recorded violations.	None to low potential
Shostak Iron and Metal Co.	700 Kindleberger Road, Kansas City, KS	RCRA-NonGen FINDS	High potential for metals contamination of surface soils.	May affect Build Option 3A
Fairfax Levee	Missouri River east of Fairfax Bridge, Kansas City, KS	KS SHWS	Past spills, cleanup completed to standards of the time (1986). No evidence of current activity.	None to low potential
Union Pacific Railyard	South side of Fairfax Levee, Kansas City, KS	None	Potential for unreported spills and/or chemicals present on the site due to railroad operations (e.g., greases and oils, creosote, herbicides, etc.)	May affect any of the Build Options
Magellan Petroleum Pipeline	South of, on and north of Platte Purchase Bridge, Kansas City, KS/Riverside, MO	KS SHWS	Potential leaks and subsurface petroleum contamination.	May affect any of the Build Options
Doepke Fairfax	7th Street and Missouri River, Kansas City, KS	CERCLIS	Outside of study area	None to low potential

NOTES:
CERCLIS = Comprehensive Emergency Response, Compensation, and Liability Information System, SUPERFUND
FINDS = Facility Index System
NFRAP = No Further Remedial Action Planned under the Comprehensive Environmental Response, Compensation, and Liability Act CERCLA
SHWS = state hazardous waste site
SOURCE: URS Corporation, 2013

If acquisition of properties or rights-of-way from properties of environmental concern cannot be avoided, MoDOT may conduct additional sampling and testing of soils within the

proposed footprint of the selected Build Option to determine the level of contamination and any required remediation. The remediation or "clean-up" would be required to bring the contamination levels within the soil (or groundwater) to levels acceptable to the MDNR/KDHE for proper site closure and follow-on use as public right-of-way.

Regardless of the Build Option selected, an environmental contractor should be used to excavate areas of potential contamination that are within the project footprint. This process would allow any contamination encountered to be characterized, removed, treated, and buried or contained by trained professionals following applicable regulations prior to initiating roadway construction. The level of impact to a potentially contaminated site will depend on the type and amount of excavation and the final design of bridge footings and foundations and/or roadway embankment. The worst case scenario would be where excavation takes place in areas of known contamination and/or where contamination is indicated by the soil odor and/or color. Such excavated soil would need to be sampled and disposed of off-site. At this time, the type of construction and mitigation needed to limit impacts to any area of contamination is unknown. Remediation activity may be warranted in the future if it is determined that the project has negatively impacted any potential contamination. The type of remediation will be determined at that time.

If any additional regulated solid or hazardous wastes are found during construction activities, the MoDOT Project Director will direct the contractor to cease work at the suspect site. The Project Director will contact the appropriate environmental specialist to discuss options for remediation. The environmental specialist, the Project Director 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/or KDHE and the U.S. Environmental Protection Agency will be contacted for coordination and approval of required activities

Demolition of both existing bridges would require evaluation of the potential for the presence of lead-based paint and/or asbestos containing materials prior to demolition of the bridges. 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. MoDOT/KDOT will ensure that asbestos-containing materials, depending on their condition and quantity are removed and disposed of according to current regulations and procedures. No paint will be removed from the existing bridges prior to demolition.

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 and KDHE 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.

3.13.3 Mitigation for Hazardous Material Impacts

The preferred mitigation measures for these sites would be avoidance. However, in the event that these sites could not be avoided and contamination was proven to be present, MoDOT or KDOT would negotiate cleanup responsibility with the current owner. Negotiations with the current owner and any investigative or remedial activities would be coordinated with the MDNR's Hazardous Waste Management Program or KDHE's Bureau of Waste and

would comply with all EPA requirements. If any hazardous waste sites are encountered during the construction process, they would be dealt with in accordance with appropriate state and federal regulations.

3.14 GEOLOGY AND SOILS

The study area is located across the Missouri River floodplain, which is underlain by alluvial deposits along with shale, limestone, and sandstone bedrock, approximately 100 feet from the surface. The alluvial deposits were formed by the meandering river. No mines, caves, or sinkholes are present or mapped within or immediately adjacent to the study area. No quarries or sand/gravel operations are located within or adjacent to the study area.

Data gathered from the Natural Resources Conservation Service soil survey maps (2012) for Platte and Wyandotte Counties reveals that the same or similar soil deposits are located beyond the levees on both sides of the river. These landward areas are dominated by Hanie silt loam, Leta silty clay loam, Waldron silty clay loam, and Onawa soils that are all relatively flat (slopes 0 to 2 percent) and are occasionally flooded.

3.14.1 No-Build Alternative

No soils disturbance would occur until the time when the bridges would need to be removed. Surface soils would be disturbed along the river banks to access the bridge piers and foundations. The bridge piers would be removed to below grade within the floodplain areas and within the river channel. The foundations down to bedrock would remain in place. Impacts to soils, especially erosion and sedimentation, would be short-term during bridge demolition and would be managed through the implementation of Best Management Practices, where feasible.

