

SECTION 3

ENVIRONMENTAL ANALYSIS

Environmental Analysis

Section 3 describes the existing social, economic, and environmental setting of the project corridor and the potential impacts of alternatives carried forward for analysis (as described in Section 2, *Alternatives*) on the environmental resources found in the project corridor.

Resource areas that were considered but had no potential to be impacted by the proposed improvements are listed in Table 3-1. These resource areas are not discussed in this document.

Table 3-1. Resource Areas Not Discussed

Resource Area	Impact Analysis Summary
Farmland	While Woodbury County contains approximately 150,100 acres of prime farmland, the project study area is urban in character and contains no farmland or agricultural land. Since no farmland would be impacted by the proposed improvements no further discussion concerning farmland is applicable.
Wild and Scenic Rivers	Segments of the Missouri River from the Fort Randall Dam to Ponca State Park, upstream of Sioux City, are considered wild, scenic, or recreational. However, through the Sioux City area and downstream, the Missouri River is not considered a wild, scenic, or recreational river so no further discussion concerning protection under the Wild and Scenic Rivers Act is applicable.

3.1 Land Use and Related Characteristics

3.1.1 Geographical Setting

The I-29 project corridor is located within the corporate limits of Sioux City in northwest Iowa. The study area extends 3.5 miles from approximately 0.25 mile south of the BNSF Railroad bridge over the Missouri River north to approximately 0.7 miles west of the existing Hamilton Boulevard interchange with I-29 as shown in Figure 1-1, *Location Map*. The existing I-29 roadway facility generally follows the course of the Missouri River and abuts the south side of the Sioux City Downtown Central Business District. Other prominent features in and around the project corridor include Chris Larsen Park and associated recreational facilities located between I-29 and the Missouri River, and the Hoeven Valley industrial area found between Floyd Boulevard and IA 376/Lewis Boulevard/US Highway 75 (Business Route). The topography in the project corridor is primarily flat with minor grade variations resulting from roadway overpasses rather than hills or bluffs.

3.1.2 Geology and Soils

The geology of the I-29 project corridor, like most of the Siouxland region and the States of Iowa, South Dakota, and Nebraska, includes sedimentary bedrock that accumulated in shallow seas and in coastal and floodplain environments over millions of years. Limestone, sandstone, dolomite, and shale are the primary sedimentary bedrocks found in Woodbury County, while

much of the surface is covered in younger, wind-blown loess deposits underlain in some areas with glacial till. Loess is the most extensive parent material in Woodbury County and consists of wind-deposited silt particles with smaller amounts of clay and sand picked up from the Missouri River floodplain. Wind-deposited loess is very fine-grained and contains no stones, pebbles, or larger particles and can reach depths of more than 100-feet in thickness in areas of Woodbury County. Alluvium is the parent material of approximately 25 percent of the soils in the county, with the largest area found in the Missouri River valley and floodplain. Alluvium consists of sediment deposited along major streams and low benches during flood events along those watercourses. It varies widely in texture due to differences in the materials from which it came and the manner in which it was deposited.

The I-29 project study area is located primarily in and adjacent to the historical Missouri River floodplain where alluvium is the dominant parent material. The portion of the project corridor between the existing I-29 roadway and the Missouri River primarily contains soils designated by the USDA's Soil Conservation Service (SCS) as "Alluvial land". Alluvial land is described as mostly flat, frequently flooded silt, sand, and clays with limited value for farming in its natural state. Much of alluvial land is wooded and cut with shallow old meanders and oxbows and is often used as pasture or wildlife habitat. Soils identified as alluvial land in the I-29 project study area are primarily used for parkland, trails, open space.

The McPaul, Albaton, and Blake soil series dominates the land north and east of I-29 in the project area. This series is found in Sioux City in areas built upon before soils were surveyed. Due to the disturbance of the original soils, no attempt has been made to determine exact percentages of each soil or to delineate them separately on soil maps. McPaul soils are more extensive in this group, forming in sediments deposited by tributaries of the Missouri River such as the Floyd River. Albaton and Blake soils formed in sediments deposited by the Missouri River located adjacent to the Missouri River and its tributaries are subject to flooding. However, flooding frequency has been reduced as major flood control structures (levees) have been constructed.

It should be noted that, while not located within the boundaries of the I-29 project study corridor, portions of the project corridor are abutted by bluffs forming the edge to the Missouri River floodplain. These bluffs are steep-sided and have been eroded away during successive historical rain, and ordinary rain, heavy rain, and flood events associated with the Missouri River, Perry Creek, and the Floyd River. The bluffs are covered to varying depths with fine-grained wind-blown loess picked up from soils on the floodplain below. The portions of the corridor adjacent to the bluffs include the areas north of the BNSF-owned railroad tracks west of the Wesley Parkway interchange with I-29 and directly east of the UP-owned railroad tracks south of the Floyd River.

3.1.3 General Land Use

3.1.3.1 Affected Environment

The I-29 corridor contains a combination of industrial, commercial, recreational & parkland, public and semi-public, and residential land uses. Existing land uses in the project study area are shown in Figures 3-1a, 3-1b, and 3-1c, *Existing Land Use and Utilities*. Most industrial land uses are found in the Hoeven Valley industrial area in the vicinity of the Floyd River and in the far western portion of the project corridor between I-29 and the UP railroad right-of-way. Commercial uses associated with the Sioux City Downtown Central Business District are generally concentrated north of I-29 and between Wesley Parkway and Floyd Boulevard. Other commercial land uses are found scattered throughout the project corridor.

Park and recreational land uses are primarily between the I-29 right-of-way and the Missouri River. Chris Larsen Park and associated recreational facilities, including a marina, Lewis & Clark multiuse trail, amphitheater, and Flight 232 Memorial are located in or near the Park area, stretching from west of the Hamilton Boulevard interchange to near the Floyd Boulevard interchange.

Residential land uses found in the project corridor are located along the west side of Wesley Parkway, north of the interchange with I-29. Other uses found in the immediate project corridor include Public/Semi-Public uses associated with the Tyson Events Center, surface parking lots, and vacant property.

3.1.3.2 Environmental Consequences

The proposed improvements to I-29 in the project area would use both existing and additional right-of-way throughout the corridor. As a result of new right-of-way acquisition, there would be direct conversions of commercial and industrial property to roadway uses. Given the absence of residential uses in the area, there would be no conversion of residential lands to transportation uses. Table 3-2, *Land Use Conversions* summarizes proposed land conversion totals by existing land use acreage. Figures 3-2a, 3-2b, and 3-2c, *Proposed Additional Right-of-Way Needs* show the additional right-of-way needed, potential acquisitions, and potential business relocations for the three proposed build alternatives.

No-Build Alternative

The No-Build Alternative would not require any conversion of land to transportation uses.

Alternative A

Alternative A would require approximately 18.1 acres of additional right-of-way for construction. About 8.7 acres of the total amount of new right-of-way needed would be converted from existing commercial uses to transportation use, while 9.2 acres would be converted from public uses (including public facilities, open space, and utility uses) to new right-of-way. Of the 9.2 acres, approximately 0.8 acres is owned by the State of Iowa. An estimated 0.2 acres of existing private railroad right-of-way would be converted to public roadway right-of-way and less than 0.1 acres of industrial property would need to be converted into right-of-way.

Alternative B

Approximately 15.0 acres of new right-of-way would be necessary to convert into transportation uses for construction of Alternative B. 8.1 acres of new right-of-way needed would be converted from existing commercial uses, and 6.7 acres would be converted from public and utility uses. Of the 6.7 acres approximately 0.7 acres is owned by the State of Iowa.

Approximately 0.2 acre of railroad right-of-way and less than 0.1 acre of industrial use property would be necessary to convert to public roadway right-of-way.

Alternative C

Alternative C would require approximately 16.4 acres of additional right-of-way, with approximately 6.0 acres of commercial land uses to be converted to right-of-way. Approximately 9.0 acres of public and utility property uses would be required to be incorporated into the new right-of-way and 1.2 acres of industrial property would be needed. Of the 9.0 acres, approximately 0.2 acres is owned by the State of Iowa. 0.2 acres of existing private railroad right-of-way would also need to be converted to public roadway right-of-way.

Table 3-2. Land Use Conversions

Land Use	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)
Residential	0.0	0.0	0.00
Commercial	8.7	8.1	6.0
Industrial	<0.1	<0.1	1.2
Public*	9.2	6.7	9.0
Railroad Right-of-Way	0.2	0.2	0.2
Total (acres)	18.1	15.0	16.4
* Public land uses include public facilities, open space, and public utility uses.			

3.1.4 Transportation

3.1.4.1 Affected Environment

I-29 is an integral piece of the local Sioux City transportation network as well as an important component of the regional and national transport system. In addition to I-29, the Sioux City metropolitan area is served by a cross-river interstate facility, three US highways, five state highways, four railroads, one commercial airport, and a barge terminal. The metropolitan area is also served by multiuse pedestrian and bicycle trails and a bus-based transit system.

Street System and Highways

The Sioux City area is served by a roadway network that accommodates both long-distance interstate traffic and regional travel. This network provides the region with the following key connections:

- I-29 south to Omaha, Nebraska and north to Sioux Falls, South Dakota;
- I-129 west across the Missouri River to South Sioux City and Dakota City, Nebraska;

- US 20 east to Fort Dodge, Iowa and I-35;
- US 75 north to Le Mars, Iowa and south to Dakota City and Omaha, Nebraska; and
- US 77 south to Lincoln, Nebraska.

Convenient and efficient connections between I-29 and the adjacent local highway system are essential to providing efficient transportation services to other communities in the Siouxland region. The I-29 corridor provides important linkages to several state routes, local arterials, and ultimately to the regions' residential, retail, commercial, and entertainment centers.

In the project corridor, arterial roadways with direct connections to I-29 include Hamilton Boulevard, Wesley Parkway, Pierce Street (entrance only), Nebraska Street (exit only), Gordon Drive, Floyd Boulevard, and Dace Avenue. Pierce Street and Nebraska Street operate as a one-way pair and provide access to Sioux City's Downtown Central Business District. Gordon Drive and Dace Avenue are parallel routes to I-29 and also provide access to the district. Floyd Boulevard services the eastern portion of downtown and the Hoeven Valley industrial area. Wesley Parkway provides access to west portions of the district and the residential areas west of the district. Hamilton Boulevard links residential areas north and west of the district with I-29. Figures 3-2a, 3-2b, and 3-2c, *Proposed Additional Right-of-Way Needs*, also displays the existing local street network connections with I-29.

Public Transport

The Sioux City Transit System provides public bus transportation for the metropolitan Sioux City area including Sioux City, South Sioux City, and North Sioux City. The transit system consists of 12 fixed routes using a hub-and-spoke system with buses leaving perimeter areas of the metro area at 15 minutes past the hour and departing at 45 minutes after the hour from the Martin Luther King Jr. (MLK) Transportation Center at 501 Nebraska Street. During peak hours (6 AM – 9 AM and 3 PM – 6 PM), buses run on a 30-minute interval service. The MLK Transportation Center serves as the transfer center for all fixed routes and inter-city bus service from Omaha and Sioux Falls. None of the existing 12 transit routes use the I-29 roadway facility.

The Sioux City Transit System also provides accessible curb-to-curb and door-to-door bus transportation for individuals with special transportation needs, including disabilities. Ride arrangements must be made at least one day in advance and individuals must qualify for the service. Basic services on all fixed routes and paratransit (i.e., non fixed routes) are compliant with Americans with Disabilities Act (ADA) accessibility requirements.

According to the Siouxland Interstate Metropolitan Planning Council's (SIMPCO) 2030 Long Range Transportation Plan (LRTP), total transit ridership on the Sioux City Transit System fell approximately 14.1 percent from 2001 to 2005. Fixed-route bus service ridership fell 14.8 percent during that time period while paratransit ridership rose approximately 45 percent. Approximately 1,008,000 individual trips on fixed bus routes were taken in 2005, while approximately 39,250 trips were taken using the paratransit system.

Additionally, the Siouxland Regional Transit System, administered by SIMPCO, provides demand responsive service to the elderly, pre-school day care centers, school students, and the general public. While based in Sioux City, the Siouxland Regional Transit System serves Cherokee, Ida, Monona, Plymouth, and Woodbury counties in Iowa and southern Union County in South Dakota and provides paratransit services by contract in Sioux City.

