

# Chapter 3:

## AFFECTED ENVIRONMENT

This chapter of the Planning and Environmental Linkages (PEL) Study provides an overview and description of the existing environmental conditions known to exist within the proposed Study Area, including the social, natural, and cultural environment. The environmental conditions identified in this chapter will be part of the screening criteria established to review the relative merits of the proposed improvement strategies. The environmental conditions will also be carried forward in subsequent National Environmental Policy Act (NEPA) studies to serve as the Affected Environment chapter. Updates to the information provided in this chapter may need to be made if environmental conditions change.

### ENVIRONMENTAL OVERVIEW

The proposed improvement strategies identified during the PEL Study will be evaluated relative to their impacts on the existing environment. The existing environment is traditionally discussed in three distinct categories: the social environment, the natural or man-made environment, and the cultural environment. Within each of these three categories, there are specific resources that have been identified.

#### Social Environment

The social environment includes the resources specific to the people that live and work within the Study Area including characteristics related to:

- **Population** — How many people live in the Study Area and is that number increasing or decreasing?
- **Race and Ethnicity** — What is the demographic makeup of the population?
- **Income and Employment** — What are the income levels and how many people work in the area?
- **Environmental Justice Populations** — How many people are considered economically or socially disadvantaged?

#### Natural Environment

The natural environment includes the resources specific to the plants and animals, as well as natural and some man-made features within the Study Area:

- **Floodways and Floodplains** — Where is the existing floodway for the Missouri and Kansas Rivers and how far do their floodplains extend into the Study Area?
- **Flood Protection Levees** — How well does the existing flood protection system work?
- **Water Quality** — What is the quality of the two rivers and corresponding drainage basins?



- **River Navigation** — What is required to maintain the existing navigation channel through the region?
- **Wetlands and Waters of the U.S. (WOUS)** - Where are the wetlands and WOUS, that are protected by Section 404 of the Clean Water Act located?
- **Natural Habitat and Threatened and Endangered Species** — Is there habitat for any of the known species that have been classified as threatened or endangered?
- **Parks and Recreational Resources** — Where are the parks and recreational resources located and what activities are occurring in those parks?
- **Hazardous Materials Sites** — Where are the known locations of potentially contaminated sites?
- **Air Quality** — What is the status of current air quality improvement initiatives and compliance with federal and state requirements?
- **Noise** — Where are there existing noise concerns and where are the sensitive noise locations?
- **Mines and Caves** — Are there mines and caves underlying the Study Area that could create potential subsidence or surface collapse issues?



## Cultural Environment

The cultural environment includes the resources related to the history of the region, including existing historic properties and districts, as well as prehistoric sites.

- **Historic Resources** — Are there existing structures that have been determined to be of value for their historic relevance or contribution to the region's history?
- **Prehistoric Resources** — Are there archaeological resources related to the history of the community?

## RESOURCE AGENCY COORDINATION

There are various state and federal agencies that are responsible for the preservation of each of these environmental resources. The study team conducted a formal resource agency coordination meeting on February 28, 2017 to provide these agencies with an opportunity to learn about the project and to provide the study team important input as to the environmental resources in the Study Area. The various resource agencies are an integral part of the PEL process and were included throughout the decision-making process.



The project Study Area is located in an area that is comprised primarily of industrial and commercial uses, with a growing residential population. Demographic data for the residential population within the greater project vicinity is presented below, including population, race and ethnicity, age, employment, and income.

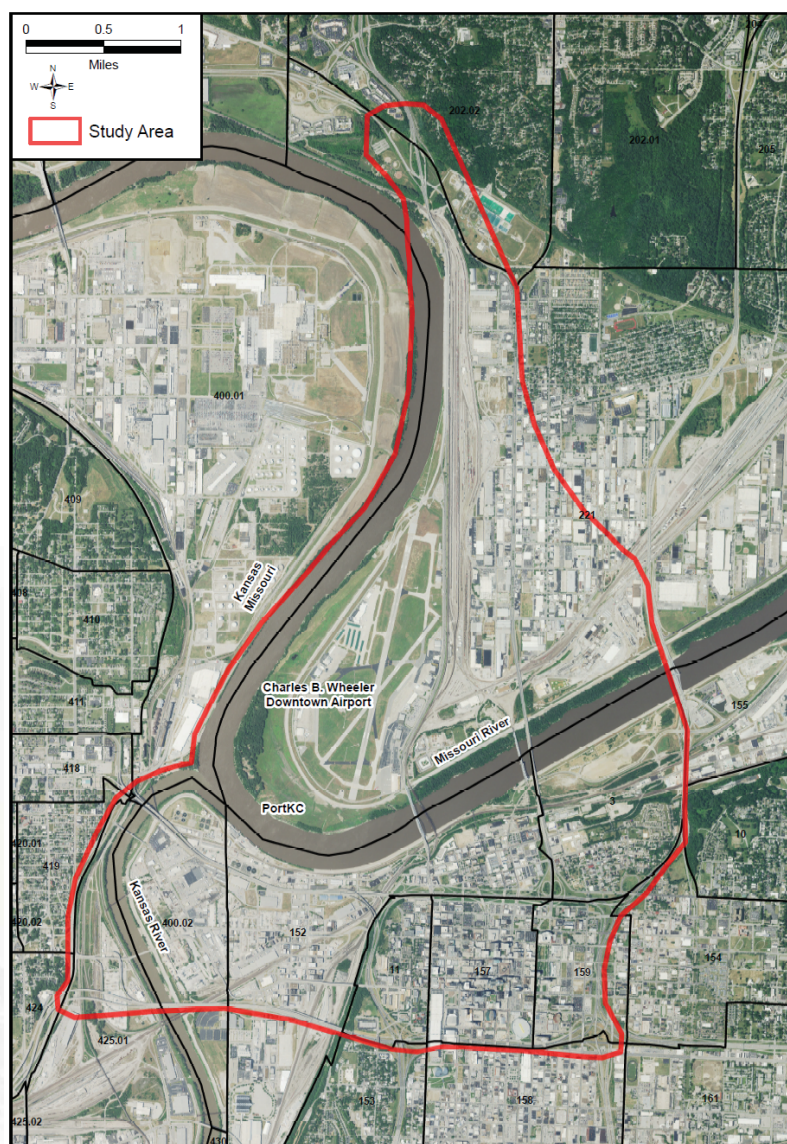
## Population

Data from the U.S. Census Bureau 2000 Census, 2010 Census, American Community Survey (ACS) data for 2015 and 2011-2015 five-year estimates and Mid-America Regional Council (MARC) population projections was obtained in order to characterize demographic trends in the Study Area. Seven census tracts are located within the Study Area (Figure 3.1). In some cases a large portion of the census tract may be located outside of the Study Area, however, based on the level of analysis for the PEL Study the entire tract has been included for discussion purposes.

Between 2000 and 2015, the population of Missouri and the City of Kansas City, Missouri grew at a similar rate of between 8 and 9 percent. The Kansas City Metropolitan Area grew at a faster rate over the 15 year period, at over 17 percent. Clay County increased by almost 28 percent during this time, while Jackson (5 percent) and Wyandotte (3.5 percent) counties grew at more modest rates. Over this same time, population change in the Study Area census tracts varied greatly from a loss of 11 percent to growth of almost 300 percent. The Study Area continues to see a large influx of people wanting to live in a more urbanized environment, a common trend across the country.

According to MARC population projections, growth is expected in the Study Area through 2040. All of the tracts within the Study Area are projected to grow over the 30-year period. Several of the tracts in Jackson County, which include the River Market area and Downtown Kansas City, Missouri, are expected to nearly triple in size during this period, while those in Wyandotte County should remain stable. The number of households are expected to experience similar rates of growth. The rate of household growth compared to population growth suggests that many of the new households being established have fewer individuals per household than was previously the case.

*Figure 3.1 - Study Area Census Tracts*



*Table 3.1 - Population and Household Growth in the Study Area*

	Population 2010	Population 2040*	Percent Change 2010- 2040	Households 2010	Households 2040*	Percent Change 2010-2040
Census Tract 202.02 (Clay)	3,685	5,323	+44.5%	1,665	2,437	+46.4%
Census Tract 221 (Clay)	4,283	5,843	+36.4%	2,416	3,162	+30.9%
Census Tract 3 (Jackson)	1,393	1,784	+28.1%	638	1,020	+59.9%
Census Tract 11 (Jackson)	1,709	2,869	+67.9%	1,087	2,132	+96.1%
Census Tract 152 (Jackson)	1,727	5,745	+232.7%	1,015	1,344	+32.4%
Census Tract 157 (Jackson)	1,886	5,465	+189.8%	1,418	4,704	+231.7%
Census Tract 159 (Jackson)	1,683	3,330	+97.9%	567	2,009	+254.3%
Census Tract 400.02 (Wyandotte)	3	3	0.0%	Not available	Not available	Not available
Census Tract 425.01 (Wyandotte)	61	61	0.0%	Not available	Not available	Not available
Total	15,430	30,423	+97.2	8,806	16,806	+90.8%
*Source: 2040 data based on MARC Population Projections						

*The Study Area continues to see a large influx of people looking to live in a more urbanized environment. The West Bottoms (152) and the Downtown core (157) are expected to see the largest percent increase in population.*

Table 3.2 includes data on race and ethnicity for the states of Missouri and Kansas, Study Area census tracts, the Metropolitan Area, each county, as well as the cities of Kansas City, Missouri, and Kansas City, Kansas. The data was obtained from the U.S. Census Bureau, 2015 and 2011-15 ACS 5-Year Estimates, which provides an estimate for the year 2015. Census Tracts 3 and 159, both located south of the Missouri River in Kansas City, Missouri, reflect populations where the number of minority individuals is over 50 percent. The cities of Kansas City, Missouri and Kansas City, Kansas, have minority populations of around 40 percent. Clay County and Census Tracts 202.02 and 221 fall below the state of Missouri and Kansas City Metropolitan Area minority population averages at 14, 11 and 16 percent respectively.

## Population over 65 (Aged)

The Kansas City Metropolitan Area population over 65 is just over 13 percent. The portion of the Study Area north of the river averages around 18 percent and the tracts south of the river average about 6.5 percent. Although Census Tract 3 is over 15 percent and tract 11 is around 11 percent, the other three tracts each have around 2 percent of the population that are over the age of 65.

## Income and Employment

Based on the U.S. Census Bureau's 2015 ACS and 2011-15 ACS 5-Year Estimates, the percent of the civilian labor force that is unemployed within the Study Area census tracts ranges from two percent to 14 percent (Table 3.3). The highest percentage of unemployed civilian workers is within Census Tracts 3 and 159 at 14 and 13 percent respectively. These tracts also have the highest percent of the population below the poverty level at 44 and 35 percent. The lowest unemployment numbers are within Census Tract 157, which is Downtown Kansas City, Missouri, at 2 percent and Census Tract 202.02, which is in Kansas City, MO north of the Missouri River, at 3 percent. The lowest percentages of population below the poverty level are in Clay County, North Kansas City, MO and Census Tract 202.02 all of which are around seven percent. Approximately 13 and 14 percent of the population in the states of Kansas and Missouri are below the poverty level. The City of Kansas City, MO is near 18 percent of the population below the poverty level.

The most common employment categories within the Study Area include:

- Retail Trade;
- Transportation, & Warehousing & Utilities;
- Professional, Scientific, Management & Administrative; and
- Educational Services & Health Care & Social Assistance (Figure 3.2).

The Downtown portion of the Study Area sees the highest percentages in:

- Professional, Scientific, Management & Administrative and
- Arts Entertainment & Recreation & Accommodation & Food Services.

The Kansas City metropolitan area only has a little over two percent employed in the Information industry, however Census Tract 11 is at over six percent. The individuals within the Study Area appear to be living near their chosen employment industry.