3.14.2 Alternative 3 Build Options 3A, 3B1, and 3B2

Construction of new bridge abutments and piers and realignment of Argosy Parkway (Build Options 3A and 3B2) would disturb soils. Topsoil would be removed and stockpiled in an upland area while grading and other construction activities take place. The topsoil would be replaced at finish grades near the end of the construction process. The existing bridge piers would be removed to below grade within the floodplain areas and within the river channel. The foundations down to bedrock would remain in place. New bridge foundations would be constructed on bedrock using drilled shafts or some other reasonable method. Sediments from the river bottom would be removed during construction of the foundations and piers. The sediments would be loaded on a barge and transported to a designated spoil location in an upland area. Short-term soil erosion would be managed through the implementation of Best Management Practices, where feasible, as described in Section 3.15 Construction Impacts.

3.15 CONSTRUCTION IMPACTS

3.15.1 No-Build Alternative

The No-Build Alternative would have no construction impacts initially since it would involve no new construction. However, over time, there would be increased maintenance to keep the 55-year-old Platte Purchase Bridge in service. The Fairfax Bridge has reached the end of its useful life and would be closed in the very near future. Bridges of this age have the potential for increased maintenance activities and unexpected repairs that would temporarily close the bridges and hinder traffic flow in the short term. Even the continued, routine upkeep and rehabilitations could cause more delays over the next few years than the other options that would construct a new bridge. Short-term impacts such as noise, dust, and pollutant discharges from maintenance activities associated with the No-Build Alternative would be mitigated in a similar manner to those for Alternative 3, as described below.

3.15.2 Alternative 3

All of the Build Options would result in short-term and temporary impacts due to construction activities. These would include increases in noise, dust, and pollutants discharged by construction equipment. It would also include impacts to motorized and non-motorized traffic, and to businesses in the area in terms of circulation and temporary impacts caused by access modifications and detours.

Traffic Control/Detours

Regardless of the Build Option selected, both bridges could be closed in order to expedite construction.

Constructing a new bridge would have some impact on local traffic in the immediate area as the contractor's personnel work around the project site. Additional traffic would be generated by delivery of materials to the project site. Vehicles bringing materials in and out would add to the existing traffic. A Traffic Management Plan would be developed as part of the final design activities during project design. A Traffic Management Plan defines a set of coordinated traffic management strategies to manage the work zone impacts.

As outlined in the Traffic Management Plan, proposed strategies for managing traffic on this project would include staging construction to impact traffic as little as possible, conducting active public information and outreach, scheduling high-impact work for hours of off-peak traffic, installing temporary traffic control devices, and possibly enlisting the help of law enforcement for additional traffic control, if necessary.

Temporary detours and local roadway closures would be necessary to facilitate construction of the approach roadways and to make connections to the existing roadway network. Traffic along Argosy Parkway would need to be re-routed to realign Argosy Parkway under the north end of the new bridge. Because there are a number of alternate routes in the vicinity of the project, maintaining access during construction could be accommodated with minimal disruption. Traffic along U.S. 69 would be rerouted to I-70 to the south and to Kansas Route 5 and I-635 to the west to cross the Missouri River. Using I-635 as an alternate route would add approximately four miles and ten minutes travel time for trips between Riverside and Fairfax depending on the origin/destination and time of day. Similarly, an I-70/U.S. 169 detour would add approximately seven miles and 25 minutes for trips between Riverside and Fairfax depending on the origin/destination and time of day.

The extent of the closures that would limit traffic on the existing bridges would be established during final design and described in the Traffic Management Plan. Factors that would affect the ability to maintain traffic during construction include the ultimate alignment of the new bridge, approach roadway connections, pier locations and configurations, and logistics related to utility relocations.

If the construction sequencing for a new bridge makes it feasible to maintain at least one of the existing bridges open to traffic, there are several possibilities for its use to carry traffic. Depending on which bridge is removed, the northbound or southbound traffic could be left open during all of the bridge construction, and would not be disrupted until the roadway work conflicted with existing clear zones. An alternative to this could maintain both directions of traffic on one of the bridges with one lane in each direction. This would require building sections of temporary roadway or "shooflies" so that the existing roadway ties into the remaining bridge for northbound and southbound traffic.

MoDOT and KDOT deploy proactive communications to the public through a variety of tools including web-based applications, intelligent transportation systems applications, and other conventional media outlets. MoDOT also publishes construction-related news releases and information on its web site at www.modot.org for those who have Internet access. Work

zone impacts and issues would vary through the different stages of construction, making these timely announcements a valuable part of the Traffic Management Plan.