Air Service

I-29 provides access to the Sioux City region's only commercial airport, the Sioux Gateway Airport/Colonel Bud Day Field, via the Airport Boulevard interchange located on the southern edge of Sioux City. The airport terminal and two runway facilities are located between the Missouri River and I-29 near the City of Sergeant Bluff. The airport is owned by the City of Sioux City and governed by a Board of Trustees that reports directly to the City Council. Day-to-day operations are overseen by a professional airport director.

The Sioux Gateway Airport is classified as a non-hub primary airport by the Federal Aviation Administration (FAA) and is a designated Commercial Service airport by the State of Iowa. The facility also provides general aviation services and functions as a major base for the Iowa Air National Guard. Commercial service at the airport is provided by Northwest Airlines with four daily arrivals and departures. All commercial flights originate from or travel to Northwest's hub at Minneapolis/St. Paul International Airport. The number of passengers in 2005 was approximately 40,000, a 65 percent decrease from 1990 when approximately 115,000 passengers flew. Frontier Airlines will provide two daily arrivals and departures starting in October 2007. A dedicated cargo carrier does not serve Sioux Gateway Airport. Cargo passing through the airport is handled by Northwest Airlines as part of its commercial passenger service. Air cargo bound for the Sioux City metropolitan region is typically routed through the air cargo hubs in Omaha or Sioux Falls and then delivered via truck to the metro area.

Two privately owned general aviation airports for local commuters and small aircraft owners are also found in the Siouxland region. Graham Field Airport is located in North Sioux City and Martin's Field is located three miles southwest of South Sioux City, Nebraska.

Rail Service

The Sioux City area does not have passenger rail service, with the nearest AMTRAK route passing through Omaha and Lincoln, Nebraska. Three major Class I railroads serve the area, primarily for the shipping of coal, grain products, and other freight including forestry products, plastics, and aggregate stone materials. The three Class I railroads that operate in the area include the BNSF, UP and the Chicago Central and Pacific, a subsidiary of the Canadian National/Illinois Central Railroad.

Approximately 120 miles of mainline track, switching, and yard track facilities are found in the Sioux City region. Operations are concentrated in the Hoeven Valley industrial corridor with each of the three Class I railroads operating small yards servicing adjacent agricultural processing properties. Rail spurs also service the Big Soo barge terminal and the MidAmerican Energy coal fired power plant.

The Nebraska Northeastern (NENE) Railroad, a Class III railroad, is a light density rail line that operates in South Sioux City and northeast Nebraska primarily to haul grain products. Another Class III railroad, the Dakota & Iowa (D&I) Railroad, operates on State of South Dakota-owned track in northwest Sioux City to haul rock aggregate and seasonal shipments of grain.

The BNSF, UP, and Chicago Central and Pacific railroads provide regional freight connections to Le Mars, Fort Dodge, Waterloo, and Dubuque, Iowa; and to Minneapolis, Minnesota; Sioux Falls, South Dakota; Lincoln, Nebraska; and Denver, Colorado. The UP Railroad also provides a connection to its transcontinental mainline track in Missouri Valley, Iowa.

Bicycle/Pedestrian Facilities

Bicycle/pedestrian facilities are found throughout the Sioux City region, extending across state lines and over the Missouri River. In the three-state Siouxland region, approximately 54.8 total miles of multiuse trails currently exist or are scheduled to be completed in the near future. Additionally, dedicated bicycle lanes and designated shared roadways are part of the non-motorized transportation network in the Sioux City area. With the exception of eight miles of trail at the Adams Homestead & Nature Preserve surfaced with crushed rock, all designated trails in the region are paved or use paved roadways.

Several designated bicycle pathways and trails are located or under development in the vicinity of the I-29 project area (see Figures 3-3a, 3-3b, and 3-3c, *Natural Environmental Resources*). The six-mile long Lewis & Clark Trail generally follows the course of the Missouri River through Riverside and Chris Larsen parks. The trail provides access to the recreational amenities found in the parks, including parking, restrooms, and playground/picnic areas. The Perry Creek Trail, completed as part of the Perry Creek flood control project, opened to the public in August 2007 and runs approximately three miles along Perry Creek from Tri-View Avenue in the I-29 project area north to Stone Park Boulevard. The portion of the Perry Creek Trail at Hamilton Boulevard is not yet complete and is scheduled to be constructed in the spring of 2008. The three-mile Floyd River Trail uses Floyd Boulevard to connect the multiuse trail that runs along the west bank of the Floyd River north of 4th Street to Outer Drive to connect to the Lewis & Clark Trail at Chris Larsen Park.

3.1.4.2 Environmental Consequences

No-Build Alternative

The No-Build Alternative is defined as no new major construction along the I-29 corridor. Any improvements constructed under this alternative would be limited to short-term maintenance or rehabilitation activities to ensure roadway pavement and bridge structure integrity. The design of the existing interstate facility, including location, geometric features, and existing capacity would remain unchanged. Under this alternative, some operational improvements could be anticipated, such as utilizing traffic management systems as traffic volumes warrant, and minor improvements at ramp terminals.

The existing I-29 corridor has crash rates above the statewide average for similar roadway facilities. The most current accident information provided by the Iowa DOT indicates that there were 477 accidents in the project corridor from 2001 to 2003. Crash rates are expressed in 100

million vehicle miles (MVM), which is the traffic industry standard. Table 3-3 compares crash and injury rates with the statewide averages.

Table 3-3. Crash Rate for Selected Interchanges

Interchange	Crashes			Injury		
	Crashes ¹ / 100 MVM ²	Statewide Average Rate Crashes/ 100 MVM ³	Percent Above/ Below Statewide Average Crash Rate	Fatal +Injury Crashes ¹ / 100 MVM ²	Statewide Average Rate Fatal +Injury Crashes/ 100 MVM ³	Percent Above/Below Statewide Average Injury Crash Rate
Floyd Boulevard	401	134	199%	155	55	181%
Nebraska Street/ Pierce Street	621	134	363%	299	55	443%
Wesley Parkway	561	134	319%	222	55	304%
Hamilton Boulevard	138	134	3%	89	55	62%
Corridor Total	162 ⁴	134	35%	70	55	26%

¹ 2001 through 2003

² MVM = million vehicle miles

³ Statewide rate for municipal interstate crash rates, 1995-1999. Source: Iowa DOT, Transportation Safety Office

⁴ Corridor total crashes was derived by considering total mainline, ramp, and ramp terminal crashes, 2002 average daily traffic (ADT) volume for the corridor as whole (derived from average ADTs within project study area), and length of the mainline through the corridor.

Source: Howard R. Green Company and HDR Engineering, *Existing Conditions Evaluation, Technical Memorandum No. 1*, April 2005

Although Hamilton Boulevard Interchange was only 3% above the statewide average crash rate, Floyd Boulevard, Nebraska Street/ Pierce Street, and Wesley Parkway Interchanges were at least three times the statewide average crash rate. When the 2001-2003 crashes were evaluated exclusively for those involving fatalities and injuries, all four interchanges were above the statewide average.

Predicted traffic volume is an important consideration to understanding future potential crash incidents. And, while the rate of incidents might not change, the actual number of incidents could increase as the volume of traffic on a roadway increases. Traffic data from 2003/2004 was used for existing conditions. The highest volume of traffic occurred between the Pierce/Nebraska Street Interchange and the Wesley Parkway Interchange. The average daily traffic (ADT) in this segment of the corridor is about 36,800 vehicles per day (vpd). Volumes for this same segment of the corridor are projected to reach approximately 49,200 vpd. Table 3-4 compares the existing and projected traffic volumes of corridor segments.

Table 3-4. Traffic Volumes

Corridor Segment	Existing (2003) (vpd)	Projected (2030) (vpd)
South of Floyd Boulevard Ramps to south project study area limit	35,200	45,200
East of Nebraska Street to south of Floyd Boulevard Ramps	30,700	42,000
East of Wesley Parkway to east of Nebraska Street	36,800	49,200
East of Hamilton Boulevard to east of Wesley Parkway	31,280	45,800
West of Hamilton Boulevard to north project study area limit	33,100	46,400
Source: HDR Engineering, <i>Segment 2 Initial Concepts Technical Memorandum No. 3</i> , April 2005		

The No-Build Alternative would not meet the project's intended purpose and need and would result in the following consequences:

- Safety issues would not be satisfactorily resolved. If the accident rate in 2030 were to remain similar to today and traffic increases as projected, a greater number of vehicle accidents would be expected in the future. Therefore, the No-Build Alternative would not address these safety concerns, and wouldn't meet this need.
- Design features and improvements to resolve forecasted traffic operational needs would not be implemented. Improvements to ramp sequencing and spacing, lane balance, ramp design, guide signs, and updating other roadway design features, all of which would contribute to improved traffic operations, would not occur. As a result, the No-Build Alternative would not address traffic operational needs.
- Geometric improvements that lead to better driver expectancy conditions would not be constructed. Short acceleration and deceleration lanes, tight curves, and poor sight distance relating to vertical and horizontal curves are all driver expectancy issues currently found in the I-29 corridor. The No-Build Alternative would not address these geometric deficiencies, and therefore would not meet this need.
- Sections of pavement and some bridge structures in I-29 in the project corridor are considered to be in a deteriorated state. Maintenance and rehabilitation activities associated with the No Build Alternative would provide only short term relief from deteriorating infrastructure. Accordingly, the No Build Alternative would not meet this need over a long timeframe.

Alternative A

A description of the design features of Alternative A can be found in Section 2.3.2 *Build Alternatives*. Construction of Alternative A would result in the following impacts to the downtown Sioux City transportation system as it relates to I-29 and access to the existing local street network:

- The overall number of entrances and exits would remain the same as currently exists on I-29.

- Northbound and southbound frontage roads would afford direct access to Gordon Drive via connector roadways.
- Due to the close proximity of the Floyd Boulevard and downtown exits, exit ramps for those interchanges cross each other (i.e., “braided”).
- The Wesley Parkway interchange with I-29 would be reconstructed as a two-level interchange rather than a three-level interchange.
- Continuous northbound and southbound frontage roads run from Virginia Street to Hamilton Boulevard.

These improvements would result in minor changes to traffic patterns in the downtown Sioux City area. Gordon Drive would be severed at Jennings Street to provide direct access to and from the northbound and southbound frontage road system. Dace Avenue would also be severed at its connection with Virginia Street to allow space for the northbound frontage road. The Nebraska Street and Pierce Street one-way pair would be connected to the frontage road system rather than having direct access to the I-29 mainline. Improvements made as part of Alternative A would likely diminish traffic circulation in front of the Tyson Events Center due to the construction of the northbound frontage road. The parking lot in front of the Events Center would also be impacted. The braided ramps would serve to separate downtown commercial and pedestrian access to the river traffic from industrial traffic bound for the Floyd Boulevard area.

Alternative B

A description of the design features of Alternative B can be found in Section 2.3.2 *Build Alternatives*. Impacts of constructing Alternative B would include:

- Reduced number of entrances and exits in the southbound direction resulting from consolidated interchange access at Floyd Boulevard and Virginia Street.
- Downtown and Gordon Drive traffic in the southbound direction would be focused at the Gordon Drive and Virginia Street intersection.
- The consolidated access point in the southbound direction at Floyd Boulevard mixes commercial downtown traffic and industrial traffic bound for Floyd Boulevard on the frontage road.
- Provides a dedicated northbound exit ramp for access to Nebraska Street and the downtown area.
- The Virginia Street on-ramp and Nebraska Street off-ramp are braided, which separates the traffic.
- The Wesley Parkway interchange would be reconstructed as a two-level interchange from its current three-level configuration.
- Northbound and southbound frontage roads would be provided from Wesley Parkway to Hamilton Boulevard.

Traffic patterns in the downtown area could be potentially impacted by Alternative B, including the severing of Dace Avenue at Virginia Street, the focusing of downtown-bound traffic at the Gordon Drive/Virginia Street interchange, and direct access to Nebraska Street from I-29 via a dedicated off-ramp. Routes to access to the Tyson Events Center from I-29 would change and parking for the Events Center would be impacted. Northbound downtown commercial traffic (via the dedicated ramp to Nebraska Street) and Floyd Boulevard industrial traffic would be separated with braided ramps.

