CHAPTER III
Affected Environment

A. Introduction

This chapter presents a summary of the existing land use, socioeconomic, biophysical and cultural environment. These environmental factors are presented to provide a baseline for the assessment of potential future transportation and economic benefits within SIU 7 and to provide a baseline for the assessment of potential environmental, land use, cultural, social and economic effects of the potential action. Existing conditions described in this chapter include:

- Land Use and Related Characteristics
  - Comprehensive Plans and Zoning
  - Residential Land Use
  - Agricultural Land Use
  - Commercial/Industrial Land Use
  - Parks and Open Space
  - Transportation
- Socioeconomic Characteristics
  - Population
  - Economic Setting
  - Community Services
- Natural and Cultural Features
  - Geology
  - Topography, Surficial Geology and Soils
  - Mineral Resources
  - Seismic Risk
  - Caves
  - Groundwater
  - Floodplains
  - Wetlands
  - Lakes, Rivers, and Streams
  - Plant Communities
  - Wildlife and Aquatic Species
  - Threatened and Endangered Species
  - Hazardous Materials
  - Air Quality
  - Noise
  - Archaeological Resources
  - Historic Resources
  - Visual and Aesthetic Resources

B. Land Use and Related Characteristics

Land use decisions and transportation investment are closely interrelated. Land use and development decisions facilitate the transportation needs of an area – in terms of trips to and

from the area – and in the transportation modes that are used to make those trips. As such, land use decisions and transportation investments affect a region's level of mobility, the viability of each transportation mode in the region, and the overall efficiency of the region's transportation facilities and services. In addition, the cyclic nature of the transportation and land use relationship substantiates the fact that transportation investments also have impacts – at the regional, community and site-specific level – on land uses.

Land use data were obtained using aerial photography and property data. Where available, land use data from city and county sources were also utilized.

The western portion of the study corridor is predominantly rural in character. In eastern Warren and western St. Charles counties, land use becomes increasingly suburban in character. Rural, non-farm lands are generally single-family residential uses and are located along the various state and U.S. highways. Commercial and industrial uses are largely confined to the scattered small urban areas, although freestanding, isolated commercial uses along principal roads are common.

Agricultural lands are found throughout the study corridor, with a majority in Montgomery County.

Urban uses are clustered in or near the numerous small communities, or distributed along the state and U.S. highways in the study corridor. Land development in the study corridor is similar to other rural areas with urban land uses gravitating to the fringes of urban centers along or near state highways. This section provides a summary of pertinent land use planning activities for communities within the SIU 7 Study corridor, and maps highlighting generalized land uses in each county are found in Exhibits III-1 - 3.

1. Comprehensive Plans and Zoning

Through contact with community leaders and local government officials several comprehensive plans and zoning maps were collected throughout the study corridor.

Comprehensive plans, although general in nature, are primarily concerned with the allocation of future land uses (based upon expected land consumption rates and most compatible relationships), the provision of transportation networks needed to access future land uses, and the provision of essential utility systems (infrastructure) to service land use activities. Comprehensive plans were available from the cities of Wentzville and O'Fallon, and each of the three counties in the study corridor.

The intended use of zoning maps/plans is to establish the regulation of the use of land and buildings that permits a community to control the development of its own jurisdiction. Zoning involves dividing a designated area into districts or zones for agriculture, residential, commercial, industrial and public purposes. It provides for orderly growth by protecting homes and property from harmful uses on neighboring properties. The following communities provided zoning/future land use plans: The City of Wentzville, City of New Florence and Lake St. Louis. Two of the three counties in the I-70 study corridor, St. Charles County and Warren County, provided similar plans.

In addition, Boonslick Regional Planning Commission provided a copy of their Comprehensive Economic Development Strategy. This document serves as a tool to lay the foundation for coordinated economic development in the Boonslick Region, Montgomery, Lincoln and Warren Counties, and build upon the resources and efforts of the region.

Following are relevant goals, objectives and action items contained in comprehensive plans and zoning ordinances from municipalities that may be affected by construction within SIU 7:

- Montgomery County's 1995 Master Plan identifies I-70 as the heart of the county. It also recognizes the significance of the highway's economic impact for the future growth and

development within the county. In general, the plan seeks to concentrate new development around existing communities, while providing adequate barriers to potentially incompatible land uses. The plan also recognizes the historic and future importance of agriculture and seeks to minimize the loss of agricultural lands. The plan does not support development of major new transportation facilities, but encourages the redevelopment of major transportation routes in or near existing communities.

- Warren County has recently completed an update of its County Master Plan (February 2003). The plan utilizes a series of tiers to direct growth: urban, suburban, rural and agricultural preservation tiers. The plan attempts to limit conflicts between urban and rural land uses by limiting development to areas where services can efficiently be provided. The urban tiers are planned to concentrate development around existing cities within the county. The SIU 7 study corridor potentially impacts rural tier land located at the far western edge of Warren County. Further, the county would like to rezone land around its I-70 interchanges to plan for commercial development. The county has anticipated a need for access control, parking and effective buffering from nearby residential uses at these interchanges.
- The SIU 7 study corridor also impacts the City of Warrenton. Warrenton's comprehensive development plan (last updated December 2000) establishes a general goal to "provide for the development and growth of Warrenton in such a manner that the community will retain its historic and rural characteristics while responding to the needs of a growing population." Specific objectives include discouraging and/or minimizing the "piecemeal conversion of residential property to commercial uses" and the development of strip commercial shopping facilities. Warrenton is actively trying to attract additional industrial development and would like to direct future commercial and industrial development to vacant land north of I-70. General transportation goals include improving the existing transportation system and building new facilities to support the city's planned growth patterns.
- The SIU 7 study corridor also impacts the City of Wright City. Wright City's comprehensive plan is more than 30 years old. The existing plan is being updated, but until that update is complete, the existing plan provides at least a basic foundation for gauging the city's goals and objectives. The plan focuses on general goals of encouraging commercial and industrial development and guiding residential development. Wright City's transportation goals include improving the existing transportation system (with the possibility of adding interchanges to old Highway 40) and upgrading existing facilities to encourage growth and development.
- St. Charles County's land use plan indicates a preference for commercial and industrial activities along the existing I-70 corridor.
- Wentzville's comprehensive plan (last updated March 1999, with October 2001 amendments) is based on three tiers, ranging from broad development goals to fundamental objectives based on these broad goals to specific action steps. Some of the relevant land use objectives in the city's plan include: to "ensure an adequate supply of developable land"; to "minimize initial and future public/private improvement cost"; and to "provide for high quality development … compatible with adjacent or surrounding land uses." Objectives related to the transportation system include: "to enhance traffic carrying potential and safety on I-70"; "to upgrade Highway 40/61 to a controlled-access highway (including service roads)"; and to "improve or create interchanges of state or regional roadway systems with existing or proposed community arterial road systems." Specific action steps associated with the first of these objectives call for widening and improving existing I-70 in the near future.

- While not directly impacted by the SIU 7 study corridor, the City of Flint Hill's comprehensive plan (last updated August 1999) acknowledges the role the transportation system plays in helping to define the character of its community. However, due to its location several miles north of the existing I-70 corridor, the city has focused primarily on local needs, not improvements to I-70. Pertinent to this study, these goals include the need to upgrade Route 61 (the primary access to the city from I-70) to interstate standards within the next 10-15 years, and the need to widen Route P (the only east-west corridor) to four and five lanes to support future development. The plan also states that any proposed roadway improvements must consider the improvements outlined in plans from other nearby communities, most notably the City of Wentzville.
- In the City of Lake St. Louis' Development Plan, a number of zoning classifications are present along I-70. Predominant among the zoning classifications abutting the freeway are Community Business and Highway Commercial Districts. Other permitted uses include multi-family residential, planned residential, public activity districts and a planned development district.
- Also not directly affected, but potentially impacted by any I-70 improvements is the City of Cottleville. Cottleville is located to the south of I-70, north of Route 94 and east of U.S. 40. The City's land use element indicates that it intends to transition towards a mix of residential and commercial uses, and away from agricultural uses. The City would also like to see light industrial land uses in the vicinity of the Page Avenue extension. Cottleville's comprehensive plan does not specifically address issues related to I-70, but the reconstruction of this portion of the freeway would certainly help with implementing these land use changes. Further, the City sees the upgrading of considerable portions of its roadway network to arterial and multi-lane roadways as critical to its overall growth. It also would like to link its land use planning activities with its transportation, in order to insure compatible growth.

2. Residential Land Use

Residential land use is dispersed throughout the study corridor with residential densities generally decreasing from east to west, but with large concentrated residential densities on the fringe of St. Charles County. Residential land use totals approximately 13 percent of the land area within SIU 7, with most located in Warren County (Table III-1: Land Use by County).

Concentrations of residential land use are also found in the communities of Wentzville, Foristell, Wright City, Warrenton, Jonesburg and High Hill. The larger residential concentrations in St. Charles County are found in Lake St. Louis and in close proximity to Highways A and Z, at the U.S. 40/61 interchange. In Warren County, Wright City and Warrenton have a substantial cluster of residential use. In Montgomery County, residential land use again is concentrated near major highways and I-70 interchanges.

Single-family residences are the primary residential use. There are a growing number of manufactured home developments throughout the study corridor, on individual lots or small acreage. These are generally located at the major interchanges along I-70, in close proximity to the cities. Multi-family land uses, including duplexes, apartments and condominiums are generally located in the urbanized areas of the study corridor, such as Wentzville, Wright City and Warrenton.

Refer to Exhibits III-1 – 3 for a summary of residential land uses for each county within the SIU 7 study corridor.

3. Agricultural Land Use

Land use in the western portion of the SIU 7 study corridor is dominated by agricultural use, with a gradual transition to the more urban-based land use within the eastern portion of the study area. However, agricultural and vacant land uses continue to dominate throughout SIU 7 (Table III-1: Land Use by County). The change in land-use patterns observed within the study corridor is primarily influenced by two factors: urban development from the St. Louis metropolitan area extending westward along the heavily-traveled I-70 corridor, and physiographic changes between the western and eastern portions of the study corridor. Refer to Exhibits III-1 – 3 for a summary of agricultural land uses for each county within the SIU 7 study corridor. Prime Farmland soils are discussed in Section III.D.2.c.

Wetland Reserve Program (WRP) is a voluntary program administered by the Natural Resources Conservation Service (NRCS) that offers landowners the opportunity to protect, restore and enhance wetlands on their property. The NRCS provides technical and financial support to help landowners with their wetland restoration efforts. The goal is to achieve the greatest wetland functions and values, along with optimum wildlife habitat, on every acre enrolled in the program. This program offers landowners an opportunity to establish long-term conservation and wildlife practices and protection. No properties within the SIU 7 study corridor are enrolled in the WRP.[1]

Conservation Reserve Program (CRP) is another voluntary program that provides technical and financial assistance to eligible farmers and ranchers to address soil, water and related natural resource concerns. The program encourages farmers to convert highly erodible cropland to vegetative cover such as native grasses, trees, or other plantings or buffers. The program is administered by the Farm Service Agency. Farmers receive an annual rental payment from the Commodity Credit Corporation (CCC) for the term of a multi-year contract, usually ten years. Two properties enrolled in the CRP in Montgomery County are within the study corridor (Exhibits III-10 – III-12). The two properties, consisting of 5.62 acres and 10.58 acres, adjoin one another and are located south of the High Hill interchange, on County Road 257.[2] A third property enrolled in the CRP program is a 63-acre parcel located in St. Charles County northeast of the Meyer Road and Highway W intersection, approximately 0.5 mile north of the I-70/Foristell interchange.[3]

4. Commercial/Industrial Land Use

The study corridor's commercial and industrial land uses are prevalent throughout the corridor in the various communities. The vast majority of commercial land uses are located in the cities or in the urbanizing area along the major road network. Approximately 867 acres (351 ha) of land is devoted to commercial use, representing approximately 13 percent of the total land area in the study corridor (Table III-1: Land Use by County). The typical pattern of commercial use is strip commercial, although freestanding, isolated commercial activities are quite common. Commercial strip development in the unincorporated areas is most pronounced in the central and eastern communities, particularly at the Route 47 interchange at Warrenton in Warren County, and the U.S. 40/61 interchange at Wentzville in St. Charles County. Most scattered

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[1] Map of WRP sites in east-central Missouri, provided by Alan E. Wolfe, State Administrative Office; letter to authors March 19, 2003.

[2] Elizabeth Cook, State NRCS Office, Personal Communication. July 31, 2003.

[3] Ellis Bolling, St. Peters Regional NRCS Office. Personal Communication December 23, 2003.

commercial developments along these highways and other county roads are primarily convenience commercial activities. In the more rural western section of the study corridor, convenience and service commercial land uses are also scattered along the major roadway, intersecting I-70. Warren County has the largest concentration of commercial land use and Montgomery County has the least.

There is little industrial activity along the I-70 study corridor. Overall, industrial activity is one of the most underrepresented land use activities in the entire study corridor, due in part to the historically rural nature of the area. Industrial land use is generally concentrated in larger communities, but is also occasionally found as a freestanding use in a rural location. New industrial activities are typically located near subdivisions at the periphery of larger established towns.

Refer to Exhibits III-1 – 3 for a summary of commercial land uses for each county within the SIU 7 study corridor.

Table III-1: Land Use by County

	Warren			Montgomery			St. Charles		
Land Use	acres	ha	percent	acres	ha	percent	acres	ha	percent
Suburban Residential	3.6	1.5	0.1%	0.0	0.0	0.0%	15.1	6.1	1.0%
Rural Residential	417.7	169.0	14.5%	241.0	97.5	10.1%	135.0	54.6	9.0%
Urban Residential	9.1	3.7	0.3%	3.1	1.3	0.1%	25.6	10.4	1.7%
General sales or services (commercial)	349.0	141.3	12.1%	238.9	96.7	10.0%	279.0	112.9	18.7%
Manufacturing and construction	127.6	51.6	4.4%	182.2	73.7	7.7%	55.9	22.6	3.7%
Transportation, communication, & utilities	17.9	7.2	0.6%	60.2	24.3	2.5%	18.7	7.5	1.2%
Arts, entertainment, and recreation	0.0	0.0	0.0%	8.1	3.3	0.3%	53.8	21.8	3.6%
Education, public administration, health care	44.6	18.1	1.5%	39.4	16.0	1.7%	85.6	34.6	5.7%
Mining and extraction	0.0	0.0	0.0%	0.0	0.0	0.0%	0.0	0.0	0.0%
Agriculture, forestry, fishing and hunting	1,425.8	577.0	49.5%	1,428.0	577.9	60.0%	468.8	189.7	31.4%
Vacant land	488.0	197.5	16.9%	177.6	71.9	7.5%	355.8	144.0	23.8%
Total:	2,883.3	1,166.8	100%	2,378.5	962.6	100%	1,493.2	604.3	100%

5. Parks and Open Space

There are several municipal and county parks within the SIU 7 study corridor. Table III-2 lists the parks located within one-half mile of the existing I-70 alignment in SIU 7 that are Section 4(f) properties. The table also notes parks that are subject to Section 6(f) Land and Water Conservation Fund (LAWCON) provisions.

The following seven municipal and county parks are located within ¼-mile of I-70 in SIU 7:

- *Founders Park Sports Complex* in Lake St. Louis, south of I-70, has a total of 55 acres. The park features six ball diamonds, soccer fields, picnic facilities, comfort station, pavilion with concession stand, playground, basketball court and walking paths.
- *Quail Ridge Park*, owned by St. Charles County, is located in the southwest quadrant of the I-70-U.S. 40/61 intersection near Wentzville. The park has 250 acres of woodlands and recreational areas. Park amenities include picnic areas with pavilions, a three-acre lake, fishing pond and wetlands, playgrounds, hiking trails, restrooms, a disc golf course and a meeting lodge.
- *Memorial Park*, located in Wentzville, has five acres featuring a baseball field, picnic shelter, playground and multi-purpose courts. The park is northeast of the I-70/U.S. 61 interchange.

- *Diekroeger Brothers Park* located in Wright City has seven acres. The park has a large pavilion with cooking building, restrooms, playground and picnic areas.
- *Corwin Ruge Memorial Park* is located in the southern portion of Wright City. The park contains ball fields, restrooms, pavilion, walking trail, playground and picnic areas.
- *Dyer Park* is a 3.5-acre park located in Warrenton. The park features two picnic pavilions, two tennis courts, three playgrounds and restrooms.
- *Lions Park* is a 4.5-acre park in Jonesburg that features picnic areas and pavilions.

Public parklands have special status under the provisions of Section 4(f) of the Federal Aid Highway Act of 1968. Before any transportation project is allowed to proceed with an encroachment on an eligible public park, recreation area or refuge, a specific evaluation must be conducted that tests all proposed alternatives, as well as an avoidance alternative. To allow the use of parkland, this evaluation must lead to a finding that there is no feasible and prudent alternative to the taking of that park, and that all possible planning to minimize harm to the resource has been undertaken.

The LAWCON provides grants, known as Section 6(f) funds, for recreational land acquisition and facility development. Some of the parks within the study area have received these funds and would likely be subject to the provisions of Section 6(f) if they were impacted. The provisions state that the impacted parkland must be replaced with land and/or facilities of at least equal recreational utility and monetary value. Further, the replacement property is subject to approval by the U.S. Department of the Interior. Funds from the LAWCON program were also used to accomplish the acquisition of Lake St. Louis in St. Charles County.

No state parks, state historic sites, conservation areas, or state trails are located within one mile of I-70.[4]

Four conservation areas owned by the Missouri Department of Conservation are located within five miles of I-70. All are located in Warren County:[5]

- *Little Lost Creek Conservation Area* is southeast of Jonesburg, approximately three miles south of the study corridor. The conservation area consists of 2,899 acres of forestland, and features primitive camping, a hiking trail and horse trail.
- *Frank Reifsnider State Forest* is located southeast of Warrenton, approximately 1.7 miles (2.7 km) south of the study corridor. The conservation area consists of 1,465 acres of forestland. Features include a picnic area, a hiking trail, a firearms range, an intermittent stream and Reifsnider Forest Natural Area, a 22-acre mature white oak forest.
- *Warrenton Towersite* is a 10-acre forested site located approximately 1.25 miles (2.0 km) south of the study corridor, southwest of Warrenton. The site contains a forest lookout tower.
- *Daniel Boone Conservation Area* is located approximately five miles south of High Hill and the study corridor. The area consists of 3,520 acres of mostly forestland. The area features primitive camping, a picnic area, a hiking trail, a horse trail and five fishable ponds.

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[4] MoDNR Missouri State Parks and Historic Sites. *http://www.mostateparks.com/stlouisregion.htm*.

[5] Missouri's Conservation Atlas; Missouri Department of Conservation. 2001 Edition. p. 228.

Table III-2: Section 4(f) and 6(f) Parks Within 1/2-Mile of I-70

Park Name	Jurisdiction	County	Notes
Boulevard Park	Lake St. Louis	St. Charles	Section 4(f)
Founders Park	Lake St. Louis	St. Charles	Section 4(f)
Quail Ridge Park	St. Charles Co.	St. Charles	Section 4(f), 6(f) LAWCON
Memorial Park	Wentzville	St. Charles	Section 4(f), 6(f) LAWCON
Progress Park	Wentzville	St. Charles	Section 4(f)
Rotary Park	Wentzville	St. Charles	Section 4(f), CAP*
Josephville Park	Josephville	St. Charles	Section 4(f)
Neighborhood Park	Warrenton	Warren	Section 4(f)
Dyer Park	Warrenton	Warren	Section 4(f)
City Park	Warrenton	Warren	Section 4(f)
Binkley Park/Pool	Warrenton	Warren	Section 4(f)
Warrenton Park	Warrenton	Warren	Section 4(f), 6(f) LAWCON
Corwin Ruge Park	Wright City	Warren	Section 4(f), 6(f) LAWCON
Diekroeger Park	Wright City	Warren	Section 4(f)
Lions Park	Jonesburg	Montgomery	Section 4(f)
Ball Park	New Florence	Montgomery	Section 4(f)

*The Community Assistance Program (CAP) is sponsored by the Missouri Department of Conservation to provide fisheries assistance to towns and cities seeking to develop and upgrade lakes and ponds.

6. Pedestrian and Bicycle Facilities

The FTEIS process identified bicycle and pedestrian facilities including identifying recreational trail improvements or linear parks as joint development opportunities. As a result of agency comments, the FTEIS directed Second Tier efforts to address the cross-corridor needs of pedestrians and bicyclists.

Regarding local level government entities within the study corridor, several potential bicycle/pedestrian facilities were addressed. According to the EWGCOG Pedestrian Advisory Committee's website[6], an update of the Council's 1994 St. Louis Region Bicycle Facilities Plan is currently underway. The existing 1994 plan mentions a proposed St. Charles County Bikeway; connecting the communities of Wentzville, Lake St. Louis, O'Fallon, St. Peters, St. Charles and the KATY Trail. Once the plan is updated, further information on the St. Charles County Bikeway is expected. Finally, the Boonslick Regional Planning Commission's website[7] had no indication of planned bicycle and/or pedestrian facilities within Montgomery and Warren counties.

In addition, according to the I-70 Corridor Enhancement Plan's Bicycle and Pedestrian Trail exhibit, no existing or planned bicycle/pedestrian facilities will be impacted in SIU 7. Ongoing coordination efforts will be carried out with the previously mentioned agencies and up-to-date information regarding existing and planned bicycle/pedestrian facilities within the study area of SIU 7 will be maintained.

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6 http://www.ewgateway.org/trans/shortrgplan/bikeways/bikeways.htm

7 http://www.boonslick.org

C. Socioeconomic Characteristics

This section provides a description of socioeconomic characteristics, including demographic statistics, economic conditions and community facilities within SIU 7.

1. Population

Demographic data for this section was derived from the 1990 and 2000 United States census. This data is provided at the county and urban level to provide a summary of social and economic growth trends within the study corridor.

a. Total population

Between 1990 and 2000, the combined population of St. Charles, Warrenton and Montgomery Counties grew from 243,796 to 320,544, an increase of 31.5 percent (Table III-3). During the same period, the population of the State of Missouri increased by 9.3 percent to 5,595,211. The three counties accounted for 4.8 percent of the state's total population in 1990 and 5.7 percent of the state's population in 2000.

The highest rate of growth among the three counties was recorded in St. Charles County with 33.3 percent for the ten-year period, 1990-2000. Warren County followed closely with 25.6 percent over the same period. Montgomery County experienced an intermediate growth rate that was slightly lower than the growth rate for the state. St. Charles County accounted for 87.3 percent of the combined population of the three counties in 1990, and 88.6 percent in 2000. The higher rates of growth in St. Charles and Warren Counties can be attributed to their proximity to the St. Louis metropolitan area.

Table III-3: 1990-2000 County Population

Area	1990 Population	2000 Population	Percent Change 1990-2000
Montgomery County	11,355	12,136	6.9
Warren County	19,534	24,525	25.6
St. Charles County	212,907	283,883	33.3
Total	243,796	320,544	31.5
State of Missouri	5,117,073	5,595,211	9.3

Source: U.S. Bureau of the Census, Census 2000 and 1990.

Figure III-1 shows the growth in population in each county in SIU 7 between 1990 and 2000.