Air Quality

Air quality concerns associated with bridge construction typically arise from the operation of construction equipment such as barges and cranes. Similarly, equipment such as bulldozers, haul trucks, and pavers are used in the construction of the roadway approach to the bridge. All of these types of equipment use diesel engines that put out exhaust gases similar to those from commercial river barges and over-the road trucks. The level of contaminants in the exhaust can vary greatly depending on the condition of the equipment, thus making it important to keep equipment in good operating condition. Emissions from construction equipment would be controlled in accordance with emission standards prescribed under state and federal regulations.

Materials resulting from clearing and grubbing, demolition, or other operations (except materials to be retained) would be removed from the project site and disposed of by a licensed contractor at a construction landfill. No open burning of trees, brush, or other waste would be permitted. The contractor may attempt to harvest any marketable timber, use mulched timber for erosion control, and compost excess mulch. Man-made waste must be hauled to a licensed landfill.

Under dry conditions, heavy traffic or strong winds can cause dust from the soil itself to become airborne (fugitive dust), resulting in air quality impacts. Contractors are required to control this fugitive dust to keep it from leaving the project limits. Watering the ground or using dust-retarding chemicals and washing vehicles prior to leaving the construction site may be used to reduce the generation and transport of fugitive dust. All methods must comply with applicable federal, state, and local laws and regulations.

Noise

One the most noticeable types of noise generated during construction would be during the installation of steel piles, which require the use of a pile driver. The noise from driving piles would be heard along the river adjacent to the bridge. Pile-driving activity would be relatively short in duration, lasting days or weeks until the work is completed, and would not occur at night. Noise could also be expected from the operation of equipment such as cranes, bulldozers, front-end loaders, scrapers, and other typical earth-moving equipment. To reduce the impacts of construction noise, MoDOT would include special provisions in the construction contract requiring that all contractors comply with all applicable local, state, and federal laws and regulations relating to noise levels permissible within and adjacent to the project construction site. Construction equipment would be required to have noise-reducing mufflers in accordance with the equipment manufacturer's specifications.

Use of explosives could be expected for demolition of the trusses and bridge piers. These blasts would be expected to be limited in number and would be scheduled for daytime occurrence to avoid disrupting residential night-time quiet.

Water Quality

Preventing water quality impacts on a major bridge project presents some slightly different challenges than a road construction project. Controlling erosion during construction of the roadway approaches is certainly important but work in the Missouri River itself must be given special attention. Bridge construction uses barges and when the water level drops too low, the area adjacent to the work platform may be dredged to maintain access for the barges. Any dredged material would be disposed of in an upland location off MoDOT right of way. All necessary measures to control turbidity would be undertaken.

The MDNR regulates the control of runoff from land disturbance and issues a permit for the work to MoDOT, not to the contractor. Erosion control measures must be put in place before land clearing begins. As discussed earlier in Section 3.6, MoDOT's Pollution Prevention Plan provides for temporary erosion and sediment control measures that would be included within construction contract specifications. Careful refueling practices would limit spills of gasoline and diesel fuels. Oil spills can be minimized by frequent checks of construction equipment. At a minimum, the following measures would be included in the SWPPP:

- 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. Clean-up any such spills that occur within 1,640 feet (500 m) of any stream within 24 hours of the spill to prevent the possibility of pollution due to runoff.
- 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.
- Reseed all areas within the project limits denuded of vegetation as a result of construction activities.
- Protect wetlands in the project vicinity from activities that may result in draining or filling them.
- Per project permits, excavate, dredge, and fill in the watercourses in a manner that will minimize increases in suspended solids and turbidity.
- Immediately remove and properly dispose of all debris during every phase of the project in order to prevent the accumulation of unsightly, deleterious, and toxic material in or near area waterbodies.
- Avoid disposing of any construction debris or waste material below the OHWM of any waterbody or at any location where the material could be introduced into the water or an adjacent wetland because of run-off, flood, wind, or other natural forces.

Impacts to Floodplains/Floodways and the Existing Levee System

Several construction techniques could be utilized which impact parts of the study area. Impacts to the navigation channel and the levee systems are of particular concern. Temporary measures used for the construction of a Missouri River bridge of this type may include the following:

- Cofferdam construction may be proposed for pier foundations in the river channel. Cofferdams are generally constructed using steel sheet piling, and then excavated and dewatered to allow for concrete construction in dry conditions. Cofferdams are removed after completion of pier construction.
- A temporary causeway may be proposed towards the river channel from either bank. Causeway construction is often used when piers are required in shallow conditions near the bank, making barge operation difficult.
- Temporary supports such as pile bents may be proposed in the navigation channel to support girder erection in stages. Close coordination with the USCG would be required.
- Pier construction in the vicinity of the levee system would likely require contingency for emergency backfill in the event of flood conditions. In addition, impacts to critical elements of the levee system such as the landward drainage system or relief wells should be minimized. Excavated construction in the vicinity

of the levee would require strict backfill measures to restore the system to its original condition.