Table 3.2 - Percent Minority Population in Study Area

	Total Pop.	White Alone	Black or African American	American Indian	Asian	Native Hawaiian or Pacific Islander	Hispanic	Total Minority
<b>Missouri</b>	<b>6,083,672</b>	<b>79.9%</b>	<b>11.6%</b>	<b>0.4%</b>	<b>1.9%</b>	<b>0.1%</b>	<b>4.0%</b>	<b>20.1%</b>
Kansas City Metro Area	2,088,269	78.8%	12.5%	0.4%	2.8%	0.1%	8.9%	21.2%
Clay Co., MO	235,637	86.0%	5.7%	0.9%	2.5%	0.0%	6.7%	14.0%
Census Tract 202.02*	3,706	88.7%	1.1%	0.0%	6.4%	0.0%	10.0%	11.3%
Census Tract 221*	4,441	83.6%	6.2%	0.0%	4.6%	0.0%	10.5%	16.4%
Kansas City, MO	475,361	59.8%	29.7%	0.3%	2.9%	0.1%	9.7%	40.2%
Jackson Co., MO	687,623	66.8%	23.8%	0.3%	1.7%	0.3%	8.9%	33.2%
Census Tract 3*	1,600	48.5%	37.8%	0.2%	10.1%	0.0%	3.2%	51.5%
Census Tract 11*	1,679	67.7%	22.3%	0.0%	1.3%	1.2%	9.0%	32.3%
Census Tract 152*	1,964	76.5%	12.5%	4.8%	2.2%	0.0%	5.0%	23.5%
Census Tract 157*	2,286	76.2%	15.4%	0.8%	3.2%	0.7%	3.9%	23.8%
Census Tract 159*	2,106	46.3%	38.0%	0.2%	4.4%	2.6%	7.3%	53.7%
<b>Kansas</b>	<b>2,911,641</b>	<b>84.7%</b>	<b>5.9%</b>	<b>0.9%</b>	<b>2.9%</b>	<b>0.1%</b>	<b>11.6%</b>	<b>15.3%</b>
Kansas City, KS	151,261	59.5%	24.0%	0.4%	4.4%	0.0%	29.3%	40.5%
Wyandotte County, KS	163,369	61.2%	23.2%	0.4%	4.1%	0.0%	27.7%	38.8%

Source: U.S. Census Bureau, 2015 and 2011-15 ACS 5-Year Estimates.



Figure 3.2 - Employment by Industry, 2015

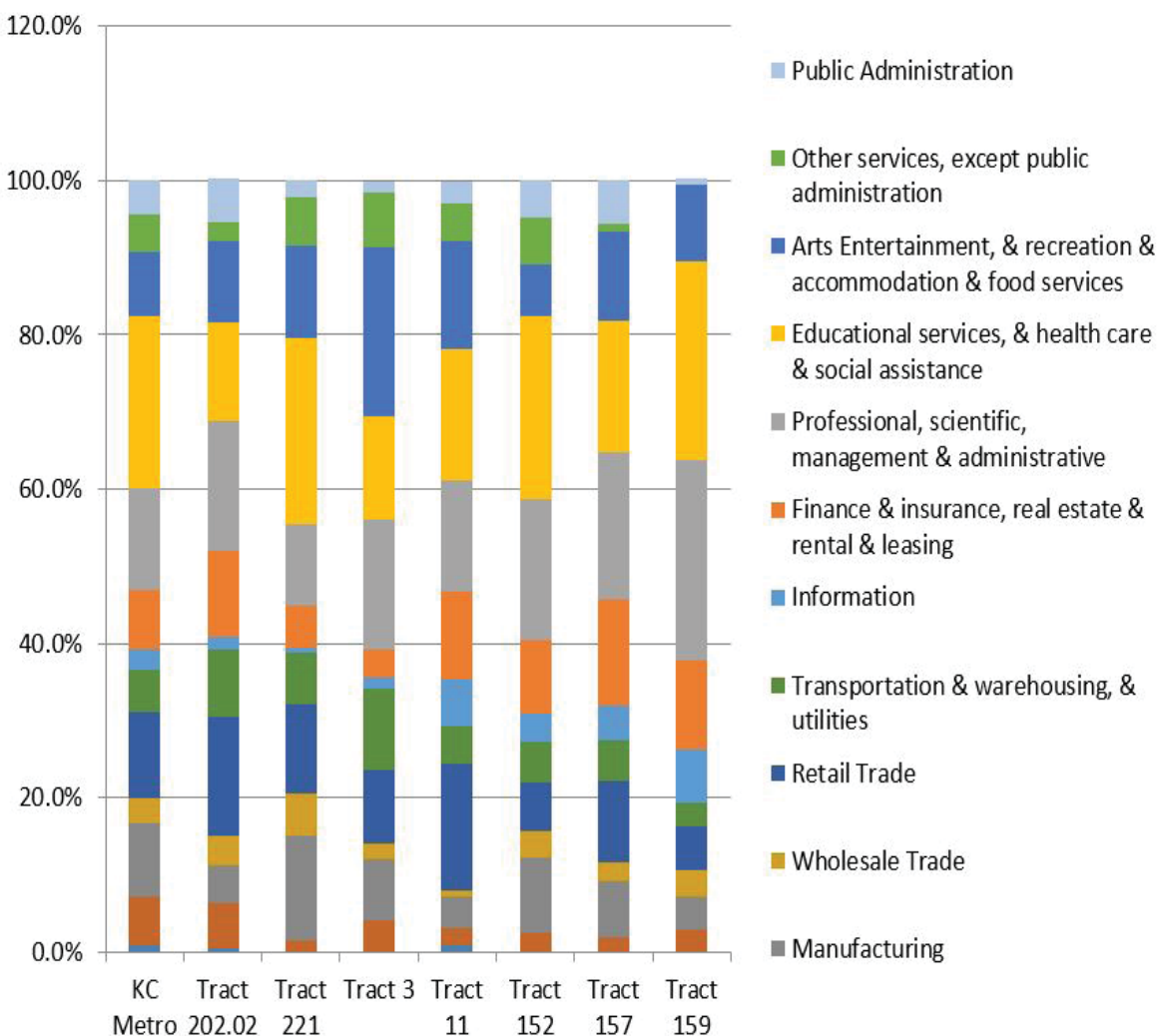


Table 3.3 - Economic Indicators, 2015

	Civilian Labor Force	Percent Civilian Unemployed	Median Household Income	Percent of Population Below Poverty
<b>Missouri</b>	<b>3,042,538</b>	<b>5.3%</b>	<b>\$50,238</b>	<b>14.8%</b>
Kansas City Metropolitan Area	1,099,917	4.4%	\$60,502	11.8%
City of North Kansas City, MO	2,911	9.9%	\$38,930	7.6%
Clay County, MO	128,235	4.4%	\$65,090	7.3%
Census Tract 202.02*	2,070	3.6%	\$76,693	7.1%
Census Tract 221*	3,051	9.4%	\$38,474	8.6%
City of Kansas City, MO	253,776	5.2%	\$50,259	17.9%
Jackson County, MO	355,072	5.0%	\$48,212	17.8%
Census Tract 3*	735	14.4%	\$25,167	44.5%
Census Tract 11*	1,299	9.3%	\$35,563	21.1%
Census Tract 152*	1,480	4.2%	\$44,031	16.2%
Census Tract 157*	1,904	2.2%	\$56,063	9.9%
Census Tract 159*	735	13.1%	\$45,346	34.9%
<b>Kansas</b>	<b>1,486,201</b>	<b>4.7%</b>	<b>\$53,906</b>	<b>13.0%</b>
City of Kansas City, KS	76,043	7.0%	\$41,255	22.2%
Wyandotte County, KS	81,477	7.1%	\$41,800	21.8%
Source: ACS Profile Report for 2015, *2011-2015 ACS 5-Year Estimate which provides an estimate for 2015				





# ENVIRONMENTAL JUSTICE POPULATIONS



Title VI of the 1964 Civil Rights Act seeks to ensure that all groups and individuals have the right to access and participate in the transportation decision-making process.

Executive Order 12898, issued in 1994, directs federal agencies to take steps to ensure that minority or low-income neighborhoods are not subjected to disproportionate project impacts. Disproportionate adverse effects either mainly affect minority and/or low-income populations or put more of a transportation burden on a minority and/or low income population and are recognizably more severe or of greater significance than the effects felt by non-minority and/or non-low-income population.

Environmental justice seeks to:

- Avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority and low-income populations.
- Ensure full and fair treatment of all people and their involvement in the transportation decision-making process regardless of race, color, national origin, age, or income.
- Prevent the denial of, reduction in, or significant delay in benefits received by minority and low-income populations.

MARC has done an environmental justice analyses, identifying minority and low-income populations and evaluates their proximity to federal investment at a regional scale. This is reflected in the map of EJ census tracts in Figure 3.4. These census tracts are areas in which:

- The proportion of minority populations in the tract is greater than the minority proportion of the overall MPO area. The MPO as defined by MARC is eight counties and the minority population is 27.7 percent.
- More than 20 percent of households are in poverty.

As discussed previously and illustrated by Figure 3.4, Tracts 3, 11 and 159 reach over 27 percent for minority populations and have higher percentages of those below the poverty level and have higher unemployment. Tract 3, 202.02 and 221 have higher populations over 65 at between about 14 and 21 percents. Figure 3.5 identifies the block groups that reach over 50 percent minority or low income population as well as those that are more than the averages for the Study Area. For minority population the Study Area average is 34 percent and for low-income the average is 13 percent. These areas are concentrated inside the downtown loop, Columbus Park on the western edges of the Study Area.

Individuals living in the Study Area have had an opportunity for input through public involvement activities. These activities sought to gather input about issues affecting residents such as connectivity, access, neighborhood cohesion, property impacts, noise and air quality which can disproportionately affect the populations mentioned above.

Evaluation of specific impacts, adverse effects and benefits at a project level, as well as determining project-level measures to avoid, minimize or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, will be conducted during the project development stage in the environmental review process as required by NEPA.



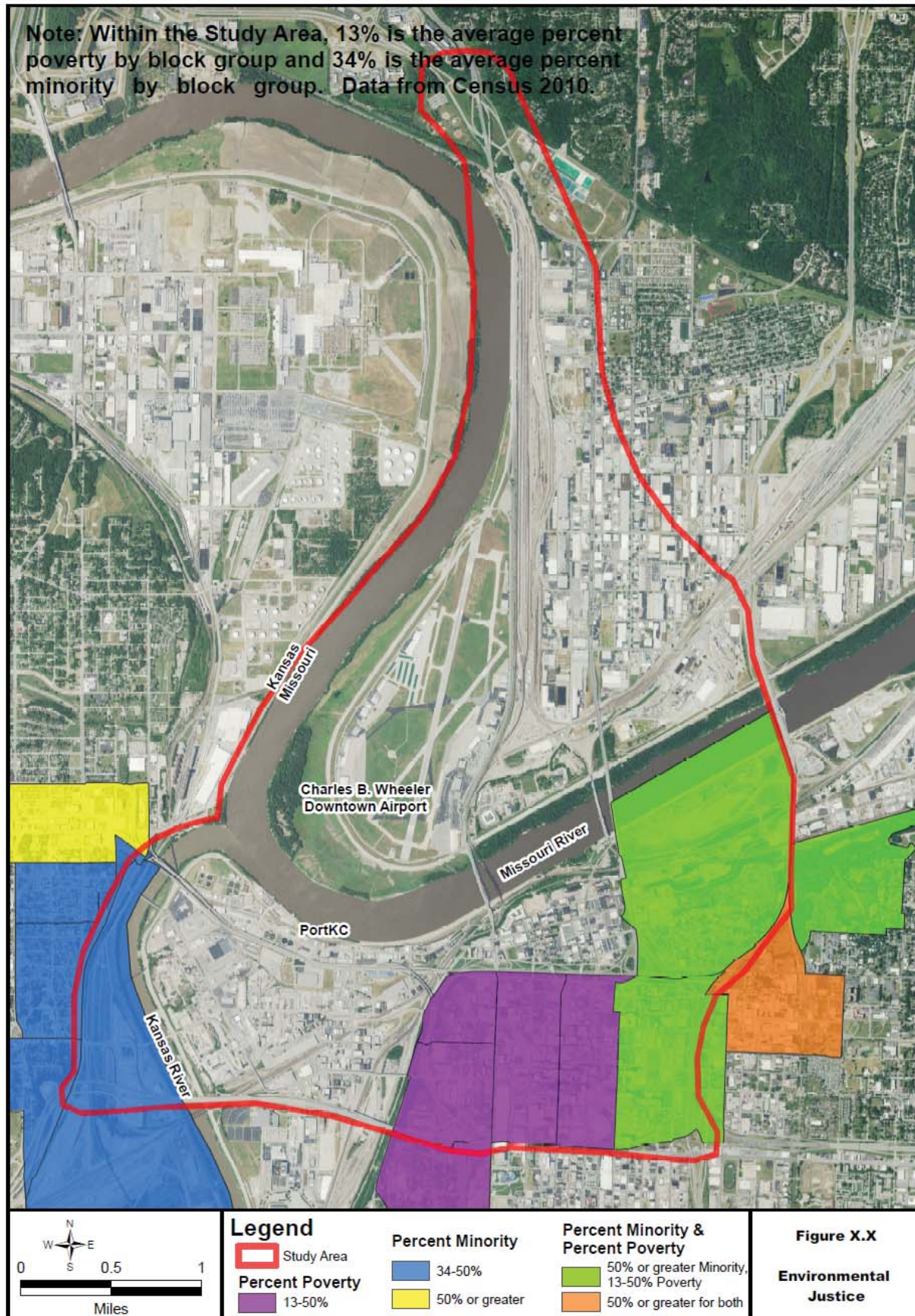
## Transportation Map 2018



Area	Percentage over 65	Percent Minority	Percent Civilian Unemployed	Percent of Population Below Poverty
KC Metro	14	22	5	12
Tract 202.02	21	12	4	8
Tract 221	16	17	10	9
Tract 3	16	52	15	45
Tract 11	11	33	10	22
Tract 152	2	24	5	17
Tract 157	3	24	3	10
Tract 159	3	54	14	36