Figure III-1: County Population Changes 1990-2000

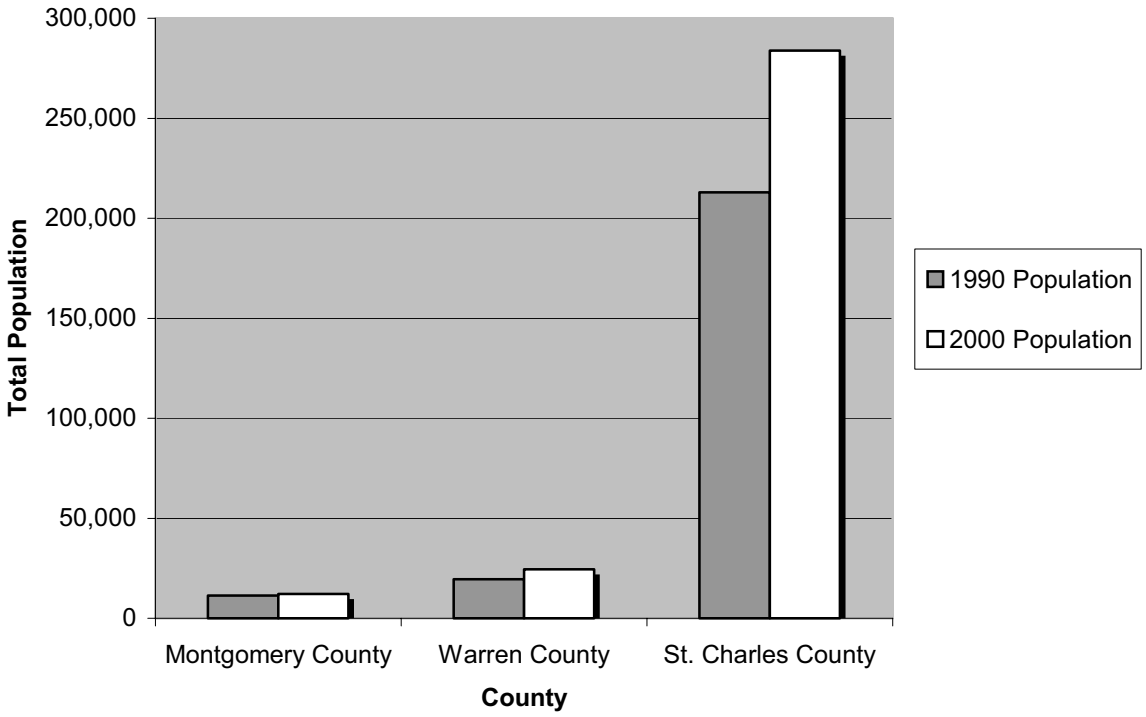


Table III-4 shows the 1990 populations and the corresponding 2000 populations for the SIU 7 communities. Warrenton, Wentzville and Lake St. Louis account for nearly 81.9 percent of the population of the study corridor's communities in 1990, and 83.8 percent in 2000. Within SIU 7, Lake St. Louis is the most populated community along I-70, accounting for 37.8 percent of the combined 1990 population, and 38.1 percent of the combined 2000 population.

The community that experienced the highest rate of growth was Foristell (129.9 percent), while New Florence experienced a negative growth rate (4.8 percent). Within the study corridor, most of the population growth has taken place towards the eastern portion. Communities in St. Charles County, including Wentzville and Lake St. Louis, account for 64.1 percent of the growth in 2000.

Table III-4: 1990-2000 Community Population

County	Community	Population 1990	Population 2000	Percent Change 1990-2000
Montgomery	New Florence	801	764	-4.8
	High Hill	204	231	13.2
	Jonesburg	630	695	10.3
Warren	Warrenton	3,564	5,281	48.2
	Truesdale	285	397	39.3
	Wright City	1,250	1,532	22.6
St. Charles	Foristell	144	331	129.9
	Wentzville	5,088	6,896	35.5
	Flint Hill	229	379	65.5
	Lake St. Louis	7,400	10,169	37.4
	Total	19,595	26,675	36.1

Source: U.S. Bureau of the Census, Census 2000 and 1990.

b. Age

Table III-5 shows that in 1990 and 2000, nearly 60 percent of the population of the three counties was between 20 and 64 years of age. The next largest population cohort was those under the age of 20 years, accounting for almost 32 percent in 1990 and 2000. Those aged 65 and over constituted the third largest group. St. Charles County has a slightly lower percentage of the population 65 years of age and over when compared to the other two counties. In addition, Montgomery and Warren Counties compared relatively close in growth with the State of Missouri in all the age categories. However, St. Charles County had a smaller percentage, seven percent in 1990 and nine percent in 2000, than the state average of 14 percent over the same period.

The median age in the three counties increases from east to west along the study corridor. In 2000, St. Charles County had a median age of 34, whereas Warren County had a median age of 37, and the greatest median age of 39 in Montgomery County.

Table III-5: 1990-2000 County Age Distribution

Area	Under 20	%	20-64	%	65 & Over	%
1990						
Montgomery	3,225	28.4	5,877	51.8	2,253	19.8
Warren	5,962	30.5	10,870	55.6	2,702	13.8
St. Charles	69,593	32.7	128,622	60.4	14,692	6.9
Total	78,780	32.3	145,369	59.6	19,647	8.1
State of Missouri	1,471,392	28.8	2,928,000	57.2	717,681	14.0
Area	**Under 20**	**%**	**20-64**	**%**	**65 & Over**	**%**
2000						
Montgomery	3,409	28.1	6,636	54.7	2,091	17.2
Warren	7,207	29.4	14,132	57.6	3,186	13.0
St. Charles	89,740	31.6	169,291	59.6	24,852	8.8
Total	100,356	41.2	190,059	78.0	30,129	12.4
State of Missouri	1,594,172	28.5	3,245,660	58.0	755,379	13.5

Source: U.S. Bureau of the Census, Census 2000 and 1990.

Over 56 percent of the population in 1990 and 2000 in all the communities listed in Table III-6 was between 20 and 64 years of age. The communities on the western edge of the study corridor, New Florence, High Hill and Jonesburg have the greatest percentage of their population aged 65 and over, when compared to the other communities for this age group. At about 35 percent, the community with the largest population cohort under 20 years of age was Wentzville in 1990 and 2000. The following population cohort, those between 20 and 64 years of age, Lake St. Louis has the largest percentage between 61-64 percent over the same decade. Those aged 65 and over, New Florence accounted for the largest percentage in 1990 at over 28 percent and Jonesburg in 2000 at over 22 percent.

The median age in each of the communities varies throughout, following no clear trend or growth pattern. In 2000, the lowest median age was in Wright City at 30 years of age. By comparison, the highest median age in the communities in Table III-6 was in High Hill at almost 44 years of age.

Table III-6: 1990-2000 Community Age Distribution

County	Community	Under 20	%	20-64	%	65 & Over	%
1990							
Montgomery	New Florence	212	26.5	360	44.9	229	28.6
	High Hill	61	29.9	98	48.0	45	22.1
	Jonesburg	157	24.9	294	46.7	179	28.4
Warren	Warrenton	1,050	29.5	1,834	51.5	680	19.1
	Truesdale	80	28.1	167	58.6	38	13.3
	Wright City	381	30.5	685	54.8	184	14.7
St. Charles	Foristell	44	30.6	86	59.7	14	9.7
	Wentzville	1,805	35.5	2,597	51.0	686	13.5
	Flint Hill	71	31.0	122	53.3	36	15.7
	Lake St. Louis	2,169	29.3	4,763	64.4	468	6.3
	Total	6,030	30.8	11,006	56.2	2,559	13.1
County	**Community**	**Under 20**	**%**	**20-64**	**%**	**65 & Over**	**%**
2000							
Montgomery	New Florence	227	29.7	374	49.0	163	21.3
	High Hill	60	26.0	128	55.4	43	18.6
	Jonesburg	185	26.6	352	50.6	158	22.7
Warren	Warrenton	1,712	32.4	2,850	54.0	719	13.6
	Truesdale	136	34.3	217	54.7	44	11.1
	Wright City	490	32.0	873	57.0	169	11.0
St. Charles	Foristell	99	29.9	198	59.8	34	10.3
	Wentzville	2,400	34.8	3,749	54.4	747	10.8
	Flint Hill	114	30.1	225	59.4	40	10.6
	Lake St. Louis	2,757	27.1	6,214	61.1	1,198	11.8
	Total	8,180	30.7	15,180	56.9	3,315	12.4

Source: U.S. Bureau of the Census, Census 2000 and 1990.

c. Race

The majority of the population in the study area is White as shown in Table III-7. St. Charles County had the most minority residents (7,483 or 3.5 percent of the County's population in 1990 and 12,078 or 4.3 percent of the population in 2000). The largest minority population in the county study corridor is the Black or African American population. In 1990, Blacks or African Americans represented 2.4 percent of the population, while in 2000 they accounted for 2.6 percent of the population, a slight increase. The remaining minority categories represent less than one percent of the population in each county between 1990 and 2000. By comparison, the statewide racial composition is similar to the three counties in the study corridor, except for the Black or African American population. Statewide, the Black or African American population is higher, around 11 percent for the 1990 to 2000 period. In addition, statewide the White population saw a decrease during this time and the minority populations saw an increase. In contrast, Montgomery and Warren Counties were the opposite, with an increase in the White population and a decrease in the Black or African American population. St. Charles County experienced similar growth to the State of Missouri.

The minority percentages in these counties are consistent with the percentages in the ten major communities as a whole, with differences varying less than one percent.

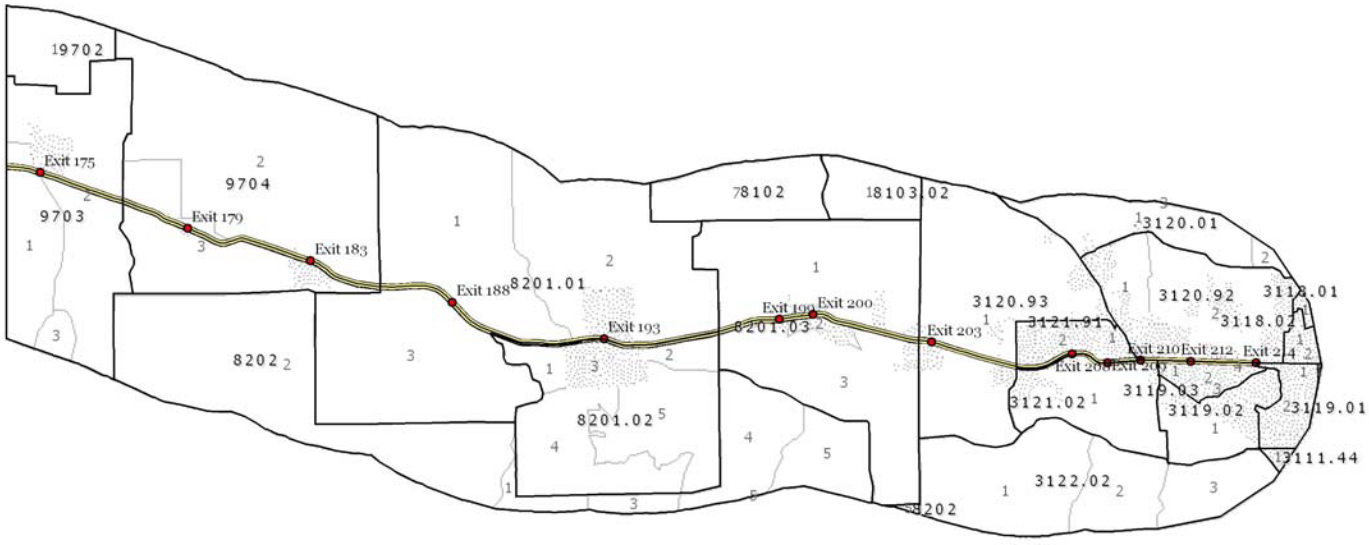
Table III-7: County Racial Composition 1990-2000

County	White	%	Black or African American	%	American Indian, Eskimo, or Aleut	%	Asian or Pacific Islander	%	Other Race	%
1990										
Montgomery	11,015	97.0	289	2.5	12	0.1	20	0.2	19	0.2
Warren	18,903	96.8	513	2.6	46	0.2	33	0.2	39	0.2
St. Charles	205,424	96.5	4,963	2.3	528	0.2	1,431	0.7	561	0.3
Total	235,342	96.5	5,765	2.4	586	0.2	1,484	0.6	619	0.3
State of Missouri	4,486,228	87.7	548,208	10.7	19,835	0.4	41,277	0.8	21,525	0.4
County	**White**	**%**	**Black or African American**	**%**	**American Indian, Eskimo, or Aleut**	**%**	**Asian or Pacific Islander**	**%**	**Other Race**	**%**
2000										
Montgomery	11,647	97.2	248	2.1	29	0.2	32	0.3	25	0.2
Warren	23,517	96.9	476	2.0	110	0.5	63	0.3	109	0.4
St. Charles	268,756	95.7	7,635	2.7	657	0.2	2,485	0.9	1,301	0.5
Total	303,920	95.8	8,359	2.6	796	0.3	2,580	0.8	1,435	0.5
State of Missouri	4,748,083	84.9	629,391	11.2	25,076	0.4	64,773	1.2	45,827	0.8

Source: U.S. Bureau of the Census, Census 2000 and 1990.

Table III-8 identifies minority populations by block groups and census tracts (Figure III-2). The most diverse tracts of land in the corridor are in St. Charles County, close to the eastern terminus of SIU 7. These tracts of land are more diverse due likely to their proximity to the metropolitan St. Louis area. The least diverse tract of land is located in a rural portion of the study corridor in Warren County near the city of Warrenton.

Figure III-2: 2000 Census Tracts & Block Groups



The largest population of a minority group by block group is the Black or African American population. The next largest is the Hispanic population. The block group with the highest number of Black or African American persons is also closest to the metropolitan St. Louis area

and in the growing suburban community of Lake St. Louis. The block group with the highest number of Hispanic persons is in Warren County, in the northern section of the City of Warrenton. Throughout the corridor, the number of minority persons is greater in block groups located within or near an urban area, or in an established city/town. The populations with the least representation within the corridor are Native Hawaiians or Pacific Islanders.

Table III-8: Minority Demographics (Year 2000)

County Census Tract/Block Group		Total Population	One Race	Percent	White	Percent	Black or African American	Percent	American Indian & Alaska Native	Percent	Asian	Percent	Native Hawaiian or Other Pacific Islander	Percent	Other Race	Percent	Two or More Races	Percent	Hispanic or Latino (of any race)	Percent
St. Charles		283,883	280,834	98.9%	268,756	94.7%	7,635	2.7%	657	0.2%	2,414	0.9%	71	0.0%	1,301	0.5%	3,049	1.1%	4,176	1.5%
3119	1	1,330	1,314	98.8%	1,262	94.9%	36	2.7%	3	0.2%	7	0.5%	1	0.1%	5	0.4%	16	1.2%	22	1.7%
	2	1,197	1,190	99.4%	1,161	97.0%	16	1.3%	1	0.1%	9	0.8%	0	0.0%	3	0.3%	7	0.6%	21	1.8%
	4	734	729	99.3%	698	95.1%	22	3.0%	1	0.1%	4	0.5%	0	0.0%	4	0.5%	5	0.7%	12	1.6%
3120.9	1	2,303	2,210	96.0%	1,621	70.4%	562	24.4%	8	0.3%	14	0.6%	0	0.0%	5	0.2%	93	4.0%	26	1.1%
	2	1,512	1,498	99.1%	1,476	97.6%	4	0.3%	3	0.2%	9	0.6%	0	0.0%	6	0.4%	14	0.9%	14	0.9%
3120.9	1	3,405	3,372	99.0%	3,307	97.1%	40	1.2%	2	0.1%	8	0.2%	0	0.0%	15	0.4%	33	1.0%	45	1.3%
3121	1	1,459	1,449	99.3%	1,388	95.1%	55	3.8%	0	0.0%	3	0.2%	1	0.1%	2	0.1%	10	0.7%	7	0.5%
3121.9	1	1,188	1,172	98.7%	1,045	88.0%	107	9.0%	1	0.1%	12	1.0%	2	0.2%	5	0.4%	16	1.3%	8	0.7%
	2	2,916	2,888	99.0%	2,708	92.9%	146	5.0%	2	0.1%	6	0.2%	0	0.0%	26	0.9%	28	1.0%	52	1.8%
Warren		24,525	24,275	99.0%	23,517	95.9%	476	1.9%	110	0.4%	59	0.2%	4	0.0%	109	0.4%	250	1.0%	314	1.3%
8201	1	1,103	1,086	98.5%	1,054	95.6%	9	0.8%	13	1.2%	4	0.4%	0	0.0%	6	0.5%	17	1.5%	2	0.2%
	2	3,307	3,260	98.6%	3,166	95.7%	48	1.5%	20	0.6%	9	0.3%	0	0.0%	17	0.5%	47	1.4%	46	1.4%
	3	918	910	99.1%	897	97.7%	4	0.4%	2	0.2%	6	0.7%	1	0.1%	0	0.0%	8	0.9%	3	0.3%
8201	1	1,364	1,357	99.5%	1,338	98.1%	11	0.8%	1	0.1%	2	0.1%	0	0.0%	5	0.4%	7	0.5%	8	0.6%
	2	887	873	98.4%	835	94.1%	27	3.0%	6	0.7%	4	0.5%	1	0.1%	0	0.0%	14	1.6%	18	2.0%
	3	732	727	99.3%	682	93.2%	35	4.8%	3	0.4%	6	0.8%	1	0.1%	0	0.0%	5	0.7%	5	0.7%
8201	1	2,244	2,215	98.7%	2,018	89.9%	177	7.9%	15	0.7%	0	0.0%	0	0.0%	5	0.2%	29	1.3%	25	1.1%
	2	1,210	1,194	98.7%	1,087	89.8%	59	4.9%	6	0.5%	1	0.1%	0	0.0%	41	3.4%	16	1.3%	79	6.5%
	3	1,004	990	98.6%	966	96.2%	15	1.5%	2	0.2%	1	0.1%	0	0.0%	6	0.6%	14	1.4%	15	1.5%
Montgomery		12,136	11,981	98.7%	11,647	96.0%	248	2.0%	29	0.2%	31	0.3%	1	0.0%	25	0.2%	155	1.3%	94	0.8%
9703	2	925	924	99.9%	890	96.2%	19	2.1%	7	0.8%	1	0.1%	0	0.0%	7	0.8%	1	0.1%	14	1.5%
9704	2	687	668	97.2%	657	95.6%	8	1.2%	1	0.1%	1	0.1%	0	0.0%	1	0.1%	19	2.8%	16	2.3%
	3	1,209	1,184	97.9%	1,154	95.5%	12	1.0%	2	0.2%	16	1.3%	0	0.0%	0	0.0%	25	2.1%	9	0.7%

2. Economic Setting

a. Income and Poverty

As would be expected in a study corridor that transitions from largely rural in character to one of transitional and suburbanizing land uses, income levels generally rise moving from west to east. These figures are shown in Table III-9, from the 2000 U.S. Census. On a percentage basis, incomes are considerably lower in Montgomery County, and rise appreciably in Warren and St. Charles Counties. Note too that the mean and median household income rises noticeably moving from west to east, and the St. Charles County household income figures outpacing the statewide numbers by an appreciable amount.

Table III-9: Income Distribution of Households

	Montgomery		Warren		St. Charles		Statewide	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Less than $10,000	540	11.3	741	8.0	3,125	3.1	221,242	10.1
$10,000 to $14,999	397	8.3	505	5.5	3,204	3.1	154,370	7.0
$15,000 to $19,999	461	9.6	543	5.9	3,688	3.6	156,062	7.1
$20,000 to $24,999	487	10.2	659	7.2	4,355	4.3	163,924	7.5
$25,000 to $29,999	318	6.6	754	8.2	5,093	5.0	159,663	7.3
$30,000 to $34,999	319	6.7	606	6.6	5,569	5.5	154,948	7.1
$35,000 to $39,999	435	9.1	621	6.7	5,496	5.4	139,948	6.4
$40,000 to $44,999	317	6.6	702	7.6	5,972	5.9	132,159	6.0
$45,000 to $49,999	189	4.0	460	5.0	5,813	5.7	113,208	5.2
$50,000 to $59,999	500	10.5	817	8.9	11,239	11.0	198,631	9.0
$60,000 to $74,999	410	8.6	1,021	11.1	15,956	15.7	217,141	9.9
$75,000 to $99,999	274	5.7	1,074	11.7	16,904	16.6	193,561	8.8
$100,000 to $124,999	86	1.8	338	3.7	7,709	7.6	86,961	4.0
$125,000 to $149,999	31	0.6	139	1.5	3,716	3.6	38,605	1.8
$150,000 to $199,999	15	0.3	103	1.1	2,525	2.5	31,716	1.4
$200,000 or more	3	0.1	127	1.4	1,462	1.4	35,075	1.6
Median income (dollars)	32,772		41,016		57,258		37,934	
Mean income (dollars)	37,627		52,068		65,118		49,956	

As with the income figures, rates of poverty tend to decrease moving from west to east. This holds true for every metric in Table III-10, with the exception of female-headed households in Warren County.

Table III-10: Poverty Status of Families and Non-Family Householders

	Montgomery		Warren		St. Charles		Statewide	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Families	281	8.4	439	6.4	2,179	2.8	127,317	8.6
Married-couple families	120	4.4	181	3.1	694	1.1	50,782	4.4
Female head of household	130	28.6	229	30.1	1,337	15.4	64,805	26.1
Non-family householder	315	22.1	442	19.1	1,822	7.5	131,102	18.4

Table III-11 identifies income and poverty characteristics at the census tract and block group level. Montgomery County and the study corridor block groups have the lowest median household income, which averages about $33,700. Within St. Charles County, those block groups in the study corridor have the highest median household income, with an average of $53,000. The wealthiest block group in the SIU 7 corridor is in St. Charles County with a median household income of over $66,000. This tract extends to the north and south of I-70 between Route Z on the east and Route W on the west. By contrast, the poorest block group is in Montgomery County, on the south side of I-70 between the county line and the western terminus near Route 19, with a median household income of $27,500.

There is little difference between the averages of per capita income throughout the impacted block groups within the study corridor. St. Charles County has the highest average per capita income at $22,597. In addition, the southern side of I-70 in St. Charles County near the Lake St. Louis subdivision had the largest per capita income in the SIU 7 corridor at $34,490. Montgomery County has the smallest per capita income for a block group, near Highway 19 on the south side of I-70, at $13,468.

The poverty level was calculated based on a weighted average poverty threshold for 1999, developed by the U.S. Census Bureau. Table III-11 shows the number of persons below the calculated poverty level for each block group. Correlating to income, Montgomery County has the largest number of persons with an income below the poverty level. By contrast, a block group in St. Charles County on the south side of I-70 near Lake St. Louis has no persons below the poverty level. However, this area is mostly commercial with limited housing opportunities. Overall, Montgomery County's impacted block groups in SIU 7 have the largest percentage of people below the poverty level, about 31 percent. Warren County is in the middle, with about 10 percent of the impacted block group persons below poverty level, and Montgomery County with the smallest percentage close to seven percent.

Table III-11: Income and Poverty (Year 1999)

Location		Population	Income (dollars)		Poverty* (# of persons)	
Tract	Block Group		Median Household Income	Per Capita Income	Income Below Poverty Level	Income At or Above Poverty Level
St. Charles County		279,670	57,258	23,592	11,177	268,493
3119.03	1	1,326	42,237	19,886	197	1,129
	2	1,204	80,851	34,490	37	1,167
	4	748	53,750	28,354	0	748
3120.92	1	2,299	35,673	13,257	607	1,692
	2	1,508	60,850	20,943	48	1,460
3120.93	1	3,370	66,467	23,895	67	3,303
3121.02	1	1,520	50,208	22,441	10	1,510
3121.91	1	1,156	33,403	19,295	55	1,101
	2	2,805	53,690	20,813	129	2,676
Warren County		24,272	41,016	19,690	2,095	22,177
8201.01	1	1,056	49,773	22,190	104	952
	2	3,264	35,993	16,154	304	2,960
	3	927	45,125	16,705	63	864
8201.02	1	1,393	30,195	15,787	127	1,266
	2	881	31,300	13,474	111	770
	3	640	28,654	14,238	93	547
8201.03	1	2,235	49,032	20,105	217	2,018
	2	1,214	30,134	18,229	168	1,046
	3	997	50,375	33,779	40	957
Montgomery County		11,712	32,772	15,092	1,381	10,331
9703	2	816	29,773	13,468	149	667
9704	2	670	43,750	14,443	30	173
	3	1,149	27,500	15,001	640	976

b. Employment

Within the SIU 7 corridor counties, manufacturing jobs dominate as the employment category with the highest percentage of employees overall (Table III-12). This is followed closely by wholesale trade, retail trade and healthcare and related services. As expected, the more suburbanized St. Charles County has the highest overall employment and it is in this county that manufacturing, construction and retail trade dominate. Growing Warren County appears to be following this employment trend. It is interesting to note that as a more “urban” county, St. Charles County not have a corresponding increase in “professional” employees (such as transportation, communication, finance, personal services, public administration or other professional services), although it is considerably higher on a percentage basis as compared to the other two counties.

While agricultural land uses dominate the study corridor, they are not strongly represented within the employment figures. This is likely due to the fact that agriculture does not generally require a large number of employees to function. Further, agricultural workers typically are also employed full or part-time in other industries.