- Construction access may be permitted on the levee road(s); however, because of the steep incline up and over the levee, additional material may be required to safely haul equipment used for construction. Additional material placed against the levee would be placed to avoid compromising the integrity of the levee system.
- Construction staging areas may be proposed on the riverward, or more likely, the landward side of either levee. Any staging area used in the vicinity of a seepage berm would not disturb the impervious blanket, and the area would be restored to its original condition after use as a staging area.

Visual Effects

During construction of any of the Build Options, both views *of* and *from* the facility would be temporarily degraded due to the construction activities such as earth moving, roadway and bridge demolition, and roadway and bridge construction. The length of duration and the severity of these temporary visual impacts would vary depending on the Build option selected.

Railroad Coordination

The Union Pacific Railroad passes under the existing and proposed bridges on the south side of the river. MoDOT would coordinate with the railroad to work around their train schedule. Construction of bridge piers nearby would require flaggers during construction operations. All flagging costs would be borne by MoDOT/KDOT. To avoid interrupting train traffic, the bridge contractor would coordinate with the railroad to schedule setting girders and handling other materials over the railroad tracks. It is not anticipated that rail traffic would be affected by construction, although railroad company flagmen would be on-site whenever there is active construction on railroad right-of-way.

Utilities

A variety of petroleum, natural gas, and communications facilities rely on the existing bridges to cross the Missouri River. There are additional distribution and pressure regulating stations in the immediate vicinity of the existing bridges and roadways.

According to the utility operators, most of the existing facilities serve as critical components to the regional and cross-country transmission and distribution of their respective products. The demolition of both bridges would require these utilities to either relocate to the new bridge, or cross beneath the river. Because of the critical function of these utilities, the relocations must be closely coordinated with the demolition of the existing bridges and construction of the new bridge to minimize disruption of service. The gas and pipeline companies indicated that they could tolerate short outages (two to three days at the most) to accommodate construction and relocation. Winter is a critical time due to higher product demands.

The utilities that are affixed to the existing bridges are allowed under permit from MoDOT, and the associated costs of their relocation would be borne by their respective owner/operators. Regulating and distribution stations are sited on dedicated easements so the costs related to any adjustments or relocations of those facilities would be a direct project cost.

Borrow and Waste Sites

All suitable materials removed during excavation shall be used as far as practicable in the formation of bridge and roadway embankments, subgrade, shoulders, and other locations requiring fill as directed on the construction plans. No excavated materials shall be wasted

without permission, and when such material is to be wasted, it shall be so placed that it would present a neat appearance and not be injurious to abutting property. The construction plans may designate certain materials to be excavated and stockpiled for a specific purpose or for future use. It is the Contractor's responsibility to make use of all available suitable excavation material within the limits of the project.

All waste and borrow areas would be identified by the Contractor. The use of borrow pits or waste areas, other than shown on the construction plans or designated by the Field Engineer, may be approved, provided the material and area is satisfactory. The Contractor shall furnish the Field Engineer a copy of the agreement with the landowner for use of the property as a borrow or waste area. The agreement shall contain stipulations about temporary seeding and water pollution control to be implemented during construction. Approval of borrow or waste sites is also contingent upon receiving appropriate wildlife and/or archaeological clearances.

In the event the Contractor's excavation operation encounters remains of a prehistoric site or artifacts of historical and/or archaeological significance, all construction activities shall be temporarily discontinued. The Field Engineer will contact the MoDOT Design Division Environmental Section or KDOT's Bureau of Design, Environmental Services Section to determine the disposition of the discovered artifacts. When directed by the Field Engineer, the Contractor shall excavate the site in such a manner as to preserve the artifacts encountered and the archaeologist or his/her representative shall remove the artifacts for delivery to the custody of the proper state authority.

3.16 INDIRECT AND CUMULATIVE IMPACTS

Indirect impacts are caused by implantation of a project but occur later in time or are outside of the project boundaries (e.g., changes to surface water flow to wetlands, or development of a gas station near a new highway interchange). The Council on Environmental Quality defines cumulative impacts (40 CFR 1508.7) as *The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.*

3.16.1 Indirect Impacts

The proposed projects would be consistent with the current comprehensive plans of the cities of Riverside and Kansas City, Kansas. On-going development of the Riverside Horizons Development fosters economic development on both sides of the river and the Kansas City region. Additional phases of the development would attract additional businesses to the area. Development and redevelopment of parcels within Fairfax would also continue. The Revitalizing Auto Communities Environmental Response (RACER) Trust continues to work towards redevelopment of a 74-acre parcel formerly used by General Motors. Additional plans are also under development to provide additional warehousing and manufacturing space within Fairfax. Improvement in the reliability of this river crossing would support these on-going development and redevelopment efforts.

Research and empirical evidence support the theory that economic development follows significant transportation and access improvements; however, the proposed project does not introduce a new transportation facility or corridor into the region, and will not provide any new access. The proposed project would reduce the uncertainty travelers and businesses would have of "is the bridged closed today", which could influence a business's decision to locate or expand within the area. The planning authorities have been involved in the project development and they support the proposed replacement of the Fairfax and Platte Purchase Bridges. Comprehensive plans and any future planning and zoning

ordinances would continue to serve as the appropriate mechanisms to guide land use and development.