Figure 3.5 - Environmental Justice Populations in the Study Area by Block Group



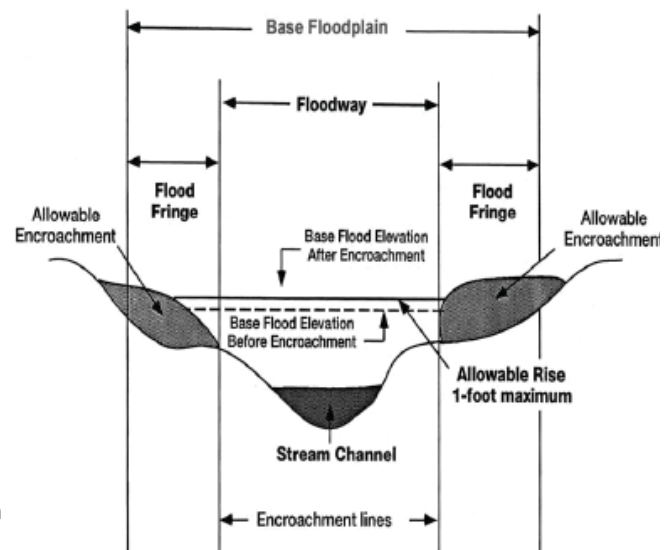
Several locations within the Study Area contain a higher than average percentage of minority and low income populations. These groups have special protection under the Environmental Justice provisions.

# FLOODWAYS & FLOODPLAINS

Floodplains are the lowlands adjoining the channel of a river, stream, or watercourse, or adjoining the shore of an ocean, lake, or other body of standing water, that have been or may be inundated with flood water. Executive Order 11988 – Floodplain Management, FHWA policy and procedures in 23 CFR 650, and other federal floodplain management guidelines, direct agencies to evaluate floodplain impacts for proposed actions. Floodplains can be described by the frequency of flooding that occurs. With Executive Order 11988, the base flood was formally adopted as a standard for use by all agencies. Figure 3.6 illustrates a typical floodplain diagram.

The National Flood Insurance Program (NFIP) uses the base flood as the standard for floodplain management and to determine the need for flood insurance. When available, NFIP flood hazard boundary maps and flood insurance studies for the Study Area are used to determine the limits of the base floodplain and the extent of encroachment from an action such as building a structure, including highways, within the limits of the base floodplain.

Figure 3.6 - Typical Floodplain Diagram



## Regulated Floodway

The regulatory floodway is the area of a stream or river channel that must be kept open to convey floodwaters from the base flood. Federal Emergency Management Agency (FEMA) restrictions do not allow projects to cause any rise in the regulatory floodway and no more than a one-foot cumulative rise may result from all projects in the base floodplain. The regulated floodway, along with the floodplain, have been illustrated in Figure 3.7.

## Regulated Floodplain

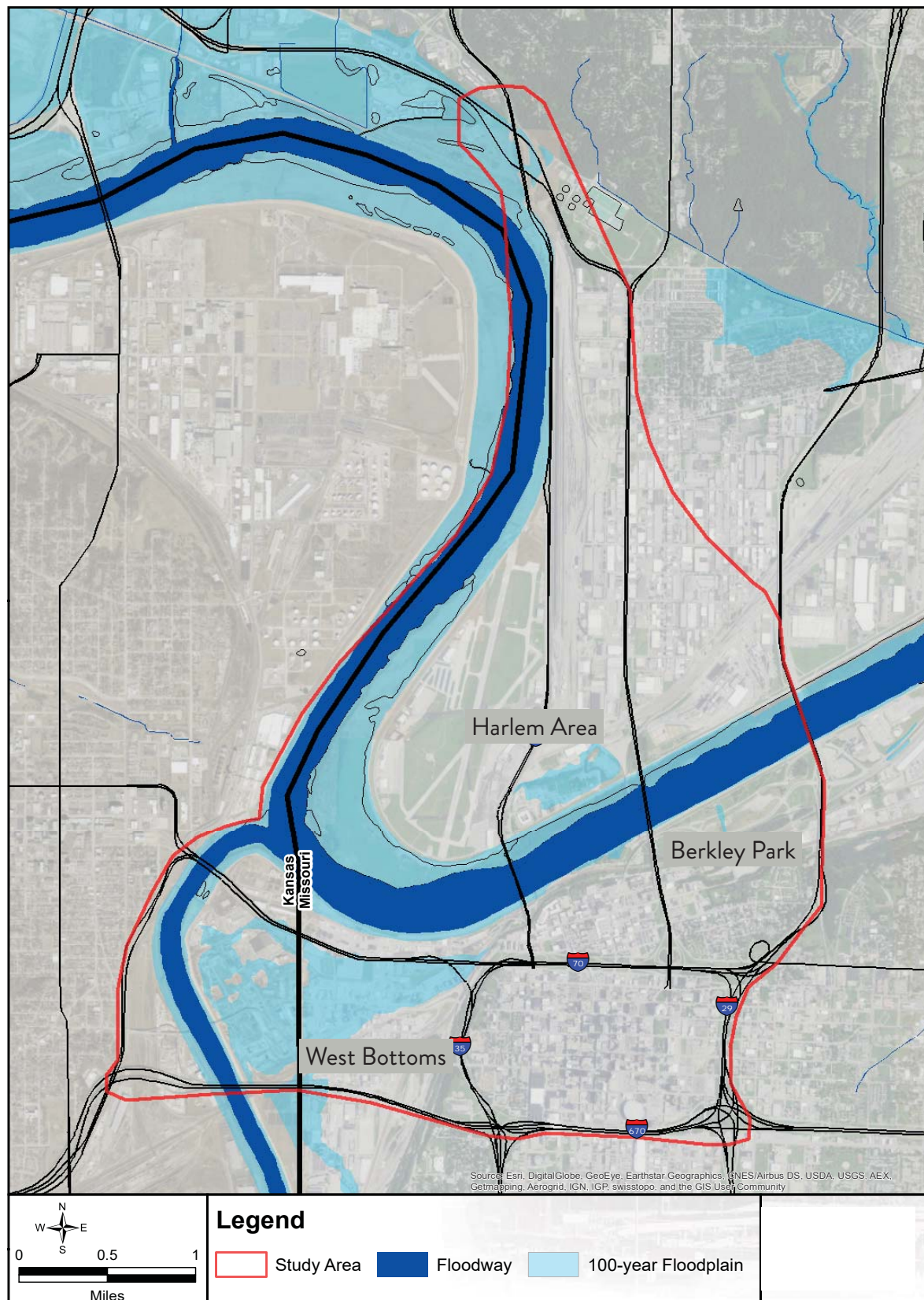
The project team identified potential floodplains by investigating the FEMA National Flood Hazard Layer in ArcGIS for the designated Study Area. For reference, Zone AE refers to areas of 100-year shallow flooding where depths are undetermined but the BFE (Base Flood Elevation) has been determined. Zone AH are areas of 100-year shallow flooding where depths are between 1-3 feet; the BFE has been determined, but no flood hazard factors have been determined. In addition to the areas along the Kansas and Missouri Rivers FEMA has designated the following zones in the specified areas:

- **Zone AE and Zone AH in the Historic West Bottoms District** — The Historic West Bottoms District, within Missouri, includes two locations where shallow flooding occurs with varying depths of 1-3 feet. This includes lower elevation areas that develop ponding during a 100-year flood event. The West Bottoms District that is in Kansas has shallow flooding where depths are undetermined.
- **Zone AE in the Historic Harlem District** — The Historic Harlem District, north of the Missouri River, includes a 38.2 acre shallow floodplain, with depth ranges that are undetermined.
- **Zone AH in the Richard L. Berkley Riverfront Park** — The Richard L. Berkley Riverfront Park includes a 1.86 acre shallow floodplain, with varying depths of 1-3 feet. This includes lower elevation areas that develop ponding during a 100-year flood event.



The Missouri State Emergency Management Agency (SEMA) issues floodplain development permits for projects undertaken by the State of Missouri. The Kansas Department of Agriculture/Division of Water Resources (KDA/DWR) issues permits for projects in the state of Kansas. For projects proposed within regulatory floodways, a “no-rise” certificate would be required before a permit is issued.

Figure 3.7 - Floodway and Floodplains



The majority of floodways and floodplains are associated with the Missouri and Kansas Rivers and immediately adjacent areas.

# FLOOD PROTECTION LEVEES

## Flood Protection Regulations

Through the Civil Works program the U.S. Army Corps of Engineers (USACE) serves the public by providing the nation with management of its water resources. As a result, USACE, in partnership with stakeholders, has constructed many Civil Works projects across the nation's landscape. Given the widespread location of these projects, many embedded within communities, over time there may be a need for others outside of USACE to alter or occupy these projects and their associated lands. Two existing regulations exist that govern the USACE in their mission to protect the nation's water resources:

- **Section 408** — Because these projects are in place for the benefit of the public, USACE ensures that any alteration proposed will not be injurious to the public interest and will not affect the USACE project's ability to meet its authorized purpose. USACE accomplishes this through the authority of Section 408 and its associated procedures. (Note: as of the date of this report the USACE has recently launched an effort to update and improve the Section 408 process.)
- **Section 14** — Section 14 of the River and Harbors Act of 1899, as amended, and codified in 33 USC 408 (Section 408) provides that the Secretary of the Army may, upon the recommendation of the Chief of Engineers, grant permission to other entities for the permanent or temporary alteration or use of any USACE Civil Works project.

## Study Area Levees

The existing levees in the Kansas City flood risk management system are maintained by the levee's sponsor. Each sponsor is responsible for the operation, maintenance, repair, rehabilitation and replacement of their structure and must meet inspection requirements conducted by the USACE.