Table III-12: Employment (North American Industry Classification System) (2001)

Major Industry	Montgomery		Warren		St. Charles	
	Annual	Total Establishments	Annual	Total Establishments	Annual	Total Establishments
Total	56,698	330	132,593	542	2,736,915	6,321
Forestry, fishing, hunting, and agriculture support	76	3	57	4	146	8
Mining	190	3	0	3	3,797	6
Utilities	0	2	0	1	28,275	12
Construction	8,131	51	15,388	101	318,300	881
Manufacturing	18,211	26	53,726	41	592,162	269
Wholesale trade	5,407	17	3,248	22	154,682	354
Retail trade	6,425	62	21,400	108	318,318	964
Transportation & warehousing	1,266	26	4,332	36	47,246	197
Information	334	4	901	4	151,173	130
Finance & insurance	4,237	18	3,391	24	89,525	393
Real estate & rental & leasing	54	5	842	19	32,390	253
Professional, scientific & technical services	0	10	1,982	20	157,904	574
Management of companies & enterprises	0	2	0	2	98,720	37
Admin, support, waste mgt, remediation services	0	9	2,454	22	112,767	388
Educational services	0	0	0	0	42,303	63
Health care and social assistance	5,671	21	8,657	33	318,418	555
Arts, entertainment & recreation	0	4	423	6	51,153	117
Accommodation & food services	1,488	20	4,279	34	102,313	450
Other services (except public administration)	2,822	45	8,826	57	101,975	620
Auxiliaries (corporate, subsidiary & regional mgt)	0	1	67	5	13,993	11
Unclassified establishments	0	1			1,355	39

Source: U.S. Census Bureau

c. Housing Characteristics

Housing characteristics within SIU 7 are shown in Table III-13. Occupancy rates exceed 80 percent in each county and are consistent with state occupancy rates. As indicated in the table, the majority of housing units in the corridor are owner occupied, with each county having an owner occupancy rate greater than 78 percent. The median value of the housing units in the corridor ranges from $59,300 for Montgomery County to $126,200 for St. Charles County. As with other socioeconomic factors, this is expected given the rural to suburban nature of the study corridor

Table III-13: Housing Characteristics

County	Total Housing Units	Percent Occupied	Percent Owner Occupied	Percent Renter Occupied	Median Value
Montgomery	5,726	83.4	78.5	21.5	59,300
Warren	11,046	83.2	83.1	16.9	108,600
St. Charles	105,514	96.4	82.0	18.0	126,200

As indicated in Table III-13, the housing vacancy rate for the study corridor ranges is below 20 percent. This level of availability is one indication that an adequate supply of housing exists to meet the requirements associated with residential relocations that would occur as a result of this project.

3. Community Services

This section discusses some of the community services provided within the SIU 7 study area. Most of the population centers in the study area offer municipal sanitary sewer, water and police service, while some areas are served by community and volunteer fire services. Towns without their own police department are typically served by the County Sheriff and those without their own fire department are typically served by the fire department of a neighboring community. This section also identifies the schools and school districts that serve children living in the study corridor, as well as heath care facilities. In addition, the University of Missouri and Lincoln University provide rural areas of the study corridor with a variety of services. Maps highlighting community facilities within SIU 7 are found in Exhibits III-4 – 6.

a. Montgomery County

Cities in Montgomery County within the SIU 7 study corridor include Jonesburg and New Florence (Exhibit III-4: Montgomery County Community Facilities)

Public Utilities
Montgomery County continues to improve its ability to service residents and businesses with public water and sewer services. While there are areas of the county that are not served by a water or wastewater system, steps are being taken to expand existing systems. The City of Jonesburg provides water and sewer services to its residents, including a City lagoon and installation of new sewer service in areas not previously serviced. The City has also recently replaced deteriorated lines within the community.

Public Safety
Montgomery County is served by a Sheriff's Department and a Department of Emergency Management. The sheriff's office is responsible for county wide law enforcement, criminal investigations, county jail and prisoner transportation, civil process for the county, firearms permits, crime prevention tips, pride program for schools, and community seminars on criminal and drug awareness. The Department of Emergency Management works with SEMA and FEMA and coordinates with AmerenUE for drills concerning the Callaway Nuclear Plant. The County of Montgomery also has a tax-supported, 24-hour ambulance service that is headquartered in Montgomery City.

Health Care
Health care services in Montgomery County include the following:

- Associated Medical Arts: Family health care.
- Developmental Disabilities Assistance Board of Montgomery County: Provides support and services to people who have developmental disabilities and their families.
- Fibromyalgia Support Group: Fibromyalgia support group/other arthritis diseases.
- Gamma Road Lodge: A long-term care facility providing skilled nursing care.
- Gamma Road Nursing Center: A 120-bed skilled nursing facility.
- Jonesburg Nursing & Rehab: A long-term care facility providing skilled nursing care.
- Montgomery County ARC Adult Learning Center: A not-for-profit organization providing services and support for individuals with developmental disabilities.
- Montgomery County Health Department: Local health agency offering a wide variety of disease prevention and health promotion services to Montgomery County residents.

- Montgomery County Health Dept/Home Health Agency: Local Home Health Agency offering skilled care services to eligible Montgomery County residents in their homes.
- Montgomery County Physical Therapy: A clinic equipped to provide the full scope of physical therapy services.
- NECAC -- North East Community Action Corp.: A community action agency with services designed to help people help themselves achieve self-sufficiency.
- New Florence Nursing Home, Inc.: A long-term care facility providing residential care, skilled nursing care.
- Youth In Need - Montgomery County HS/EHS Socialization Center: Comprehensive child development program for children ages zero to five.

Education and School Districts
The Montgomery County University Outreach and Extension Center is an outreach effort provided by the four campuses of the University of Missouri System and Lincoln University. University Outreach and Extension maintains a unique partnership among federal, state and local governments that provides access to the research based resources needed to provide high quality educational programs on issues of highest priority to meet the needs of the citizens of Missouri. The Montgomery County Extension Council, as established by state statute, is a partner with University Outreach and Extension and USDA-CSREES in the development, implementation and evaluation of extension educational programs. Services offered at the Montgomery County Outreach and Extension Center include:

- Soil Testing and Plant Diagnostic Services
- Family Nutrition Education Program
- Center for Distance and Independent Study
- MU Direct: Continuing and Distance Education
- Canner Gauge Tests

The Montgomery County portion of the study corridor is served by the Montgomery County R-II School district. This district also serves a small portion of western Warren County. Enrollment for the district is approximately 1,300 students. Jonesburg Elementary School is the only school located near this section of the study corridor.

b. Warren County

Cities in Warren County in the SIU 7 study corridor include Foristell, Pendleton, Truesdale, Warrenton and Wright City (Exhibit III-5: Warren County Community Facilities).

Public Utilities
The following summarizes community services provided within Warren County.

- Foristell is unique within the study area, as portions are located within both Warren and St. Charles counties. The City of Foristell provides water and wastewater services within its incorporated limits.
- The Village of Pendleton is the newest incorporated municipality within Warren County. At present, the entire village is on septic systems, with water provided by cisterns and wells. The Village is working with the Boonslick Regional Planning Commission to acquire funding for a public water distribution system and a wastewater treatment facility.

- The City of Truesdale is landlocked on all sides by the City of Warrenton and shares its wastewater treatment systems. Water for Truesdale is provided by an elevated storage tank.
- Warrenton is the largest city within Warren County and is anticipating continued growth. The City provides water and wastewater services and is planning for expansion of both facilities.
- Wright City is the second largest city within Warren County and also is planning for continued growth. The City has an existing water storage tank, with plans to expand. A wastewater treatment facility also serves residents, and it too is slated for expansion.

Rural water districts also serve portions of unincorporated Warren County. The Montgomery County Public Water and Sewer District serves areas within the SIU 7 study corridor and has plans to add capacity to its service area with the addition of an additional well and tower. St. Charles County Public Water District No. 2 also provides services in the eastern portion of the county. The district has expansion plans within the county, but not proximate to the study corridor.

Public Safety
Warren County Ambulance is the primary provider of emergency medical services within the study portion of Warren County. Patients are primarily transported to St. Joseph's Hospital in Lake St. Louis, although patients are at times transported to hospitals in Wentzville, Troy or Washington.

Fire protection is provided through the Jonesburg, Warrenton and Wright City Fire Protection Districts.

Staffing for the Warren County Sheriff's Department includes one sheriff, three detectives and 17 patrol officers. While providing public safety services for all of Warren County, the department also has mutual aid agreements with each incorporated area within the county.

Health Care
Health care services in Warren County include the following:

- Boonslick Area Health Services, Inc.: Provides women with physical exams, PAP smears, reproduction education and contraceptives (if requested).
- Bridgeway Counseling Services, Inc. - Warrenton Office: Provides outpatient chemical dependency counseling.
- HS Warren County - Warrenton: In-home and center-based programs for a minimum of 342 children, ages three years to compulsory school age and their families.
- Midwest Health Centers - Warrenton: Primary health care centers to assist people who are under and uninsured.
- Warrenton Nursing & Rehab: A long-term care facility providing skilled nursing care.
- Warren County Ambulance District: First Aid is taught, but with no accreditation.
- Warren County Council on Aging: Provides senior citizens with assistance in preparing taxes.
- Warren County Handicapped Services, Inc.: Adult Day Program for adults with developmental disabilities.
- Warren County University Outreach & Extension Center: Provides practical, research-based information and problem-solving resources of the University of Missouri and Lincoln University.
- Youth In Need - Warren County HS/EHS Socialization Center: Comprehensive child development program for children ages zero to five.

Education and School Districts
The Warren County University Outreach and Extension Center is an outreach effort provided by the four campuses of the University of Missouri System and Lincoln University. University Outreach and Extension maintains a unique partnership among federal, state, and local governments that provides access to the research based resources needed to provide high quality educational programs on issues of highest priority to meet the needs of the citizens of Missouri. The Warren County Extension Council, as established by state statute, is a partner with University Outreach and Extension and USDA-CSREES in the development, implementation and evaluation of extension educational programs. Services offered at the Warren County Outreach and Extension Center include:

- Soil Testing and Plant Diagnostic Services
- Family Nutrition Education Program
- Center for Distance and Independent Study
- MU Direct: Continuing and Distance Education
- Canner Gauge Tests

School districts serving the study corridor within Warren County include Montgomery County R-II, Warren County School District R-III and Wright City R-II. Warren County Junior High School and Warren County Senior High School are located in Warrenton, but outside the study corridor. Other schools located near the study corridor are located near Wright City. These include Wright City Elementary, Wright City Middle School and Wright City High School.

Enrollment for the Montgomery County R-II district is approximately 1,300 students. Enrollment for the Warren County School District R-III district is approximately 2,700 students. Enrollment for the Wright City R-II district is approximately 1,400 students.

c. St. Charles County

Cities in St. Charles County that fall into the SIU 7 study corridor include Foristell, Wentzville and Lake St. Louis (Exhibit III-6: St. Charles County Community Facilities).

Public Utilities
The following summarizes community services provided within St. Charles County:

- Foristell is unique within the study area, as portions are located within both Warren and St. Charles counties. The City of Foristell provides water and wastewater services within its incorporated limits.
- The City of Wentzville's water supply system contains two wells, water storage facilities and a distribution system. The City is also served by Water District #2, which obtains water from the St. Charles County Water Plant located near the Missouri River. Water District #2 is currently constructing a supply line from the City of St. Louis Howard Bend Water Treatment Plant located on the east side of the Missouri River. Most of the developed areas of the City are served by a sanitary sewer system and treatment facility.
- The City of Lake St. Louis is served by Water District #2 as well.

Public Safety
St. Charles County is served by St. Charles County Ambulance. Fire Protection is provided by the Lake St. Louis Fire Protection District, the O'Fallon Fire Protection District and the Wentzville Fire Protection District. The County is also served by a Sheriff's office. Each city

within the study corridor provides law enforcement services through its respective police departments.

Health Care
St. Charles County is served by ambulance services from the St. Charles Fire Department and the St. Charles County Ambulance Service. Other heath care resources in or near the study area include:

- Alternative Behavioral Care/Two Rivers Geriatric Solutions: Adult day care.
- American Red Cross, St. Louis Area - St. Charles County: Places volunteers in more than 100 types of positions throughout the organization.
- Area Volunteers Inc.: Volunteers Inc. provides a clearinghouse for volunteer services and training opportunities for the St. Louis Metropolitan area.
- Barnes-Jewish St. Peters Hospital: Offers community adult, child & infant CPR, as well as babysitting courses.
- Bridgeway Counseling Service - St. Charles Center: Outpatient alcohol and drug abuse counseling is provided on an individual basis.
- Charlevoix Healthcare and Rehab Center: A long-term care facility providing skilled nursing care.
- Claywest Skilled Care: A long-term care facility providing skilled nursing care.
- Crider School Based Services: Crider school based programs include services relating to a variety of family oriented prevention topics from personal safety to crisis counseling.
- Doctors Hospital-Wentzville LP: Proprietary/corporation hospital, general medical-surgical.
- Midwest Health Centers - Lake St. Louis: Primary health care centers to assist people who are under and uninsured.
- SSM Rehab at St. Joseph Health Center: Offers a medically supervised driver evaluation and training program for persons with disabilities.
- St Joseph Health Center: Voluntary not-for-profit hospital, general medical-surgical. Provides medical & supportive services to the terminally ill and their families.
- St. Charles County Department of Health - Wentzville: Provides developmental screenings, immunizations, physical examinations and anticipatory guidance.
- St. Charles County Department of Health: Issues certified copies of certificates for births and deaths occurring in Missouri.
- St. Charles County Recovery Center: Provides chemical dependency services and psychiatric assistance for adults.
- Wentzville Park Care Center: A long-term care facility providing skilled nursing care.
- Youth In Need - St. Charles County HS/EHS Center: Comprehensive child development program for children ages zero to five.

Education and School Districts
The St. Charles County University Outreach and Extension Center is an outreach effort provided by the four campuses of the University of Missouri System and Lincoln University. University Outreach and Extension maintains a unique partnership among federal, state, and local governments that provides access to the research based resources needed to provide

high quality educational programs on issues of highest priority to meet the needs of the citizens of Missouri. The St. Charles County Extension Council, as established by state statute, is a partner with University Outreach and Extension and USDA-CSREES in the development, implementation and evaluation of extension educational programs. Services offered at the St. Charles County Outreach and Extension Center include:

- Soil Testing and Plant Diagnostic Services
- Center for Distance and Independent Study
- MU Direct: Continuing and Distance Education
- Canner Gauge Tests

The portion of the study corridor located in St. Charles is served by the Wentzville R-VI School District. Enrollment for the Wentzville R-VI district is approximately 7,000 students. There are no schools located in or near the SIU 7 study corridor.

D. Natural and Cultural Features

This section provides a description of the natural environment and cultural features within the study corridor.

1. Geology

The I-70 alignment between New Florence and Lake St. Louis generally coincides with the boundary between two physiographic provinces: the till plains of Northern Missouri and the dissected plateau of Southern Missouri. Eastern Montgomery County, western Warren County and the Wentzville area of western St. Charles County lie on a nearly level to gently sloping loess-mantled, glacial till plain. Soils on this plain are typically deep and poorly drained. The topography of central and eastern Warren County, and St. Charles County between Wentzville and Lake St. Louis, consists of thick, loess-covered, gently sloping to steep hills.[8]

A literature search was performed to obtain available geological information for SIU 7 of the I-70 corridor. This section summarizes the geologic conditions identified along the corridor, and provides an outline of identified geotechnical constraints that will impact the various alternative layouts along the corridor.

a. Bedrock Geology

In general, the upper bedrock geology of the I-70 corridor within this region consists primarily of Mississippian-aged deposits in Warren and St. Charles Counties and east Montgomery County; and Pennsylvanian-aged deposits in central and west Montgomery County. Devonian-aged deposits are located a few miles south of the corridor near the border of Montgomery and Warren Counties. Unassigned Devonian or Mississippian formations are also present in east-central and central Missouri.

The Mississippian-aged bedrock present in east-central Missouri is primarily of the Osagean and Meramecian Series. The Osagean Series is approximately 200 feet (61 m) thick and characteristically

[8] Missouri General Soil Map and Soil Association Descriptions; USDA Soil Conservation Service. 1979. pp 20 -23

composed of limestone, which is typically described as crinoidal, very cherty, generally coarsely crystalline, and fossiliferous. The common formations of the Osagean Series are Fern Glen, Burlington and Keokuk. The Meramecian Series in these counties consists of the Salem, St. Louis and St. Genevieve formations. These formations are composed mainly of limestone and some dolomite. Chert is not common but does occur in all the formations. The Salem formation is approximately 100 to 160 feet (31 to 49 m) thick; the St. Louis formation is approximately 100 feet (31 m) thick; and the St. Genevieve formation is approximately 30 to 75 feet (9 to 23 m) thick.

Pennsylvanian-age bedrock is present beneath surficial deposits in more than two-thirds of the counties in Missouri, including Montgomery County. Generally the Pennsylvanian deposits consist of shale as the dominant rock, limestone second in amount, sandstone third, coal fourth, and fire-clays fifth. Clay (particularly refractory clay), coal, limestone and petroleum are important economic resources associated with the Pennsylvanian system. The lower Pennsylvanian Series, mainly the Cherokee group, is present in Montgomery County. The Cherokee group is made up of shales; however, several limestone members are present, along with several coal beds. The thickness of the Cherokee group in Audrain and Montgomery Counties is approximately 75 feet (23 m).

The Devonian rocks of Missouri consist almost entirely of limestone and dolomite. Shale, sandstone and chert are secondary in quantity. The Devonian rocks of central and east-central Missouri are late Middle and Late Devonian in age. These include the Snyder Creek formation, which crops out in limited areas in Callaway and Montgomery Counties. The Snyder Creek formation is composed of calcareous and arenaceous shale, which contains thin beds of limestone and sandstone. The lower part of the formation is predominantly a grayish-green shale containing an increasing number of thin sandstone and limestone beds near the base. The upper part of the formation is an earthy, yellow drab, concretionary, slightly sandy shale with thin, profusely fossiliferous, light grayish-tan to dark brown limestone beds near the top. Within its limited outcrop areas in Callaway and Montgomery Counties, the Snyder Creek formation varies in thickness from 60 feet (18 m) to a minimum of less than 10 feet (3 m).

The Glen Park formation is the series of unassigned Devonian or Mississippian formations present in east-central and central Missouri. The Glen Park formation is a light to medium gray or yellowish-gray, oolitic limestone. This formation is sporadically present. Isolated exposures are present in a narrow band trending northwest through Franklin, St. Louis, St. Charles and Warren Counties. Its northernmost exposure is in west-central St. Charles County on Dardenne Creek. The Glen Park formation can be traced in the subsurface northwestward from Dardenne Creek through St. Charles, Warren, Lincoln, Montgomery and eastern Audrain Counties. In west-central St. Charles County, it is approximately 30 feet (9 m) thick with a six-foot (2 m) bed of oolitic, cross-bedded limestone near the base.

b. Structural Geology

Three anticline structural features are present close to the corridor: Big Spring anticline, Warren County anticline and Eureka-House Springs anticline. The Big Spring anticline is approximately 2.5 miles (4 km) long and located at the border of Montgomery and Warren County approximately five miles (8 km) south of the corridor. This is an anticlinal axis trending north 60 degrees west in the north-central part of the New Florence Quadrangle. The Warren County anticline is approximately 2.5 miles (4 km) long and located approximately one mile (1.6 km) north of the corridor. This is a north-south trending anticline two miles (3 km) west of Warrenton. The Chouteau limestone is exposed on the crest of the structure with Burlington limestone surrounding it. Both formations are Mississippian in age.

The Eureka-House Springs anticline is located in St. Charles County approximately five miles (8 km) south of the corridor. The Eureka-House Springs anticline is part of the anticlinal structure that

extends from near Riverside in Jefferson County through the House Springs-Eureka area, then trends northwest across the Missouri River to a window of Ordovician rocks north of New Melle on Dardenne Creek. The structure continues in a northwest direction in several outcrops of the Chouteau Group in St. Charles County on Peruque Creek between Wentzville and Wright City.

2. Topography, Surficial Geology and Soils

a. Topography

The corridor within SIU 7 lies in the Dissected Till Plains physiographic region, sometimes referred to as Old Plains Modified by Glaciation. Based on the map showing physiographic regions of Missouri, some portions along the corridor are at the border of Dissected Till Plains and Salem Plateau. The Salem Plateau is a highly dissected upland plateau with broad, rolling uplands separated by entrenched, meandering streams that flow along relatively narrow, deep valleys.

The topography of the study corridor is gently sloping with elevations generally increasing from 560 feet (183 m) mean sea level (msl) at the eastern boundary (Lake St. Louis) to 850 feet (259 m) msl at the western boundary (milepost (MP) 174 – Montgomery City), with isolated higher elevations of up to 900 feet (274 m) msl.

b. Surficial Geology and Soils

Glacial deposits are the main surficial soils common along the proposed corridor in Montgomery and Warren Counties. Residuum will be encountered in the east end of the corridor (St. Charles County) and probably in some parts of the corridor in Montgomery County. The generalized thickness of the surficial materials within the study area vary from 50 to 200 feet (15 to 61 m) in east Montgomery and west Warren Counties to less than 50 feet (15 m) in east Warren and west St. Charles Counties.

The glacial deposits also called glacial drift, consist of mainly silty clay and clay with color ranging from tan to dark gray. The drift is usually covered by one to five feet (0.3 to 1.5 m) of loessial soil, which in some areas may exceed 20 feet (6 m). The drift typically varies in thickness from 20 to 40 feet (6 to 12 m) in the southeastern part of the glaciated portion of the state, which includes the corridor counties of Montgomery, Warren and St. Charles. The drift varies laterally and vertically but is predominantly a silty clay mixed with pebbles of limestone, chert and quartzite. Locally, pockets, lenses and channels contain glacially derived sand, cobbles and boulders. At depths of six to eight feet (1.8 to 2.4 m), clay-rich Sangamon and/or Yarmouth paleosol is generally present. The thickness of the clay ranges from five to 10 feet (1.5 to 3.0 m) but in local areas exceeds 25 feet (7.6 m).

The residuum is mainly cherty clay, dark red to reddish brown, and varies in thickness up to 50 feet (15 m). The soil developed as residuum from limestone and cherty limestone containing cherts and nodules.

Based on the Montgomery, Warren and St. Charles County Soil Surveys, soil associations in the study corridor are as follows:

Montgomery and Warren Counties
Mexico-Armster-Putman Association. Deep soils that formed in loess and glacial till and are nearly level to moderate sloping and somewhat poorly drained, moderately well drained and poorly drained. This area consists of a mainly loess-covered glacial till plain that occupies most of the higher areas. This unit is made up of all the upland soils that formed under prairie grasses.

Mexico soils are gently sloping and somewhat poorly drained. They are mostly on long side slopes, downslope from the nearly level Putman soils. In many places, however, they are on the crest of divides. Mexico soils are upslope from the moderately sloping Armster soils. Their surface layer typically is very dark grayish brown silt loam. The subsoil is silty clay loam in the upper part, silty clay in the middle part, and silty clay loam in the lower part. It has dark grayish brown, strong brown, yellowish brown and red mottles.

Armster soils are moderately sloping and moderately well drained. They are downslope from Mexico soils. The surface layer typically is very dark grayish brown loam. The subsoil is brown clay loam in the upper part and brown, yellowish brown and red clay in the lower part.

Putman soils are nearly level and poorly drained. They are on the highest part of the landscape. The surface layer typically is very dark grayish brown silt loam, and the subsurface layer is light gray silt loam. The subsoil is dark grayish brown, grayish brown, strong brown, brown, yellowish red and red silty clay.

These soils are suited for building sites. The high to moderate shrink-swell potential could cause damage to the foundations of light structures and roadway pavement. Foundations and footings should be adequately reinforced to prevent structural damage. Drainage systems should be installed around footings and along the roadway to prevent damage from excessive wetness. This soil does not have sufficient strength to support vehicular traffic, but this can be overcome by strengthening the base material with crushed rock or other suitable material. Side ditches and culverts can provide proper drainage to help prevent damage from frost action and shrinking and swelling.

St. Charles County

Armster-Mexico-Hatton Association. Gently sloping and moderately sloping, moderately well drained and somewhat poorly drained soils formed in loess and clayey glacial till on uplands. This association consists of a partly loess-covered glacial till plain that occupies most of the higher areas of the country and the narrow ridges and side slopes below it.