There would be both immediate and long-term potential economic impacts around the study area. Immediate, positive economic impacts would occur during the time required for property acquisition and design and construction of the roadway. These would be generated by the work and incomes provided by construction. In addition to the jobs supported by the direct infusion of construction dollars into the local economy, there would be the secondary effect of those dollars in the economy and the increase in tax monies received.

3.16.2 Cumulative Impacts

Placing new bridge piers in the river could contribute to cumulative negative effects on the habitat of some species of fish that live in the Missouri River; but these effects are anticipated to be minimal. Both MoDOT and KDOT have Pollution Prevention Plans, which describe erosion control practices that will be implemented for the project. Given the existing Missouri River natural sediment load and contributions from agricultural runoff, river dredging, and other developments, the sediment contribution from the project is expected to be minimal. MoDOT and KDOT will implement Best Management Practices to minimize off-site transport of sediment. The implementation of these practices should afford adequate protection to sensitive aquatic resources in the Missouri River and minimize this project's contribution to any potentially negative cumulative impacts associated with sedimentation. The use of cofferdams during pier construction will further minimize sedimentation from this project.

The construction of Alternative 3 would contribute to the cumulative loss of riparian and wetland habitat. Because of the very limited and relatively low-quality habitats present within the study area, their loss would not contribute to the overall degradation or fragmentation of habitats within the region. Much of the on-going and planned development is occurring in areas already disturbed and dedicated for development and are not contributing to habitat loss. The floodplains in the vicinity of the project are also occupied by levees which limit the types of vegetation communities managed in these areas in order to maintain the integrity and function of the levee system. Cumulative effects on riparian communities, wetlands, and floodplains are not considered to be substantial.

Many of the bridges along the Missouri River were constructed during the 1920s through the 1950s. These bridges were designed with truss structures to allow the lengthy spans needed to bridge the navigation channel of the Missouri River. Due to the ages of these bridges and their individual significance, many have been listed or are eligible for listing on the NRHP. However, many bridges that have been listed may be functionally obsolete or structurally deficient. The higher volume of traffic, as well as the heavier loads that trucks are carrying today, far exceed the loads for which these bridges were designed. In addition, the aging steel structures may need substantial repairs to prolong functional life. Most of these truss bridges were built with narrow traffic lanes and do not have shoulders. Modern traffic requirements call for wider lanes, separation between opposing traffic, and shoulders to accommodate disabled vehicles. Widening an existing truss bridge is typically not economically feasible. For these reasons, many of these Missouri River bridges are being replaced.

Bridges are also limited in the ways that they can be adaptively re-used. Larger bridges are more difficult to adapt for re-use. It is often prohibitively expensive to repair or rehabilitate a bridge for non-vehicular use or to move to another location. Therefore the aging Missouri River bridges, like the Fairfax and Platte Purchase, are likely to be demolished. The removal or replacement of these bridges would lead to a cumulative impact to a cultural resource. Overall, no significant cumulative effects are anticipated as a result of implementation of the proposed project.

Chapter 4
Commitments

4.1 PROPOSED PROJECT COMMITMENTS

The Alternative 3 Build Options have identical commitments in this document. The following is a compiled list of MoDOT's and KDOT's proposed project commitments. MoDOT and KDOT 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 and KDOT will acquire all properties needed for this project in accordance with the Uniform Relocation Assistance and Real Property Acquisition Act of 1970 as amended (Uniform Act; 42 U.S.C 4601), and other regulations and policies as appropriate. MoDOT and KDOT will implement their respective Pollution Prevention Plans to prevent or minimize adverse impacts to streams, water courses, lakes, ponds, or other water impoundments within and adjacent to the project area.
- Construction will be conducted so as not to unreasonably interfere with free navigation of the waterway or impair the present navigable depths of the Missouri River.
- 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 the existing bridge is demolished during the supported navigation season, commercial use of the river in the vicinity of the bridge would be slowed during demolition, but use of the navigation channel will only be restricted for a 24-hour period while the span is salvaged.
- MoDOT will complete wetland/waters of the U.S. field delineations and obtain jurisdictional determinations 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.
- The Alternative 3 corridor will be evaluated during the design phase and if suitable roost trees for Indiana bats are present and need to be removed for construction, MoDOT/KDOT will only allow clearing of potentially suitable roost habitat between November 1 and March 31.
- MoDOT will implement mitigation agreed upon in the Memorandum of Agreement among the FHWA, MoDOT, KDOT, and Missouri SHPO, and KHS to address the adverse effect to the Fairfax and Platte Purchase Bridges.
- The section of the Missouri Riverfront Trail that passes through the study area and the trailhead located east of the north end of the Platte Purchase Bridge, will need to be closed during construction of the new bridge. This closure will be temporary and will not result in any permanent modification or use of the trail. Alternative 3 will not result in the incorporation of any part of the trail or trailhead into the proposed transportation facility. Notice will be published by the City of Riverside on their website a minimum of two weeks prior to trail closure.