Alternative C

A description of the design features of Alternative C can be found in Section 2.3.2 *Build Alternatives*. The design of Alternative C includes the following features and associated impacts:

- The overall number of entrances and exits would be reduced by consolidating interchange access at Nebraska and Pierce Streets with access to Wesley Parkway and Pearl Street.
- A split diamond configuration at Pearl Street and Wesley Parkway, utilizing frontage roads between the two interchanges.
- Downtown access is provided via Pearl Street and the new 3rd Street Connector.
- A weaving section on I-29 between Floyd Boulevard and Pearl Street interchanges.
- Reconstruction of the Wesley Parkway Interchange from a three-level to two-level interchange.
- Hamilton Boulevard and Wesley Parkway ramps are braided due to the close proximity of the interchanges.

Construction of Alternative C would result in a change in traffic patterns on both I-29 and the local downtown street system. The distance on I-29 between Floyd Boulevard and the Pearl Street interchanges would be lengthened, allowing more opportunity for merging industrial and commercial traffic to safely weave. Additionally, significant traffic would be focused on the 3rd Street and Pearl Street intersection. To reach Gordon Drive and Wesley Parkway, northbound traffic must route via the frontage road and 3rd Street, with no direct access provided to Gordon Drive. The braiding of the ramps between Hamilton Boulevard and Wesley Parkway results in very long ramps.

Also, with Alternative C, the northbound industrial traffic from Floyd Boulevard would mix and merge with downtown-bound commercial traffic on the frontage roads and on/off ramps. Patrons would be able to access the Tyson Event Center from I-29 via the Pearl Street Interchange and would have access from Gordon Drive.

Public transportation services would experience minor impacts from construction of any of the three build alternatives. It may be necessary to reconfigure individual transit bus routes to accommodate potential changes in access in the downtown area from I-29. Although existing fixed transit bus routes do not currently use the I-29 facility itself, the potential for new circulation patterns in the downtown area abutting I-29 could necessitate the rerouting of existing

routes. The existing transit hub and transfer center located at the MLK Transportation Center on Nebraska Street would not experience any direct or indirect impacts from construction of the build alternatives. Likewise, demand-response and paratransit services are not expected to be directly or indirectly impacted by changes in access from I-29 to the downtown area.

3.1.5 Navigation

3.1.5.1 Affected Environment

Sioux City is the northernmost navigable point on the Missouri River for barge traffic. The region is the beginning of a nine-foot deep, 735-mile long navigational channel that joins with the Mississippi River at St. Louis, Missouri. However, recent severe droughts upstream from Sioux City in the Dakotas and Montana and regulated seasonal water flows to protect endangered species have frequently reduced river levels below navigable levels during shipping seasons. Water level fluctuations and low flows have severely reduced or eliminated barge traffic at Sioux City since 2001. In 2006, the U.S. Army Corps of Engineers (USACE) estimated 200,000 tons of cargo was shipped on barges over the navigable portion of the Missouri River, the lowest tonnage amount shipped since 1951.

The Sioux City region currently has seven port facilities, six of which are privately owned and operated. The public port is owned by the City of Sioux City and serves as the berth for the Argosy Riverboat Casino. During navigable river flow conditions, northbound spring shipments consist primarily of fertilizer, while southbound fall shipments typically carry grain and other agricultural products. All six privately-owned port terminals are served by UP Railroad connections and all but one, that is owned by Nutra-Flo Company, are located outside the project study area. With the recent reductions and elimination of shipping seasons, much of the goods and commodities formerly shipped by river barge have shifted to rail.

3.1.5.2 Environmental Consequences

The No-Build Alternative would not have an impact on existing navigation and shipping activities on the Missouri River. No changes would be made to the existing navigable channel as a result of the No-Build Alternative.

All three Build Alternatives could potentially impact Nutra-Flo Company's ability to utilize their barge terminal. Nutra-Flo, which is located north of I-29, used to be connected to their barge terminal by rail spur but sections of the track have been removed. The existing profile of I-29 allows enough clearance that if the tracks were replaced rail traffic could occur on this spur. The proposed lowering of I-29's profile, which is proposed in all three of the Build Alternatives in the Floyd Boulevard area, would eliminate the clearance needed for rail cars. However, access to the barge terminal is still available using other methods of transportation such as trucks.

The three Build Alternatives would not impact navigation on the Missouri River. There are no bridges within the project corridor to which making structural changes, including changes to pier spacing and horizontal and vertical clearances, could impact barge shipping traffic. Likewise,

improvements to I-29 associated with the Build Alternatives do not require shoreline cut or fill activities that could impact surface water flow or the navigable channel.

3.1.6 Utilities

3.1.6.1 Affected Environment

The Siouxland region is served primarily by major national and regional utility companies. MidAmerican energy provides electrical and natural gas services throughout the area. Local and long-distance telephone service providers include Qwest Communications, McLeod USA, MCI, AT&T, FiberComm, and Northwest Iowa Telephone Co. FiberComm, Northwest Iowa Telephone Co., and Thompson Electric Company provide fiber optic communications in the area. Water and wastewater services are provided by the City of Sioux City, which also service outlying areas. The Sioux City Water Plant treats and provides drinking water to Sioux City and neighboring communities through its distribution system; the plant is located adjacent to the I-29 right-of-way in the vicinity of Wesley Parkway. Weekly solid waste, yard waste, and recycling collection for Sioux City are provided by City Wide Collection, a private solid waste collection and hauling agency.

Overhead power lines are the dominant method of electric, cable, and telephone service in the vicinity of the project corridor. Natural gas, fiber optics, water and wastewater lines are buried underground. Both above and below ground utilities are located in or near I-29 right-of-way. Primary utilities in the project corridor are shown on Figure 3-1a, 3-1b, and 3-1c, *Existing Land Use and Utilities*.

3.1.6.2 Environmental Consequences

No utilities would be impacted by the No-Build Alternative.

The three Build Alternatives would require the relocation of existing public utilities found within the existing I-29 right-of-way as well as those adjacent or in close proximity to the right-of-way. The types of required utility relocations would be typical of projects involving the construction of roadways utilizing both existing and expanded right-of-way. Utility impacts could include fiber optic cable, overhead and underground electric lines, gas mains, telephone cable and cable TV lines, water main, and sanitary and storm sewers. Especially of note is approximately 9,000 lineal feet of sanitary sewer that may need to be relocated or reconstructed as a result of the proposed improvements.

The Sioux City Water Plant, located at 1101 Tri View Avenue and in close proximity to existing I-29 right-of-way, would be impacted by all three Build Alternatives. Alternatives A and B would require approximately 0.7 acre of property to be incorporated into permanent I-29 right-of-way. The property that would be incorporated into right-of-way under Alternatives A and B is passive-use frontage and paved parking lot access and is not integral to the continued operations of the WTP. Under Alternative C the proposed improvement would impact the buildings on the approximately 1.6 acre parcel and would require relocation of the water plant.

The exact locations of underground storage facilities and other facilities located on the property critical to the delivery of treated potable water to the Sioux City community should be coordinated between Iowa DOT and WTP officials so that water service delivery is not disrupted.

The Iowa DOT would coordinate with all other utility providers during the project's final design phase to help ensure that there would be no substantial interruption of service during construction. Utilities located within the existing I-29 right-of-way would be relocated at the expense of the utility provider. Utilities currently located in proposed right-of-way would be relocated at the expense of the Iowa DOT.

3.1.7 Public Facilities and Services

3.1.7.1 Affected Environment

Several public facilities exist in or near the project corridor. Those facilities include:

- The Tyson Events Center (also known as Gateway Arena) is located at 401 Gordon Drive, adjacent to I-29 right-of-way. The facility hosts regional and national performances and events. It is home to the Sioux City Musketeers of the United States Hockey League (USHL) and the Sioux City Bandits of the United Indoor Football League (UIFL). The arena capacity is approximately 10,000 persons and parking is available in adjacent surface lots and public ramps nearby.
- The Long Lines Family Recreation Center is located inside the Municipal Auditorium at 500 Gordon Drive. This facility is adjacent to I-29 right-of-way and is connected to the Tyson Events Center. The City of Sioux City's Parks and Recreation Department office is located in this Center that offers a rock climbing wall, sports courts, batting cage, and meeting rooms.
- The June E. Nylén Cancer Center is located at 230 Nebraska Street. The Nylén Cancer Center is a not-for-profit healthcare provider established in 1995. The Center provides outpatient medical oncology care and chemotherapy, counseling, support groups, and other associated treatment services for cancer patients.
- The Siouxland Senior Center is located at 217 Pierce Street. The Senior Center offers varying services to senior citizens including daily fitness activities, continuing education classes and seminars, health screenings, and entertainment.

Churches, cemeteries, public or private schools, government, or otherwise public facilities are not located within the project Study Area. However, several major public facilities or services are found within the downtown Sioux City area. Those facilities include:

- City Hall located at 405 6th Street;
- Sioux City Federal Courthouse, 320 6th Street;
- Woodbury County Courthouse, 7th and Douglas Streets;

- Sioux City Convention Center, 801 4th Street;
- Sioux City Public Library (Wilbur Aalfs Main Library), 529 Pierce Street;
- Mercy Medical Center, Hospital, and Emergency & Trauma Center, 801 5th Street;
- First Presbyterian Church, 608 Nebraska Street;
- Holy Trinity Greek Orthodox Church, 900 6th Street;
- St. Paul's Lutheran Church & School, 612 Jennings Street; and
- United States Post Office Mail Processing facility, 214 Jackson Street.

Several colleges, universities, technical schools, or university-affiliated programs/services are available within the Sioux City metropolitan area; none of them are located in close proximity to the project area. Those institutions include:

- Morningside College;
- Briar Cliff University;
- Western Iowa Tech Community College;
- St. Luke's College of Nursing and Health Sciences;
- Tri-State Graduate Center;
- Iowa State University Northwest Area Extension Office; and
- University of Iowa School of Social Work teaching and research site.

3.1.7.2 Environmental Consequences

No public facilities or services would be impacted by the No-Build Alternative, as any improvements associated with this alternative would occur within the existing I-29 right-of-way.

Alternatives A, B, and C would each have similar impacts to the Tyson Events Center facility located at 401 Gordon Drive and to the adjacent property to the west across Pearl Street. Each Alternative would require the incorporation of paved surface parking lots associated with the main Tyson Events Center facility as well as the portions of event center parking across Pearl Street into permanent right-of-way. The three parking lots associated with the Tyson Events Center facility currently have a total of 1,091 parking spaces available.

Alternative A would require 2.2 acres (19% of available spaces), Alternative B would require 1.3 acres (9% of available spaces), and Alternative C would require the incorporation of 1.9 acres (16% of available spaces) of parking lot. The incorporation of surface parking into right-of-way would not affect operations of this public facility. Four public parking ramps, on-street parking, and numerous other private lots are found within walking distance of the events complex with a total of approximately 5,000 additional parking spaces. The parking ramps, street parking, and nearby private event parking lots are available to replace any lost parking spaces.

No other public facilities or services would be directly impacted by Alternatives A, B, or C.

3.1.8 Consistency of the Proposed Action with Land Use Plans

Roadway improvements such as proposed Alternatives A, B, and C can foster beneficial results, including serving future growth and planning policies. Likewise, the lack of planning for roadway improvements can bring undesirable effects to a community, including fracturing a formerly cohesive neighborhood. The City of Sioux City's comprehensive plan, *My Home, Our Neighborhood, Everybody's Hometown*, was reviewed to determine how the existing transportation facility could be improved to support the goals identified in the comprehensive plan. The document helped to understand local conditions, goals, and perceptions about the existing transportation system and its needs. Each proposed alternative would be consistent with the intent, plans, and guidelines outlined in the comprehensive plan.

By utilizing most of the existing I-29 right-of-way, all three Build Alternatives minimize the amount of right-of-way needed and amount of land uses that would be converted to transportation uses in the downtown and riverfront open space areas of Sioux City.

3.1.9 Indirect Impacts

The proposed I-29 improvements would occur in a densely developed commercial and industrial corridor with no residential land uses in close proximity to the proposed Build Alternatives. There is little vacant land available for development on which development, driven by the proximity to the I-29 roadway, could occur. However, redevelopment of existing commercial properties in the corridor could be spurred by transportation improvements. Land use policies and management at the local level can guide the orderly redevelopment of property at acceptable locations. The local zoning ordinance would restrict redeveloped properties to uses that are acceptable and appropriate for the given zone.

In addition, all of the proposed Build Alternatives were coordinated with local officials to ensure interstate access points and local street connections were consistent with the comprehensive plan's future land use plan. Also, construction of any one of the proposed three Build Alternatives has the potential to create excess parcels once construction is completed and traffic has been successfully transitioned to the new roadway facility. Excess parcels may provide additional property for redevelopment, including relocation of businesses displaced due to Build Alternative construction (see Section 3.2.5, *Business Relocation Impacts*) for a discussion on business relocations). The ability to relocate within the general proximity of prior business operations can effectively minimize indirect impacts to that business.