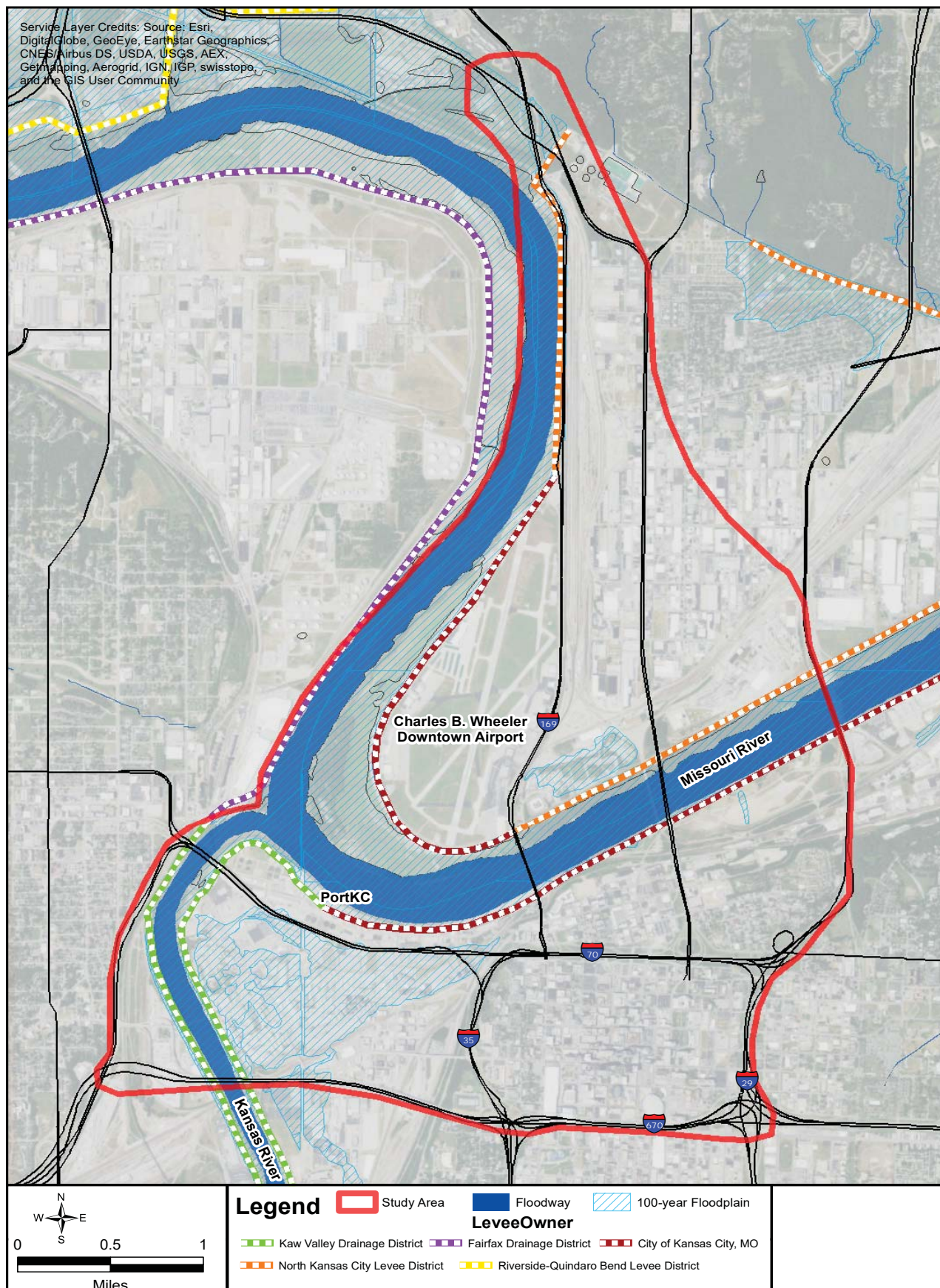
Local sponsors are responsible for controlling all construction which occurs within the critical area. The USACE provides engineering review to ensure that any work within or near the flood control unit does not reduce the level of protection and to assure the continued integrity of the flood control system. The critical area is predominately the area from 300 feet riverward to 500 feet landward of a flood control project centerline. Occasionally the critical area extends beyond 500 feet if the flood control project is impacted.

Levees are present along both sides of the Missouri River channel within the Study Area (Figure 3.8). The levee along the east bank of the Missouri River and north of the Downtown Airport is sponsored by the North Kansas City Levee District. The North Kansas City Levee District also sponsors the levee on the north bank of the Missouri River east of US-169. The levee along the west bank of the Missouri River is sponsored by the Fairfax Drainage District. The levee along the Downtown Airport bank of the Missouri River is sponsored by the City of Kansas City, Missouri. The City of Kansas City, Missouri also sponsors the levee on the south bank of the Missouri River east of PortKC. The levee along the Kansas River to the Missouri River confluence is sponsored by the Kaw Valley Drainage District.





Figure 3.8 - Flood Protection Levees



Both the Missouri and Kansas Rivers are protected by an existing levee system. Any encroachment into either river will require coordination with the U.S. Army Corps of Engineers to ensure the same level of flood protection and to ensure the continued integrity of the overall system.

# WATER QUALITY

Water quality is defined for a particular water body by comparing the biological, chemical, and physical characteristics of water in accordance with a set of standards. The EPA sets water quality standards based on the use of a particular body of water. Example uses include drinking, swimming, and the protection of aquatic life and habitat. The Clean Water Act (CWA), under section 303(d), requires every governing body of land to identify waters not meeting water quality standards and those in which adequate mitigation of pollution has not been required. Water quality standards were enacted to fortify bodies of water that would benefit from continuous usage by humans (swimming and drinking), aquatic life, livestock, and wildlife.

If any proposed work is to be done in a water body in the Study Area, such as the Missouri River, coordination with the USACE, Missouri Department of Natural Resources (MDNR) or Kansas Department of Health and Environment (KDHE) Water Divisions will be necessary. Any project that has the potential to result in discharge of fill or dredged material into a jurisdictional water of the United States may require a Section 404 permit from the USACE and Section 401 Certification from MDNR.

## Surface Waters

Surface water resources within the Study Area include the Missouri River and Kansas River. The MDNR and KDHE define water use classifications for water resources in their respective states. The Study Area is located within the Independence-Sugar (10240011) and Lower Missouri-Crooked (10300101) Hydrologic Units. Table 3.4 describes water bodies within the Study Area and their use classifications.

- **Missouri River** — The Missouri River is a Class P stream, which is defined as a stream that maintains permanent flow even in drought periods. The unnamed tributaries in the Study Area are Class C streams, which are defined as streams that may cease to flow in dry periods, but maintain permanent pools which support aquatic life. The Missouri River is listed as an impaired water body on the Missouri 2016 303(d) list. The impaired portion of the Missouri River that falls within the Study Area extends from the north of Atchison County to the east of Jackson County. The cause of water body impairment originates from the pollutant *Escherichia coli* (W) which affects the rivers use for human skin contact, ingestion, and secondary contact.
- **Kansas River** — The Kansas River is listed as an impaired water body on the Kansas 2016 303(d) list. The impaired portion of the Kansas River that falls within the Study Area extends from the east of Wyandotte County to west of Johnson and Leavenworth counties. The cause of water body impairment originates from total suspended solids (TSS) which is associated with higher levels of disease-causing microorganisms harmful to humans and the reduced ability to absorb light through the water for aquatic life.

## Wells

There are over 900 wells within the Study Area, of which about 400 are abandoned and about 500 are monitoring wells used to monitor for a variety of parameters. Wells can also act as conduits of pollutants to groundwater.

## Other

There are no known waters designated for Cold Water Habitat, Outstanding National Resource Waters, Outstanding State Resource Waters, biocriteria reference locations, or losing streams within the Study Area. A more detailed assessment of potential water quality or flood control improvements that could be incorporated into the various strategies has been provided in the urban design technical memorandum.



Table 3.4 - Water Body Classification and Impairment

Water Body	Use Classification	Impairment
Missouri River	Protection and propagation of fish, shellfish and wildlife – warm water habitat (WWH) Human health protection (HHP) Irrigation (IRR) Livestock and wildlife protection (LWP) Secondary contact recreation (SCR) Whole body contact recreation (WBC-B) Industrial (IND) Drinking Water Supply (DWS)	Escherichia coli (W)
Kansas River	Domestic water supply use (DS) Food procurement use (FP) Groundwater recharge (GR) Industrial water supply use (IW) Irrigation use (IR) Livestock watering use (LW)	Total Suspended Solids (TSS)
Wells	Abandoned (400) Monitoring (500)	Unknown
Other	None	None



The cause of the Kansas River impairment originates from Total Suspended Solids (TSS) which is associated with higher levels of disease-causing microorganisms harmful to humans and the reduced ability to absorb light through the water for aquatic life.



The cause of the Missouri River impairment originates from the pollutant Escherichia coli (W) which affects the rivers use for human skin contact, ingestion, and secondary contact.

## MINES AND CAVES

The uppermost bedrock in the northern and southern portions of the Study Area consists of shale, limestone and sandstone of the Pennsylvanian-aged Kansas City Group. The central portion of the Study Area is underlain by alluvium of the Missouri and Kansas Rivers. The Study Area does not lie in a karst setting. There are no recorded sinkholes or losing stream segments in the vicinity of the Study Area.

The Study Area does not lie within a former mining district and there are no recorded mines or caves within the Study Area. The Briarcliff West underground limestone quarry lies close to and may extend under the northern end of the Study Area. With the exception of the northern most area, there is no likely collapse potential due to former mining activities in the area.

However, it should be noted that there are a number of utility tunnels underlying the Study Area including the former West Bottoms streetcar tunnel (picture), trans-Missouri River water tunnel, as well as others

*The likelihood of either old mines or naturally occurring caves or losing streams are low in the Study Area. The one exception are utility tunnels. Pictured to the right is the existing tunnel constructed for the original streetcar system underneath downtown Kansas City.*



## WETLANDS AND WATERS OF THE U.S.

Wetland resources are protected under Section 404 of the CWA (33 US Code [USC] 1344) and Executive Order 11990 Protection of Wetlands (Environmental Protection Agency (EPA), 1977). The following wetland analysis describes the inventory of wetlands and other open waters within the Study Area. This analysis was performed using GIS and National Wetland Inventory (NWI) mapping data.

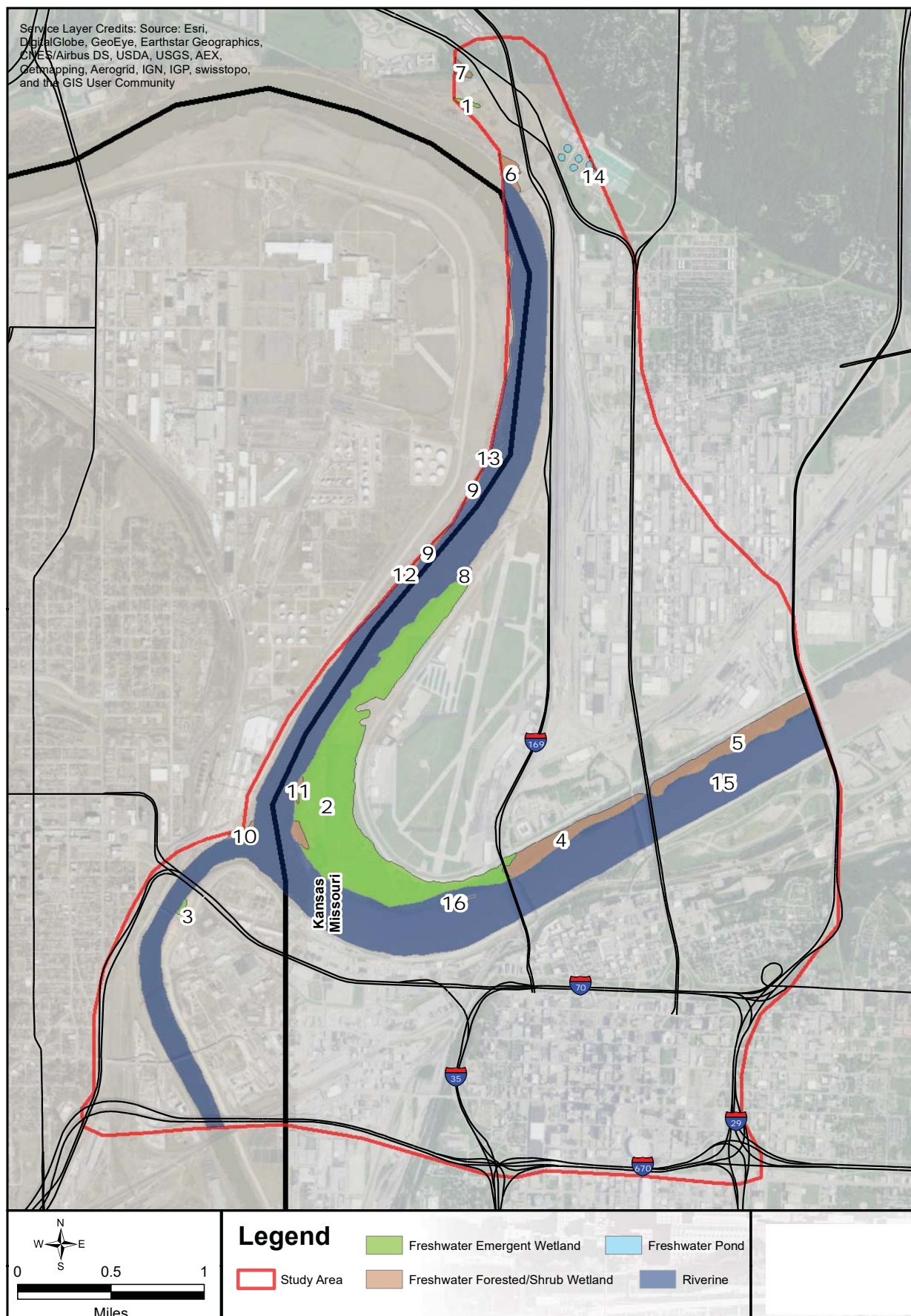
National Wetland Inventory mapped wetlands may or may not qualify as USACE jurisdictional wetlands when wetland determinations are performed following the methods of the 1987 Corps of Engineers Wetlands Delineation Manual and supplements. Wetlands may have developed in other low-lying or wet areas not shown on NWI maps. Section 404 of the Clean Water Act (CWA) prohibits the discharge of dredged or fill material (i.e., rock, sand, soil, construction materials) into waters of the United States without a permit from the USACE and mitigation may be required.