- Any previously unknown hazardous waste sites 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/KDOT 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, analytical and remediation services will be contracted if necessary. The MDNR or KDHE will be contacted for coordination and approval of required activities.
- 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. No paint will be removed from the existing bridges prior to demolition.
- 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 and KDHE 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/KDOT would ensure these materials, depending on their condition and quantity, are removed and disposed of according to current regulations and procedures.
- A Traffic Management Plan (TMP) 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.
- 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 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.
- It is expected that limited day- and/or night-time lane closures would be needed to make roadway tie-ins, but MoDOT/KDOT will require the contractor to utilize appropriate traffic control during these times and to keep back-ups to a minimum.
- Construction of bridge piers nearby the railroad will require flaggers for trains during construction operations. All flagging costs will be borne by MoDOT/KDOT.

- MoDOT's and KDOT's utility engineers and representatives of the utilities will work out details of individual utility relocations on a case-by-case basis.
- 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.
- 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.
- 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.

4.2 PERMITS REQUIRED FOR CONSTRUCTION

The following permits and approvals will be required for construction of the proposed project:

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/KDHE will be required to authorize placement of fill materials within jurisdictional wetlands and the Missouri River. Through coordination with the USACE, it is anticipated that a Nationwide Permit (NWP) #15 (U.S. Coast Guard-Approved Bridges) will be issued to authorize construction of the bridge, and a NWP #14 (Linear Transportation Projects) will be issued to authorize construction on the roadway approaches. Issuance of the Section 404 permits by the USACE is contingent on obtaining water quality certification issued under Section 401 of the Clean Water Act from the MDNR and KDHE.

Section 9 Permit under the Rivers and Harbors Act and General Bridge Act – A Section 9 Permit from the USCG is required to remove the existing bridges and to construct a new bridge over navigable waters of the U.S.

Section 402 of the Clean Water Act – authorization for the discharge of stormwater from construction activities is required in both Missouri and Kansas in compliance with the National Pollutant Discharge Elimination System (NPDES) 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) and with the KDHE to request authorization under the Kansas General Permit for Stormwater Runoff Associated with Construction Activities (reissued March 2, 2012). Both states require development of a SWPPP in conjunction with the permit authorization. Once construction is complete, a Notice of Termination will be submitted to the MDNR and the KDHE.

"No-Rise" Certification; SEMA and Kansas Department of Agriculture - "No-Rise" Certification for construction within a flood hazard area.

Wyandotte County/Kansas City, Kansas:

- Floodplain Development Permit
- Land Disturbance Permit
- Demolition Permit

Platte County, Missouri:

- Floodplain Development Permit
- Land Disturbance Permit

Riverside-Quindaro Bend Levee District and Fairfax Drainage District Approvals – Both levee districts will coordinate closely with the USACE to review and comment on proposed construction activity in the vicinity of the levee systems. Approvals for this work will be obtained prior to initiating construction. In addition, the contractor will need approval from the levee districts to use the levee roads for construction access.

Chapter 5
Comments and Coordination

5.1 INTRODUCTION

The U.S. 69 Bridges environmental study was initiated by FHWA, MoDOT, and KDOT as an Environmental Impact Statement (EIS) in October 2012. Both the NEPA and Section 6002 of the *Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users* of 2005 (SAFETEA-LU) require opportunities for the public as well as federal, state, and local governmental agencies to comment and provide information about proposed federal-aid projects. As such a Coordination and Public Involvement Plan was initially developed in accordance with Section 6002.

With reclassification of the study as an EA in February 2013, the study schedule was modified to include the following major project coordination milestones listed in Table 5-1. Section 6002 does not require the preparation of a Coordination or Public Involvement Plan for an EA.

Table 5-1: Major Project Coordination Milestones

Milestone	Completion Date
Invitation Letter sent to potential Cooperating and Participating Agencies	October 9, 2012
Letter sent to Native American Indian Tribes inviting them to become Section 106 consulting parties	October 26, 2012
Newsletter #1	November 2012
Public Open House Meeting – Purpose and Need and Initial Alternatives (included on-line meeting)	November 13, 2012
Interagency Scoping Meeting	November 14, 2012
Decision to reclassify project under NEPA from EIS to EA	December 2012
Notification Letter to Cooperating and Participating Agencies of Change in Project NEPA Classification	February 5, 2013
Notification Letter to Tribes of Change in Project NEPA Classification	February 26, 2013
Preliminary EA sent to Cooperating Agencies for review and comment	May 2013
EA approved for public review by FHWA	*August 2013*
Newsletter #2	*Anticipated August 2013*
EA Notice of Availability Published	*Anticipated Aug-Sep 2013*
Location Public Hearing	*Anticipated September 2013*
NEPA Decision Document Issued by FHWA	*Anticipated Nov-Dec-2013*

5.2 EARLY AGENCY COORDINATION

Letters and project information packets were sent to a number of local, state, and federal agencies and tribal governments at the initiation of the NEPA process. The USACE and USCG agreed to participate as Cooperating Agencies. A number of the other agencies also agreed to participate as Participating Agencies under Section 6002 of SAFETEA-LU. Sample cover letters, the list of agencies and tribal governments contacted, and agency responses received are provided in Appendix B.