3.2 Socioeconomics Characteristics & Impacts

3.2.1 Population and Ethnicity

The Sioux City area's population levels are summarized in Table 3-5, *Regional and County Population Change*. The 2000 population of the Sioux City Metropolitan Statistical Area

(MSA), which included Woodbury County, Iowa, and Dakota County in Nebraska, was approximately 124,000. The United States Census Bureau estimated the 2005 population of the MSA to be approximately 143,000, an approximate 15 percent gain in population from 2000. However, in 2003 the Sioux City MSA geographic area definition was updated by the US Census Bureau to include Union County, South Dakota and Dixon County, Nebraska, which added an additional 19,600 persons to the metropolitan area. The addition of Union and Dixon counties accounted for nearly all population gain in the MSA from 2000 to 2005. During that timeframe, only Union County, South Dakota saw an appreciable population increase among counties included in the Sioux City MSA.

Table 3-5. Regional and County Population Change

Year	Sioux City MSA		Woodbury County, IA		Dakota County, NE		Dixon County, NE**		Union County, SD**	
	Total	% Change	Total	% Change	Total	% Change	Total	% Change	Total	% Change
1990	115,018	--	98,276	--	16,742	--	6,143	--	10,189	--
2000	124,130	7.9	103,877	5.7	20,253	20.9	6,339	3.2	12,584	23.5
2005*	142,960	15.1	102,605	-1.2	20,349	0.0	6,155	-2.9	13,462	6.9

Source: US Census Bureau, Census 2000 Summary File (SF) 3 and 2005 Population Estimates.
 * Population figures for 2005 are estimates.
 ** Dixon County, NE and Union County, SD added to the Sioux City MSA in 2003.

The City of Sioux City is the largest community in the MSA and is where the project corridor is located. Sioux City had an estimated 2005 population of approximately 83,100, which represented a loss of 2.2 percent of population from the 2000 Census population totals. The neighboring communities of Sergeant Bluff, Iowa, South Sioux City, Nebraska, Dakota City, Nebraska, and North Sioux City, South Dakota all experienced 2005 (estimated) population increases from 2000 Census numbers. Table 3-6, *Municipal Population Change*, summarizes population levels for these communities.

Table 3-6. Municipal Population Change

Year	Sioux City, IA		Sergeant Bluff, IA		S. Sioux City, NE		Dakota City, NE		N. Sioux City, SD	
	Total	% Change	Total	% Change	Total	% Change	Total	% Change	Total	% Change
1980	82,003	--	2,416	--	9,339	--	1,440	--	1,992	--
1990	80,505	-1.8	2,772	14.7	9,677	3.6	1,470	2.1	2,019	1.3
2000	85,040	5.6	3,308	19.3	11,967	23.7	1,806	22.9	2,060	2.0
2005*	83,148	-2.2	3,819	15.4	11,979	0.0	1,880	4.1	2,494	21.1

Source: US Census Bureau, Census 1980, 1990, & 2000 Summary File (SF) 3 and 2005 Population Estimates.
 * Population figures for 2005 are estimates.

The racial composition of the region is predominantly white, accounting for approximately 86 percent of the population in the Sioux City MSA. Table 3-7, *Detailed Minority Population*, summarizes year 2000 minority population information for the MSA and communities in the region. In 2000, African Americans accounted for approximately 1 percent of the MSA population and nearly 93 percent are located in the City of Sioux City. Other racial group categories (Asian, American Indian and Alaskan Native, Native Hawaiian, Other Pacific Islander, or Other) accounted for approximately 12 percent of the MSA population. Within the

MSA, 2000 Census data indicated that approximately 11 percent of the population was of Hispanic origin.

Table 3-7. Detailed Minority Population, 2000

	Sioux City MSA		Sioux City, IA		Sergeant Bluff, IA		Dakota City, NE		South Sioux City, NE		North Sioux City, SD	
	Total	Percent	Total	Percent	Total	Percent	Total	Percent	Total	Percent	Total	Percent
White	107,125	86.3	72,678	85.5	3,074	92.9	1,502	83.2	9,198	76.9	1,958	95.0
Black or African American	2,168	1.7	2,020	2.4	49	1.5	3	0.0	83	0.1	15	0.1
American Indian & Alaska Native	2,094	1.7	1,575	1.9	57	1.7	58	3.2	293	2.4	9	0.1
Asian	2,887	2.3	2,237	2.6	65	1.9	68	3.8	292	2.4	51	2.6
Native Hawaiian & other Pacific Islander	40	0.0	31	0.0	0	0.0	2	0.0	7	0.0	0	0.0
Some other race alone	7,277	5.8	4,629	5.4	5	0.0	118	6.5	1,703	14.2	6	0.0
Other (includes 2 or more races)	2,539	2.0	1,870	2.2	58	1.7	55	3.0	391	3.3	21	1.1
Hispanic or Latino	13,910	11.2	9,202	10.8	17	0.1	272	15.1	2,976	24.9	49	2.5
Total Population	124,130	--	85,040	--	3,308	--	1,806	--	11,967	--	2,060	--

Source: US Census Bureau, Census 2000 Summary File (SF) 3

One residential neighborhood, located atop a bluff overlooking the existing I-29 and Wesley Parkway interchange, is in proximity to the I-29 corridor project area. According to statistics compiled for the 2000 Census, the block group that generally represents this neighborhood contains established minority and low-income protected populations. Table 3-8, *Protected Populations Near I-29*, summarizes Census population data for the neighborhood.

Table 3-8. Protected Populations near I-29

	Neighborhood*		Sioux City MSA		Sioux City, IA	
	Total	Percent	Total	Percent	Total	Percent
White	554	52.6	107,125	86.3	72,678	85.5
Black or African American	59	6.0	2,168	1.7	2,020	2.4
American Indian & Alaska Native	163	15.5	2,094	1.7	1,575	1.9
Asian	54	5.1	2,887	2.3	2,237	2.6
Native Hawaiian & other Pacific Islander	0	0.0	40	0.0	31	0.0
Some other race alone	155	14.7	7,277	5.8	4,629	5.4
Other (includes 2 or more races)	69	6.6	2,539	2.0	1,870	2.2
Hispanic or Latino	458	43.5	13,910	11.2	9,202	10.8
Total Population	1,054	--	124,130	--	85,040	--

Source: US Census Bureau, Census 2000 Summary File (SF) 3
 * Neighborhood is generally represented by Block Group 3, Census Tract 15 of Woodbury County.

Approximately 44 percent of the population in the block group identifies themselves of Hispanic origin, which is a far greater percentage than the City of Sioux City (10.8%) and metropolitan area (11.2%) as a whole. Likewise, larger percentages of individuals that identify themselves as

American Indian or Alaska Native, Asian, or some other race are found in this neighborhood in comparison to the city and metropolitan area. Additionally, the 2000 Census reported a median income of \$17,857 for the block group, which was approximately 48 percent of the 2000 median income reported (\$37,429) for the City of Sioux City. The neighborhood's median income also falls below the Department of Health and Human Service's current poverty guideline of \$20,000.

3.2.2 Environmental Justice

On February 11, 1994, President Clinton issued Executive Order 12898 on Environmental Justice. The Executive Order requires all federal agencies to address the effects of their programs with respect to environmental justice. The Executive Order states that, to the extent practicable and permitted by law, neither minority nor low-income populations may receive disproportionately high or adverse impacts as a result of a federally funded proposed project. It also requires that representatives of any minority or low-income populations potentially affected by the project be provided the opportunity to be included in the impact assessment and public involvement process.

The minority and low-income populations (see Table 3-6, *Protected Populations near I-29*) located near the I-29 corridor would not be directly impacted by the proposed Build Alternatives due to the neighborhood's location atop a bluff adjacent to the existing I-29 roadway; the bluff is outside of new right-of-way proposed for the alternatives. The three Build Alternatives include improvements to and minor realignments of Wesley Way and I-29 on the southeast side of the neighborhood. These improvements would not require the displacement of any residences in the neighborhood and the previous access point to Wesley Parkway from the neighborhood will be maintained at its current location.

The majority of impacts associated with the proposed improvements would be immediate effects including potential noise increases and relocation of businesses. As the impacted areas are already located adjacent to the interstate, the indirect impacts of the proposed action would be minimal. Access would be maintained or improved throughout the corridor. Some access modifications could cause some changes in travel patterns, however no major indirect effects would be disproportionately borne by low-income or minority populations.

Based on the lack of direct impacts to the minority and low-income populations located in this neighborhood, the proposed action does not have the potential to exert high or disproportionate impacts upon any protected populations.

The proposed project is in compliance with Executive Order 12898 and FHWA Order 6640.23, *FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (December, 1998). The project's public involvement process did not exclude any individuals due to race, income, color, religion, national origin, sex, age, or handicap. Meeting locations were specifically selected to accommodate all persons. Notices for public information meetings were placed in local Spanish-language as well as English-language newspapers. In addition, an English/Spanish interpreter was present at the public information meetings.

3.2.3 Employment and Income

3.2.3.1 Employment

Employment in the Sioux City MSA increased 19.5 percent from 1990 to 2006, amounting to over 12,000 more employed persons in the 4-county MSA in the 15-year period. Table 3-9, *Total Employment*, summarizes local MSA and States of Iowa, Nebraska, and South Dakota employment data from 1990 to 2006. Rapid employment growth in the Sioux City MSA occurred between 1990 and 1995, much of which can be attributed to the rapid expansion of Gateway 2000 (now known as Gateway, Inc.) in North Sioux City, South Dakota. From 1995 to 2006, employment growth has stagnated, with a modest 2.1 percent total rate of growth over the 11-year period.

Table 3-9. Total Employment

	Sioux City MSA	% Change	State of Iowa	% Change	State of Nebraska	% Change	State of South Dakota	% Change
1990	62,593	--	1,393,302	--	797,799	--	337,503	--
1995	73,248	17.0	1,527,972	9.7	882,603	10.6	373,515	10.7
2000	75,126	2.6	1,557,081	1.9	923,198	4.6	397,678	6.5
2005	72,039	-4.1	1,568,561	0.1	940,040	1.8	411,551	3.5
2006	74,820*	3.9	1,602,849	2.2	945,270	0.1	417,100	1.3

Source: US Bureau of Labor Statistics, Local Unemployment Statistics. All statistics are seasonally unadjusted.
* Sioux City MSA 2006 data is from December 2006, all other 2006 data is annualized data.

Although employment levels have remained relatively steady, as demonstrated by the 2.1 percent 11-year employment growth rate, several industries have seen significant recent employment growth. The manufacturing, retail trade, administrative & support, and accommodation & food service industrial sectors experienced 20 percent or greater gains in total paid employees over a 5-year period from 1997 to 2002. Table 3-10, *Sioux City MSA Employment by Industry*, summarizes employment data from the 1997 and 2002 Economic Censuses. Manufacturing continues to be the largest single industry employment sector in the MSA, with over 14,500 paid employees in 2002, followed by retail trade with over 11,000 paid employees.

Table 3-10. Sioux City MSA Employment by Industry

Industry	1997 Paid Employees	2002 Paid Employees	Percent Change
Mining*	N/A	N/A	N/A
Utilities	500-999	500-999	N/A
Construction*	N/A	N/A	N/A
Manufacturing	11,977	14,546	21.4
Wholesale Trade	2,500-4,999	2,500-4,999	N/A
Retail Trade	8,649	11,402	31.8
Transportation & Warehousing	2,432	2,300	-5.4
Information*	N/A	2,452	N/A
Finance & Insurance	2,340	2,598	11.0
Real Estate & Rental/Leasing	747	780	4.4
Professional, Scientific, & Technical Services	1,043	1,000-2,499	N/A
Management of Companies & Enterprises*	N/A	N/A	N/A
Administrative & Support & Waste Management & Remediation Services	1,923	3,029	57.5
Educational Services	27	20-99	N/A
Health Care & Social Assistance (taxable & exempt)	7,954	5,000-9,999	N/A
Arts, Entertainment & Recreation (taxable & exempt)	1,420	1,000-2,499	N/A
Accommodation & Food Services	4,468	5,701	27.6
Other Services (taxable & exempt)	1,874	1,842	-1.7
Source: US Census Bureau, 1997 & 2002 Economic Census. Employment ranges are used to withhold disclosing data of individual companies.			
* Mining, Construction, Information, and Management of Companies are industries not published for metropolitan areas.			