Armster soils are moderately sloping and moderately well drained. They are on side slopes below Hatton and Mexico soils. Typically, the surface layer is very dark grayish brown silt loam. The subsurface layer is dark grayish brown silt loam. The subsoil is brown, mottled silt loam in the upper part; brown, mottled clay in the middle part; and yellowish brown, mottled clay in the lower part. The underlying material is grayish brown and dark yellowish brown clay.

Mexico soils are gently sloping and somewhat poorly drained. They are on the crests of upland divides and on long side slopes. Typically, the surface layer is very dark grayish brown silt loam. The subsurface layer is brown silt loam. The subsoil is silty clay loam in the upper part and silty clay on the lower part. It has mottled colors of dark grayish brown, yellowish brown and red. The underlying material is grayish brown and dark yellowish brown silty clay loam.

The Hatton soils are moderately sloping and moderately well drained. They are on rounded ridge crests. Typically, the surface layer is dark brown silt loam, and the subsurface layer is brown silt loam. The subsoil is yellowish brown silt loam and silty clay loam in the upper part; dark brown, mottled silty clay loam in the middle part; and strong brown, mottled silty clay loam in the lower part. The underlying material is strong brown, mottled silty clay loam and yellowish red, mottled clay loam.

These soils are suited for building sites. The high to moderate shrink-swell potential could cause damage to the foundations of light structures and roadway pavement. Foundations and footings should be adequately reinforced to prevent structural damage. Drainage systems should be installed around footings and along the roadway to prevent damage from excessive wetness. This soil does not have sufficient strength to support vehicular traffic, but this can be overcome by strengthening the base material with crushed rock or other suitable material. Side ditches and culverts can provide proper drainage to help prevent damage from frost action and shrinking and swelling.

c. Prime Farmland

Prime farmland is that land determined by the U.S. Department of Agriculture to have an optimal combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides and labor, without intolerable soil erosion. Prime farmland is also used to produce livestock or timber. Unique farmland is land other than prime farmland that is used for the production of specific high-value food and fiber crops as determined by the USDA.

Statewide and Local Important farmland is land other than Prime or Unique farmland that the State of Missouri has determined to be important for the production of food, feed, fiber, forage or oilseed crops.

Within the study corridor corn and soybeans are the primary crops grown, and cattle are raised.

The following table lists all of the individual soil units that exist in the SIU 7 corridor, and indicates the status of each unit as prime or statewide-important farmland. Prime farmland in the study area is presented on Exhibits III-11 – 13.

Table III-14: Soil Units

Map Unit	Soil - Description	Farm Class
11	Dockery silt loam, occasionally flooded	All areas are prime farmland
24D2	Keswick silt loam, 9 to 14 percent slopes, eroded	Farmland of statewide importance
27C	Armster silt loam, 5 to 9 percent slopes	Farmland of statewide importance
2F	Goss gravelly silt loam, 14 to 35 percent slopes	Not prime farmland
31C	Hatton silt loam, 5 to 9 percent slopes	Farmland of statewide importance
34E	Lindley loam, 14 to 20 percent slopes	Not prime farmland
35B	Mexico silt loam, 1 to 5 percent slopes	All areas are prime farmland
40	Westerville silt loam, rarely flooded	All areas are prime farmland
48B	Weller silt loam, 2 to 5 percent slopes	All areas are prime farmland
48C	Weller silt loam, 5 to 9 percent slopes	Farmland of statewide importance
54C	Harvester-Urban land complex, 2 to 9 percent slopes	Not prime farmland
6D2	Crider silt loam, 9 to 14 percent slopes, eroded	Farmland of statewide importance
81	Haymond silt loam, occasionally flooded	All areas are prime farmland
AmC2	Armster loam, 5 to 9 percent slopes, eroded	Farmland of statewide importance
ArC3	Armster clay loam, 5 to 9 percent slopes, severely eroded	Farmland of statewide importance
Bp	Borrow Pits	Not prime farmland
CaB	Calwoods silt loam, 1 to 5 percent slopes	All areas are prime farmland
CbB2	Calwoods silty clay loam, 1 to 5 percent slopes, eroded	All areas are prime farmland
Cd	Cedargap silt loam, occasionally flooded	All areas are prime farmland
Ce	Cedargap cherty silt loam, occasionally flooded	All areas are prime farmland
Cp	Clay Pits	Not prime farmland
Do	Dockery silt loam, occasionally flooded	All areas are prime farmland
GoF	Goss soils, 14 to 45 percent slopes	Not prime farmland
HcB	Hatton silt loam, 2 to 9 percent slopes	Farmland of statewide importance
KeC2	Keswick silt loam, 5 to 9 percent slopes, eroded	Farmland of statewide importance
KeD	Keswick silt loam, 9 to 14 percent slopes	Farmland of statewide importance
KsC3	Keswick clay loam, 5 to 9 percent slopes, severely eroded	Farmland of statewide importance
LnE	Lindley loam, 14 to 35 percent slopes	Not prime farmland
Ma	Marion silt loam	All areas are prime farmland
MoB	Mexico silt loam, 1 to 5 percent slopes	All areas are prime farmland
MpB2	Mexico silty clay loam, 1 to 5 percent slopes, eroded	All areas are prime farmland
Pt	Putnam silt loam	Prime farmland if drained
Sh	Sharon silt loam, occasionally flooded	All areas are prime farmland
Tm	Twomile silt loam, rarely flooded	Prime farmland if drained

3. Mineral Resources

Very few economically important mineral deposits are located in the study corridor. The dominant mineral resources available within or near the corridor are sand and gravel for construction, stone quarries, and a calcining and grinding plant. No currently operating surface quarries are located along the alignment.

a. Sand and Gravel for Construction

The most extensive resources of sand are present in channel deposits of the Missouri River. The sand fraction is quartz, but the Missouri River sands are generally coarser and the percentage of silt is high. While resources of gravel are present in the alluvial material of the Missouri River, they are not believed to have any great potential. Some of the areas where sand and gravel is mined for commercial purposes include near Hermann in Montgomery County and Augusta in St. Charles County. Non-commercial mining of sand and gravel is available in Montgomery City mainly for use by the Montgomery County Highway Department. There is no mining of sand and gravel for construction within the study area, but since the corridor is a few miles north of and roughly parallel to Missouri River, there is potential for these resources.

b. Stone

Limestone is one of the most important minerals produced in this area. The rock units considered to have commercial importance are mainly limestone and dolomite. Production consists of crushed and broken stone, principally for construction use. Most of the quarries are located in south St. Charles County. Quarries located along or near the corridor are in the city of Warrenton in Warren County, and the cities of Foristell and Wentzville in St. Charles County.

c. Calcining and Grinding Plant

Clay, particularly refractory clay, is an important economic resource associated with the Pennsylvanian-aged bedrock of central and west Montgomery County. Most refractory clay mines are located in High Hill, New Florence, Montgomery and Wellsville in Montgomery County. Some of these mines may not be active anymore, but Christy Minerals Company, located in High Hill, Montgomery County, is active and mines calcines and grinds alumino-silicate clays.

Other areas having the potential for clay deposits are located a few miles southwest of Wentzville; St. Charles County along the drainage divides of Peruque, Dardenne and Callaway Fork Creeks; and in Warrenton, Warren County. A large low-grade clay pit is located about three miles (4.8 km) southwest of Wentzville and is active on an intermittent basis.

d. Coal and Petroleum

Although coal and petroleum are important economic resources associated with the Pennsylvanian age, there is no information indicating any mining of these materials within or near the study corridor.

4. Seismic Risk

The Midwest is laced with a series of fault-lines resulting from the shifting of tectonic plates. These fault systems were formed 500 million years ago when the protoatlantic was being

formed to the east by the tearing open of the continental crust. Presently, seven major hard, rigid plates cover the earth. The North American Plate, which includes the study corridor, extends from western coast of North America where it meets the Pacific Plate to the middle of the Atlantic Ocean where it meets the Eurasian Plate. As the plates move to relieve built-up stress, they can violently shift and create a quake or shaking effect at the surface.

The Midwest is the most seismically active area east of the Rocky Mountains. Fault systems include the St. Genevieve, the Wabash Valley and the New Madrid Fault System. All these faults occur within 250 miles (402 km) from the east end of the study corridor. The New Madrid Fault has been the epicenter of many severe to moderate earthquakes over the past million years. Moderate earthquakes have occurred in this region and seismometers indicate that the fault system is still active.

The horizontal bedrock peak acceleration with a 10 percent probability of exceedance in 50 years should range from about 0.08g in the eastern end of the corridor to about 0.05g in the western end of the corridor. Site response coefficients would be based on either Soil Profile Types II or III as per AASHTO Standard Specifications for Highway and Bridges. An earthquake of a magnitude resulting in this range of bedrock peak acceleration will not have a significant impact on the design and performance of the roadway embankments and structures.

5. Caves

Caves in Missouri are generally found in carbonate rocks from the Mississippian to Cambrian ages. Although the geology of the study area, especially within Warren and St. Charles Counties, exhibit these types of rocks, minimal cave development is found in these counties including Montgomery County. The only significant cave is Graham Cave nestled in the hills above the Loutre River (located in SIU 6) several miles west of MP 174 – Montgomery City. Several small caves are found in Warren County, which include St. Peter Shelter, Hollman Cave, Eagle Cave and Buzzard Nest Cave. None of these caves will be impacted by any of the alternatives under consideration. There is potential for cave features to exist anywhere in the corridor where carbonate rocks are present.

6. Groundwater Resources

The study area falls within the geohydrologic zone of northern Missouri, south of the Freshwater-Salinwater Transition Zone. Four major groundwater sources exist in northern Missouri: (1) dolomite and sandstone formations of Cambrian and Ordovician age, (2) limestone formations of Mississippian age, (3) alluvial valley deposits, and (4) surficial deposits of glacial drift.

The large, complex aquifer composed of formations of the Cambrian and Ordovician Systems (the Cambrian-Ordovician aquifer) is the only one of these four aquifers that underlies all of northern Missouri. The excessive salinity of water from this aquifer throughout much of the region limits its use to a few counties including St. Charles, Warren and Montgomery. The Cambrian-Ordovician aquifer is the main source of potable water in the study area. The Cambrian-Ordovician aquifer within the study area has a local freshwater flow system, which is nearly independent of the regional saline-water flow system normally associated with this formation. Water enters this local flow system by leakage from the overlying Mississippian aquifer and by infiltration.

The Mississippian aquifer includes formations of the Osagean Series and Meramecian Series. Water enters the Mississippian aquifers by direct recharge from precipitation and by leakage from overlying Pennsylvanian and Mississippian strata where it is confined. The Burlington and

Keokuk limestones are the principal water-yielding rocks in this aquifer. Both normally are composed of coarsely crystalline limestone containing varying quantities of chert nodules. Well-developed solution channels are common and provide a source for domestic and farmwater supplies in the eastern part of the study area. In the area of study, the potentiometric surface is affected more by topography as the aquifer changes from confined to unconfined conditions. The aquifer discharges into the major rivers.

The alluvial soils in the river valleys and outwash deposits in the buried bedrock valleys are the primary source of freshwater in northern Missouri. The deposits consist of clay, sand and gravel, and generally grade from fine to course grained with increasing depth. The generally permeable deposits can yield as much as 3,000 gallons per minute along reaches of the Missouri River. Water levels in the Mississippi and Missouri River alluvium respond to fluctuations in river stage, thus the aquifer both discharges into and is recharged by the river systems.

The glacial drift deposits, consisting of clay, silt, sand and gravel, are a source of water for domestic and non-irrigation farm use. Yields from the glacial drift usually are small (less than 10 gallons per minute) due to the presence of large quantities of relatively impermeable silt and clay. However, in areas containing well-sorted sand bodies, yields may be sufficient to supply small towns and industries (30 to 500 gallons per minute). The cleaner, coarser sands normally occur at the base of the glacial drift in the preglacial valleys. The potentiometric surface of this aquifer, which can be either water table or artesian, is affected by the regional topography.

a. Wells

Information obtained from Missouri Department of Natural Resources (MoDNR) Wellhead Protection databases indicates that 45 Public Water Supply wells and 88 non-public water supply wells are located within one mile of I-70. Non-public water supply wells include private potable water supply wells, irrigation wells, environmental monitoring wells, heat pump wells and other miscellaneous use water supply wells. The majority of the wells within the study corridor are 500-600 feet deep and pump from the St. Peters Sandstone in the Roubidoux Formation. None of these wells will be impacted by any of the alternatives under consideration.

No sole-source aquifers exist in Missouri as defined by the EPA.[9]

b. Dams

Nineteen dams are located within one-half mile of I-70, and are listed in the following table. None are impacted by any of the alternatives under consideration.[10]

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[9] Kifer, Evan. Unit Chief, MoDNR Wellhead Protection Section. Personal Communication. June, 2003.

[10] MoDNR Dam Database provided by Mr. Robert Clay, Water Resources, Dam and Reservoir Safety Engineer, May 2003.

Table III-15: Dams Within ½-Mile of I-70

Name Of Dam	County
Bethel Lake Dam	Montgomery
Cool Valley Lake Dam	Montgomery
B&K Lake #1 Dam	Warren
B & K Lake No. 2 Dam	Warren
Niko Lake Dam	Warren
White Smith Austin Lake Dam	Warren
Lakeview Estates Dam	Warren
Petersmeyer Lake Dam	Warren
Petersmeyer's Lower Lake Dam	Warren
Boone Trail Farm Lake Dam	Warren
Olive Ballas Realty Co Dam-Sec 24	Warren
N&W Railroad Dam-Sec 19	Warren
Palazzo Lake Dam	Warren
Cloverleaf Farm Lake Dam	St. Charles
Garrett Lake Dam	St. Charles
Lake Sainte Louise Dam	St. Charles
Key Harbour Estate Dam #1	St. Charles
Key Harbour Estate Dam #2	St. Charles
Lake St. Louis Dam	St. Charles
Brown's Lake Dam	St. Charles

c. Groundwater Water Quality

Groundwater of varying quality and source is an important resource in the study corridor. Water containing more than 1,000 parts per million (ppm) of dissolved solids is considered saline. Saline water is classified as slightly saline (1,000 to 3,000 ppm), moderately saline (3000 to 10,000 ppm), very saline (10,000 to 35,000 ppm) and briny (more than 35,000 ppm). Water from the localized freshwater area of the Cambrian-Ordovician aquifer has dissolved solids concentrations ranging from about 350 to 750 ppm. Water from alluvial wells in northern Missouri is a calcium bicarbonate with a large dissolved-iron concentration. Dissolved-solids concentrations normally are less than 1000 ppm. Glacial drift water is a mixed calcium bicarbonate sodium sulfate type with a large iron concentration. The dissolved-solids concentration may exceed 1000 ppm with an average of 620 ppm.

The dominant potable water source in the study area is the Cambrian-Ordovician aquifer. The Mississippian and alluvial aquifers are also available. The municipalities of New Florence, High Hill, Wright City, Warrenton and Wentzville rely on wells in the deeper Cambrian-Ordovician aquifer for water.

7. Floodplains

As part of the National Flood Insurance Program, many communities and counties have performed flood insurance studies to identify flood hazards for floodplain management and flood insurance purposes. The administration of the National Flood Insurance Program, performed by FEMA, entails detailed studies of flood-prone streams and rivers for the determination of flood boundaries and flood hazards. The level of detail for the studies varies depending on the severity of the flooding hazards and other factors. Both the floodplain and the floodway areas were determined as part of these studies. The floodplain includes the channel of a river, stream, or tributary and the adjacent area exhibiting the capability to flood.

According to 44 CFR 59.1, a "Regulatory floodway" means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood[11] without cumulatively increasing the water surface elevation more than a designated height. FEMA requires the community to designate its own floodways in an effort to protect the surrounding areas from a flood. In accordance with FEMA, a community that participates in the FEMA program must prohibit development within the designated floodway that would cause any additional rise in base flood elevations. Following the construction of the preferred alternative, these areas must remain in an unobstructed condition in order to discharge the base flood without increasing flood levels. The value of these areas is associated with flood protection and the protection of a variety of habitats. A limited increase in the base flood elevation may be acceptable for construction within the floodplain, but outside of the regulatory floodway.

The following FEMA Maps were reviewed to determine the presence of floodplains and floodways in the study area: Montgomery County panel 2902420150B, Warren County panels 2904430050B, and 2904430075C, City of Warrenton panels 2906480001A, and 2906480002A, St. Charles County incorporated and unincorporated panels 29183C0180E, 29183C0185E, 29183C0190F, 29183C0195E, 29183C0205E, 29183C0210F, 29183C0215, and 29183C0220F.

The floodplains in the project area are generally narrow and well defined by the adjacent vertical relief of the surrounding hills. Most of the streams are characterized as sandy to rocky bottom creeks with intermittent flow. Only four of the significant streams (rivers) are classified as having perennial flow. The floodplains are affected when rivers and creeks top their banks but typically they do not hold water as a result of the sandy porous nature of the alluvial soils that comprise their substrate. No trunk buttressing or adventitious roots were observed, however many of the floodplain trees do exhibit watermarks. Some temporarily flooded forests exist on nearly level to gently sloping natural levees and higher elevations of stream and river floodplains. Land use within the floodplains of the study corridor is dominated by agricultural activity, with little industrial or residential development present within these areas.

Working from west to east, the following streams have a 100-year floodplain or regulatory floodway either crossing or adjacent to I-70:

- Smith Branch of the Clear Fork of the Loutre River
- Tributaries of Elkhorn Creek
- Tributaries of Little Bear Creek
- Big Creek and tributaries (floodway)
- Tributaries of Hickory Lick Creek (floodway)
- Tributaries of Indian Camp Creek
- Peruque Creek and tributaries (floodway)

a. FEMA/SEMA Flood Buyout Properties

Some flood prone properties have been purchased by the State Emergency Management Agency (SEMA) with Federal Emergency Management Agency (FEMA) funding through the Hazard Mitigation Assistance Program and Section 404 of the Stafford Act and Flood Mitigation Assistance Program, with state and local governmental agency matching funds. These flood buyout properties

[11] The national standard for floodplain management is the base, or one percent chance flood. This flood has at least one chance in 100 of occurring in any given year. It is also called a 100-year flood (source: www.crh.noaa.gov/fgf/hydro/glossary/glossary.html).

are owned by local jurisdictions. Deed restrictions prohibit development on these properties, including placement of fill for road construction or bridge abutments and piers. No properties within or adjacent to the SIU 7 study corridor are involved in the buyout program.

8. Wetlands and Ponds

Level III Investigations, as defined by the United States Army Corps of Engineers 1987 Wetland Delineation Manual, were performed for areas within the study corridor. The Level III investigations included collecting published data from the United States Fish and Wildlife Service, National Wetland Inventory (NWI) maps, United States Geological Survey Topography Map, and the United States Department of Agriculture (USDA) Soil Conservation Service Survey Maps and Hydric Soils Lists. This data was combined with field investigations looking for hydrophytic vegetation, hydric soils and wetland hydrology to determine areas exhibiting jurisdictional wetland characteristics. Level I investigations were performed at sites where access was either denied or not obtained. Level I delineations were performed using published recorded data only. No field investigations were performed on these sites.

In general, all wetland sites were identified using MoDOT's Protocol for Identifying and Delineating Wetlands and Stream Impacts for the Interstate 70 Corridor Second Tier Environmental Documents and Preliminary Jurisdictional Wetland Determinations dated January 2002.

Section 404 of the Clean Water Act [33 U.S.C. § 1344] prohibits the discharge of dredged or fill material into "Waters of the U.S." unless exempted by law or permitted in writing by the U.S. Army Corps of Engineers (USACE). Operating in conjunction with Section 401 [33 U.S.C. § 1341] and other statutes, Section 404 is a Federal statute that implements federal regulatory policies concerning the protection of wetlands and other waters of the U.S. as specified in various orders and regulations. The Kansas City and St. Louis Districts of the USACE maintain jurisdiction over the water resources in the area in which the I-70 corridor is located.

A total of 101 potential wetland sites and ponds were located within the study corridor, all of which were in the Palustrine System of the Cowardin Classification System, except for one that was in the Lacustrine System (see Exhibits III-7 to III-9 at the end of this chapter).

The Palustrine System includes all nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5 percent. It also includes wetlands lacking such vegetation, but with all of the following four characteristics: (1) area less than eight hectares (20 ac); (2) active wave-formed or bedrock shoreline features lacking; (3) water-depth in the deepest part of basin less than two meter (6.6 ft) at low water; and (4) salinity due to ocean-derived salts less than 0.5 percent.

Classes under the Palustrine System wetlands that occur within the study corridor include: Emergent, Unconsolidated Bottom, Forested and Scrub-shrub. The Emergent class is characterized by erect rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Perennial plants usually dominate these wetlands. All water regimes are included except subtidal and irregularly exposed. In areas with relatively stable climate conditions, Emergent Wetlands maintain the same appearance year after year. The Unconsolidated Bottom class includes all ponds and deepwater habitats with at least 25 percent cover of particles smaller than stones, and a vegetative cover less than 30 percent. Water regimes are restricted to subtidal permanently flooded, intermittently exposed and semipermanently flooded. Unconsolidated bottoms are characterized by the lack of large stable surfaces for plant and animal attachment. The

Forested class indicates a dominance of woody vegetation over 20 feet tall. The Scrub-Shrub class indicates dominance of woody vegetation less than 20 feet tall. The following tables present the potential wetlands and ponds identified within the study area for this project organized by the individual wetlands and summarized by wetland classification (refer to the Wetlands Technical report for additional information).