The majority of wetlands identified within the Study Area are riverine wetlands with most occurring in a narrow fringe along the Missouri and Kansas Rivers. Wetlands within the Study Area are illustrated on Figure 3.9 and described in Table 3.5.





Figure 3.9 - Existing Wetlands in the Study Area



While the Study Area is mostly urbanized, there are scattered areas close to the Missouri and Kansas Rivers that contain existing wetland resources.

Table 3.5 - Existing Wetland Resources

Wetland Number	Description & Location	NWI Map Classification	Wetland Type	Approximate Wetland Area within Study Area (acres)
1	NWI mapped palustrine emergent wetland, persistent vegetation year round, temporarily flooded, north side in the area of influence inundated with fresh marsh.	PEM1A	PEM	1.05
2	NWI mapped palustrine emergent wetland, persistent vegetation year round, temporarily flooded, south of the Charles B. Wheeler Downtown Airport.	PEM1A	PEM	177.89
3	NWI mapped palustrine emergent wetland, persistent vegetation year round, seasonally flooded, near the Kansas River confluence with the Missouri River.	PEM1C	PEM	1.12
4	NWI mapped palustrine forested wetland, broad-leaved deciduous vegetation, temporarily flooded, between US-169 and State Route 9, north of the Missouri River	PFO1A	PFO	21.24
5	NWI mapped palustrine forested wetland, broad-leaved deciduous vegetation, temporarily flooded, between State Route 9 and Interstate Highway 29, north of the Missouri River	PFO1A	PFO	27.44
6	NWI mapped palustrine forested wetland, broad-leaved deciduous vegetation, temporarily flooded, North neck of the area of influence, West of US-169, north of the Missouri River.	PFO1A	PFO	4.50
7	NWI mapped palustrine forested wetland, broad-leaved deciduous vegetation, temporarily flooded, North neck of the area of influence, South of State Route 9, north of the Missouri River.	PFO1A	PFO	2.01
8	NWI mapped palustrine forested wetland, broad-leaved deciduous vegetation, seasonally flooded, North of the Charles B. Wheeler Downtown Airport, west of the US-169, east of the Missouri River.	PFO1C	PFO	0.97
9	NWI mapped palustrine forested wetland, seasonally flooded, north of the Charles B. Wheeler Downtown Airport, west of the Missouri River.	PFOC	PFO	3.79
10	NWI mapped palustrine forested wetland, seasonally flooded, confluence area of the Kansas River and Missouri River.	PFOC	PFO	2.39
11	NWI mapped palustrine scrub-shrub wetland, broad-leaved deciduous vegetation, seasonally flooded, South of Charles B. Wheeler Downtown Airport on the north edge of the Missouri River.	PSS1C	PSS	4.21



Wetland Number	Description & Location	NWI Map Classification	Wetland Type	Approximate Wetland Area within Study Area (acres)
12	NWI mapped palustrine scrub-shrub wetland, seasonally flooded, North of the Charles B. Wheeler Downtown Airport, west of the Missouri River.	PSSC	PSS	0.16
13	NWI mapped palustrine unconsolidated bottom wetland, permanently flooded, freshwater pond, north of the Charles B. Wheeler Downtown Airport, west of the Missouri River.	PUBH	PUB	0.0001
14	NWI mapped palustrine unconsolidated bottom wetland, artificially flooded, freshwater pond at Kansas City Water Works, recently excavated, North neck of the area of influence, east of the Missouri River.	PUBKx	PUB	2.79
15	NWI mapped riverine wetland, low gradient, no tidal influence, lower perennial, unconsolidated bottom, permanently flooded, Kansas River and Missouri River.	R2UBH	R	679.24
16	NWI mapped riverine wetland, low gradient, no tidal influence, lower perennial, unconsolidated shore, seasonally flooded, West of US-169 and south of Charles B. Wheeler Downtown Airport.	R2USC	R	1.47



# HISTORIC RESOURCES

In the Study Area, there are more than 100 single sites and districts listed in the National Register of Historic Places. These significant assets include commercial, industrial, archaeological, parks and boulevards, and transportation-related resources throughout the Kansas City downtown neighborhoods and portions north of the Missouri River such as Harlem and North Kansas City. In addition, there are several historic assets located in the Study Area that are listed in the Kansas City Register of Historic Places and those that appear to retain integrity and therefore significance. Furthermore, historic assets located within a one-mile radius of the Study Area, such as Kansas City, Kansas, the Fairfax Industrial District and Strawberry Hill, were also identified. These assets include, but are not limited to, National Register and Kansas State Register of Historic Places (Figure 3.10-3.12).

In order to assess the current status of National Register of Historic Places (NRHP) nominations and studies that include historical assets within the Study Area, records were gleaned from the following repositories:

- Historic Preservation Commission, City of Kansas City, MO.
- State Historic Preservation Office, Jefferson City, MO.
- State Historic Preservation Office, Topeka, KS.
- State Historical Society of Missouri-Kansas City, Kansas City, MO.
- National Archives Records Administration II (NARA), College Park, MD.
- Historic American Buildings Survey (HABS) and the Historic American Engineering Record (HAER) archives, National Park Service, Department of the Interior.
- Linda Hall Library, Kansas City, MO.
- Special Collections, Missouri Valley Room, Kansas City Public Library, Kansas City, MO.
- North Kansas City Public Library, North Kansas City, MO.
- Architectural & Historical Research, LLC, Kansas City, MO.
- Mid-Continent Library, Jackson County, MO.
- Wyandotte County Historical Society, Wyandotte County, KS.

## Area of Potential Effects

Within the Study Area, the following neighborhoods have been identified and contain single sites and districts listed in the NRHP and/or historic assets that retain integrity and therefore significance. The following are general boundaries for these districts:\*

- **Central Business District** — The Central Business District of Kansas City was surveyed for historically and culturally significant properties. It included a 0.9 square mile area extending from 6th Street on the north to 15th Street on the south, and from Troost on the east to Jefferson on the west.
- **West Bottoms** — Known as the Central Industrial District, the CID or West Bottoms includes approximately 500 acres of land and is bounded on the north by the Missouri River, the west by State Line Road to 25th Street; 25th Street to Allen Avenue to Beardsley; Beardsley to the 12th Street Trafficway Viaduct; 12th Street east to Southwest Trafficway then to Pennsylvania Avenue Exit back to the POB. Also included in this area is Port KC, bounded by State Line Road on the west, the Missouri River on the north, the Lewis and Clark Viaduct on the south and the Woodswether Bridge on the south. This area is known historically as the Woodswether Industrial Area. Kansas City's Port Improvement District is included within this area.
- **River Market** — This area includes two historic districts: Old Town and the Town of Kansas Archaeological Site. Old Town is bounded on the north by 2nd Street, on the south by Independence Avenue/Boulevard, on the

east by Oak Street and on the west by Wyandotte and Delaware. There are roughly 20 square blocks within the Old Town Historic District. It is important to note that the Town of Kansas is located within the Old Town District and is sited between the river's edge, Second Street, Grand Boulevard and west of the Broadway Bridge.

- **Columbus Park** — Encompassing approximately 170 acres, Columbus Park is bounded on the north by Front Street, the west by Locust Street, the south by Independence Avenue/Boulevard and on the east by the North Midtown Freeway.
- **River Front** — This area is generally bounded by the Missouri River on the north, Columbus Park and the railroad tracks on the south, the Heart of America Bridge on the west and the Christopher S. Bond Bridge on the east.
- **North Kansas City** — This area is generally bounded by the area north of the Missouri River, east of US-169, west to the Heart of America Bridge and on the north at the intersection of Highway 9 and US-169.
- **Downtown Airport** — The Downtown Airport loop is located north of the Missouri River and bounded on the east by US-169, on the west by the levee and NW Lou Holland Drive.
- **Harlem** — The boundary for Harlem encompasses the area east of US-169, north of the North Kansas City Levee, west of the Christopher S. Bond Bridge and south of the BNSF Rail Corridor and the North Kansas City limits.

Historic assets located immediately outside of the Study Area have also been examined. The following neighborhoods have been identified and contain single sites and districts listed in the NRHP and/or historic assets that retain integrity and therefore significance:

- **Kansas City, Kansas** — Encompasses several key neighborhoods within the Study Area to include Strawberry Hill, and Fairfax. The Lewis and Clark Historic Park, the Kaw Point Riverfront Park, and Kaw River Industrial District (west of the Kaw River) are cultural resources also located in this area. The Huron Cemetery recently was listed as a National Historic Landmark.

\* The above district names are based on popular identification, as well as official districts so named by local and state agencies.