The food processing sector of the manufacturing industry comprises the largest employment block in the Sioux City MSA, with Tyson Foods-IBP's international sales office and fresh meat headquarters located in Dakota Dunes, South Dakota and a beef processing plant located in South Sioux City, Nebraska. John Morrell & Co. also operates a pork processing plant in Sioux City, Iowa. Other food processing businesses operating in the Sioux City MSA include Sara Lee Bakery Group, Earthgrains, Kustom Pak Foods, Jolly Time Pop Corn, and Kind & Knox Gelatin, Inc. Other major employers located in the Sioux City MSA include:

- Gateway, Inc. – Computer operations and manufacturing center in North Sioux City, South Dakota
- MidAmerican Energy – Regional energy utility with electricity generation plant in Port Neal, Iowa area.
- St. Luke's Medical Center – Regional medical hospital & clinics in Sioux City, Iowa.
- Mercy Medical Center – Regional medical hospital & clinics in Sioux City, Iowa.
- City of Sioux City – Local governmental agency.
- Sioux City School District – Local public school district.
- Great West Casualty Insurance Co. – Trucking insurance company headquartered in South Sioux City, Nebraska.
- Terra Industries – Producer and marketer of nitrogen fertilizer and crop protection products headquartered in Sioux City, Iowa with a nitrogen manufacturing plant near Sergeant Bluff.

Among the major employers in the Sioux City area, only the John Morrell meat processing plant is located in or in close proximity to the I-29 project corridor. The processing plant is located adjacent to the I-29 right-of-way south of Floyd River in the “Stockyards” area of Sioux City, Iowa.

3.2.3.2 Income

According to 2000 Census data shown in Table 3-11, *Project Area Median Household Income*, the median household income in the Sioux City MSA was \$38,509, which was approximately 92 percent of the median household income for the United States. The median household income for Union County, South Dakota was \$44,790, the highest in the region and 107 percent of the year 2000 median income for the United States. On whole, the 2000 median household income varies in the Siouxland region from 81 percent (Dixon Co., NE) to 107 percent (Union Co, SD) of the median US income.

Table 3-11. Project Area Median Household Income

	United States		City of Sioux City		Sioux City MSA		Woodbury County, IA		Dakota County, NE		Dixon County, NE		Union County, SD	
	\$	% US	\$	% US	\$	% US	\$	% US	\$	% US	\$	% US	\$	% US
1980	17,710	91	16,128	91	16,274	92	16,054	91	16,967	96	11,964	68	13,785	78
1990	30,056	83	25,045	83	25,186	84	25,186	84	25,397	84	20,047	67	22,274	74
2000	41,994	89	37,429	89	38,563	92	38,509	92	39,834	95	34,201	81	44,790	107

Source: US Census Bureau, 1980, 1990, & 2000 US Census of Population.

3.2.4 Residential Relocation Impacts

The No-Build Alternative would not displace any residential dwellings. Likewise, the three Build Alternatives would not require the relocation of any residences.

3.2.5 Business Relocation Impacts

The business displacements that would occur as a result of construction of a proposed alternative would be concentrated in the downtown commercial area of Sioux City, typically in the Leech Avenue, Dace Avenue, and Gordon Drive areas northeast of the existing I-29 right-of-way. Another area of potential business relocations is the Tri View Avenue area north of I-29 between the Hamilton Boulevard and Wesley Way interchanges. Figures 3-2a, 3-2b, and 3-2c, *Proposed Additional Right-of-Way Needs*, show the potential business relocation impacts for the three build alternatives.

The Iowa DOT will provide relocation assistance and payments to all businesses and non-profit organizations without discrimination that are partially or totally displaced by the proposed action. The State of Iowa’s relocation program is in compliance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (42 USC 4601).

No-Build Alternative

The No-Build Alternative would not have any business relocation impacts. Routine roadway maintenance and rehabilitation activities associated with this alternative would occur within the existing I-29 right-of-way.

Alternative A

Utilizing aerial photography surveys, field observations, and Woodbury County Assessor's data, properties with structures that would potentially require relocation for construction of Alternative A were identified. Alternative A potentially would require the relocation of 1 billboard, 6 businesses, and a total of 8 buildings associated with those businesses. Potential relocations could include 1 billboard, 1 retail office supply store, 1 bank, 3 distribution/warehouse centers, and 1 auto body repair store. Table 3-12, *Alternative A Business Relocation Impacts*, summarizes the location, type, and structure of the potential relocation impacts.

Table 3-12. Alternative A Business Relocation Impacts

Address	Business Type	Building Structure(s)
99 S. Virginia St.	Billboard	No building on lot, billboard structure only
300 S. Virginia St.	Distribution center/ warehouse	Primary building & accessory building
319 S. Floyd Blvd.	Distribution center/ warehouse	Primary building
1022 Dace Ave.	Auto body repair/ service	Primary Building & accessory storage building
800 Gordon Dr.	Bank	Primary building
840 Gordon Dr.	Retail office supply store	Primary building
1100 Tri View Ave.	Distribution center/ warehouse	Primary building

Alternative B

Alternative B potentially would require the displacement and relocation of 1 billboard, 7 businesses, and a total of 9 buildings associated with those businesses. Included in those potential relocations are 1 billboard structure, 5 distribution centers/warehouses, and 2 auto body repair and service centers. Table 3-13, *Alternative B Business Relocation Impacts*, summarizes the location, type, and structure of the potential relocation impacts.

Table 3-13. Alternative B Business Relocation Impacts

Address	Business Type	Building Structure(s)
99 S. Virginia St.	Billboard	No building on lot, billboard structure only
300 S. Virginia St.	Distribution center/ warehouse	Primary building & accessory building
205 S. Court St.	Distribution center/ warehouse	Primary building
319 S. Floyd Blvd.	Distribution center/ warehouse	Primary building
915 Dace Ave.	Auto body repair/ service	Primary building
1022 Dace Ave.	Auto body repair/ service	Primary building & accessory storage building
1100 Dace Ave.	Distribution center/ manufacturing	Primary building
1100 Tri View Ave.	Distribution center/ warehouse	Primary building

Alternative C

Alternative C would require the relocation of a total of 1 billboard, 1 storage tank, 4 businesses and a total of 4 buildings associated with those businesses. Additionally, chemical storage tanks may need to be relocated as a result of construction of Alternative C. Table 3-14, *Alternative C*

Business Relocation Impacts, summarizes the location, type, and structure of the potential relocation impacts as a result of construction of Alternative C.

Table 3-14. Alternative C Business Relocation Impacts

Address	Business Type	Building Structure(s)
506 S. Floyd Blvd.	Chemical storage	Storage tanks
514 S. Floyd Blvd.	Heavy manufacturer/ chemical storage	Accessory building, storage tanks
99 S. Virginia St.	Billboard	Billboard structure
300 S. Virginia St.	Distribution center/ warehouse	Primary building & accessory building
1001 Tri View Ave.	Fraternal building	Primary building
909 Tri View Ave.	Retail store/ warehouse	Primary buildings

3.2.5.1 Business Relocation Opportunities and Employment

Relocation options in the vicinity of the I-29 corridor for businesses displaced by any of the proposed alternatives are likely to be available. The Sioux City commercial property market is active with available properties throughout the metropolitan area providing opportunities to relocate. However, commercial property market conditions can and do change quickly, and the availability of vacant properties may vary in the future.

Construction of any of the proposed alternatives would likely result in new property and parcels available for redevelopment in the immediate vicinity of the I-29 corridor. None of the businesses that would require relocation due to construction of any of three proposed Build Alternatives are considered highway-oriented businesses. Businesses that are highway-oriented businesses are generally dependent upon pass-by traffic for customers. Vacant excess parcels created by the proposed alternatives would be ideal for such businesses to locate. Relocation opportunities for industrial-based businesses, including distribution, warehousing, and chemical storage are available in several industrial-zoned areas in the metropolitan area.

The availability of both commercial and industrial properties for relocation does not guarantee that displaced business would choose to occupy those properties or continue operations in the Sioux City metropolitan area.

Workers employed by businesses requiring relocation are expected to maintain employment with those businesses. Those employees not wishing to relocate with their employer could be expected to find employment elsewhere in the Sioux City MSA. Several industries in the region have seen large gains in employment in recent years, including the manufacturing, retail trade, accommodation and food services, and finance and insurance business sectors. A low unemployment rate coupled with moderate to fast growth in those industries indicates an availability of employment opportunities if employees of displaced businesses wish to seek new employment opportunities.

3.2.5.2 Indirect Business Impacts

While all three Build Alternatives involve the relocation of some businesses, including national, regional, and local companies, the reconstruction of I-29 has the potential to improve the overall competitive position of the Sioux City metropolitan area through improved access to downtown

Sioux City. Businesses that are not displaced by any of the alternatives may still be impacted by changes to the transportation system, including changes to and reconfigured access points, as well as potential redevelopment initiatives undertaken by the City of Sioux City. The proposed I-29 improvements would improve mobility through the metropolitan area and could improve the ability to attract and retain businesses that depend on efficient goods movement and services.

Access changes associated with the proposed alternatives could result in beneficial and adverse impacts on some businesses in close proximity to the I-29 corridor. Retail businesses and other types of businesses dependent upon accessibility and visibility would be more directly affected by the physical proximity and access to a roadway. Although there are limited numbers of highway-oriented businesses near I-29 in downtown Sioux City, those that are located in the area could have their competitive position affected, both positively and negatively, by changes in access. The proposed alternative alignments and connections to the downtown area have been designed to minimize impacts to businesses while providing acceptable levels of accessibility.

The long-range business impacts of reconstructing I-29 would also be a function of and dependent on regulatory controls such as tax incentives, future land use plans, and zoning regulations. Assuming that regulatory controls contribute to a favorable business climate, proposed improvements to I-29 would improve mobility throughout the Sioux City region and improve its ability to attract and retain businesses that depend on efficient and effective movement of goods and services.

3.2.6 Property Values

3.2.6.1 Property Value Impacts

Construction of expanded or new roadways can impact the market values of properties in close proximity to the roadway. In general, business properties may increase in value due to improved access for customers and delivery vehicles. However, determining exact property value impacts, both positive and adverse, can be speculative given that properties must be sold to determine actual market values and then compared to recent sales prices for like properties.

However, since the properties potentially affected by the proposed Build Alternatives are already located near the I-29 facility, the three alternatives would likely have negligible overall property value impacts, with both increases and decreases in value. Changes in access associated with proposed improvements could result in beneficial or adverse impacts on individual properties, particularly for retail establishments dependent on pass-by traffic, high-visibility, and close physical proximity to the roadway. Those effects, however, would be limited to a few parcels and the project would likely have minimal measurable impact on property values in the area.

3.2.6.2 Indirect Property Value Impacts

An improved I-29 roadway facility can be expected to have a net positive overall impact on property values over the long-term, with improved access stimulating business development and retention. While values of some individual properties may decline, the overall impact on

property values is expected to be positive for the downtown Sioux City localized area, the City of Sioux City itself, and the Siouxland region as a whole.

3.2.7 Sales Tax Revenues

The No-Build Alternative would not displace any businesses, and would not impact the existing tax base.

All three Build Alternatives would displace between 6 and 9 businesses. These businesses range from a retail office supply store, a bank, warehousing and distribution centers, a chemical production and storage facility, and an auto body service and repair shop. These businesses generate sales tax revenues on goods and services for the City of Sioux City, Woodbury County, and State of Iowa and serve to help fund a wide variety of programs and services among the jurisdictions.

Based on the existing and potential availability of commercially and industrially zoned properties within the City of Sioux City and near the I-29 project area, it is expected that the potentially displaced businesses would relocate within or near the project area. The loss of sales tax revenue generated from the businesses would be insignificant due to the expected relocation, which would redistribute sales in the area and therefore would not decrease overall sales tax revenues.

The overall sales tax base impact associated with the I-29 project would be minor in relation to the total sales tax revenue for the Sioux City MSA, and therefore construction of any of the three Build Alternatives would not significantly impact the existing tax base.