Dominant vegetation observed in wetland areas were: Rice Cutgrass *(Leersia oryzoides)*, Wool-Grass *(Scirpus cyperinus),* Black Willow *(Salix nigra)*, Sedges (*Carex spp.),* Broad-Leaf Cattail*(Typha latifolia)*, Narrow-Leaf Cattail *(Typha angustifolia),* Barnyard Grass *(Echinochloa crusgalli),* Reed Canary Grass *(Phalaris arundinacea),* Least Spikerush *(Eleocharis acicularis),* Swamp Smartweed *(Polygonum hydropiperoides)*, Straw-Color Flat Sedge *(Cyperus strigosus),* Eastern Cotton-Wood *(Populus deltoids),* and Silver Maple *(Acer saccharinum).*

Table III-16: SIU 7 Wetlands

ID	Type	Area	
		acres	hectares
sw-26	Forested	0.04	0.02
sw-44	Emergent	0.15	0.06
sw-22	Emergent	0.02	0.01
sw-58	Emergent	0.08	0.03
sw-59	Forested	0.70	0.28
sw-45	Scrub-shrub	0.37	0.15
sw-31	Emergent	0.03	0.01
sw-100	Forested	0.62	0.25
sw-42	Emergent	0.04	0.02
sw-14	Emergent	0.05	0.02
sw-64	Emergent	0.12	0.05
sw-15	Emergent	0.10	0.04
sw-65	Emergent	0.07	0.03
sw-29	Emergent	0.01	0.00
sw-50	Emergent	0.11	0.04
sw-19	Emergent	0.12	0.05
sw-102	Emergent	0.12	0.05
sw-74	Emergent	0.21	0.08
sw-13	Emergent	0.09	0.04
sw-79	Emergent	0.03	0.01
sw-80	Scrub-shrub	0.15	0.06
sw-81	Emergent	0.72	0.29
sw-37	Scrub-shrub	0.18	0.07

ID	Type	Area	
		acres	hectares
sw-36	Forested	0.60	0.24
sw-82	Emergent	0.14	0.06
sw-84	Scrub-shrub	0.05	0.02
sw-85	Emergent	0.02	0.01
sw-87	Scrub-shrub	0.03	0.01
sw-88	Emergent	0.62	0.25
sw-89	Scrub-shrub	0.09	0.04
sw-78	Emergent	0.08	0.03
sw-2	Emergent	0.08	0.03
sw-3	Emergent	0.01	0.00
sw-27	Emergent	0.06	0.02
sw-8	Emergent	0.02	0.01
sw-7	Emergent	0.28	0.11
sw-94	Emergent	0.29	0.12
sw-98	Emergent	0.17	0.07
sw-95	Emergent	0.91	0.37
sw-76	Scrub-shrub	0.10	0.04
sw-99	Forested	0.04	0.02
sw-91	Emergent	0.13	0.05
sw-92	Emergent	0.27	0.11

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Table III-17: Total Wetland Types

Palustrine Emergent	Palustrine Forested	Palustrine Scrub-shrub
5.18 / 2.10 (ac / ha)	2.00 / 0.81 (ac / ha)	0.96 / 0.39 (ac / ha)

Table III-18: Ponds

ID	Type	Area	
		acres	hectares
sw-6	Pond	0.79	0.32
sw-54	Pond	3.80	1.54
sw-55	Pond	0.10	0.04
sw-25	Pond	1.00	0.40
sw-23	Pond	0.21	0.08
sw-53	Pond	0.38	0.15
sw-24	Pond	0.59	0.24
sw-21	Pond	0.16	0.06
sw-52	Pond	0.30	0.12
sw-51	Pond	0.62	0.25
sw-56	Pond	0.14	0.06
sw-57	Pond	0.71	0.29
sw-47	Pond	0.25	0.10
sw-46	Pond	0.46	0.19
sw-48	Pond	0.09	0.04
sw-61	Pond	0.14	0.06
sw-60	Pond	1.81	0.73
sw-62	Pond	2.53	1.02
sw-32	Pond	0.13	0.05
sw-33	Pond	1.62	0.66
sw-41	Pond	1.85	0.75
sw-40	Pond	1.71	0.69
sw-43	Pond	0.11	0.04
sw-28	Pond	0.32	0.13
sw-16	Pond	0.21	0.08
sw-39	Pond	1.05	0.42
sw-38	Pond	1.52	0.62
sw-17	Pond	0.21	0.08
sw-63	Pond	0.21	0.08
sw-66	Pond	0.07	0.03

ID	Type	Area	
		acres	hectares
sw-30	Pond	0.45	0.18
sw-34	Pond	0.26	0.11
sw-35	Pond	0.93	0.38
sw-67	Pond	0.22	0.09
sw-69	Pond	0.31	0.13
sw-49	Pond	0.25	0.10
sw-68	Pond	0.13	0.05
sw-70	Pond	0.23	0.09
sw-71	Pond	0.11	0.04
sw-20	Pond	0.25	0.10
sw-18	Pond	0.68	0.28
sw-72	Pond	0.09	0.04
sw-73	Pond	0.32	0.13
sw-101	Pond	0.35	0.14
sw-12	Pond	0.51	0.21
sw-83	Pond	0.97	0.39
sw-75	Pond	1.26	0.51
sw-86	Pond	0.85	0.34
sw-11	Pond	0.43	0.17
sw-10	Pond	1.12	0.45
sw-9	Pond	1.43	0.58
sw-93	Pond	0.05	0.02
sw-77	Pond	1.53	0.62
sw-1	Pond	1.00	0.40
sw-5	Pond	2.74	1.11
sw-97	Pond	0.42	0.17
sw-96	Pond	2.83	1.15
sw-90	Pond	0.75	0.30
Total		**43.56**	**17.6**

In addition to delineating the wetlands and ponds presented in the table above, the wetland investigation also identified NWI mapped wetlands that have been disturbed since publishing the NWI maps and are no longer wetlands. Exempt wetlands, such as sewage lagoons and detention basins, were also identified. Additional information is available in the Wetlands Technical Report. The following tables present locations identified as former NWI mapped wetlands and locations identified as exempt wetlands.

Table III-19: Exempt Ponds or Wetlands in or Near SIU 7

ID	Location	Type	NWI Designation	Area	
				Acres	Hectares
ex-5	North	Sewage pond	None	0.14	0.06
ex-4	North	Sewage pond	PUBGx	2.27	0.92
ex-3	North	Sewage pond	PUBGh	0.35	0.14
ex-2	North	Sewage pond	None	0.04	0.02
ex-6	South	Sewage pond	None	0.03	0.01
ex-1	South	Sewage pond	None	0.08	0.03

9. Lakes, Rivers and Streams

The Water Resources Council developed a hierarchical classification of hydrologic drainage basins in the United States. Each hydrologic unit is identified by a unique hydrologic unit code (HUC) consisting of two to eight digits based on the four levels of classification in the hydrologic unit system. The study corridor lies within three watersheds. From the western terminus of SIU 7 near New Florence to Jonesburg, the highway travels along a ridgetop that forms the boundary between the Cuivre watershed north of the highway, and the Lower Missouri watershed (HUC10300200), which drains into the Missouri River.[12] From Jonesburg to west of Wright City in eastern Montgomery County, I-70 lies within the Cuivre watershed (HUC 7110008). Creeks originating along this stretch of the highway flow northeastward to the Cuivre River, which in turn flows into the Mississippi River. From west of Wright City to Lake St. Louis, Interstate 70 travels through the Peruque-Piasa watershed (HUC 7110009). Peruque Creek drains this watershed area, eventually flowing north into the Mississippi River.

The following streams and tributaries are located within the SIU 7 study corridor:

- Peruque Creek (perennial)
- Big Creek (intermittent)
- Camp Branch of Camp Creek (intermittent)
- Schlanker Branch of Big Creek (intermittent)
- Smith Branch of the Clear Fork of the Loutre River (intermittent)
- Unnamed tributaries of Elkhorn Creek (intermittent)
- Unnamed tributaries of Bear Creek (intermittent)
- Unnamed tributaries of Big Creek (intermittent)
- Unnamed tributaries of Camp Creek (intermittent)
- Unnamed tributaries of Clear Creek (intermittent)
- Unnamed tributaries of Hickory Lick Creek (intermittent)
- Unnamed tributaries of Indian Camp Creek (intermittent)
- Unnamed tributaries of Lake St. Louis (intermittent)
- Unnamed tributaries of Little Bear Creek (intermittent)
- Unnamed tributaries of Millum Creek (intermittent)

[12] EPA Surf Your Watershed Website. http://cfpub.epa.gov/surf/locate/index.cfm Accessed 12/4/03.

- Unnamed tributaries of Peruque Creek (intermittent)
- Unnamed tributaries of the Camp Branch of Camp Creek (intermittent)
- Unnamed tributaries of the Dry Branch of McCoy Creek (intermittent)
- Unnamed tributaries of the Poor Branch of Little Bear Creek (intermittent)
- Unnamed tributaries of the Prices Branch of Bear Creek (intermittent)
- Unnamed tributaries of the Yeater Branch of Big Creek (intermittent)

None of the streams located within the SIU 7 study area meet the criteria for any of the following designations:

- Used for a public water supply[13]
- A losing stream[14]
- Designated for cold-water sport fishery (10 CSR 20.7, Table C)[15]
- Designated "Outstanding National Resource Waters" (10 CSR 20.7, Table D)[16]
- Designated "Outstanding State Resource Waters" (10 CSR 20.7, Table E)
- Designated "Metropolitan No-Discharge Streams" (10 CSR 20.7, Table F)
- A Wild and Scenic River (16 U.S.C. 1271 – 1287)[17]

The eastern terminus of the SIU 7 study area is located immediately north of (but does not include) the north shore of Lake St. Louis in St. Charles County. Lake St. Louis and the adjacent Lake Sainte Louise are the two largest lakes within 0.5 miles of the interstate (431 acres (174 ha) and 70 acres (28 ha), respectively). A total of 21 additional, smaller lakes are located within 0.5 miles of the interstate. None of the lakes are owned by the Missouri Department of Natural Resources or the Department of Conservation.

a. Section 303(d) Waters

The Missouri Clean Water Commission has compiled a list of waters designated under Section 303(d) of the Federal Clean Water Act. The list identifies lakes and stream subsections that do not meet state water quality standards. While a few tributaries of listed streams originate near or are crossed by the existing interstate, none of the stream subsections in the vicinity of the study area are included on the 303(d) list of impaired waters.

In the Lower Missouri Watershed, no streams or tributaries within the study area appear on the impaired waters list. The Missouri River, into which this watershed drains, is listed as impaired for its entire length due to habitat loss, with no potential impairment source identified.

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[13] Vandike, James E., Surface Water Resources of Missouri; WR 45. Missouri Department of Natural Resources, Division of Geology and Land Survey. Table 4, p. 31. 1995.

[14] DuCharme, Charles B. and Todd M. Miller. Water Use of Missouri, Missouri State Water Plan Series Volume IV. Appendix 7. 1996.

[15] Rules of Department of Natural Resources Division 20 Clean Water Commission, Chapter 7. *http://www.sos.mo.gov/adrules/csr/current/10csr/10c20-7b.pdf*

[16] Ibid.

[17] National Wild and Scenic Rivers Webpage. *http://www.nps.gov/rivers/wsr-eleven-point.html*. Accessed 2/8/03.

In the Cuivre Watershed, subsections of Elkhorn Creek and Indian Camp Creek appear on the 303(d) list of impaired waters. Unnamed tributaries of Elkhorn Creek are crossed by I-70 in Montgomery County. The impaired section of Elkhorn Creek begins approximately five miles north of the highway. The impairment is due to sediment and siltation from agricultural non-point sources. No total maximum daily loads have been reported to the EPA for Elkhorn Creek. The impaired section of Indian Camp Creek begins approximately four miles downstream from the nearest tributary crossing under I-70. The impairment of the creek is due to un-ionized ammonia and sediment/siltation. The potential source of impairment is listed as JZ Landfill.

In the Peruque-Piasa Watershed, Lake St. Louis is the only impaired water listed near the study area. The impairment is due to chlordane/pesticides resulting from urban non-point sources.

10. Plant Communities

Missouri is divided into six major Natural Divisions, based on geological history, soils, bedrock geology, topography and pre-settlement vegetation patterns.[18] The study area is located entirely within the Ozark Border Division. This Division is located between the Ozark and Glaciated Plains Division, but the majority of the flora is similar to the Ozarks. Within this natural division, distinct natural plant communities occur. The study area contains forested, scrub and transition, agricultural, and prairie ecosystems.

Common plant species include, but are not limited to, the following:

- Pin oak (*Quercus palustris*)
- Shingle oak (*Quercus imbricaria*)
- American elm (*Ulmus americana*)
- Silver maple (*Acer saccharinum*)
- Wild carrot (*Daucus carota*)
- Tall goldenrod (*Solidago altissima*)
- Poison ivy (*Rhus radicans*)
- Smooth sumac (*Rhus glabra*)
- White oak (*Quercus alba*)
- Box elder (*Acer negundo*)
- Eastern Redcedar (*Juniperus virginiana*)
- Daisy fleabane (*Erigeron annuus*)
- Partridge pea (*Cassia fasciculata*)
- Kentucky bluegrass (*Poa pratensis*)
- Multiflora rose (*Rosa multiflora*)
- Fescue *(Festuca* spp.)

11. Wildlife and Aquatic Species

The types of habitats discussed above define the habitats available to both plants and animals within the study corridor. Plants (as primary producers) define the habitats available for animals. No wildlife crossings have been identified across the existing interstate.

Common bird species found in the study corridor include, but are not limited to, the following:

- Northern bobwhite (*Colinus viginianus*)
- Mourning dove (*Zenaida macroura*)
- Red-wing blackbird (*Agelaius phoeniceus*)
- Common grackle (*Quisealus quiscula*)
- Red-tailed hawk (*Buteo jamaicensis*)
- Killdeer (*Charadrius vociferus*)
- Northern cardinal (*Richmondena cardinalis*)
- House sparrow (*Passer domesticus*)
- Cooper's hawk (*Accipiter cooperii*)

Common mammal species include, but are not limited, to the following:

- Virginia opossum (*Didelphis virginiana*)
- Fox squirrel (*Sciurus niger*)
- White-tailed deer (*Odocoileus virginianus*)
- Eastern cottontail (*Sylvilagus floridanus*)
- Raccoon (*Procyon lotor*)
- House mouse (*Mus musculus*)

[18] Yatskievych, George. Steyermark's Flora of Missouri. Volume 1. 1999

Prairie mole (*Microtus ochrogaster*)

Common reptile species include, but are not limited to, the following:

Snapping turtle (*Chelydra sepentina*)
Spiny softshell (*Trionyx spinifer*)
Common garter snake (*Thamnophis sirtalis*)
Eastern hognose snake (*Heterodon platyrhinos*)
Red-eared slider (*Trachemys scripta*)
Prairie kingsnake (*Lampropeltis altissima*)
Northern water snake (*Nerodia sipedon*)

Missouri's aquatic communities are divided into four principal faunal regions and 16 divisions, based primarily on fish species abundance and distribution.[19] The study area straddles the boundary between the Ozark and Prairie Faunal Regions. The area is an ecotone where both assemblages are present. Three basic types of aquatic systems occur within the study area: lotic (streams), lentic (ponds) and transitional zones (wetlands). Some of the streams within the study area have gravel bottoms and riffle/pool complexes, but most of the streams are low-gradient streams with soft bottoms and fine-grained sediments. Most of the ponds are, or were, farm ponds. Wetlands that occur within the study area are Palustrine forested, emergent, scrub-shrub and unconsolidated bottom.

The majority of the study corridor follows a ridge that divides the Missouri River watershed from the Cuivre River. The majority of the streams in this area are low-order intermittent streams. This restriction in stream size limits the size of the fish that can survive in these streams.

Common aquatic species include, but are not limited to, the following:

Cricket frog (*Acris crepitans*)
Western chorus frog (*Pseudacris imbricaria*)
Southern leopard frog (*Rana sphenocephala*)
Ringed Salamander (*Ambystoma annulatum*)
Green sunfish (*Lepomis cyanellus*)
Redfin shiner (*Notropis umbratilis*)
Spring peeper (*Hyla crucifer*)
Bullfrog (*Rana catesbeiana*)
Red shiner (*Notropis lutrensis*)
Common shiner (*Notropis cornutus*)
Bluntnose minnow (*Pimephales notatus*)

12. Threatened and Endangered Species

Federally-listed threatened and endangered species are protected by the Endangered Species Act (ESA) of 1973 (as amended) [16 U.S.C. § § 1531-1544], and state-listed species are protected by the state Wildlife Code. According to these Federal laws, the Federal Highway Administration (FHWA) and MoDOT are required to investigate the absence and/or presence of these species and incorporate the information into the decision-making process of the proposed project. On March 4, 2004, a partnering meeting was held with the USFWS and MoDOT to discuss the Partnering Agreement. The agencies agreed to work together to develop common narratives for the known threatened and endangered species within the entire I-70 corridor and to develop an additional narrative for corridor-wide impact assessment and mitigation commitments.

The USFWS was contacted to determine which threatened, endangered, proposed, and candidate species could occur in the project corridor. In addition, the Missouri Heritage Database was queried to identify listed species in St. Charles, Montgomery, and Warren counties. The following table presents the listed species in these three counties, along with their state and federal listing status.

[19] DuCharme, Charles B. Miller, Todd M. Water Use of Missouri. Missouri State Water Plan Series Volume IV. Missouri Department of Natural Resources Division of Geology and Land Survey. 1996

Table III-20: Regional Threatened and Endangered Species[20]

Common Name	Scientific Name	State status	Federal status
Bald Eagle	*Haliaeetus leucocephalus*	E	T
Decurrent False Aster	*Boltonia decurrens*	E	T
Pallid Sturgeon	*Scaphirhynchus albus*	E	E
Indiana Bat	*Myotis sodalis*	NL	E
Running Buffalo Clover	*Trifolium stolonifereum*	NL	E
Eastern Massasauga	*Sistrurus catenatus catenatus*	NL	C
American Bittern	*Botaurus lentiginosus*	E	NL
Barn Owl	*Tyto alba*	E	NL
Blanding's Turtle	*Emydoidea blandingii*	E	NL
King Rail	*Rallus elegans*	E	NL
Western Fox Snake	*Elaphe vulpina vulpina*	E	NL

Notes: E-Endangered, T-Threatened, C-Candidate for listing, NL-Not Listed.

- Bald eagle (*Haliaeetus leucocephalus*)

  Occurs in St. Charles, Montgomery and Warren Counties.

  Bald eagles are common migrants and winter residents throughout Missouri and are rare breeders along some of the major rivers and larger reservoirs in the state. During winter, they congregate near rivers and reservoirs with open water and often near large concentrations of waterfowl. Wintering eagles usually occupy river habitats between November 15 and March 1 where they use large diameter (>12 inches diameter at breast height) cottonwoods, sycamores and other riparian trees as daytime perches and night roosts. They usually perch within a riparian corridor or along lake shores where there is limited human activity. In addition to feeding on fish, bald eagles also feed on dead or crippled waterfowl, small mammals and carrion. During winter nights, bald eagles may congregate at communal roosts, sometimes traveling as far as 20 kilometers (12 miles) from feeding areas to roost sites. The period from January 1 to March 1 is important for initiating nesting activity; March 1 to May 15 is the most critical time for incubation and rearing of young. Females lay one to three eggs per clutch, and in Missouri, usually two chicks survive to fledging.

- Decurrent False Aster (*Boltonia decurrens)*

  Occurs in St. Charles County.

  Decurrent false aster is a big river floodplain species that grows in wetlands and on the borders of marshes, lakes, oxbows and sloughs. It also may be found in old fields, roadsides, agricultural fields and on levees. It favors sites characterized by moist soil and regular disturbance, preferably periodic flooding, which maintains open areas with high light levels. Today it is found in areas where succession is prevented and sunlight is allowed to reach the seedlings. It is a perennial plant that blooms from August through October. Seed dispersal is achieved primarily by floodwater. Decurrent false aster once occurred in almost contiguous populations in a 400-kilometer band between LaSalle, Illinois and St. Louis, Missouri, within the

[20] Table compiled from U. S. Fish & Wildlife Service, Great Lakes-Big Rivers Region 3 Webpage, *http://midwest.fws.gov/endangered/lists/missouri-cty.html*, Accessed 12/7/03, and the Missouri Department of Conservation Missouri Heritage Database Webpage, http://www.conservation.state.mo.us/cgi-bin/heritage/index.html, Accessed 12/17/03.

Illinois and Mississippi River floodplains. In Missouri, decurrent false aster is presently known to occur only in the eastern one-half of St. Charles County in areas subject to Mississippi River flooding.

- Pallid sturgeon (*Scaphirhynchus albus*)

  Occurs in St. Charles, Montgomery and Warren Counties.

  The pallid sturgeon is a large fish limited to the Missouri River and lower Mississippi River drainage basins. These fish inhabit bottom areas of open channels that have strong current and firm sandy substrate. They may also be found along sandbars and behind wing dikes. Pallid sturgeons feed on the bottom of the river and typically consume aquatic insects, crustaceans, mollusks, marine worms, fish and the eggs of other fish. They are generally long-lived, possibly living as long as 41 years. Males reach sexual maturity at five to seven years. Females are believed to first spawn at 15 to 20 years. Spawning behavior is thought to occur April through mid-June, when water temperatures reach a range between 55-70 F.

- Indiana bat (*Myotis sodalis*)

  Occurs in St. Charles, Montgomery and Warren Counties.

  Indiana bats use two types of habitat depending on season. Summer habitat consists of wooded or semi-wooded areas, often along streams. Solitary females or small clusters of females, called maternity colonies, bear their offspring in hollow trees or under loose bark of living or dead trees. Dead trees in either sunny openings or in the forest interior with a somewhat open canopy are selected over live trees. When available, live shagbark hickory (*Carya ovata*) and large white oaks (*Quercus alba*) are often the preferred tree species for maternal roost sites because of their loose bark. Suitable trees must be at least nine-inch diameter at breast height (trees greater than 21-inch diameter at breast height are preferred). Indiana bats forage on insects in and around the tree canopy of flood plain, riparian and upland forest. Streams associated with floodplain forests and impounded bodies of water such as ponds, reservoirs and wetlands are preferred foraging habitats for pregnant and lactating bats. During the winter, Indiana bats hibernate in caves or mines referred to as hibernacula. Bats have the ability to lower their metabolism during hibernation, thereby reducing the amount of energy and food they use. However, they enter hibernation with only enough fat reserves to last until spring. Any disturbance to bats while they are hibernating can arouse them and possibly result in their starvation if critical fat reserves are depleted.

- Running buffalo clover (*Trifolium stoloniferum*)

  Occurs in St. Charles County.

  Running buffalo clover was historically widespread from Kansas to West Virginia. In Missouri, running buffalo clover has recently been found in three natural sites and has been reintroduced at a number of sites. The plant favors moist, open woodlands and streambanks. It grows in areas that have a pattern of long-term moderate disturbance such as mowing, trampling or grazing.

- Eastern Massasauga (*Sistrurus catenatus catenatus*)

  Occurs in St. Charles County.

  Eastern massasauga rattlesnakes range from central New York and Pennsylvania westward into Minnesota, Wisconsin and Illinois, and southward into Missouri. These snakes occur in north-central to northeastern Missouri, north of the Missouri

River. The eastern massasauga inhabits marshy or swamp areas dominated by cordgrass, sedges and bulrushes, as well as lowlands along rivers and lakes. Eastern massasaugas are active during the day from mid-April to early October. They overwinter in moist lowland areas, using burrows made by crayfish or other animals for shelter. Mating occurs in spring, and females give birth to 4-10 live young in late summer. It is likely that females in Missouri produce a litter of young only every other year. Eastern massasaugas prey on mainly deer mice and voles.

- American Bittern (*Botaurus lentiginosus*)

  Occurs in St. Charles County.

  American bitterns are secretive birds found in wetlands in most parts of North America. From spring to late fall, their range encompasses virtually all states and extends north into Canada. During winter, northern populations migrate to southern states and areas along the eastern and southern coasts. In Missouri, American bitterns nest in permanent wetlands with tall, emergent vegetation such as bur reed and bulrush. Breeding occurs between April and July, with females making nests in thick vegetation several inches above water. Clutches typically have three to five eggs. Young hatch after 24-28 days of incubation, leave the nest after approximately two weeks, and later disperse from the area. American bitterns prey on large insects, small fish and mammals, amphibians and crayfish.

- Barn Owl (*Tyto alba*)

  Occurs in St. Charles County.

  Barn owls are nearly worldwide in their distribution and present on every continent except Antarctica. They nest throughout appropriate grassland habitats in Missouri except in the Ozarks. They are most common in the Bootheel and in the Osage Plains in west central Missouri. Barn owls prefer warm climates and grasslands. Barn owls rely on open fields for hunting, which they do at night. They prey mainly on small microtine rodents and rats. Barn owls live two to four years on average, and they usually breed once or twice per year. Normally, breeding begins in March, and females lay four to seven eggs, which hatch starting in May. Barn owls use both natural and man-made nesting sites, including tree cavities, barns, silos, abandoned and occupied buildings and chimneys. Barn owls may be preyed upon by raccoons or great horned owls.

- Blanding's Turtle (*Emydoidea blandingii*)

  Occurs in St. Charles County.

  Blanding’s turtles occur in many states in the Midwest and into southern Ontario. There also are isolated populations in Massachusetts and New Hampshire. In Missouri, they inhabit wetland areas in the northeastern corner of the state. Blanding’s turtles, which are semi-aquatic in nature, spend time in marshes, water holes, sloughs, streams and ponds with relatively dense vegetation, but they also may be found in grasslands. They are active from late March to early October and overwinter in mud at the bottom of marshes or ponds. Breeding occurs between early April and mid-July and again from mid-August through mid-September. Females lay 6-15 eggs in a sandy, dry soil that is well exposed to sunlight. Young hatch in September. Blanding’s turtles eat crayfish, aquatic larvae of insects, some terrestrial insects and frogs.

- King Rail (*Rallus elegans*)

  Occurs in St. Charles County.

King rails are permanent residents of the Atlantic and Gulf coastal plains from South Carolina to Texas. During the breeding season (as early as March to as late as August), some king rails migrate north to inland marshes in the Midwest, Great Lake and mid-Atlantic states. Their habitat includes fresh and brackish wetlands. King rails prefer wetlands with abundant grasses, sedges, rushes and cattails. They prey primarily on aquatic beetles, semiaquatic beetles, fish, mollusks and crustaceans. In Missouri, breeding begins in April, with males building nests in herbaceous cover over shallow water in river floodplains. Females typically lay 10-12 eggs, and both adults incubate the clutch for approximately 21 days. Young remain with adults for at least 30 days after hatching, at which time the young may migrate or remain in the area, but generally stay together as a brood.

- Western Fox Snake (*Elaphe vulpina vulpina*)

  Occurs in St. Charles County.