5.3 AGENCY AND PUBLIC SCOPING

An agency scoping meeting was conducted on November 14, 2012. Representatives from the USACE, USCG, MDC, MoDOT, KDOT, and FHWA were all present. A copy of the meeting agenda, sign-in sheet, meeting summary, and presentation are included in Appendix B. Additional meetings and teleconferences were conducted with the USACE and USCG to discuss issues associated with potential use of the existing bridges, location and design of new bridges, and effects on existing levees.

A total of thirty-nine (39) people attended two pre-location public meetings at which the project statement of Purpose and Need and a series of initial conceptual alternatives were presented. Two separate meetings were conducted on November 13, 2013 to optimize opportunities for attendance by the general public and the employment base in the Fairfax Industrial District. The first meeting was held at Central Solutions, 401 Funston Road in the Fairfax Industrial District of Kansas City, Kansas; from 11:00 a.m. to 1:00 p.m. The second meeting was conducted between 4:30 and 6:30 p.m. at the Riverside City Hall, 2950 NW Vivion Road, Riverside, Missouri. Copies of the meeting notices, sign-in sheets, comments received, meeting and web-meeting displays, and meeting handout are provided in Appendix F.

Postcard invitations were sent to approximately 500 addresses of adjacent property owners and renters. An advertisement was placed in the *Platte County Landmark*, *Platte County Citizen, KC Star–Northland Edition, Wyandotte County Daily News, and Dos Mundos*. An email was sent to various state and federal agencies and the membership of the Fairfax Industrial Association. A MoDOT news release was distributed and posted on the MoDOT website.

Meeting materials were also available for review via an on-line meeting hosted on the MoDOT website at **www.modot.org/kansascity**. The on-line meeting was conducted from November 13 through November 29, 2012.

In addition to conducting meetings, a project newsletter was distributed to agencies, the public, and stakeholders in October 2012. The newsletter was also available on the MoDOT project website.

5.4 STAKEHOLDER MEETINGS

From October 2012 through January 2013, a number of meetings were conducted with stakeholders including:

October 5, 2012	Kansas City, Kansas Chamber of Commerce
October 8, 2012	City of Riverside
October 11, 2012	Unified Government of Wyandotte County and Kansas City, Kansas
October 11, 2012	Fairfax Industrial Association
October 24, 2012	Fairfax Industrial Association
November 11, 2012	General Motors, Argosy Casino, and North Point Development
January 17, 2013	Various Petroleum and Utility Companies
February 27, 2013	City of Riverside

Input received from these stakeholders included: need to maintain four-lane crossing due to heavy use by large trucks, description of truck operations on the bridges, connection between on-bridge bicycle/pedestrian facility to Missouri Riverfront Trail, utilities and pipelines on the bridges, bridge closures due to maintenance/repairs disrupting traffic, "just-in-time" deliveries, construction impacts (access and detours), and coordination of construction periods between this project and the proposed Lewis & Clark Viaduct Project.

5.5 DECISION TO RECLASSIFY STUDY TO AN ENVIRONMENTAL ASSESSMENT

At the completion of the initial screening process, MoDOT, KDOT, and FHWA eliminated from further consideration options that would reduce the river crossing to two-lanes. Factors that contributed to this decision are described in detail in Section 2.4 of this EA and include: traffic projections and capacity, safety and truck operations, maintaining economic vitality, and stakeholder input.

Alternative 1 which would remove the Fairfax Bridge and retain the Platte Purchase Bridge and any other option that would remove both bridges and replace them with a single two-lane structure were eliminated. With the elimination of these potentially controversial alternatives, the classification of the study under the NEPA was changed from an Environmental Impact Statement (EIS) to an EA. Agencies and tribal organizations were notified of the change in February 2013. Information on the reclassification will also be included in Newsletter #2.

5.6 PRELIMINARY EA

In May 2013, copies of the Preliminary EA were provided to the USACE and USCG for review and comment as Cooperating Agencies.

5.7 PUBLIC REVIEW OF THE EA AND THE LOCATION PUBLIC HEARING

The Location Public Hearing is anticipated to occur in September 2013.

5.8 COMMENTS ON THE EA

Substantive comments on the EA will be addressed following the Location Public Hearing (September 2013) and closure of the public comment period anticipated to occur in September/October 2013.

Chapter 6
References

Cantu, Gale, Platte County Department of Planning and Zoning.