3.2.8 Property Taxes

3.2.8.1 Property Tax Impacts

A short-term property tax revenue loss would occur in the City of Sioux City resulting from the conversion of taxable land into non-taxable transportation right-of-way use with construction of any of the Build Alternatives. To evaluate the potential property tax losses, information was obtained from the Woodbury County, Iowa Assessor's *Property Tax Admin System* via the internet. According to the *City Property Tax Comparison – FY 2002 versus FY 2007*, a report prepared for the State of Iowa House Commercial Property Tax Study Group, property in the City of Sioux City had a total taxable value of approximately \$2.2 billion at the beginning of the fiscal year 2007. This total amount includes both the value of land and improvements (i.e., structures) on the property.

All non-exempt properties in the I-29 project corridor subject to taxation are considered commercial or industrial properties. Property tax levies for commercial business and industrial properties in the downtown Sioux City area vary among the different taxing districts. Properties potentially impacted by the proposed Build Alternative were subject to tax levies that ranged from \$44.05 to \$46.29 per \$1,000 of taxable valuation. Property acquisitions involving structures are the potential tax impact presented for each Build Alternative. Proposed property

acquisitions with no building impacts were not analyzed to determine total potential short-term property tax losses because of the relatively minor collective impact on the tax base.

No-Build Alternative

The No-Build Alternative does not require the conversion of taxable property to non-taxable right-of-way and therefore would not result in short-term tax revenue losses to the community.

Alternative A

Table 3-15, *Alternative A Property Tax Losses*, summarizes the short-term property tax impacts to those properties in the I-29 project corridor that would be incorporated into public right-of-way as a result of constructing Alternative A. Approximately 18 percent (3.2 acres) of land in the corridor that is expected to be incorporated into right-of-way only involves taking land. 52 percent of potentially impacted property is considered tax-exempt property and would not impact property tax revenues.

Approximately \$4 million dollars of taxable value would be eliminated from tax rolls because of the conversion of land and structures to public right-of-way as a result of construction of Alternative A. This taxable value represents 0.18 percent of the total taxable value in the City of Sioux City and equates to a loss of approximately \$183,300 in annual property tax revenues.

Table 3-15. Alternative A Property Tax Losses

Address	Business Type	Building Structure(s)	Land Acres	Taxable Value	% of City Total Taxable Value	Total Annual Property Tax Losses
99 S. Virginia St.	Billboard	No building on lot, billboard structure	0.2	\$37,100	0.002	\$1,600
300 S. Virginia St.	Distribution center/warehouse	Primary building, accessory building	0.5	\$282,400	0.013	\$13,000
319 S. Floyd Blvd.	Distribution center/warehouse	Primary building	0.6	\$311,400	0.014	\$13,700
1022 Dace Ave.	Auto body repair/service	Primary building, accessory storage building	0.6	\$116,200	0.005	\$5,100
800 Gordon Dr.	Retail office supply store	Primary building	1.8	\$1,576,500	0.072	\$73,000
840 Gordon Dr.	Bank	Primary building	1.2	\$1,295,300	0.059	\$60,000
1100 Tri View Ave.	Distribution center/warehouse	Primary building	0.6	\$382,700	0.017	\$16,900
Total			5.5	\$4,001,600	0.183	\$183,300

Alternative B

Short-term property tax impacts potentially resulting from the construction of Alternative B are summarized in Table 3-16, *Alternative B Property Tax Losses*. Approximately 31 percent (4.6 acres) of land in the corridor expected to be used for additional right-of-way involves the taking of only property and no buildings. Forty-one percent of potentially impacted property to be converted is considered tax-exempt property and would not impact property tax revenues.

Approximately \$2 million dollars of taxable value would be eliminated from tax rolls due to the conversion of land and structures to public right-of-way as a result of construction of Alternative B. This taxable value represents 0.09 percent of the total taxable value in the City of Sioux City and would result in the loss of approximately \$90,200 in annual property tax revenues.

Table 3-16. Alternative B Property Tax Losses

Address	Business Type	Building Structure(s)	Land Acres	Taxable Value	% of City Total Taxable Value	Total Annual Property Tax Losses
99 S. Virginia St.	Billboard	No building on lot, billboard structure only	0.2	\$37,100	0.002	\$1,600
300 S. Virginia St.	Distribution center/warehouse	Primary building & accessory building	0.5	\$282,400	0.013	\$13,100
205 S. Court St.	Distribution center/warehouse	Primary building	0.4	\$227,400	0.010	\$10,000
319 S. Floyd Blvd.	Distribution center/warehouse	Primary building	0.6	\$311,400	0.014	\$13,700
925 Dace Ave.	Retail store/ antique mall	Primary building	0.6	\$186,800	0.009	\$8,600
1022 Dace Ave.	Auto body repair/ service	Primary building & accessory storage building	0.6	\$382,700	0.017	\$16,900
1100 Dace Ave.	Distribution center/ manufacturing	Primary building	0.6	\$212,300	0.010	\$9,400
1100 Tri View Ave.	Distribution center/ warehouse	Primary building	0.6	\$382,700	0.017	\$16,900
Total			4.2	\$2,022,800	0.092	\$90,200

Alternative C

Table 3-17, *Alternative C Property Tax Losses*, summarizes the short-term property tax impacts to properties would be incorporated into public right-of-way as a result of constructing Alternative C. Approximately 8 percent (1.3 acres) of property in the corridor that is expected to be incorporated into right-of-way only involves taking land. 66 percent of potentially impacted property is considered tax-exempt property and would not impact overall property tax revenues.

Approximately \$1.5 million dollars of taxable value would be reduced from tax rolls due to the conversion of land and structures to public right-of-way as a result of construction of Alternative C. This taxable value represents 0.07 percent of the total taxable value in the City of Sioux City and would result in the loss of approximately \$64,600 in annual property tax revenues.

Table 3-17. Alternative C Property Tax Losses

Address	Business Type	Building Structure(s)	Land Acres	Taxable Value	% of City Total Taxable Value	Total Annual Property Tax Losses
506 S. Floyd Boulevard	Chemical storage	Storage tanks	0.5	\$51,300	0.002	\$2,300
514 S. Floyd Boulevard	Heavy manufacturer/chemical storage	Accessory building, storage tank	0.7	\$697,900	0.032	\$30,700
99 S. Virginia Street	Billboard	No building on lot, billboard structure only	0.2	\$37,100	0.017	\$1,600
300 S. Virginia Street	Distribution center/warehouse	Primary building & accessory building	0.5	\$282,400	0.013	\$13,100
1001 Tri View Avenue	Fraternal building	Primary building	1.7	\$0	0	\$0
1100 Tri View Avenue	Distribution Center/warehouse	Primary building	0.6	\$382,700	0.017	\$16,900
Total			4.2	\$1,451,400	0.066	\$64,600

3.2.8.2 Indirect Property Tax Impacts

While a direct loss of property tax revenue would be a result of the proposed Build Alternatives, the improvements in the I-29 corridor would result in improved mobility in the region. As previously discussed, transportation is one key factor that attracts businesses to specific locations. Improvements to the I-29 corridor could prove to be a catalyst that can result in redevelopment in the corridor. Such development would ultimately result in an increase in property taxes, likely offsetting property tax losses associated with construction of any of the Build Alternatives.

3.3 Surface Water and Water Quality

3.3.1 Affected Environment

The project corridor is located adjacent to the Missouri River. Most of the corridor area drains into the Missouri either directly or via tributaries. The existing I-29 corridor in Woodbury County crosses the Floyd River, Perry Creek, and Bacon Creek. Locations of these water bodies are shown in Figures 3-3a, 3-3b, and 3-3c, *Natural Environmental Resources*. The four water bodies that are located within the project study area are:

- **Missouri River** - The Missouri River is a navigable waterway that supports barge traffic down stream. Sioux City is located approximately 60 miles downstream from Gavins Point Dam, near Yankton, South Dakota. Maintenance of the navigation channel requires frequent dredging to remove silt, sand, gravel, and rubble.

- **Floyd River** - The Floyd River is a warm-water, perennially flowing river that originates in O'Brien County and flows for approximately 90 miles before entering the Missouri River at Sioux City, Iowa. The drainage area of the Floyd River is approximately 956 square miles. The Floyd River has been straightened and channelized where it flows through the urbanized landscape of Sioux City.
- **Perry Creek** - Perry Creek is a warm-water, perennially flowing creek that originates in Plymouth County and flows for approximately 20 miles before entering the Missouri River at Sioux City, Iowa. At this point the area drained is approximately 73 square miles. Perry Creek has been straightened and routed through an enclosed conduit in the vicinity of and under I-29 through the downtown area of Sioux City before entering the Missouri River south of I-29.
- **Bacon Creek** - Bacon Creek is a warm-water creek that originates in Woodbury County, two miles east of Sioux City, Iowa. At this point the area drained is approximately seven square miles. The U.S. Army Corps of Engineers (USACE) completed a flood and erosion control project in this basin in the late 1970s. The lower half of the creek flows through a long box culvert under an urbanized area and then to a paved and channelized reach before entering the Missouri River.

3.3.2 Environmental Consequences

The proposed improvements under the three Build Alternatives could impact the Missouri River, Floyd River, Perry Creek, and Bacon Creek. Surface water impacts could result from construction, operation, and maintenance activities of the proposed Build Alternatives.

3.3.2.1 Peak Flow Increases for Proposed Build Alternatives

No Build Alternative

Under peak flow conditions, no additional water quality impacts would result from the No-Build Alternative.

Build Alternatives

All of the proposed Build Alternatives would increase the amount of pavement throughout the corridor. The conversion of pervious land to impervious pavement and the improved flow efficiency of the storm sewer system would combine to increase both the volume of runoff generated in the corridor and the peak flows associated with that runoff.

- An impact analysis was conducted to approximate the effect of each of the Build Alternatives impact to stormwater peak flows in the project study area. For each alternative, the amount of pervious area to be covered by additional pavement (beyond the existing pavement footprint) was calculated. Table 3-18, *Stormwater Impacts from Proposed Alternatives* summarizes the results of these calculations. Any of the three Build Alternatives would result in less than one percent increase in runoff and a negligible change in peak flows.

Table 3-18. Stormwater Impacts from Proposed Alternatives

	No Build Alternative	Alternative A	Alternative B	Alternative C
Increase in Paved Area	0 acre	23.9 acre	22.4 acre	16.8 acre
Increase in Runoff (10-yr storm)	0 cfs ¹	90 cfs	80 cfs	60 cfs
Proposed Runoff (10-yr storm)	11,770 cfs ²	11,860 cfs	11,860 cfs	11,840 cfs
Increase in Runoff	0 %	0.76 %	0.68 %	0.51 %
¹ Cubic feet per second (cfs)				
² Includes discharge from Perry Creek, Bacon Creek, and Basins 3, 5, & 11 from the USACE Study				

3.3.2.2 Construction Impacts to Surface Water

Surface water impacts would occur to the Floyd River, Bacon Creek (also known as Old Floyd Channel), and Missouri River with the implementation of all three of the proposed Build Alternatives. New bridges would be constructed over the Floyd River and Bacon Creek under all three Build Alternatives.

Throughout the project study area, impacts to surface water would also occur during the construction phase of any of the three proposed alternatives. As stormwater drains towards the Floyd River, Bacon Creek, or Missouri River, it is likely that the water carries with it construction debris, silt, and residue from equipment parking lots that could include motor oil and other vehicle and equipment fluids.

Debris from demolition and removal of the existing bridges and construction of the new bridges could impact these water ways. In-stream pier construction and abutment construction have the potential for erosion which would increase the amount of sediment in these waterways. In-stream construction could cause an increase in turbidity (i.e., the cloudiness of water caused by suspended solids in the water) and temporarily alter downstream hydraulics conditions.

As required in Iowa DOT's *Construction Manual*, contractors constructing in or near the Floyd River, Bacon Creek, and Missouri River would observe and comply with all federal and state laws, local ordinances, and regulations that affect the conduct of the work. This includes meeting the requirements of the National Pollutant Discharge Elimination Permitting (NPDES) for construction affecting areas greater than one acre. Implementation of erosion control measures known as Best Management Practices (BMPs) and other construction techniques would minimize erosion and sedimentation to the extent practicable. Some of the techniques that could be used are listed below. The application of these construction practices would reduce the effects of turbidity and sedimentation in the Floyd River, Bacon Creek, and Missouri River.

- Constructing river crossings during low flow periods.
- Utilizing coffer dams and silt filtration systems.
- Installing silt fences, detention ponds, erosion mats, and mulch in affected areas.

Water quality impacts to surface waters from proposed improvements to I-29 are estimated to be negligible with implementation of appropriate erosion control methods and BMPs.