  Western fox snakes occur in northern Missouri, eastern Nebraska and southeastern South Dakota east to northern Michigan and northwestern Indiana. In Missouri, they have been found in cultivated fields, along wooded stream valleys and in natural prairies that adjoin marshes. Western fox snakes are active between late April and October and overwinter in dens under brush piles or mammal burrows. Mating begins in April, and females lay 8-27 eggs under logs or leaf litter in May or June. Young hatch in August or September. Western fox snakes are constrictors, and they prey mainly on rodents.

13. Hazardous Materials

a. Data Collection Methodology

A public records review was conducted to locate properties known to contain or possess the potential for contamination along the I-70 Corridor study area. A reconnaissance survey was also conducted to identify items or conditions that might indicate the presence of potential hazardous materials contamination.

The record review focused on reasonably obtainable and publicly available records, including federal and state records.

b. Public Records and Site Reconnaissance Findings

One site had been identified in the FTEIS. Zykan Landfill in Wright City had been previously considered as a high potential impact. For this study, the study corridor was narrowed, and this landfill was found to now be located outside of the project limits. Therefore, the site was excluded from the findings.

Sites with underground storage tanks, leaking underground storage tanks, hazardous waste generators and small rural dumps were considered as having a low potential to present problems that would be inordinately expensive to address during construction, and the presence of such sites was therefore not considered in developing the project alternatives, and are not included in the STEIS.

No sites with a high potential to impact the location of the highway were found within the study corridor.

14. Air Quality

The Clean Air Act Amendments (CAAA) of 1990 requires the USEPA to implement strong environmental policies and regulations to ensure cleaner air quality. The legislation also impacts proposed transportation projects such as the I-70 project. According to Title I, Section 101, Paragraph F of the CAAA [42 U.S.C. § 7401], "No federal agency may approve, accept or fund any transportation plan, program or project unless such plan, program, or project has been found to conform to any applicable State Implementation Plan (SIP) in effect under this Act." The Final Conformity Rule (40 CFR Part 93) defines project conformity as follows:

> *Conformity to an implementation plan's purpose of eliminating or reducing the severity and number of violations of the National Ambient Air Quality Standards (NAAQS) and achieving expeditious attainment of such standards; and that such activities will not: 1) cause or contribute to any new violation of any NAAQS in any area; 2) increase the frequency or severity of any existing violation of any NAAQS in any area; or 3) delay timely attainment of any NAAQS or any required interim emission reduction or other milestones in the area.*

As required by the Clean Air Act, NAAQS have been established for six major air pollutants: carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2), sulfur oxides (SOx), particulate matter (PM_{10}) and particulate matter ($PM_{2.5}$) and lead (Pb). Table X shows the standards for each pollutant. Primary standards have been established to protect the public health while secondary standards are intended to protect public welfare.

Section 107 of the CAAA [42 U.S.C § 7407] requires the USEPA to publish a list of all geographic areas in compliance with the NAAQS, as well as those that are not in attainment of the NAAQS. Areas not in compliance with the NAAQS are termed non-attainment areas. Areas that were redesignated from non-attainment to attainment are termed maintenance areas. Areas that have insufficient data to make a determination are unclassified, and are treated as being in attainment until proven otherwise. The designation of an area is made on a pollutant-by-pollutant basis.

Table III-21: National and Missouri Ambient Air Quality Standards

Pollutant	Primary Standards	Average Times	Secondary Standards
Carbon Monoxide	9 ppm (10 mg/m^3)	8-hour	None
	35 ppm (40 mg/m^3)	1-hour	None
Lead	1.5 µg/m^3	Quarterly Average	Same as primary
Nitrogen Dioxide	0.053 ppm (100 µg/m^3)	Annual (Arithmetic Mean)	Same as primary
Particulate Matter (PM_{10})	50 µg/m^3	Annual (Arithmetic Mean)	Same as primary
	150 µg/m^3	24-hour	
Particulate Matter ($PM_{2.5}$)	15 µ/m^3	Annual (Arithmetic Mean)	Same as primary
	65 µ/m^3	24-hour	
Ozone	0.08 ppm	8-hour	Same as primary
	0.12 ppm	1-hour	Same as primary
Sulfur Oxides	0.03 ppm	Annual (Arithmetic Mean)	--
	0.14 ppm	24-hour	--
	--	3-hour	0.5 ppm (1300 µ/m^3)

Source: USEPA 40 CFR Part 50, National Primary and Secondary Ambient Air Quality Standards

The I-70 SIU 7 study area includes portions of Warren County, Montgomery County and St. Charles County, Missouri. St. Charles County is part of the St. Louis region, where air quality is overseen by the East-West Gateway Council of Governments (EWGCOG) (formerly East-West

Gateway Coordinating Council (EWGCC)), the Metropolitan Planning Organization (MPO) for the Greater St. Louis Area. The Greater St. Louis Area includes St. Louis City and County, St. Charles County, Franklin County, and Jefferson County, MO along with Madison County, St. Clair County and Monroe County, Illinois. The three Missouri counties in the study area are located within USEPA Region 7. The agencies normally involved with air quality issues in the study area include USEPA, MoDNR and MoDOT.

Prior to 1997, portions of the Greater St. Louis Area were classified as non-attainment for CO due to monitoring sites around the area showing CO concentrations exceeding the NAAQS prior to 1987. In 1997, the area was reclassified as a maintenance area for CO, meaning that the area had met the NAAQS and a maintenance plan would be implemented to prevent being reclassified to non-attainment again.

In addition to CO, the greater St. Louis area was previously designated as non-attainment for the one-hour ozone standard, but was redesignated in 2003 as attainment for the one-hour ozone standard. In April 2004, the area was redesignated as moderate non-attainment of the eight-hour ozone standard, but is expected to achieve attainment in 2010. This area includes the St. Charles County portion of the project study area.

In December 2004, USEPA is expected to designate areas which are not in attainment of the new fine particulate matter (less than 2.5 microns in diameter) standard. In all likelihood, the St. Louis area will be classified as non-attainment for this new fine particulate standard. New control strategies resulting in additional emissions reductions will likely be necessary to achieve the new national air quality standards.

Warren and Montgomery counties have been designated as attainment for all criteria pollutants and are expected to remain in attainment.

15. Noise

The appropriate metrics and methodologies for the analysis of noise impacts for highway projects are defined by the FHWA. Traffic noise is measured using the A-weighted equivalent sound level, L_{eq}, in units of dBA, as defined below. This metric considers three elements of the sound: magnitude, frequency and time variance.

Sound magnitude relates to the sound pressure displacement created by the acoustic energy of the source. This displacement is quantified through the use of a logarithmic ratio, Sound Pressure Level, expressed in units of decibels (abbreviated dB).

Human ears respond not only to sound magnitude, but also to frequency. Not all frequencies are detectable by the human ear, so an adjustment is made to the high and low frequencies to approximate the way an average person hears traffic sounds. This adjustment, called A-weighting, is applied to the sound measurement and is expressed as dBA. The A-weighting curve emphasizes the frequency ranges that humans hear best and de-emphasizes those they can't hear as well.

The A-weighted decibel describes the magnitude of a sound, emphasizing the frequencies best heard by humans, but only at one instant in time. Traffic sound levels are never constant due to the changing number, type and speed of vehicles. Thus, energy equivalent sound levels, L_{eq}, are employed to add a temporal aspect to the measurement. L_{eq} is the equivalent mean steady noise level containing the same acoustic energy as the actual time-varying noise level during a given time period (usually one hour). L_{eq} is determined by averaging the acoustic energy of a number of instantaneous measurements. L_{eq} is presented on a logarithmic scale, and thus an increase in L_{eq} of 10 dBA equates to a doubling of the perceived noise level. All noise levels in this document are in dBA Leq (h).

a. Noise Abatement Criteria

The FHWA has defined specific Noise Abatement Criteria (NAC) levels for various land uses as one means to define a traffic noise impact, as shown in Table III-23. A noise impact occurs when either an absolute or a relative impact criterion is met. Specifically, according to the FHWA's 23 CFR Part 772, a traffic noise impact occurs when "the predicted traffic noise levels approach or exceed the noise abatement criteria (NAC), or when the predicted traffic noise levels substantially exceed the existing noise levels." MoDOT's FHWA-approved *Traffic Noise Policy* defines the phrase "approach or exceed" to mean within one dBA below the levels shown in the table, and defines the phrase "substantially exceed," to mean exceed by 15 dBA or more.

Table III-22: Noise Abatement Criteria - Hourly A-weighted Sound Level - decibels (dBA)

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

Source: Code of Federal Regulations, Title 23 Part 772, Revised October 1997.

For example, for a receiver in Activity Category B, a noise impact occurs if the predicted noise level is 66 dBA or higher, or if the predicted noise level is 15 or more dBA above the existing noise level, even if the predicted level is below the NAC for that activity category.

When a traffic noise impact is predicted to occur, noise abatement measures must be considered. A noise abatement measure is any positive action taken to reduce the impact of traffic noise on an activity area. Abatement measures include traffic management measures, e.g., speed limits, prohibition of certain vehicle types, and traffic control devices, changes in the roadway's horizontal or vertical alignment to break the line of sight between receiver and noise source and noise barriers or berms. MoDOT's FHWA-approved noise mitigation policy also requires the following:

- Any proposed mitigation should be designed to achieve a noise reduction of at least 5 dBA.
- Attenuation must be provided for more than one receptor.
- A benefited residence is defined as a residence that is expected to receive noise reduction of 5 dBA or greater, whether it is a "first-row" residence or not.
- Noise barriers cannot exceed eighteen feet in height.
- Noise barriers cannot interfere with access to the property.
- Noise barriers cannot pose a traffic safety hazard.
- There must be majority concurrence with the proposed mitigation by the affected residents.
- The reasonable mitigation cost per benefited residence is up to $30,000 each.

b. Existing Noise Environment

The 40-mile long I-70 corridor between Route 19 (MP 174) and Lake St. Louis Boulevard (MP 212) is primarily rural in nature in the western portion, and becomes increasingly more developed toward the east. The study corridor terrain is generally flat to gently rolling. Several communities are located along I-70, including High Hill, Jonesburg, Warrenton, Wright City, Foristell and Wentzville. The size and intensity of development of these communities generally increases from west to east. At the extreme eastern end of the study corridor, there are a number of new, relatively densely developed residential subdivisions as well as the west campus of St. Joseph Hospital. Potentially noise-sensitive land uses in the study corridor all fall under Category B, with an exterior NAC of 67. There are no Category A land uses (lands where serenity and quiet are of extraordinary significance) within the I-70 study corridor.

Existing ambient noise levels were measured at a number of locations along the existing I-70 corridor that would be representative of noise receptors. Because all of the build alternatives under consideration include the existing highway, all of the noise measurement sites were within the immediate vicinity of the existing highway. Highway traffic noise is by far the dominant noise in the I-70 corridor, and this noise is a function of the volume of truck and auto traffic passing each site. Existing daily traffic volumes vary substantially over the length of SIU 7, from less than 34,000 vehicles per day near the western terminus to over 65,000 vehicles per day in the easternmost subsections. Noise monitoring sites were distributed along the corridor to sample noise levels throughout this range of traffic volumes. Noise monitoring sites were distributed along the corridor at noise-sensitive receptors to obtain an estimate of the SIU 7 noise environment for this range of traffic volumes.

Measurements were conducted at six sites in the front yards of residences over the length of SIU 7. These sites were located within the towns of High Hill, Jonesburg, Wright City, Foristell and Lake St. Louis. At one of the six sites, three measurements at varying distances from I-70 were made. Details of the ambient noise measurements and locations of the measurement sites are presented in the Noise Technical Report, published separately. Table III-23 presents the measured existing L_{eq} noise levels.

Table III-23: Existing Noise Measurements Results

Site[1]	Distance from Edge of Travel Lane	Time	Traffic[2]		Measured L_{eq} (dBA)
			Autos	Trucks /Buses	
M1a – High Hill	71’	10:32 AM	807	718	77
M1b – High Hill	365’	11:12 AM	728	652	63
M1c – High Hill	659’	1:19 PM	918	565	58
M2 – Jonesburg	199’	2:12 PM	948	623	67
M3 – Wright City	175’	3:13 PM	2073	672	68
M4 – Wright City	241’	9:39 AM	1359	669	63
M5 – Foristell	251’	10:28 AM	1668	645	66
M6 – Lake St. Louis	218’	11:27 AM	3027	887	67

[1] All sites, except M6 – Lake St. Louis, are residential receptors.

[2] Traffic counts taken during the 15-minute measurement period were adjusted to represent a full hour of traffic movements.

At five of the six sites (M1a, M4, M5, M7 and M8) existing noise levels were found to already exceed the NAC for the affected land use. Measured noise levels at these five sites, all located at approximately 250 feet or less from the existing near travel lane, ranged from 67 dBA to 77 dBA.

The FHWA’s TNM® model was also used to model existing (Year 2002) traffic noise levels, and to determine the distance from the existing highway to the 66 dBA isoline, the noise level that is

considered to constitute a noise impact. At the western end of SIU 7, where traffic volumes are lower, receptors within approximately 300 feet of the highway are currently subject to peak-hour noise levels of 66 dBA or above. This distance increases toward the east, as I-70 traffic volumes grow, to approximately 400 feet from the highway at the eastern terminus of SIU 7. Noise impacts of the proposed project are discussed in Chapter IV, Section 12.

16. Archaeological Resources and Cemeteries

Section 106 of the National Historic Preservation Act [16 U.S.C. § 470f] requires that any proposed actions funded by the federal government consider the potential impacts of those actions on significant historic and archaeological properties. Section 36 CFR Part 800 provides the regulations on identifying and evaluating significant historic resources and for assessing effects of proposed actions on these resources.

Archaeological resources are any surface, subsurface or submerged location that contains material remains of prehistoric or historic human life or activities that are of archaeological interest in the depositional environment in which they were interred or accumulated. During the FTEIS, a review of available data indicated the existence of a total of 158 previously recorded archaeological sites within the existing I-70 corridor. Refer to the FTEIS for additional information regarding the previously-identified sites. Six previously identified sites are located within the area of potential effects (APE) for SIU 7, and little information concerning these sites was presented in the FTEIS. However, information on location of these known sites was taken into consideration in the development of the alternatives evaluated in this study.

Cemeteries are protected by Missouri statutes. The literature review conducted during the FTEIS identified a total of 94 cemeteries within the 10-mile wide corridor centered on existing I-70 within the limits of SIU 7. The location of these cemeteries is shown on the exhibits in this document, and was taken into consideration in the development of alternatives.

Once a preferred alternative is established, a detailed, on-the-ground survey of all areas potentially impacted by that alternative will be conducted by professional archaeologists to locate and evaluate the known sites, and to discover any previously-unknown sites that might lie within the area of potential effects. Any sites discovered by this survey will be evaluated for their potential significance. Any discovered resources determined to be eligible for inclusion in the National Register of Historic Places (NRHP) will be carefully examined and a decision will be made as to how to avoid or mitigate the impact to that resource in consultation with the State Historic Preservation Officer, other relevant state and federal agencies, and concerned members of the public. Procedures for consultation will be documented in a programmatic agreement incorporated in the EIS (See Appendix H).

17. Historic Resources

MoDOT Cultural Resources staff conducted an architecture and historical investigation for SIU 7. The survey identified all historical, architectural and bridge resources within the project area. The study also provides an evaluation and assessment of identified properties eligibility for listing on the NHRP. Consultation has been ongoing with the Missouri State Historic Preservation Office (SHPO) consultation that has already occurred, and the SHPO has concurred with MoDOT's eligibility recommendations (refer to Appendix H). This cultural resources study followed preliminary studies conducted in conjunction with the FTEIS process.

a. Missouri Interstate 70 and History

Background

As early as 1938 consideration was given by the federal government to an interstate highway network. A report resulting from the Federal Highway Act of that year recommended construction of a 26,000-mile (41,843 km) inter-regional system consisting of two- or four-lane highways, some with controlled access. The plan remained dormant until the Federal Highway Act of 1944 authorized the designation of select existing highways as part of an interstate system. The act called for improvement of these designated roads, but made no provision for increased federal funding. Lack of money and lack of uniform design standards slowed progress on the project over the following years. Although funding increased with the Federal Highway Act of 1952, only 6,000 miles (9,656 km) of highway had been completed by 1953.

In an address prepared for a governor's conference in 1954, President Dwight Eisenhower declared that the highway system then in place was totally inadequate, causing needless death and injury, creating delay in the transportation of goods, and placing the nation at risk in the event of major disaster or war. He called for federal and state cooperation in the creation of a modern interstate network, paid for by a revamped system of financing that would avoid debt.

The Federal Highway Act of 1956 substantially enacted Eisenhower's proposal and initiated the current interstate highway system. The act initiated construction on a network 39,000 miles (63,730 km) in extent and authorized $25 billion for the project, to be spent over the period 1957 to 1969. Existing toll roads meeting system standards could be integrated into the interstate system. Inherent in the terms of the act was the idea that the interstate system should evolve and improve over time and that initial construction would be altered or replaced in the future as need arose. The original act permitted two-lane interstate sections with at-grade intersections in low traffic rural areas, but called for the adoption of minimum standards aimed at the eventual elimination of these sections. Legislation passed in 1966 ultimately did require all interstates to be at least four lanes and have no at-grade intersections. According to the 1956 act, interstates were to be constructed according to standards accommodating traffic forecasted for 1975. Subsequent legislation amended this requirement so that highway design would provide for traffic estimates for a maximum of 20 years.

The 1956 act started a public works project that was the most expensive and wide-scale in United States history, surpassing any program undertaken during the New Deal era, with approximately 75 percent of the new interstate system constructed on new right of way. Initial construction of the interstate system was greeted with wide-ranging support. It was not until the 1960s that significant opposition to the program mounted, with criticisms centering on the displacement of residents and the destruction of urban neighborhoods caused by highway construction.

When finished, I-70 extended from Baltimore, Maryland, through the Alleghenies of Pennsylvania, and across the Ohio River at Wheeling, West Virginia. From there it passed through Columbus, Indianapolis, St. Louis and Kansas City, toward its original western terminus at Denver. In 1957 it was decided to extend I-70 west from Denver to a junction with I-15 in south central Utah.

As one of the interstates built in the immediate aftermath of the Federal Highway Act of 1956, I-70 was designated by federal legislation in 1990 as part of the Dwight D. Eisenhower System of Interstate and Defense Highways. In February 1994, this system was named by the American Society of Civil Engineers as one of the "Seven Wonders of the United States," along with other notable engineering accomplishments including the Golden Gate Bridge, the Panama Canal and Hoover Dam.

Missouri Interstate 70 Memorandum of Understanding
Missouri is sometimes credited as the first state to initiate interstate highway construction, breaking ground on a 2.6-mile (4.2 km) section of I-70 in St. Charles County, after the state signed the first contracts under the new interstate program on August 2, 1956. Beginning in 1956, construction of I-70 across Missouri took nine years to complete. Work on the last sections, in Jackson and Lafayette counties, was completed in August of 1965. Extending 251 miles (403.9 km), the Missouri section of I-70 was designed to meet the 20-year design life established by federal legislation.

During the First Tier Study, discussions began with the Historic Preservation Program (HPP) office, which housed the SHPO, within MoDNR, and the FHWA. These discussions were regarding the potential historic significance of I-70 in view of the National Historic Preservation Act of 1966 and its possible eligibility for the NRHP. The interstate system is approaching the 50-year-old threshold for consideration of eligibility, and as a result, the national interstate system is currently being studied by a national task force including representatives of the National Conference of State Historic Preservation Officers, the FHWA, select state Departments of Transportation, the Advisory Council on Historic Preservation, the NRHP and other interested parties. The discussions within Missouri led to the development of a memorandum of understanding (MOU) that outlines a course of action to be followed with regard to I-70. The agreed action is the following:

1. A formal assessment of the eligibility of the section of Interstate 70 addressed in the First Tier EIS and in the Second Tier environmental documents will be prepared by the Federal Highway Administration at such time that the interstate has reached 50 years of age, or the national task force has reached an opinion regarding the eligibility of the interstate system.
2. In the interim, the FHWA and MoDOT will proceed in good faith to gather documentation on the history and development of this important interstate highway (Interstate 70) in Missouri.
3. Should Interstate 70 or any part thereof be determined eligible at a later date, the FHWA and MoDOT shall enter into consultation with the SHPO and the Advisory Council on Historic Preservation (ACHP) pursuant to 36 CFR 800.

The MOU has been signed by the FHWA, MoDOT and MoDNR. It is included in Appendix D of this document.

b. Architectural and Historic Records Search

The online National Register Information System database[21] was queried for NRHP-listed properties in Montgomery, Warren and St. Charles counties. Four properties in the vicinity of the project were identified as listed on the NRHP, although all are outside the APE for architectural and bridge recourses for this project. These properties include:

- High Hill School (Montgomery County)
- Ernst Schowengerdt House (Warren County)
- Warren County Courthouse and Circuit Court Building (Warren County) (destroyed)
- Wentzville Tobacco Company Factory (St. Charles County)

[21] http://cr.nps.ogv/nr/research/nris.htm

The SHPO inventory was also consulted to determine if any SHPO-funded or Cultural Resource Management (CRM) Section 106 surveys had been previously conducted for the study area. Seven CRM studies were conducted in or near the project area, yielding additional information about resources within the study section. Findings of the historical and architectural investigations are presented in Chapter IV, Section 9, Historic Resources/Section 106 Review.

18. Visual and Aesthetic Resources

The criterion by which the visual quality of the proposed project was assessed was based on methodologies provided in the U.S. Department of Transportation's publication titled Visual Impact Assessment for Highway Projects. These criteria include visual resources, visual quality and viewer groups. Visual resources, as defined by the publication, are "the appearance of the features which make up the visible landscape." Visual quality is a scale of aesthetic value determined by three factors, vividness, intactness and unity. Vividness is "the memorability of the visual impression received from the landscape elements." Intactness is "the integrity of the visual order in the natural and man-built landscape." And, unity is "the degree to which the visual resources of the landscape join together to form a coherent, harmonious visual pattern." Finally, viewer groups are "the classes of viewers differentiated by their visual response to the highway and its setting." There are two distinct categories of viewer groups: viewers who are users of the project facility (views *from* the road) and people who can observe the roadway from an adjacent vantage point (views *of* the road).

The visual quality of the environment currently surrounding I-70 within the project boundaries can be categorized as moderate to low based on the vividness, unity and intactness of the landscape. The existing I-70 alignment generally follows a ridgeline with gently rolling topography. The area along the alignments does not currently provide any notable view-sheds from the perspective of drivers or occupants of adjacent buildings. The vegetation running throughout this landscape is mostly indigenous trees, shrubs and grasses, with planted crops predominating in the western section of the project limits.

From west to east, the visual environment gradually changes from sparsely populated farming, commercial and residential areas to densely developed commercial and residential areas. The project area was divided into three sections based on similar visual characteristics that reflect this gradual change in land use and population. In general, it should be noted that commercial properties and their signage dominate most of the landscape between the project boundaries, and though concentrated around the highway's current exits, these types of properties do appear in moderate numbers between these high concentrations.

The first section extends from the western project terminus just beyond New Florence to the western city limits of Warrenton. This section has more of a rural atmosphere than the central and eastern two sections, resulting in low concentrations of viewers *of* the road. Figure III-3 illustrates a typical viewscape within this western section of the study corridor. It is void of the larger communities like Warrenton. Commercial and residential buildings (viewers of the road) are concentrated around the towns of Jonesburg, High Hill and New Florence. Most of Jonesburg cannot be seen from the existing right of way with the exception of a few commercial properties at the exit and adjacent residences. Occasional residential and commercial properties occur between these intersections along the outer roads. Numerous agricultural fields are present adjacent to the highway. Few wooded areas exist with the exception of wooded fringe along creeks and fence lines. These wooded areas break the landscape up into many different viewsheds. The visual quality of this section can be described as moderate based on the vividness, unity and intactness of the landscape.

Figure III-3: Visual Quality (West)

The second section extends from the western city limits of Warrenton to the western city limits of Wentzville. Increasing commercial and residential development occurs within this section. Most of the development is concentrated around the interchanges within the cities of Wright City and Warrenton. Figure III-4 illustrates a typical viewscape within this central section of the study corridor. Many residential and commercial buildings occur within these areas along the outer roads. Agricultural fields become more dominant adjacent to the right of way within this section. Wooded areas occur mainly as fringe along creeks. Railroad right of way parallels this section of highway to the south until Wright City. A railroad trestle blocks part of the viewshed to the south for drivers, but also blocks the highway from view by people on the south side of this feature. A rest area/welcome center occurs in this section just west of Wright City. This rest area/welcome center has a park-like visual setting from the perspective of highway users. The visual quality of this section can be described as moderate based on unity and intactness, and low based on the vividness of the landscape.