Port Arthur

Griffin & Brock

Blossom House

Cutter Res

Cordova Duplex

Progress Club

Savoy

Land Bank

Folly

Phillips House

Scarritt

Bryant Professional Studio

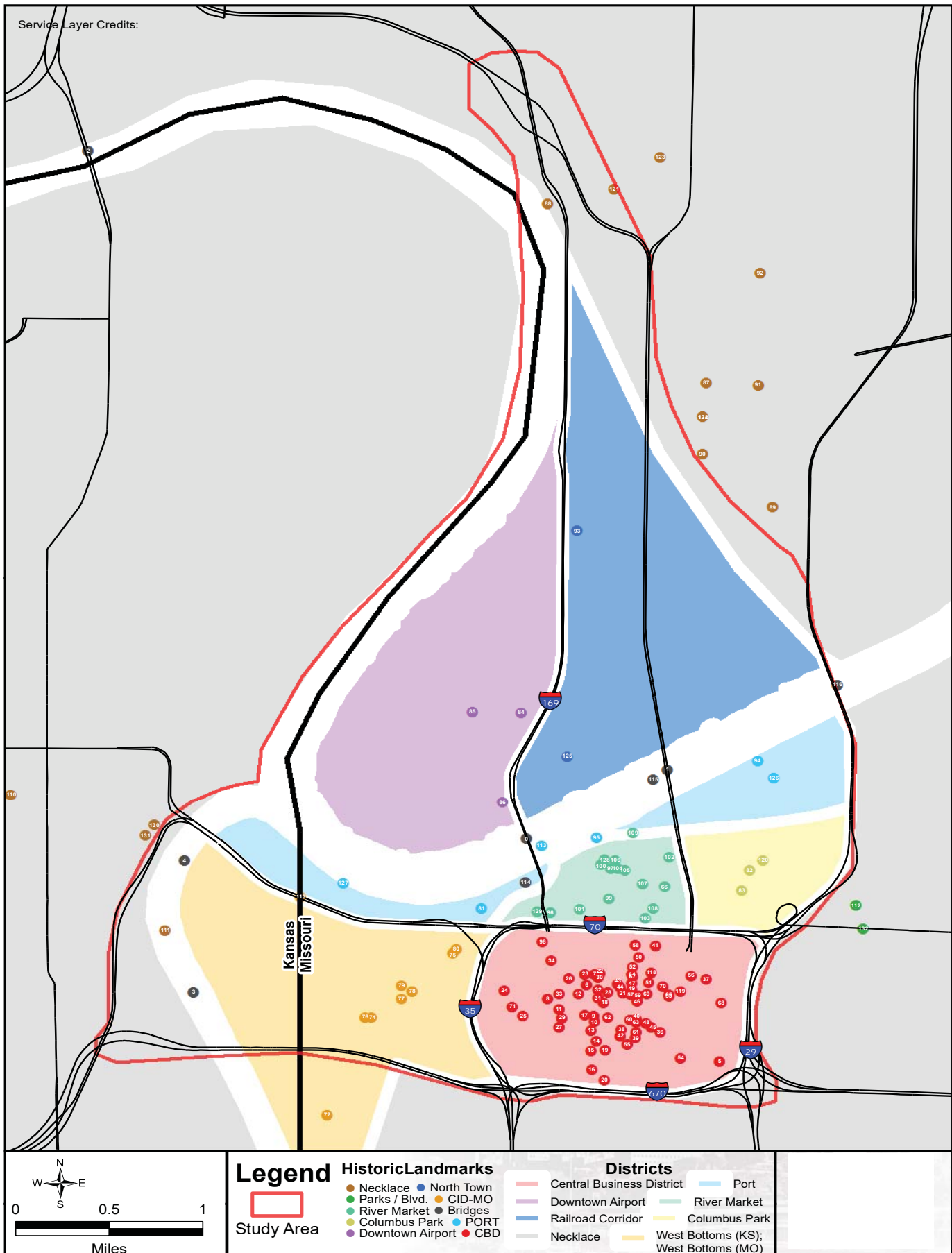
Former Library

Masonic Temple

St. Mary's



Figure 3.12 - Historic Properties within the Study Area



# HAZARDOUS MATERIALS SITES

A hazardous material screening was conducted for the Study Area. The purpose of the screening was to identify major sites that are contaminated, or potentially contaminated with hazardous materials or waste that would have a high potential to impact the location of a transportation facility. Particular attention was given to the location of landfills, Superfund-level sites, and sites with documented contamination issues. Lesser sites such as service stations (underground storage tanks) and generators of regulated materials were not included in the screening. For the purposes of this screening, hazardous wastes and materials are defined as products or wastes regulated by the EPA, MDNR, or KDHE.

## EDR Database Search

There is no single comprehensive source of information available that identifies all known or potential sources of environmental contamination within the Study Area. Therefore, to identify and evaluate sites that may potentially contain hazardous materials, petroleum products, or other sources of contamination, a federal and state government database search was conducted by Environmental Data Resources, Inc. (EDR), dated November 29, 2016. The database search included close to 100 different environmental databases including sites identified or evaluated as federal or state Superfund sites; facilities that generate, store, treat or dispose of hazardous wastes; solid waste landfills; facilities that have active, closed, or leaking aboveground storage tanks (ASTs) or underground storage tanks (USTs); sites actively undergoing cleanup; spills involving potentially hazardous materials; and a number of other activities that might be an indicator of a hazardous condition.

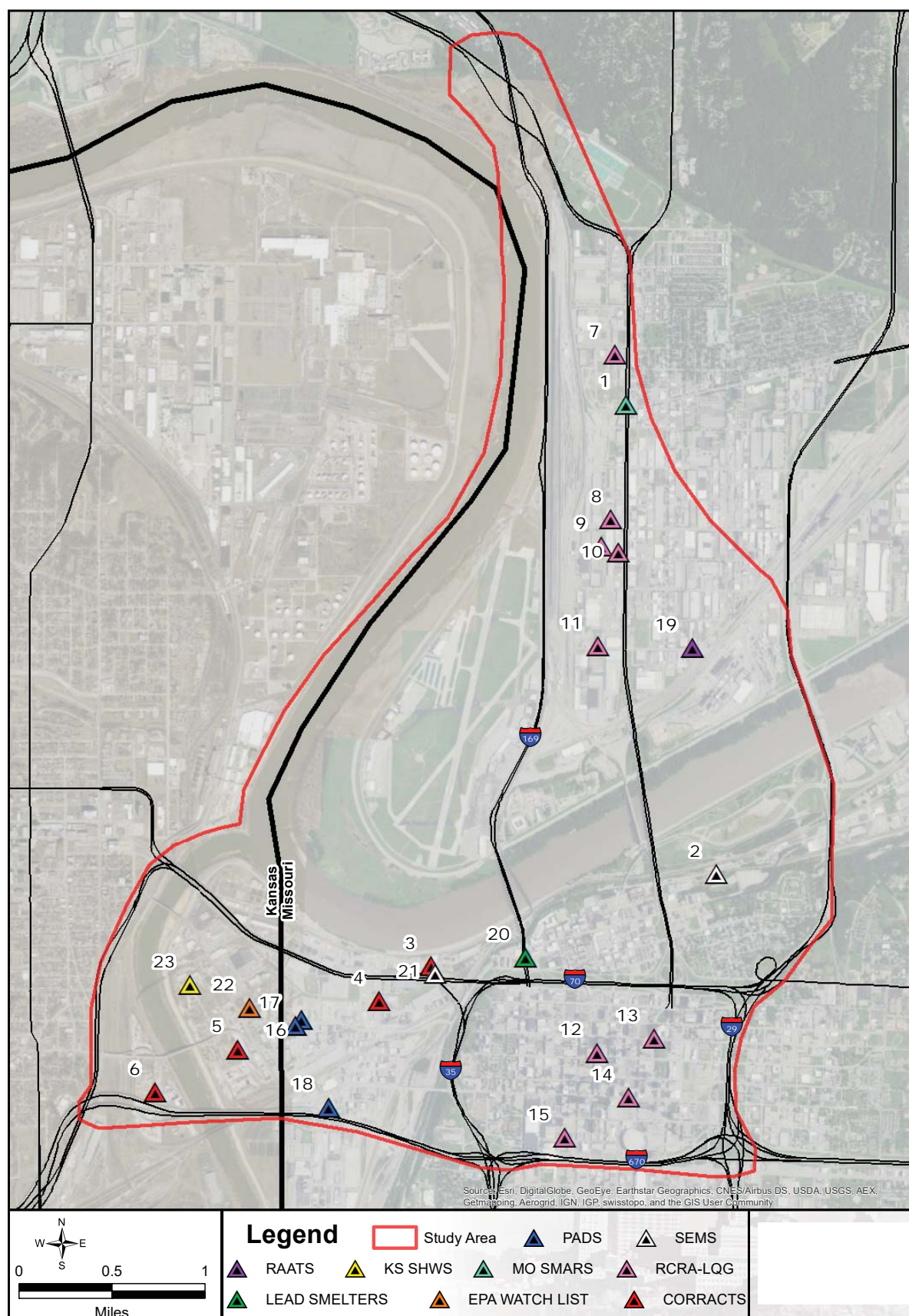
## Known Sites

In all, 23 sites were identified in the Study Area as having the high potential to impact the location of transportation improvements. High impact is defined as a site that would require extensive time and cost to assess and remediate. Some of the sites are large, working industrial plants that are in the Study Area and are not included for regulatory reasons, but assumed to be avoided for other reasons. A summary of the sites are included in Table 3.6 and identified in Figure 3.13.

A more detailed hazardous materials initial site assessment would be needed as part of any future project development. The purpose of conducting a more detailed hazardous materials assessment is to gather additional information needed to plan for known and potential hazardous materials issues. During the planning and design process, this information can be used to identify avoidance options, when possible, and to assist with the development of specific materials management or mitigation measures. Properties to be acquired may also require individual site assessments as part of the right-of-way acquisition process.



Figure 3.13 - Location of Potential Hazardous Materials/Waste Sites



The Study Area contains 23 known locations of hazardous material sites that were determined to have a high probability of increasing time and cost if affected by the proposed solutions. These sites do not include hundreds of other lower probability sites also located within the Study Area.



*Table 3.6 - Summary of Potential or Recognized Hazardous Materials/Waste Sites*

No.	Site Name	Location
1	North Kansas City Ammonia	West of 19th Avenue North Kansas City, MO 64116
2	Kansas City Coal Gas	E. 1st St. & Campbell St. Kansas City, MO 64106
3	City Environmental Inc.	901 Woodswether Rd. Kansas City, MO 64105
4	Solvent Recovery, LLC	716 Mulberry Kansas City, MO 64101
5	Midwest Industrial Services, Inc.	100 S. 1st St.(A) Kansas City, KS 66118
6	PBI Gordon Corp	300 S 3rd St. Kansas City, KS 66118
7	Tnemec Company, Inc.	123 W. 23rd Avenue North Kansas City, MO 64116
8	Fujifilm North America Corp.	20 W. 14th Avenue North Kansas City, MO 64116
9	PAS Technologies, Inc.	1234 Atlantic Avenue North Kansas City, MO 64116
10	Holland Nameplate, Inc.	1300 Burlington Street North Kansas City, MO 64116
11	Flint Ink NA	104 W. 10th Avenue North Kansas City, MO 64116
12	CVS Pharmacy #8592	921 Main Street Kansas City, MO 64105
13	Charles Evans Whitaker US Federal Courthouse	400 E. 9th Street Kansas City, MO 64106
14	AZZ Galvanizing Service	700 E. 12th Street Kansas City, MO 64123
15	KCPL Building	106 W. 14th Street Kansas City, MO 64105

No.	Site Name	Location
16	Clean Harbors PPM LLC	1629 W. 9th Street Kansas City, MO 64101
17	Safety-Kleen (PPM) Inc.	806 Genesee Kansas City, MO 64101
18	Environmental International, Inc.	1220 Wyoming Kansas City, MO 64102
19	Ensley Tool Co.	420 E. 10th Avenue North Kansas City, MO 64116
20	Shostak Metal Corp.	303 Broadway Kansas City, MO 64102
21	Studer Container Service	520 Madison Avenue Kansas City, MO 64105
22	KC Freightliner Body Shop	11 N. James Kansas City, KS 66118
23	Galamba Metals, Inc.	2nd & Riverview Kansas City, KS 66118

# NATURAL HABITAT AND THREATENED AND ENDANGERED SPECIES

The majority of the Study Area is comprised of urban built-up land. The most dominant vegetative natural communities occurring, although few, are the remnant upland and riparian forests (wooded areas along waterways). Grassed areas are predominantly composed of maintained cool-season grasses in residential and commercial/industrial areas. Wildlife, although not abundant, does exist, and potential habitat for threatened and endangered species exists.

There are no state identified Conservation Opportunity Areas or designated Natural Areas within the Study Area. However, through reviews of the MARC Natural Resources Inventory (NRI) (Figure 3.14) there are both Forest Restoration Priorities and Forest Conservation Areas within the Study Area. The NRI data is meant to guide local and regional decision-making to sustain economic vitality, community development, and ecosystem health while at the same time building a more sustainable and resilient future.

## Federal Threatened and Endangered Species

Under the U.S. Endangered Species Act (ESA), the U.S. Fish and Wildlife Service (USFWS) has primary responsibility in the protection of federally endangered and threatened species and designation of critical habitat areas for these species. Endangered species are those that are in danger of extinction throughout all or a significant portion of their range, and threatened species are those that are likely to become endangered within the foreseeable future.

## State Listed Species

In Missouri, all federally endangered and threatened plants and animals are protected by the ESA and the Missouri State Endangered Law. The Missouri Department of Conservation (MDC) determines species status in Missouri under constitutional authority (3CSR10-4.111 Endangered Species). Species that are listed in the Wildlife Code under 3CSR10-4.111 are protected. Annually, the MDC publishes the Missouri Species of Conservation Concern Checklist. Some of the plants and animals in the checklist also appear in the Wildlife Code and are afforded special legal protection. It should be noted that all species in the State of Missouri are protected as biological diversity elements unless a legal harvest method is described in the Wildlife Code.