3.3.2.3 Operational and Maintenance Impacts to Surface Waters

Impacts from operating and maintaining the improved roadway would occur and are equal among the three proposed Build Alternatives. Operation and maintenance activities that could impact surface water include things like deicing the roadway, painting lane lines, patching cracks and pot holes, spraying for weeds, and mowing. Debris, silt, deicing materials, herbicide chemicals, heavy metals, oil and grease, and bacteria from the activities mentioned above impact surface water by being washed downstream by stormwater runoff and entering rivers and streams.

Common pollutants from highway runoff are described in Table 3-19, *Common Roadway Runoff Pollutants and Their Primary Sources*. These pollutants can affect the aquatic life in the rivers and streams. For example, metals and deicing salts can be toxic to aquatic life.

Table 3-19. Common Roadway Runoff Pollutants and Their Primary Sources

Pollutants	Primary Source(s)
Particulates	Pavement wear, vehicles, atmosphere, maintenance of roadway
Nitrogen, phosphorous	Atmosphere, roadside fertilizer application
Lead	Tire wear, lubricating oil and grease, bearing wear
Zinc	Tire wear, motor oil, grease
Iron	Auto body rust, steel highway structures (for example, guard rails), moving engine parts
Copper	Metal plating, bearing wear, moving engine parts, brake lining wear, fungicides and insecticides applied by maintenance operations
Cadmium	Tire wear, insecticide application
Chromium	Metal plating, moving engine parts, brake lining wear
Nickel	Diesel fuel and gasoline (exhaust), lubricating oil, metal plating, brake lining wear, asphalt paving
Manganese	Moving engine parts
Cyanide	Anticake compound used to keep deicing salt granular
Sodium, calcium	Deicing salts, grease
Chloride	Deicing salts
Sulfate	Roadway beds, fuel

Source: Dupuis, T. V., et al. *Practitioner's Handbook: Assessment of Impacts of Bridge Runoff Contaminants in Receiving Waters*. Prepared for National Cooperative Highway Research Program. July 2001.

As pollutants enter the stormwater the concentrations and accumulations of pollutants would generally be of low volume and at most would only have a localized impact. Dilution of the pollutants would occur as the stormwater drains into the Floyd River, Bacon Creek, and Missouri River.

The addition of more lanes of pavement increases the impervious area that, in turn, increases stormwater runoff volumes that can increase in-stream erosion. The addition of more pavement and additional lanes in the project study area would likely increase the amount of deicing

chemicals used in the winter months over current levels. Research shows that occasional high levels of chloride do occur in drainage ditches and waterways due to rapid runoff and snowmelt. The research also indicates, however, no long-term buildup of chlorides occurs in waterways due to regular salt applications in the winter months. Studies by the United States Geographical Survey (USGS) (Research Project R-18-0) of sodium chloride concentrations originating from highway runoff have shown that the additional input of sodium chloride ions from deicing salts would be offset by a proportional increase in snowmelt/water runoff for dilution.

The addition of more lanes of pavement would also contribute to more runoff at elevated temperatures during warm days. Elevated water temperatures can contribute to lower oxygen levels in surface waters. The runoff flows only a short distance before entering the Missouri River where substantial flows would buffer or moderate the temperature effects on the Missouri River Water.

3.3.2.4 Indirect Impacts

None of the proposed Build Alternatives would contribute substantially to indirect impacts to receiving surface water bodies such as the Floyd or Missouri Rivers. Any minor indirect impacts to water quality are estimated to be approximately equal among all proposed Build Alternatives.

In-stream bridge and culvert construction can create localized and permanent changes in habitat. Any long-term increases in suspended sediments can reduce aquatic productivity by limiting photosynthesis, lowering oxygen levels, and covering food sources and fish spawning areas. However, habitat is generally impacted only in small areas and these impacts may be relatively minor when the entire stream/river reach is considered.

In contrast to the history along this stretch of the Missouri River, current and proposed development (casinos, office buildings, convention centers) is generally of the type that does not contribute untreated contaminated stormwater or wastewater to the river directly. As current stormwater and wastewater controls are generally stricter than in the past, and given the proposed I-29 improvements would not introduce any additional outlets the proposed improvements would not cause long-term indirect impacts to water quality.

3.4 Wetlands and Other Waters of the U.S.

3.4.1 Affected Environment

Existing data and a field survey were used to identify and characterize potential wetlands and other waters of the U.S. within the project corridor. Maps showing National Wetlands Inventory (NWI) wetlands, National Resource Conservation Service (NRCS) hydric soils units, and USGS topographic maps were investigated offsite to initially locate potential wetland resources.

A windshield survey of the corridor was conducted in June 2005 by Iowa DOT Office of Location and Environment Water Resources staff to locate wetland resources in the project corridor. Wetland determinations were made by Water Resources staff familiar with wetland delineation as described by the *Corps of Engineers Wetlands Delineation Manual* (US Army

Corps of Engineers, 1987). Wetland type, as defined by Cowardin (1979), location and extent were recorded for each wetland. Waters of the U.S. were identified as waterways with defined bed and bank complexes. Field wetland delineations (testing of soil, and reviewing hydrology and vegetation) were not performed during the survey, but would be conducted prior to any permitting addressing wetland disturbance.

The windshield survey identified four waterways (Missouri River, Floyd River, Bacon Creek and Perry Creek discussed in Section 3.3, *Surface Water and Water Quality*) and three wetland areas in the project study area which are shown on Figures 3-3a, 3-3b, and 3-3c, *Natural Environmental Resources*. One of the wetland areas occurs at the point where Perry Creek enters the Missouri River and is on the outside edge of the study area. This wetland area includes two wetland types: Palustrine, Emergent (PEM) and Palustrine Scrub-Shrub (PSS) type. Another is a narrow drainage area with reed canary grass south of the Hamilton Boulevard Interchange. This wetland was determined to be non-jurisdictional (i.e., not regulated by the USACE under Section 404 of the Clean Water Act (CWA)) in a previous study completed for Hamilton Boulevard Interchange Improvements¹. The third wetland covers 0.10 acre and is a highly disturbed bottom portion of a shallow drainage adjacent to Floyd Boulevard. This non-jurisdictional wetland near Floyd Boulevard was identified as PEM.

3.4.2 Environmental Consequences

Federal wetland laws and implementing regulations exist that are intended to protect wetland resources. Section 404 of the CWA requires that a permit be obtained before filling can occur in portions of wetlands that are under the regulatory jurisdiction of the USACE. Section 404 also requires that wetland impacts be avoided if possible and that impacts be minimized and mitigated. Presidential Executive Order (EO) 11990 on Protection of Wetlands requires that federal agencies avoid, to the extent practicable, long- and short-term adverse impacts to wetlands. The Order directs federal agencies to avoid construction in wetlands unless there is no reasonable alternative and that proposed actions must include all practicable measures to minimize harm to the wetlands.

Iowa Administrative Code (IAC) 314.23 states that wetlands removed by a state transportation project shall be replaced by the acquisition of wetlands in the same general vicinity, if possible, for public ownership and preservation, or by other mitigation deemed to be comparable to the wetland removed, including, but not limited to the improvement, development, or preservation of wetlands under public ownership.

The three wetland areas would not be impacted by the No Build Alternative and Alternative C. Alternative A and Alternative B would each result in a 0.1 acre impact to the wetland near Floyd Boulevard which would be considered a minimal impact under the USACE Section 404 Nationwide Permit process. Table 3-20, *Wetland Impacts from Proposed Alternatives*, summarizes these impacts.

¹ Iowa DOT, 2003. I-29 Hamilton Boulevard Interchange Improvement, Woodbury County, Sioux City, Iowa. *Project Concept Assessment of Impacts*, October 2003.

Table 3-20. Wetland Impacts from Proposed Alternatives

	No Build Alternative	Alternative A	Alternative B	Alternative C
Palustrine Emergent Wetland	0 acres	0.1 acres	0.1 acres	0 acres
Palustrine Scrub-Shrub	0 acres	0 acres	0 acres	0 acres
Total	0 acres	0.1 acres	0.1 acres	0 acres

3.4.2 Indirect Impacts

Indirect wetland impacts occur when adjacent work alters habitat characteristics downstream or down gradient from the construction activity through sedimentation, hydrology, and other construction effects. Indirect impacts can also occur if characteristics of a given roadway improvement would likely result in development patterns that would require future wetland fills. Indirect impacts to wetlands as a result of I-29 improvements are estimated to be negligible because of the minimal wetland area in the project corridor and based on the following:

- Indirect water quality impacts can be minimized by implementing, monitoring, and maintaining BMPs;
- The area adjacent to the project corridor is already largely urbanized and no further habitat fragmentation would occur; and
- The proposed improvements would not facilitate subsequent actions that would affect or fill identified regulated wetlands.

3.4.3 Wetland Mitigation

Wetlands were avoided to the extent practicable as part of alternatives development. Water resources in the project corridor are largely surface waters. The corridor contains segments of Floyd River, Bacon Creek and Perry Creek and only 0.1 acres of wetland that may be impacted under either Alternative A or B. If the wetland is impacted, specific relevant mitigation measures will occur in coordination with USACE in accordance with the Section 404 permitting process and IAC 314.23.

3.5 Floodplains

3.5.1 Affected Environment

Floodplains are defined as those flood-prone areas identified as part of the National Flood Insurance Program (NFIP) managed by the Federal Emergency Management Agency (FEMA).

The floodplain defines the area which is inundated during a 100 year storm event. The floodway is the main channel and adjacent areas of the watercourse must be reserved in order to limit increases of the 100 year water surface elevations to one foot or less. Floodways are not necessarily determined for all waterways that have mapped floodplains.

Sioux City, Iowa has not mapped a floodway along the Missouri River, but across the river South Sioux City, Nebraska has a mapped floodway. Projects should limit any encroachment into the 100 year floodplain so that water surface increases do not exceed elevations of the Nebraska-side floodway.

The project corridor crosses the Floyd River, Perry Creek, and Bacon Creek. These tributaries of the Missouri River have been mapped as part of Sioux City's participation in the NFIP. Bacon Creek has a 100 year floodplain but no floodway. Perry Creek and the Floyd River have a 100 year floodplain and a floodway. Figures 3-3a, 3-3b, and 3-3c, *Natural Environmental Resources*, shows the 100 and 500 year floodplains for these water bodies.

3.5.2 Environmental Consequences

In accordance with EO 11988, Floodplain Management (1977), and other DOT and FHWA directives, a hydraulic study was performed to determine the potential hydraulic impacts of proposed I-29 improvements on project area waterways. The waterways included in the analysis for the project corridor are the Missouri River, Bacon Creek (also referred to as the Old Floyd Channel), Floyd River, and Perry Creek. A floodplain "Only Practicable Alternative Finding" must be prepared for actions involving a significant unavoidable encroachment (*Technical Advisory T6640.8A, Guidance for Preparing and Processing Environmental and Section 4(f) Documents, October 30, 1987*). While encroachment on the floodplain in the project area would occur with implementation of any of the Build Alternatives (see analysis below), the encroachment would be negligible based on modeled conditions and large size of the floodplain. A formal "Only Practicable Alternative Finding" has not been developed for the proposed improvements to the existing Sioux City I-29 corridor.

Missouri River

Alternative A, Alternative B, and Alternative C would involve varying degrees of encroachment on the Missouri River floodplain. Because of the minor differences in encroachment between the alternatives, a "worst-case" model was developed to represent the impacts of encroachments from all three alternates even though only one would be constructed.

Encroachments would occur in four locations:

- Roadway side slopes would be modified from 0.3 mile south of the BNSF Missouri River bridge to the Bacon Creek bridge to meet current roadway standards. This would place additional fill in the fringe of the floodplain.
- Alignment changes from the Bacon Creek bridge to 0.4 mile north of the bridge would move I-29 slightly closer to the river.
- Roadway side slopes would be modified from approximately 0.3 mile west of Hamilton Boulevard to 0.7 mile west of Hamilton Boulevard to meet current roadway standards. This would place additional fill in the fringe of the floodplain.
- Additional fill would be placed in the fringe of the floodplain at the I-29/Hamilton Boulevard interchange because of reconstruction of the southbound off-ramp.

The modeling shows that the overall impact of the I-29 improvements would be negligible, regardless of the alternative chosen, because of the large size of the floodplain in comparison to the limited width of floodplain encroachment.