Figure III-4: Visual Quality (Central)

The easternmost section extends from the western city limits of Wentzville to the eastern project limits. This section is highly populated, resulting in higher concentrations of viewers *of* the road, and consists of both residential and commercial properties with associated landscaped areas. Figure III-5 illustrates a typical viewscape within this eastern section of the study corridor. Occasional fields occur north of the current alignment within this section. Small wooded fringe areas occur adjacent to a few creek crossings. A larger wooded area occurs south and southwest of the U.S. 40/61 and I-70 interchange. Fields with occasional shrubs occur within and adjacent to this interchange, but the network of on- and off-ramps breaks up this viewshed. The visual quality of this section can be described as low based on the vividness, unity and intactness of the landscape.

Figure III-5: Visual Quality (East)

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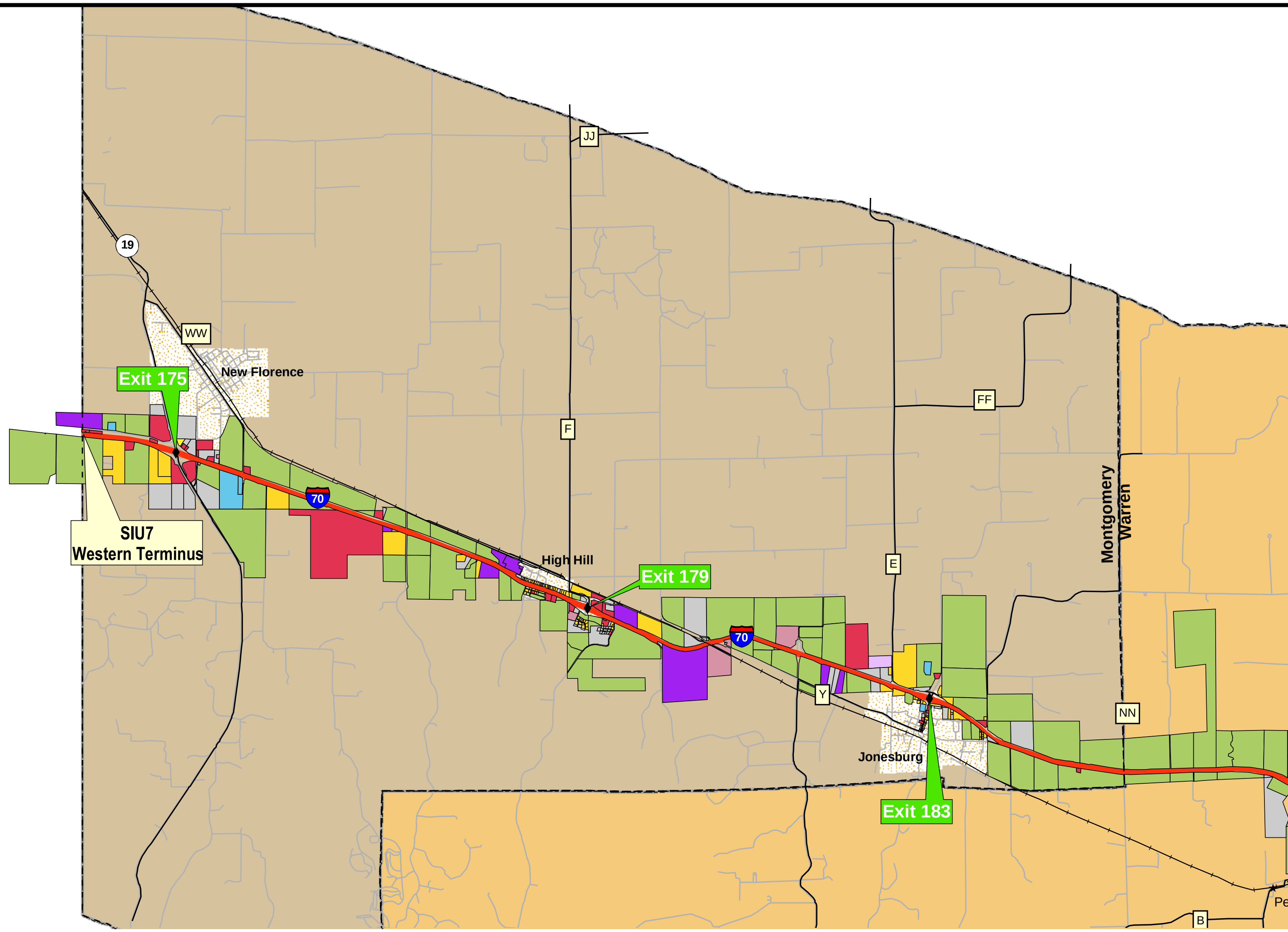