Bacchus, Fred. Unified Government. Personal communication regarding the location, nature or extent of the Doepke-Fairfax site identified as being at 7th Street and the Missouri River. February 13, 2013.

Chapman, S.S., Omernik, J.M., Griffith, G.E., Schroeder, W.A., Nigh, T.A., and Wilton, T.F., 2002, Ecoregions of Iowa and Missouri (color poster with map, descriptive text, summary tables, and photographs): Reston, Virginia, U.S. Geological Survey (map scale 1:1,800,000)

Code of Federal Regulations; Title 33, Part 320.

Code of Federal Regulations; Title 33, Part 321.

Code of Federal Regulations; Title 33, Part 325.

Code of Federal Regulations; Title 33, Part 328.

Code of Federal Regulations; Title 33, Part 332.

Code of Federal Regulations; Title 40, Part 239.

Cowardin, L.M., V. Carter, F.C. Golet, E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. 131pp.

D.L. Becker, Lockheed Engineering and Sciences Company, Las Vegas, Nevada. Aerial Photographic Analysis of the Deopke Disposal-Fairfax Site, Kansas City, Kansas, August, 1991.

Department of Transportation, Office of Secretary, Washington, D.C. April 23, 1979. Floodplain Management and Protection.

Drake, Ben. Riverside-Quindaro Bend Levee District. Personal communication regarding Missouri Riverside Trail and design of connection to the proposed project. March 11, 2013.

EDR Radius Map Report with GeoCheck, 2012. Environmental Data Resources, Inc. US 69 Missouri Bridges EIS, US 69, Kansas City, KS 66115, October 29, 2012, Inquiry No. 3443328.2s.

EDR Historical Topographic Map Report, 2012. Environmental Data Resources, Inc. US 69 Missouri Bridges EIS, US 69, Kansas City, KS 66115, October 30, 2012, Inquiry No. 3443328.4.

EDR City Directory Abstract, 2012. Environmental Data Resources, Inc. US 69 Missouri Bridges EIS, US 69, Kansas City, KS 66115, October 30, 2012, Inquiry No. 3443328.6.

EDR Aerial Photo Decade Package, 2012. Environmental Data Resources, Inc. US 69 Missouri Bridges EIS, US 69, Kansas City, KS 66115, October 30, 2012, Inquiry No. 3443328.5.

EDR Site Report, 2013. Environmental Data Resources, Inc. Doepke-Fairfax, 7th Street and Missouri River, Kansas City, KS 66115, February 11, 2013.

EDR Site Report, 2013. Environmental Data Resources, Inc. Home State Bank, 601 Kindelberger Road, Kansas City, KS 66115, February 11, 2013.

Executive Order 11988 – *Floodplain Management*

Executive Order 11990 – *Wetland Protection*

Gasper, B.R. 2013. Personal communication with Vince Travnichek (MDC), Darby Niswonger (MDC), and Aaron Delonay (USGS) regarding the Pallid Sturgeon Population Assessment Project in the Missouri and Kansas Rivers, 2005-2012.

Highway Capacity Manual, Special Report 209; Transportation Research Board, 2010

Kelly, Brian P., Blevins, Dale W. 1995. Vertical Hydraulic Conductivity of Soil and Potentiometric Surface of the Missouri River Alluvial Aquifer at Kansas City, Missouri and Kansas – August 1992 and January 1993.

Missouri Department of Natural Resources, 2012. Missouri Water Quality Report.

Missouri Department of Natural Resources, 2012. Section 303(d) waters list.

Missouri Executive Order 97-09

Mitchell, Mellissa, FEMA CRS Coordinator, Unified Government Department of Urban Planning.

Pflieger, W.L. 1997. *The Fishes of Missouri.* The Conservation Commission of Missouri. Jefferson City, Missouri. 372 pages.

U.S. Army Corps of Engineers. 1987. Wetland Delineation Manual, Technical Report Y-87-1. U.S. Army Engineer Waterways Experiment Station. Vicksburg, Mississippi.

U.S. Army Corps of Engineers. 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0). ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-10-16. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

U.S. Army Corps of Engineers and Environmental Protection Agency. 2008. Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell v. United States. Available at http://water.epa.gov/lawsregs/guidance/wetlands/upload/2008_12_3_wetlands_CWA_JuJurisdicti_Following_Rapanos120208.pdf. Accessed February 15, 2012

U.S. Department of Agriculture (USDA): Natural Resource Conservation Service (NRCS). 2012. Web Soil Survey. Available at: http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm. Accessed February 15, 2012.

U.S. Fish and Wildlife Service 2013. IPaC – Information, Planning, and Conservation System. http://ecos.fws.gov/ipac

U.S. Geological Survey Groundwater Data, NWIS, 2013. http://waterdata.usgs.gov/nwis/gw

Wyandotte County Emergency Operations Plan; Wyandotte County Emergency Management. September 2007

2010 Microsoft Corporation and its data suppliers - Bing Aerial Photography