State and federally listed species are protected in Kansas as designated by the Kansas Nongame and Endangered Species Conservation Act of 1975. The act places the responsibility for identifying and undertaking appropriate conservation measures for listed species directly upon the Department of Wildlife, Parks and Tourism (KDWP&T) through statutes and regulations. Regulations require the department to issue special action permits for activities that affect species listed as threatened and endangered in Kansas. Department personnel conduct environmental reviews of these proposed activities, and if necessary issue action permits with special conditions that help offset negative effects to listed species and critical habitats.

## Protected Species Potentially in Study Area

The project team obtained inventory details about the resources, such as protection status and presence of species, by accessing the MDC's Natural Heritage Review, the MDC's Missouri Fish and Wildlife System, the KDWP&T Threatened and Endangered Species List, and the USFWS Information Planning and Conservation System (IPaC) websites in January and February, 2017. Research centered on using the most current version of information available online.

Table 3.7 identifies the information obtained from the websites for those species that are listed as federally endangered, threatened, or candidate, and state-endangered within the Study Area. The protected species



identified have only been known to occur within the counties included within the Study Area boundaries and as a result, a more detailed habitat assessment would be needed as part of any future project development. The purpose of conducting a more detailed habitat assessment is to gather additional information needed to plan for known and potential protected species issues. During the planning process, this information can be used to identify avoidance options, when possible, and to assist with the development of specific minimization or mitigation measures.

Figure 3.14 - Natural Resource Inventory - Forested Restoration and Conservation Priority Areas

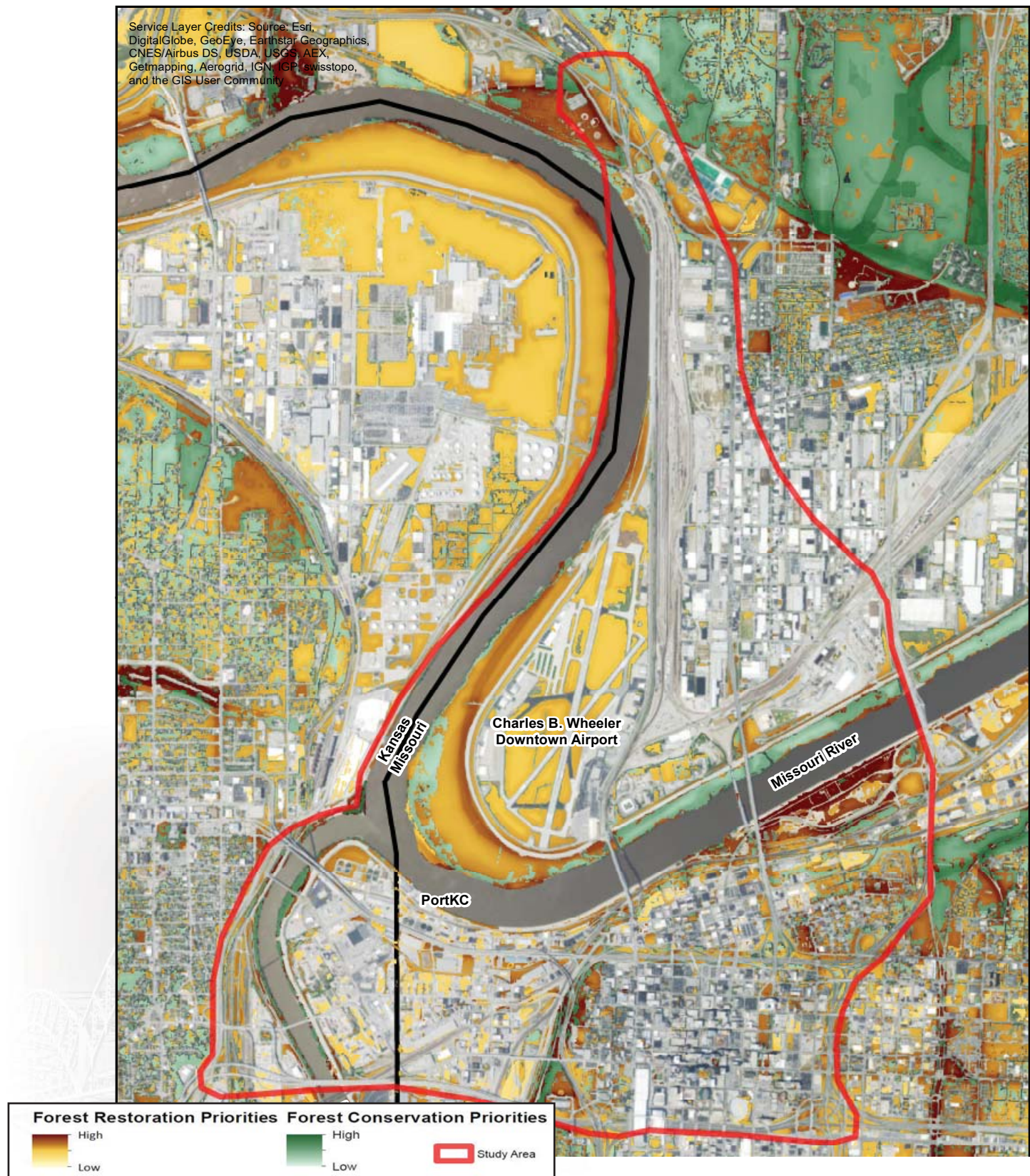




Table 3.7 - Protected Species Potentially Occurring Within the Study Area

Common Name	Scientific Name	Federal Listing	MO Listing	KS Listing
<b>Fishes</b>				
Pallid Sturgeon	Scaphirhynchus albus	E	SE	SE
Sturgeon Chub	Macrhybopsis gelida	C		ST
Shoal Chub	Macrhybopsis hyostoma	NL		ST
Sicklefin Chub	Macrhybopsis meeki	C		SE
Western Silvery Minnow	Hybognathus argyritus	NL		ST
Plains Minnow	Hybognathus placitus	NL		ST
Flathead Chub	Platygobio gracilis	NL		ST
Silver Chub	Macrhybopsis storeriana	NL		SE
<b>Mammals</b>				
Gray Bat	Myotis grisescens	E		
Indiana Bat	Myotis sodalis	E		
Northern Long-Eared Bat	Myotis septentrionalis	T		
Black-tailed Jackrabbit	Lepus californicus melanotis	NL	SE	
Plains Spotted Skunk	Spilogale Putorius	NL	SE	
Eastern Spotted Skunk	Spilogale putorius	NL		ST
<b>Birds</b>				
American Bittern	Botaurus lentiginosus	NL	SE	
Snowy Egret	Egretta thula thula	NL	SE	
Peregrine Falcon	Falco peregrinus tundrius	NL	SE	
Northern Harrier	Circus cyaneus	NL	SE	
Interior Least Tern	Sternula antillarum athalassos	NL	SE	
Least Tern	Sterna antillarum	E		SE
Snowy Plover	Charadrius nivosus	NL		ST
<b>Reptiles</b>				
Western Massasauga	Sistrurus Catenatus Tergeminus	NL	SE	

Common Name	Scientific Name	Federal Listing	MO Listing	KS Listing
Amphibians				
Yellow Mud Turtle	Kinosternon flavescens flavescens	NL	SE	
Insect				
American Burying Beetle	Nicrophorus americanus	E		SE
E: Federally Endangered; T: Federally Threatened; C: Federal Candidate Species; NL: Not Listed SE: State Endangered; ST: State Threatened				



The Pallid Sturgeon is a federally-listed Endangered species endemic to the waters of the Missouri and lower Mississippi Rivers. Both the Christopher S. Bond and Fairfax Bridges included mitigation strategies during construction for this species.



Two federally endangered bat species, the **Gray and Indiana Bat**, as well as the federally threatened **Northern Long-Eared Bat** are potentially located in or near the Study Area. Bats typically rely on dark spaces such as caves, mines, underneath tree bark, or abandoned structures to live. The Northern Long-Eared Bat, for example, is known to prefer living underneath bridges.



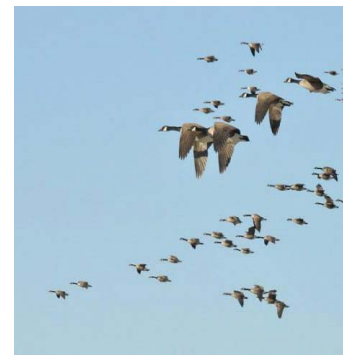
The **Least Tern** is a species of bird that is federally listed as endangered. The bird breeds in North America and northern South America and is found nesting on sandy beaches along the southern coast of the United States and up major river systems far into the interior of the continent.



The **American Burying Beetle** is a critically endangered species endemic to North America. The beetle is a carrion beetle meaning they rely on small, dead animals for sustenance. Historically, the beetle has lived in Kansas but is not currently known to be present.



The Study Area is within the geographic range of nesting Bald Eagles. Bald Eagles (*Haliaeetus leucocephalus*) may nest near streams and water bodies, like the Missouri and Kansas Rivers. While no longer listed as endangered, eagles continue to be protected by the federal government under the Bald and Golden Eagle Protection Act.



The Migratory Bird Treaty Act (MBTA) protects all migratory birds including colonial nesting sites formed on bridges or in nearby trees by certain species. Transportation projects that affect bridges during migratory bird breeding season are assessed for impact to migratory bird species such as swallows that may use the bridge as a nesting site.

Parks and recreation resources are important community facilities that warrant consideration during federally-funded projects. These resources include parks, trails, and open space areas that offer opportunities for recreation, including both passive and active activities.

## Existing Regulatory Requirements

The following federal statutes regulate how a proposed transportation improvement can impact a park or recreational facility:

- **Section 4(f), Parks** — Section 4(f) is part of the Department of Transportation Act of 1966 (DOT) designed to preserve the natural beauty of the countryside, public park and recreation lands, wildlife, and waterfowl refuges. A Section 4(f) eligible property can be either public or privately owned. Federally funded DOT actions cannot impact Section 4(f) eligible sites unless there is no “feasible and prudent” alternative – a higher standard of justification than “preferred” alternative.
- **Section 4(f), Historical Resources** — Section 4(f) also applies to the “use” of a historic property when the project effects are so severe as to cause character-defining features of the property (attributes making it eligible for NHRP listing) to be diminished to a point where the property is no longer eligible for listing. In a direct use, the property is destroyed – an adverse effect under Section 106. A constructive use occurs when the setting of the property is so altered it loses significance – also an adverse effect under Section 106.
- **Section 6(f)** — Section 6(f) is part of the Land and Water Conservation Fund (LWCF) Act of 1965, designed to provide restrictions for public recreation facilities funded with LWCF money. The LWCF Act provides funds for the acquisition and development of public outdoor recreation facilities that could include community, county and state parks, trails, fairgrounds, conservation areas, boat ramps, shooting ranges, etc. Facilities that are LWCF funded must be maintained for outdoor recreation in perpetuity. Impacts to 6(f) lands require mitigation that includes replacement lands of at least equal value and recreation utility. Based on a review of the National Park Service database, there are no Section 6(f) properties in the Study Area.