MoDOT | IMPROVE I-70

SIU 7
Route 19 to Lake St. Louis

Montgomery County Land Use

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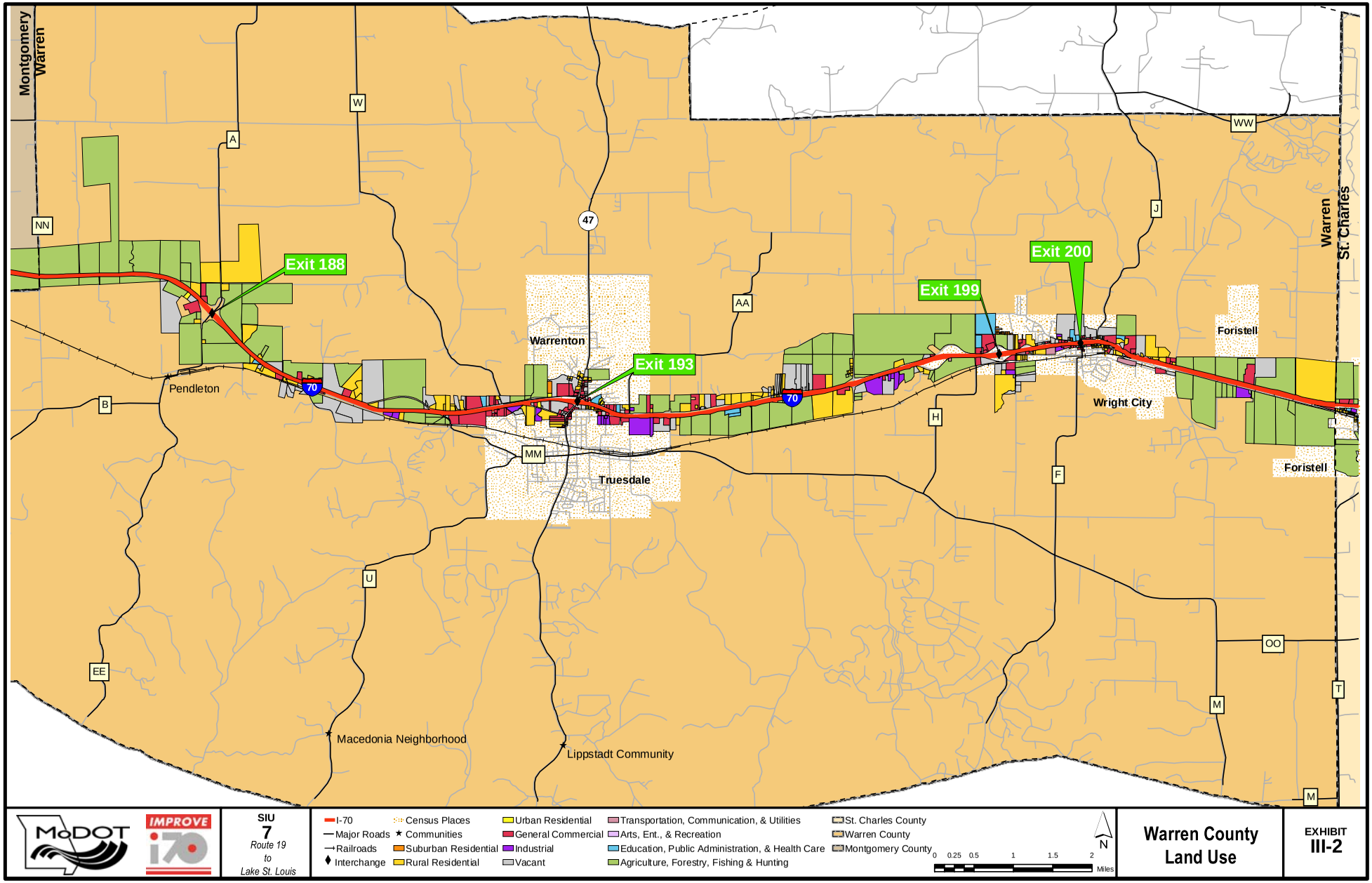
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St. Charles
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Wright City
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Macedonia Neighborhood
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SIU
7
Route 19
to
Lake St. Louis
I-70
Major Roads
Railroads
Interchange
Census Places
Communities
Suburban Residential
Rural Residential
Urban Residential
General Commercial
Industrial
Vacant
Transportation, Communication, & Utilities
Arts, Ent., & Recreation
Education, Public Administration, & Health Care
Agriculture, Forestry, Fishing & Hunting
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Montgomery County
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Land Use
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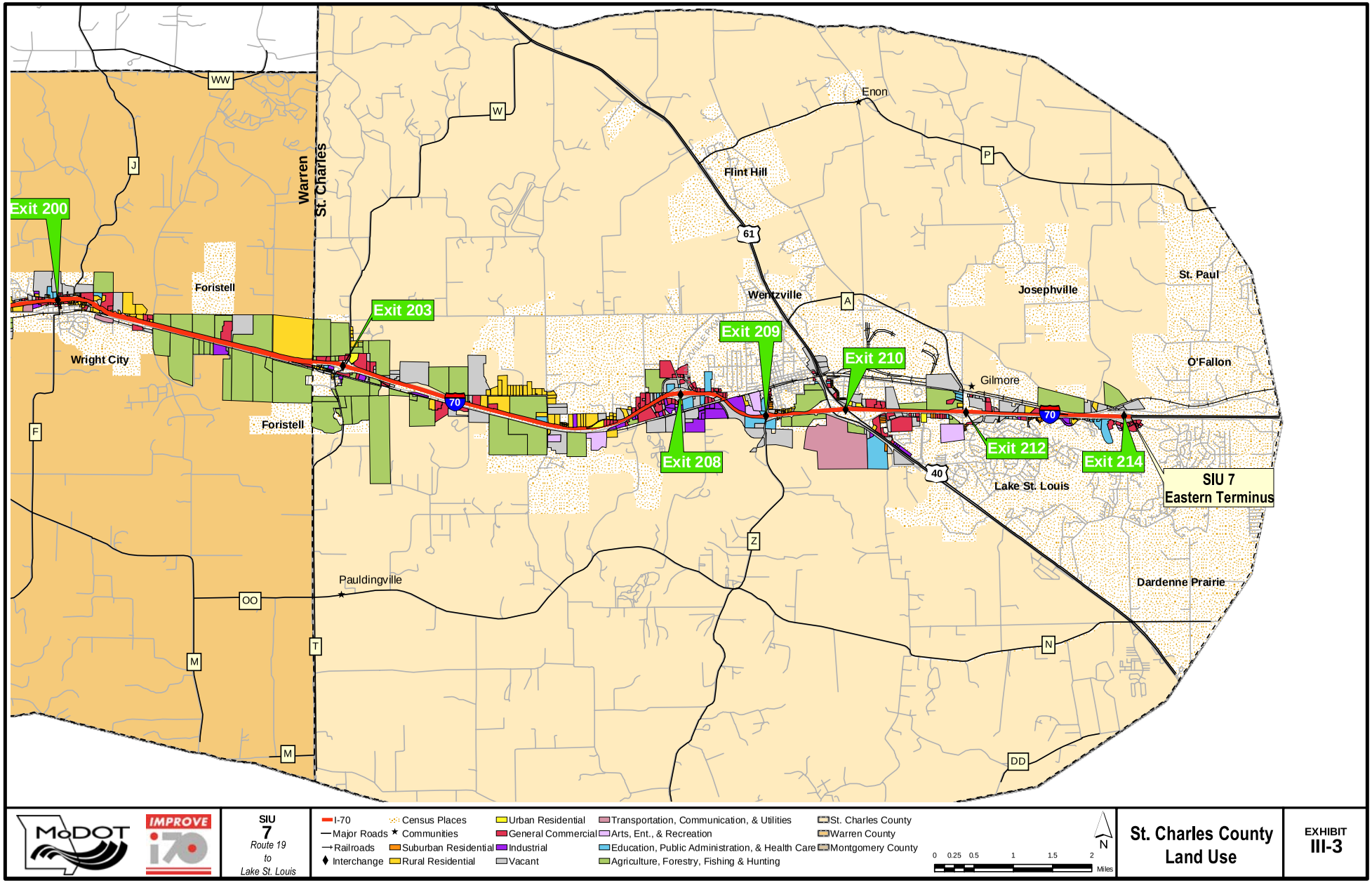
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Census Places
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Rural Residential
Urban Residential
General Commercial
Industrial
Vacant
Transportation, Communication, & Utilities
Arts, Ent., & Recreation
Education, Public Administration, & Health Care
Agriculture, Forestry, Fishing & Hunting
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Land Use
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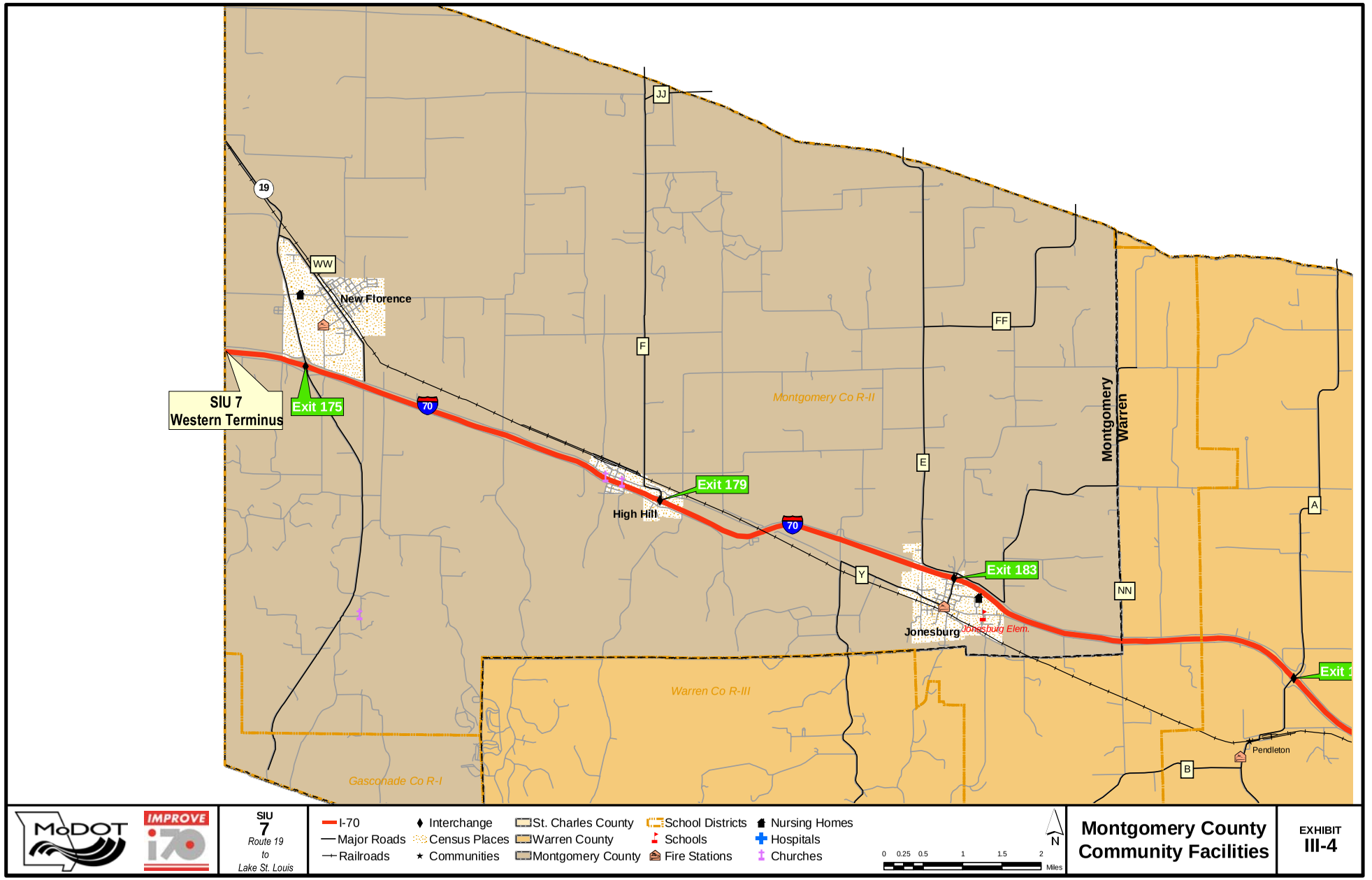
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Warren Co R-III
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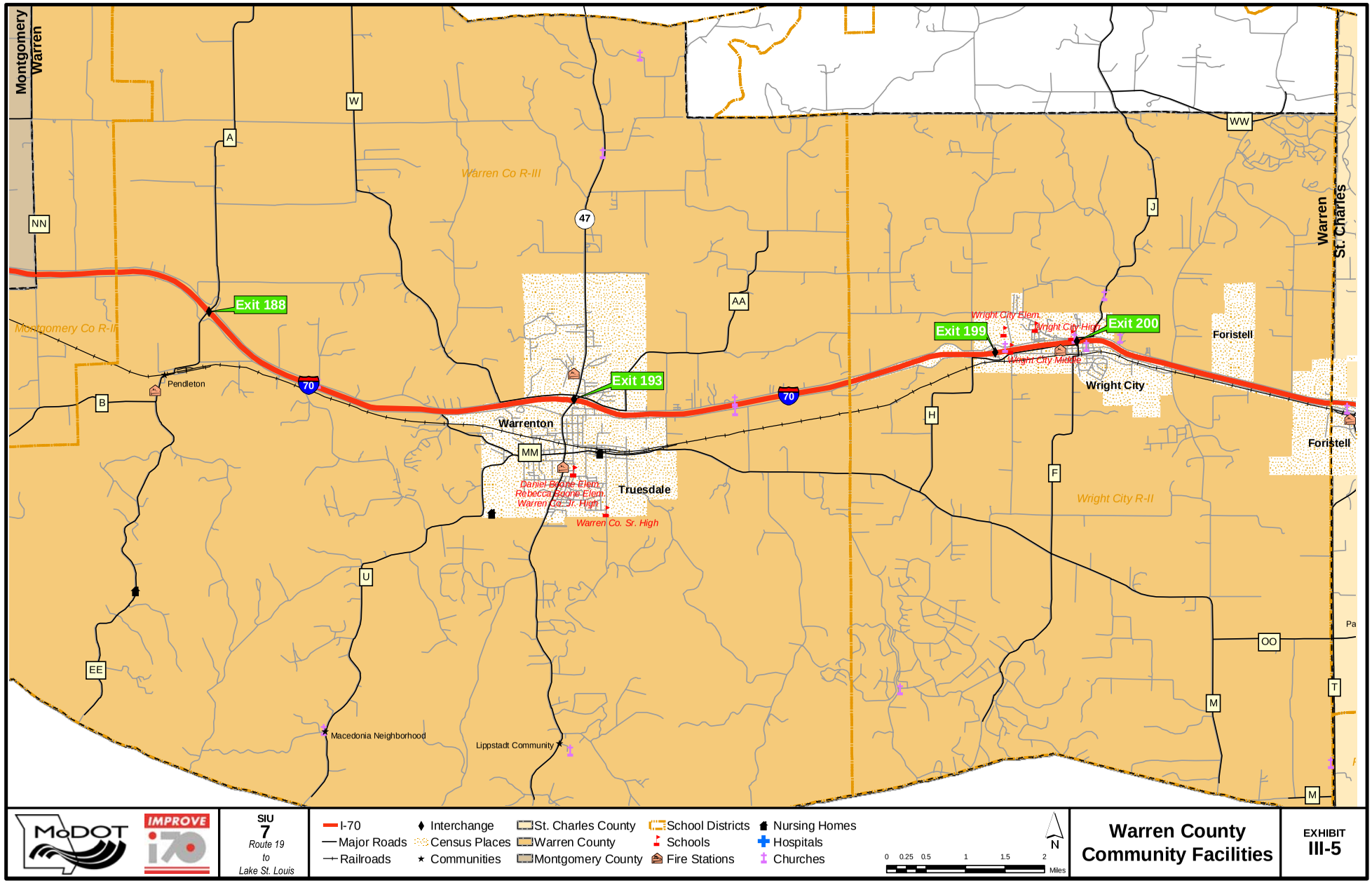
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Rebecca Boone Elem.
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Warren Co. Sr. High
Wright City Elem.
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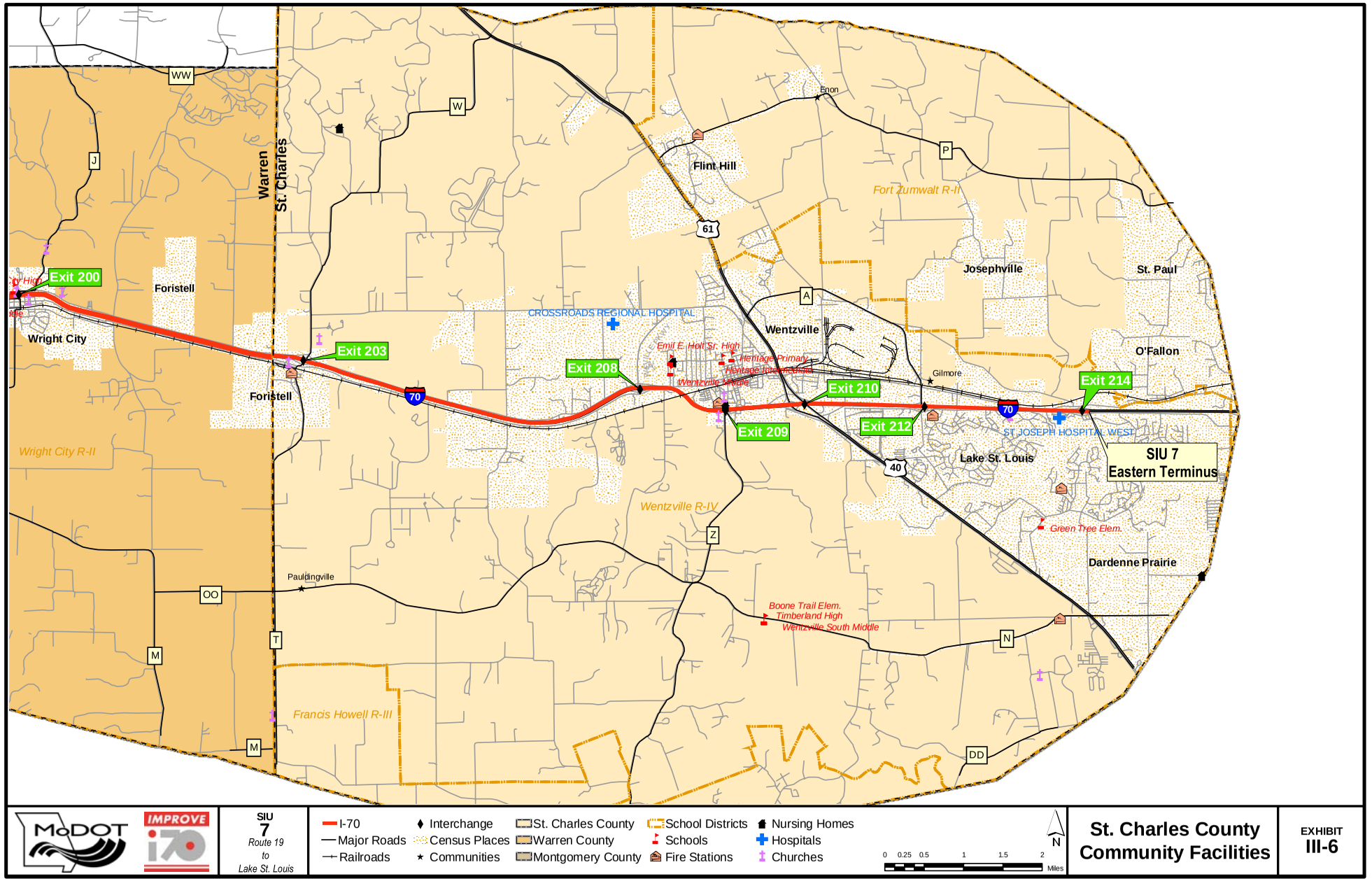
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Wentzville
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Heritage Primary
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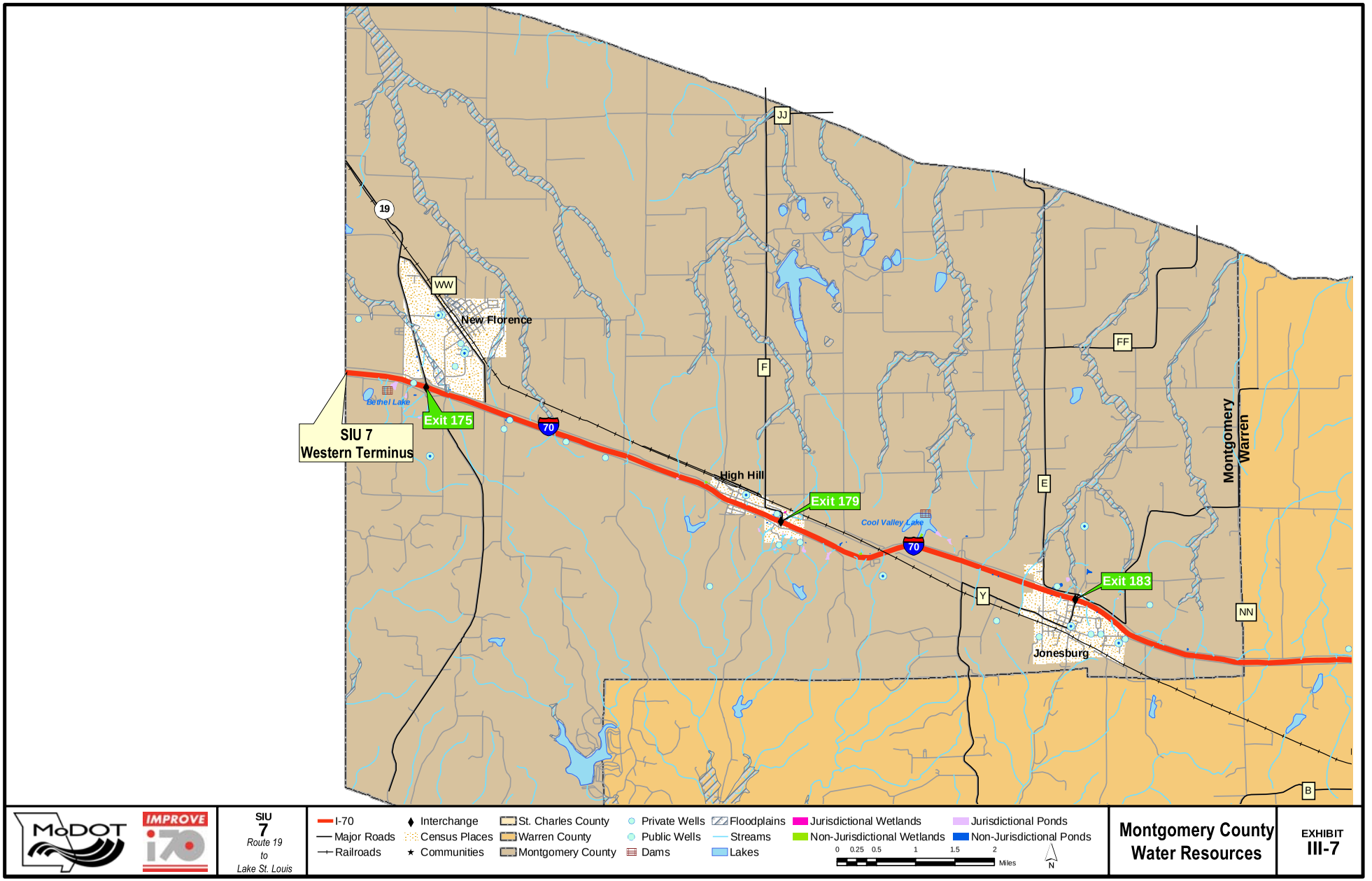
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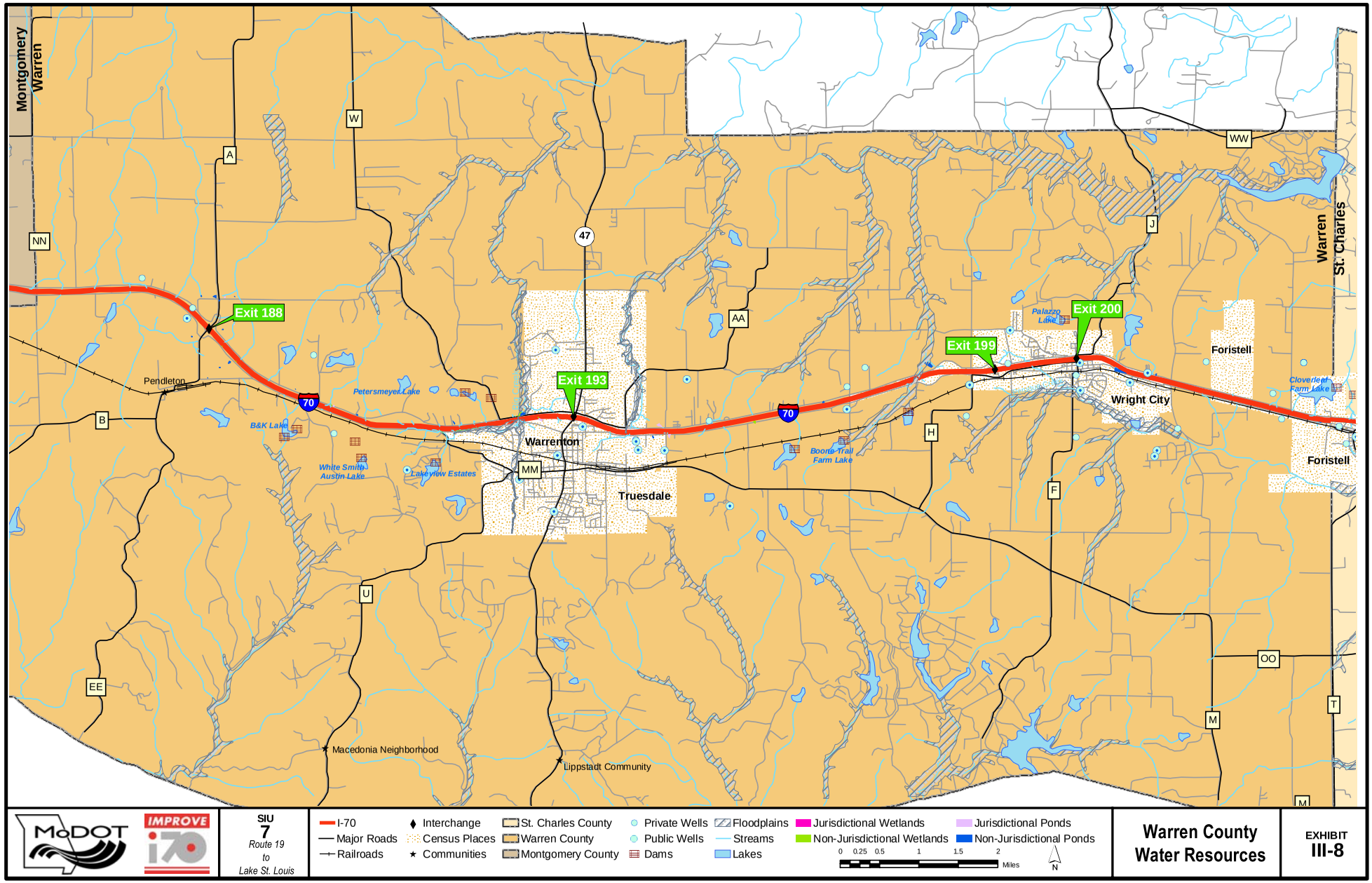
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Palazzo Lake
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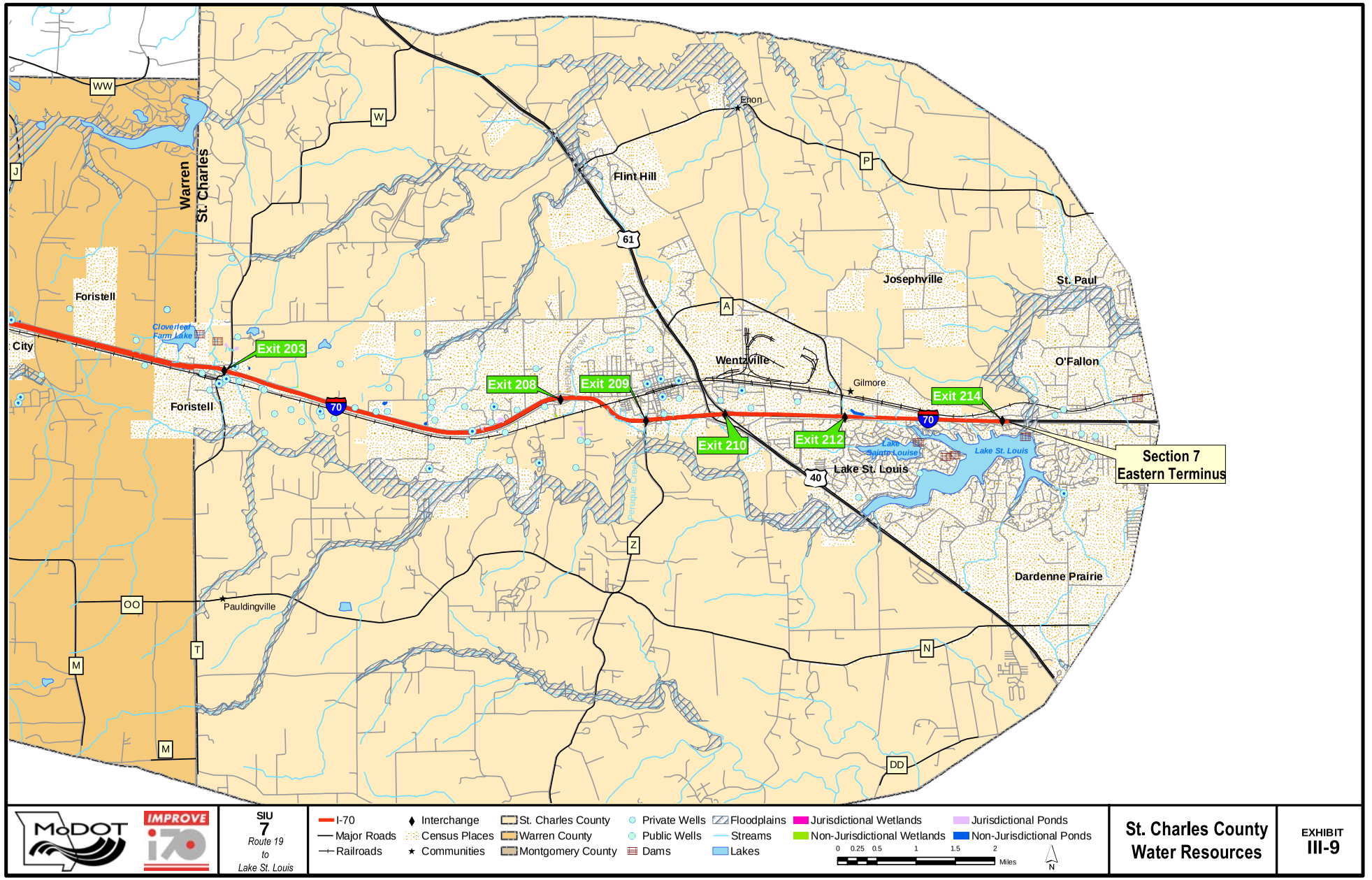
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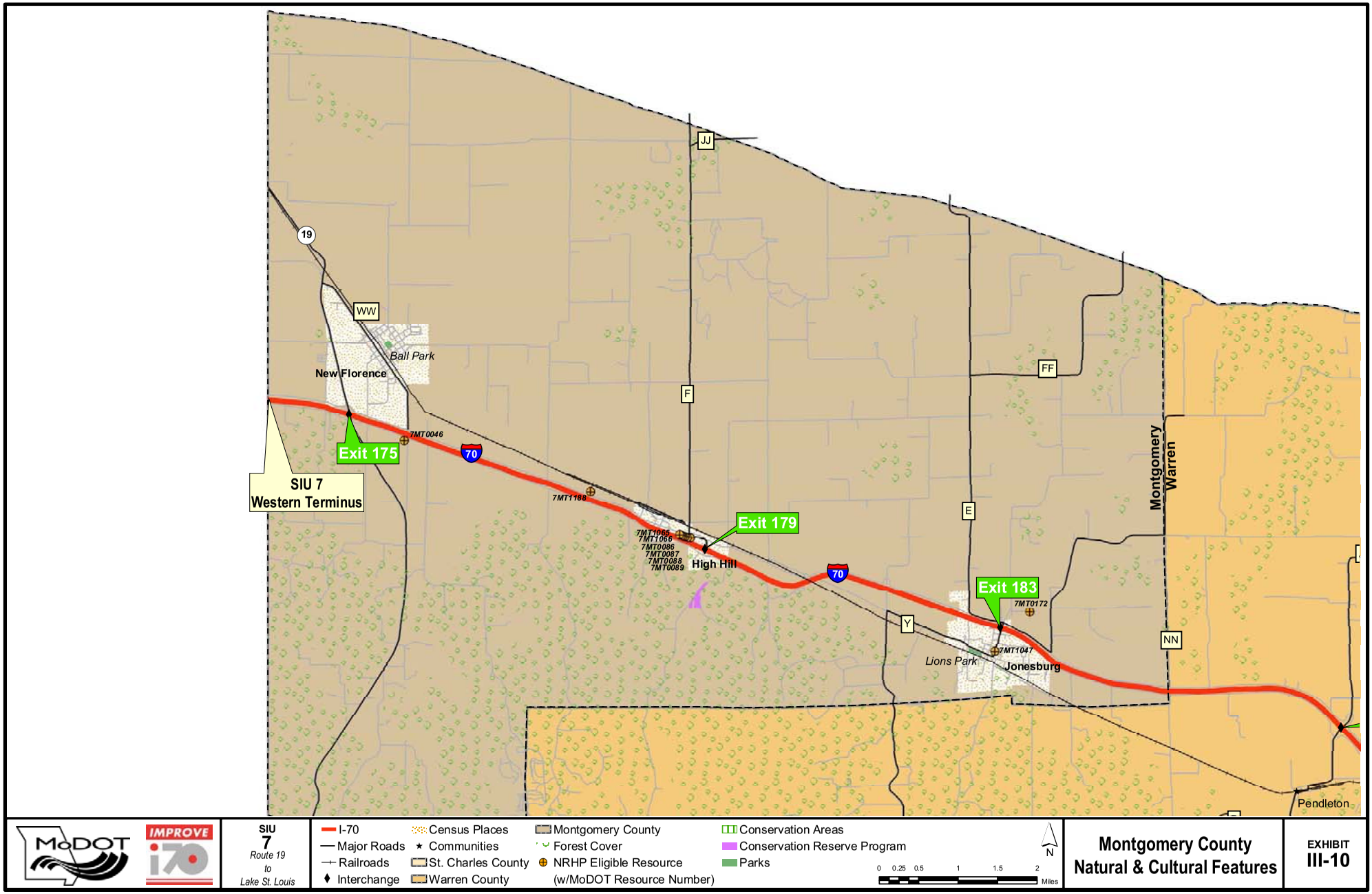
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NRHP Eligible Resource (w/MoDOT Resource Number)
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Parks
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Natural & Cultural Features
EXHIBIT
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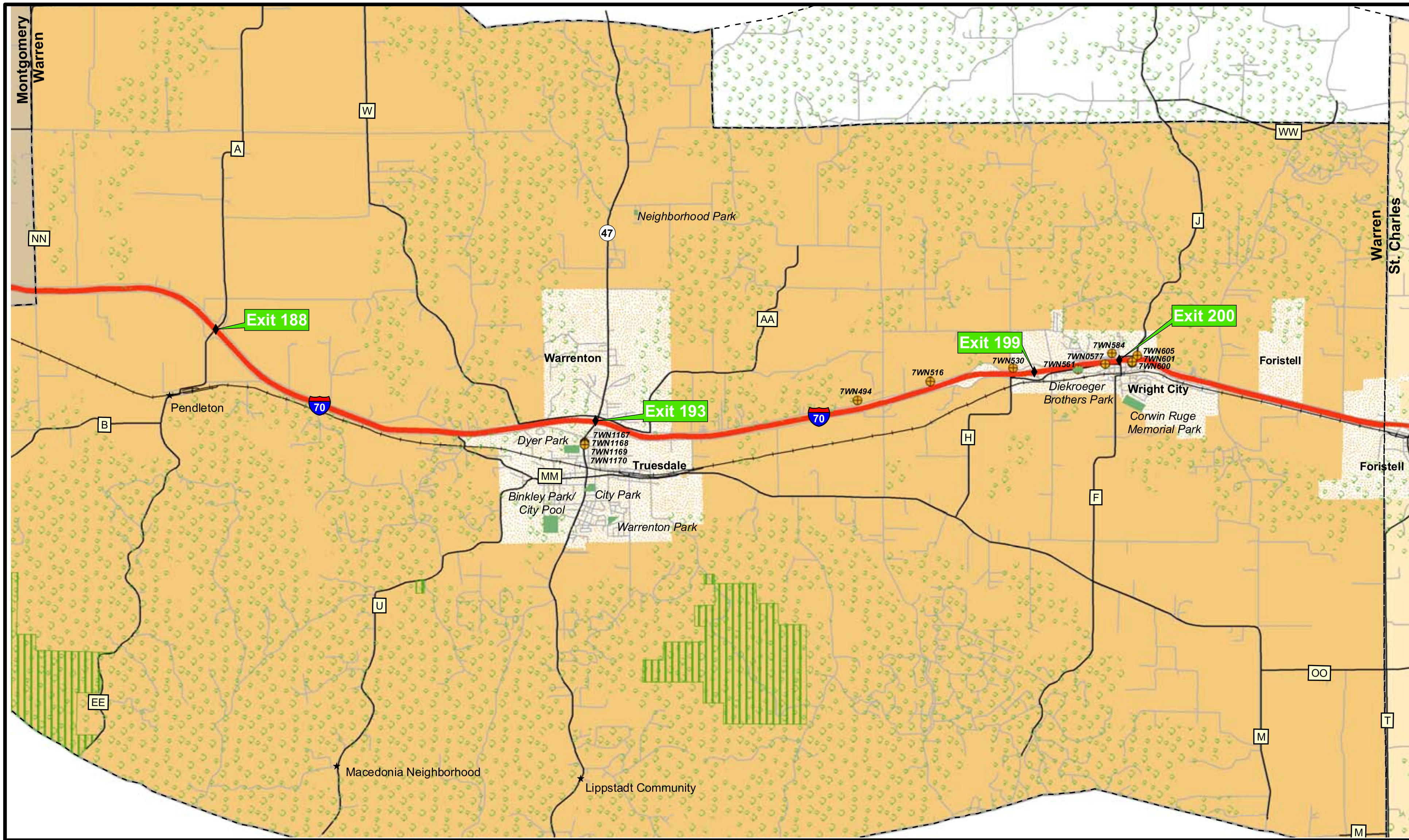

SIU 7
Route 19 to Lake St. Louis

I-70 — Major Roads — Railroads — Interchange — Census Places — Communities — St. Charles County — Warren County — Montgomery County — Forest Cover — NRHP Eligible Resource (w/MoDOT Resource Number) — Conservation Areas — Conservation Reserve Program — Parks

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Warren County
Natural & Cultural Features

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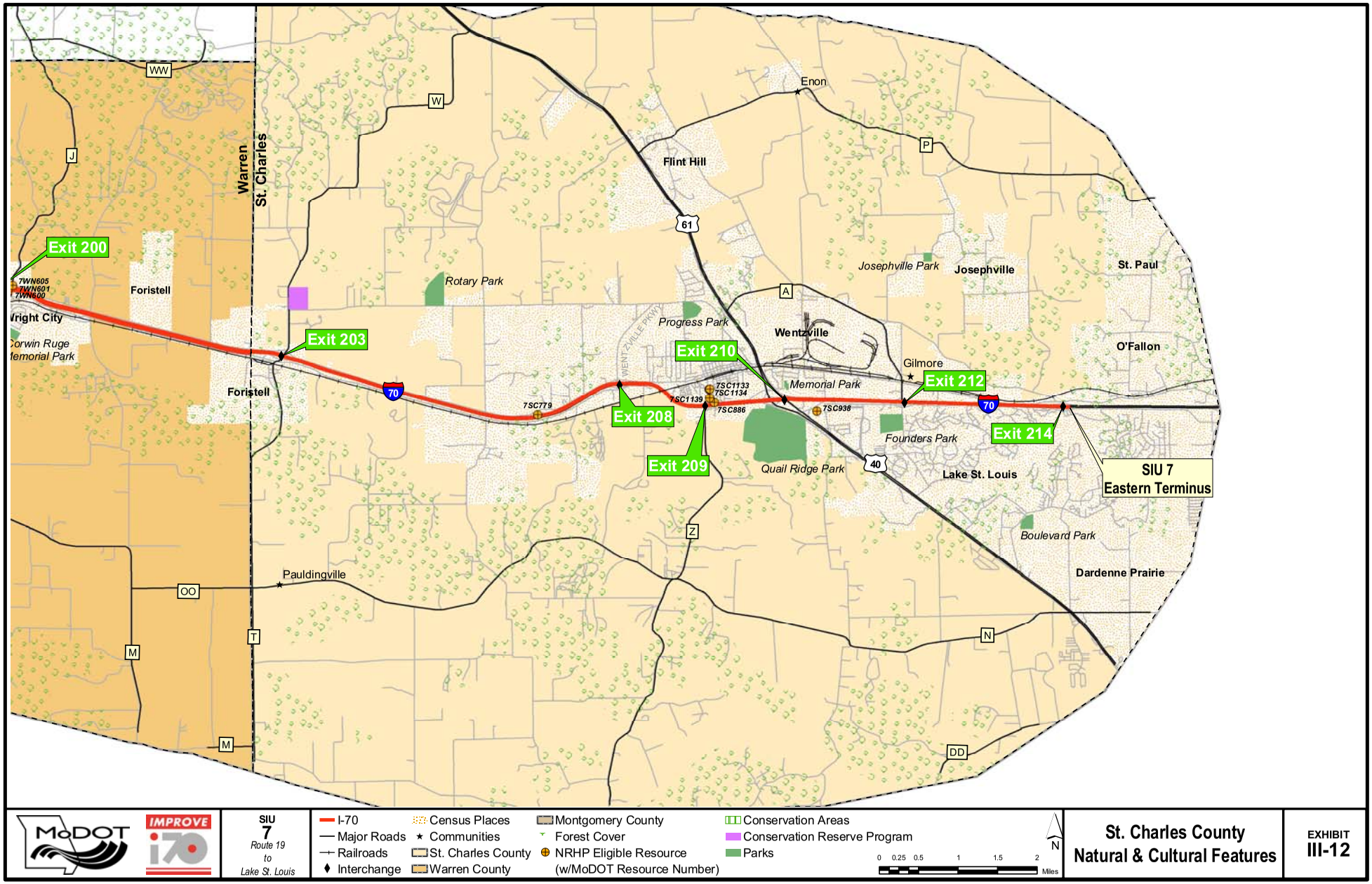

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SIU 7
Route 19 to Lake St. Louis

I-70
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Forest Cover
NRHP Eligible Resource (w/MoDOT Resource Number)
Conservation Areas
Conservation Reserve Program
Parks

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St. Charles County Natural & Cultural Features

EXHIBIT III-12