## Study Area Resources

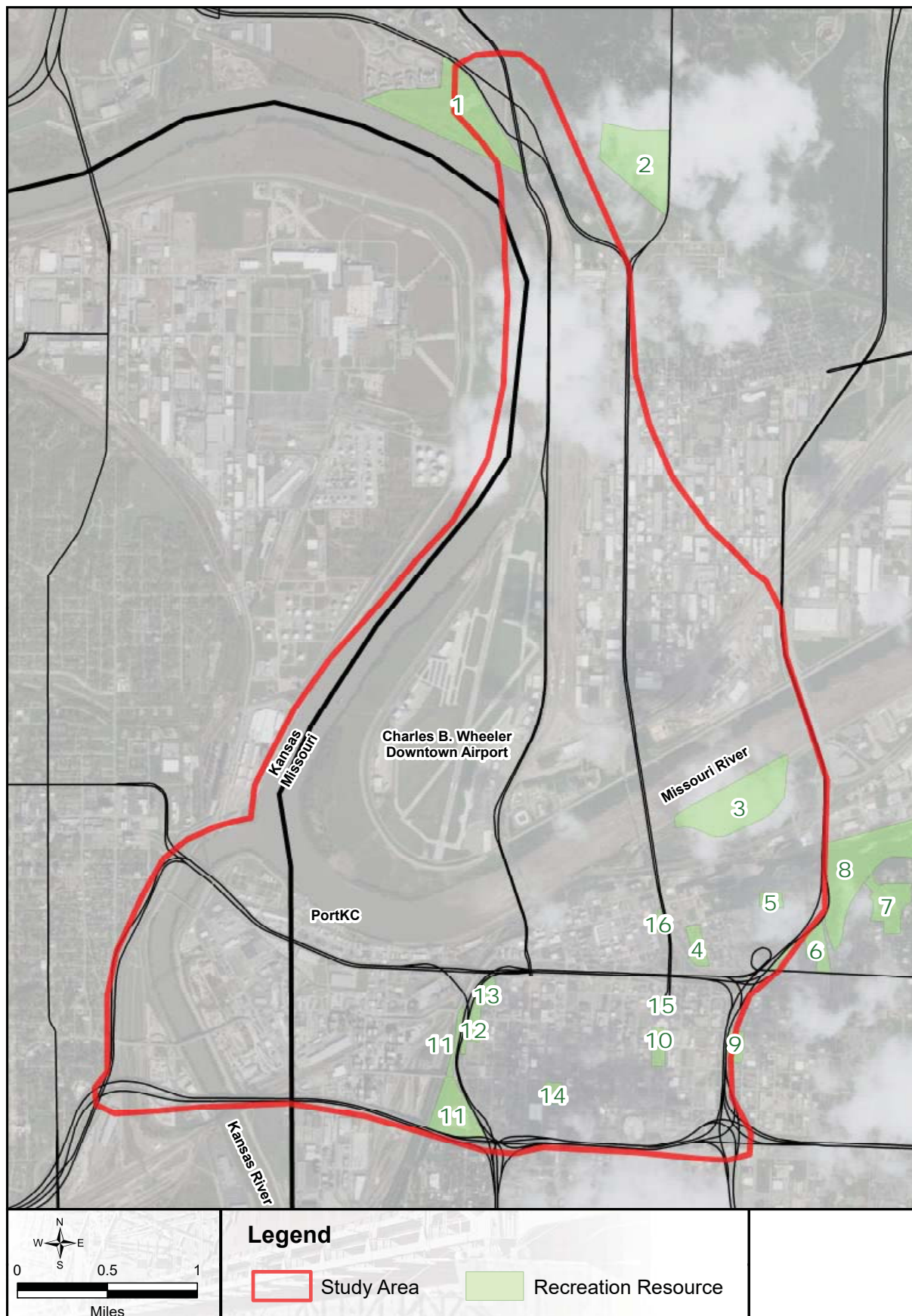
The project team used GIS data to identify details and characteristics of existing parks and recreational resources in the Study Area. The team obtained additional inventory details about the resources, such as ownership, size, and amenities, by accessing individual municipalities’ websites in January 2017. Research centered on using the most current version of online information available. The information has not been confirmed with the jurisdictions and may change as the project progresses through the planning phases.

Figure 3.15 identifies where each park is within the Study Area or within close proximity or adjacent to the Study Area. More detailed descriptions of each park has been provided in Table 3.8.





Figure 3.15 - Location of Parks and Recreational Areas



The Study Area contains numerous parks and recreational facilities. Existing regulations require a higher standard of care when a proposed transportation improvement impacts an existing park.

Table 3.8 - Existing Parks or Recreational Resources

No.	Resource Name	Location	Description
1	Waterwell Park	SW of US-169 and MO Hwy 9 interchange	Established in 1990 with over 66 acres of land. Park includes athletic complex, including 5 baseball fields and a playground.
2	Waterworks Park	NE 32nd Street and North Oak Trafficway	Park began in 1931 as space for employees of water treatment plant. During WWII park was closed for security purposes. The KCMO Parks Department acquired the land in 1965 which contains a disc golf course and memorial.
3	Richard Berkley Riverfront Park	South bank of the Missouri River between the Christopher S. Bond Bridge and the Heart of America Bridge	The park was dedicated in 1998 with 17 acres of land. The area was once a landfill and former site of a sand and gravel company.
4	Columbus Square Park	Missouri Ave and Holmes Street in Columbus Park Neighborhood	The 4.18 acre park was acquired in 1909 and includes bocce courts, a gazebo and play area. A new master plan for the park was completed in 2014.
5	Garrison Square Park and Community Center	E. 5th Street and Troost Avenue	The park was established in 1908 and is 3.09 acres, which includes a soccer field and sprayground. The Community Center is over 100 years old and a historic landmark. The Community Center offers a variety of sports, activities and events.
6	Belvidere Park	Independence Avenue and Lydia Avenue	The park was established in 1967. It is 15.46 acres and includes soccer fields.
7	Maple Park	Maple Boulevard and Lexington Avenue	Maple Park, established in 1946, is 15.52 acres and has one soccer field.
8	Kessler Park	From Paseo to Belmont Boulevard on the North Bluffs	Kessler Park was acquired in 1895 and is 303.51 acres. The park was renamed after George Kessler who was behind the plans for the early park system in Kansas City. The park is home to several memorials and public art as well as the Colonnade. The park also has a disc golf course and 5-mile trail.

No.	Resource Name	Location	Description
9	Margaret Kemp Park and Trail	10th Street and Harrison Street	Established in 1967, the park is 2.94 acres. The Margaret Kemp Park Trail is within the park and is 0.23 miles long.
10	Illus Davis Park	North of KCMO City Hall between 9th and 10th Streets	The 5.2 acre park was acquired in 2001 and includes the Illus Davis fountain. The park was named for a former city councilman who served two terms as mayor.
11	Mulkey Square Park	W. 13th Street and Summit Street	The park was acquired in 1904 and is 8.87 acres with one baseball diamond
12	Ermine Case Jr. Park	9th Street to 10th Street along Jefferson Street	Acquired in 1944 the park is 1.67 acres and adjacent to West Terrace Park
13	West Terrace Park	W. 8th Street and Jefferson Street	West Terrace is one of the oldest parks in the KCMO parks system. It was acquired in 1900 and is 30.56. There are several memorials within the park.
14	Barney Allis Plaza	12th Street and Wyandotte Street	Formerly a park located in downtown Kansas City that was recently purchased by the Kansas City Explorers, Kansas City's world tennis team.
15	Admiral Plaza	8th Street between Oak St. and Locust Street	A park in the northeast corner of the downtown loop near Columbus Square and City Center Square.
16	River Market Off Leash Area	West of Hwy 9 between 3rd and 5th Streets	Located in MoDOT right-of-way, the property has been leased from MoDOT since 2015. The River Market Capitol Improvement District and River Market Community Association raised private funds for the lease of the land. MoDOT does not believe this to be a 4(f) resource per CFR 774 Part II (h).

## TRIBAL & FEDERAL LANDS

The USGS website for Federal Lands and Indian Reservations was reviewed for locations of potential property within the Study Area. Based on the information provided ([https://nationalmap.gov/small\\_scale/printable/fedlands.html#list](https://nationalmap.gov/small_scale/printable/fedlands.html#list)) there are no Tribal or Federal Lands located within the Study Area.



The 1972 Federal-Aid Highway Act required FHWA to develop a noise standard for new Federal-Aid highway projects. FHWA noise standards give highway agencies flexibility in conforming to national requirements. Both MoDOT and KDOT have noise policies on highway traffic and construction noise. MoDOT's Engineering Policy Guide at 127.13 and KDOT's noise policy describes their respective implementation of the requirements of FHWA's noise standard at 23 Code of Federal Regulations (CFR) Part 772. These policies were developed by the state DOTs and approved by FHWA.

The primary sources of highway traffic noise are the tire-pavement interface, engine noise, and exhaust noise. In very general terms, the lower the threshold of highway noise impact is roughly the point at which interference with normal human speech is appreciable. FHWA defines projects into three types: Type I, Type II, and Type III. Below are criteria associated with each project type.

## Type I Project:

1. The construction of a highway on new location; or,
2. The physical alteration of an existing highway where it is either:
  - Substantial Horizontal Alteration. A project halves (reduces) the distance between the traffic noise and the closest receptor between the existing condition to the future build condition; or,
  - Substantial Vertical Alteration. A project that removes shielding (vegetation does not constitute shielding as it typically does not provide substantial noise reduction), as it thereby exposes the line-of-sight between the receptor and the traffic noise source. This is done by either altering the vertical alignment of the highway or by altering the topography between the highway traffic noise source and receptor; or,
3. The addition of a through-traffic lane(s). This includes the addition of a through-traffic lane that functions as a high occupancy vehicle (HOV) lane, high occupancy toll (HOT) lane, bus lane, or truck climbing lane; or,
4. The addition of an auxiliary lane, except when the auxiliary lane is a turn lane; or,
5. The addition or relocation of interchange lanes or ramps added to a quadrant to complete an existing partial interchange; or,
6. Restriping existing pavement for the purpose of adding a through-traffic lane or an auxiliary lane; or,
7. The addition of a new or substantial alteration of a weigh station, rest stop, ride-share lot or toll plaza.
8. If any portion of a project evaluated under NEPA is determined to be Type I per 23 CFR 772.5, then the entire project area as defined in the environmental document is a Type I project.



## Type II & III Projects:

Usually referred to as a retrofit project, a Type II project is a proposed Federal or Federal-Aid highway project for noise abatement on an existing highway. Type II projects are not mandatory and are at the state's discretion. Projects of this type are proposed solely at the option of a state DOT, and specific requirements for the project are determined by the individual state DOT. Federal participation in the funding of such projects is limited to those that propose abatement measures along lands that were developed prior to construction of the original highway.

A project that does not meet the criteria for Type I or Type II is designated as a Type III project. Type III projects do not require noise analysis or consideration of noise abatement. Examples of Type III projects include bridge rehabilitations or replacements, roadway pavement reconstruction, roadway resurfacing, intersection improvements, shoulder additions, and turning lanes.

## **Sensitive Noise Receptors**

Highway noise within the Study Area is typical of that found in an urban environment. At the time that the I-29/I-35 Draft Environmental Impact Statement was completed in 2006, existing noise levels near the northeast corner of the Downtown Loop ranged from 61 decibels (dB) to 68 dB. For Type I highway improvements, existing noise levels are measured and then modeled to predict what future noise levels would be with the Type I improvements. Various noise thresholds have been set for different types of noise sensitive land uses or activities. If the modeled results exceed those thresholds then a cost/benefit analysis is performed to determine if sound barriers such as noise walls are warranted.

Sensitive noise receptors within the Study Area include lands on which serenity and quiet are of extraordinary significance and serve an important need and where the preservation of those qualities is essential if the lands continue to serve their intended purpose. An example may include a cemetery. Other noise sensitive receptors within the Study Area include picnic areas, recreation areas, playgrounds, parks, residences, motels, hotels, schools, churches, and libraries.

## **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 criteria pollutants: sulfur dioxide, particulate matter, carbon monoxide, nitrogen dioxide, ozone, and lead. Transportation substantially contributes to four of the six criteria pollutants: ozone, carbon monoxide, particulate matter, and nitrogen dioxide. If an area is determined to not be in attainment with any transportation-related criteria pollutant, they are required to undergo evaluation of regionally significant projects to ensure the overall plan conforms with an approved emissions budget, also known as demonstrating transportation conformity.

## **Existing Conformance**

The Kansas City region is designated as attainment for all transportation-related criteria pollutants at this time. Therefore, the conformity requirements of 40 CFR Part 93 do not apply and no further action is required.

## **Project Requirements**

Future bridge replacement activities must be completed in accordance with the Kansas City Department of Health Air Quality Division's asbestos regulations. The bridge must be inspected for asbestos by a certified asbestos inspector. If a regulated amount of asbestos is found, then it will have to be abated before demolition occurs.