Bacon Creek (Old Floyd Channel)

Bacon Creek was the original route of the Floyd River prior to a 1960s USACE project that redirected much of the water. The project was designed for a 500-year flood event assuming bridges were placed over the channel. It is assumed that there would be no floodplain impact to Bacon Creek if the existing bridges were replaced with bridges of similar size and that water surface elevations would not be increased. No hydraulic analysis was performed that investigated replacement of the bridges with culverts.

Floyd River

The USACE created the lower Floyd River channel in the 1960s. A designated floodway for the Floyd River is bound by the levees and channel limits. Any encroachment into the channel would require proof of a no-rise in water surface elevations through hydraulic modeling.

Two options for replacement bridges have been developed for the Floyd River I-29 crossing. One option would have bridges set on two sets of piers spaced between existing piers. The existing piers would be removed after the new piers are in place. A second option would reuse existing bridge piers. All grading would occur above the 100-year water surface elevation for both options.

Interim construction conditions for the new piers option would involve some encroachment into the floodplain and floodway as a result of new pier construction prior to demolition of the existing piers. Modeling showed that the pier obstructions would temporarily raise the 100-year water surface elevation.

Prior to construction, either a temporary permit could be obtained from the USACE or the potential increase in water surface elevations could be mitigated through grading. The grading would need to increase the channel section area to the point that equal water conveyance is provided in the channel during construction.

Upon completion of the Floyd River replacement bridge, and removal of existing bridge piers under the second option, no impact to the Floyd River floodplain would occur.

Perry Creek

The Perry Creek floodplain, as mapped in the 2001 NFIP study of Sioux City, is shown crossing I-29 in three places. This delineation no longer accurately represents the 100-year floodplain because a larger conduit has been built beneath I-29 and the completed conduit is capable of containing 100-year flows from Perry Creek below ground. A USACE and City of Sioux City, Iowa project for remapping the floodplain started in 1992 was submitted to the FEMA on January 2, 2008 for review. The remapped floodplain would supersede the NFIP delineation.

The proposed alternatives cross over the new Perry Creek conduit. No modifications are anticipated to be made to the new conduit. As a result, no floodplain impacts would occur to the Perry Creek floodplain.

3.5.3 Indirect Impacts

Since compensatory volume storage is required as mitigation for impacts to the designated 100-year floodplain, it is unlikely any alternative would result in substantial indirect impacts to the 100-year floodplain. Further, it is unlikely that improvements to I-29 would foster ancillary development that would impact 100-year floodplains.

3.6 Ecological Resources

3.6.1 Affected Environment

3.6.1.1 Upland Plant Communities

The project study area is located within an urban landscape. All of the land within the project study area has been significantly disturbed or modified within the past two centuries. Plant communities observed in the project study area are typical of disturbed environments. Several habitat areas are connected to larger habitats outside of the project area that may promote colonization of native species and species of concern.

A Biological Resources Technical Memorandum prepared by Goodpaster-Jaminson, Inc. (Goodpaster-Jaminson, Inc. 2005) divided plant communities in the project study area into three cover types:

- Developed: Commercial, industrial, residential, and public recreation facilities. No functional plant communities observed.
- Open-Maintained: Areas not in use for any specified developed purpose but maintained through periodic mowing. Trees, bushes and native wildflowers exist on roadsides. Mowing along roadsides is preventing community development. Mowed areas are dominated by cool season grasses and non-native “weedy” species.
- Open-Naturalized: Areas not in agriculture that are not maintained. Habitat areas extend outside of the project study area. Two Iowa Species of Concern were observed in this cover type: sand cherry (*Prunus pumila*) and violet (*Viola adunca*).

3.6.1.2 Wildlife Resources

The project study area is within the historical floodplain of the Missouri River and part of what was once a massive and abundant biological corridor. Drastic changes to this corridor have occurred to control flooding and improve river navigation. Most of the former floodplain has been developed, but a highly degraded yet still functioning biological corridor occurs within the

project study area. The study area is within the migratory bird pathway known as the Missouri flyway.

Common urban-adapted wildlife may be found in the corridor. These species are mostly generalists and include mammal species such as raccoon, eastern cottontail, fox squirrel, Virginia opossum and songbird species including common grackle, house sparrow, mourning dove, and American crow.

3.6.1.3 Threatened and Endangered Species

Federally-Protected Species

Early coordination with the US Fish and Wildlife Service (USFWS) identified the federally threatened bald eagle (*Haliaeetus leucocephalus*) and endangered pallid sturgeon (*Scaphirhynchus albus*) as potentially being in or near the project area. These species' habitats are described below:

- **Bald Eagle (*Haliaeetus leucocephalus*):** Wintering habitat for the bald eagle is abundant within forested floodplains of the Missouri River. Wintering habitat consists of tall trees adjacent to open water where fish are abundant. There are no known eagle roosts located in the project corridor; however, roost locations change over time and may be in the project corridor in the future. The bald eagle is scheduled to be removed from the Endangered Species List of the Endangered Species Act (ENSA) in late 2007. Bald eagles will remain protected by the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act after delisting is complete.
- **Pallid Sturgeon (*Scaphirhynchus albus*):** Pallid sturgeons are similar to the shovelnose sturgeon (*Scaphirhynchus platorynchus*) in both appearance and habitat requirements, but only the pallid sturgeon is federally protected. Pallid sturgeons require large, turbid, free-flowing riverine habitat in strong currents over firm gravel or sandy substrates. Historically, this species was widespread throughout the Missouri River and its larger tributaries, but is currently considered to be one of the most imperiled fish species. There are historical accounts of pallid sturgeons in the Floyd River; however, modification of the channel including control structures at mouth and rerouting have essentially eliminated the potential for occurrence in the Floyd River within the project corridor. Sampling for pallid sturgeons in the Missouri River at the mouth of the Big Sioux and Floyd Rivers by the Nebraska Game and Parks Commission (NGPC) in March 2005 did not capture any pallid sturgeon.

State-Listed Species

Early coordination with Iowa DNR reported that the following state-listed species may occur within the project corridor: The ottoe skipper (*Hesperia ottoe*) and Olympia white (*Euchloe Olympia*) butterflies are listed as species of concern. The federally- and state-listed endangered pallid sturgeon (*Scaphirhynchus albus*) was also identified as potentially occurring in the project corridor. The butterflies are described below:

- The ottoe skipper (*Hesperia ottoe*) is habitat-restricted to plant species in diverse remnant prairies and open barrens. The ottoe skipper was not observed during a 2005 survey but it could potentially occur in the project corridor.
- Olympia white (*Euchloe olympia*) finds suitable habitat in open areas such as prairies, foothills, bluffs, barrens, meadows, and open woodlands. The Olympia white was not observed during a 2005 survey but it could potentially occur in the project corridor.

3.6.2 Environmental Consequences

The No Build Alternative would not impact ecological resources in the project corridor.

3.6.2.1 Upland Plant Community Impacts

Construction impacts to plant communities from Alternatives A, B, and C would be similar. The construction activity would likely disturb and/or eliminate portions of vegetated communities in the corridor. The areas of likely disturbance within the project corridor are generally low quality floodplain forest and open land in old field succession adjacent to existing right-of-way. No high-quality native or pristine plant communities were observed in the project corridor.

3.6.2.2 Wildlife Impacts

Impacts to urban-adapted wildlife species from construction of improvements to I-29 under any of the Build Alternatives would be negligible. Impacts to species dependent on the Missouri River and associated riparian areas can be minimized through Best Management Practices (BMPs) protecting waterways and limiting sedimentation from runoff.

3.6.2.3 Threatened and Endangered Species Impacts

No federal or state threatened or endangered species were observed in the project corridor. However, potential habitat for the federally threatened bald eagle (*Haliaeetus leucocephalus*) and endangered pallid sturgeon (*Scaphirhynchus albus*) occurs within the project corridor. Any planned in-stream work would require additional consultation with USFWS under Section 7 of the ENSA and may necessitate preparation of an incidental take agreement.

For Section 7 of the ENSA, initial interagency coordination known as informal consultation should state one of the following effect determination for the bald eagle and pallid sturgeon: 1) no effect, 2) may affect, but is not likely to adversely affect, or 3) is not likely to adversely affect. If it is determined the project is not likely to affect any listed species in the project area, and if the Service concurs, the informal consultation is complete and the proposed project moves ahead. If it appears that the project may affect the pallid sturgeon or bald eagle, then a biological assessment to assist in its determination of the project's effect on a species will need to be completed.

Two plant species listed as Iowa species of special concern have been documented in the project corridor. In addition, potential habitat exists for two butterflies that are listed as Iowa species of

special concern. Iowa Code does not require any permitting for potential impacts to these species. Consequently, State-designated plant and habitat disturbance could occur under any of the Build Alternatives.

3.6.2.4 Indirect Impacts

With accepted BMPs implemented, none of the proposed alternatives would have a substantial indirect impact on wildlife habitat and its inhabitants. None of the proposed alternatives would systematically direct future development resulting in adverse impact to ecological resources.

3.7 Air Quality

3.7.1 Affected Environment

The National Ambient Air Quality Standards (NAAQS), established by the U.S. Environmental Protection Agency (EPA), set maximum allowable concentration limits for six criteria air pollutants. These pollutants include: carbon monoxide, lead, nitrogen dioxide, particulate matter PM 10, particulate matter PM 2.5, ozone, and sulfur oxides. Areas in which air pollution levels persistently exceed the NAAQS may be designated as “non-attainment.” States in which a non-attainment area is located must develop and implement a State Implementation Plan (SIP) containing policies and regulations that will bring about attainment of the NAAQS.

In addition to the NAAQS, the EPA also regulates six priority transportation toxics called priority Mobile Source Air Toxics (MSATs). These include the following toxics: benzene, formaldehyde, acetaldehyde, diesel particulate matter/diesel exhaust organic gases, acrolein, and 1,3-butadiene.

3.7.2 Environmental Consequences

All areas of Iowa are currently in attainment of the National Ambient Air Quality Standards (NAAQS) including the project study area. Therefore, the proposed Build Alternatives would not impact NAAQS.

For the three Build Alternatives, the amount of MSATs emitted would be proportional to the vehicle miles traveled (VMT), assuming that other variables such as fleet mix and travel speeds are the same for each alternative. The VMT for each of the Build Alternatives is expected to be slightly higher than that for the No-Build Alternative, because the additional capacity increases the efficiency of the roadway and would attract rerouted trips from elsewhere in the transportation network. This increase in VMT would lead to higher MSAT emissions in the project study area for the Build Alternatives, along with a corresponding decrease in MSAT emissions along parallel routes. Regional MSAT emissions would not be different between the Build and No-Build Alternatives. Also, regardless of the Build Alternative selected, emissions will likely be lower in the design year than present levels as a result of EPA’s national control programs that are projected to reduce MSAT emissions by 57 to 87 percent between 2000 and 2020.

3.8 Noise

3.8.1 Affected Environment

Noise is defined as unwanted sound. Humans are only able to hear a certain range of sounds or frequencies that make up the sounds. To compensate for the low and high end frequencies that humans are not able to hear, the A-weighted decibel (dBA) scale is used. The dBA unit measures perceptible sound energy and factors out the extreme high and low frequencies.

The predominant source of noise in the project study area is from I-29 traffic noise. Local roadways are an additional source of noise. Noise levels were monitored at two sensitive receiver locations in the project study area on October 26, 2004. Noise monitoring location M1 was located near the ramp terminal of the southbound I-29 Hamilton Boulevard exit ramp. Noise monitoring location M2 was located off of Chris Larsen Park Road near the Argosy Casino. The monitoring locations are shown at the end of this section on Figures 3-4a, 3-4b, and 3-4c, *Human Environmental Resources*. Existing noise levels in the project study area ranges from 61 to 63 dBA as described in Table 3-21, *Noise Monitoring Locations*.

Table 3-21. Noise Monitoring Locations

Monitoring Location Number	Distance to I-29 Centerline (ft)	Time of Day	Measured Leq (dBA)
M1	275	12:50 - 1:10 PM	61
M2	220	1:15 - 1:35 PM	63

3.8.2 Environmental Consequences

Traffic noise levels were calculated using the FHWA Traffic Noise Model (TNM) Version 2.5. The Model was used to calculate noise levels generated by traffic in terms of the hourly equivalent sound level (L_{eq}), which is based on an A-weighted decibel unit (dBA). L_{eq} is defined as the weighted average of sound over a certain period of time.

According to 23 CFR 772, traffic noise impacts occur when the predicted traffic noise levels approach or exceed the FHWA Noise Abatement Criteria (NAC), or when predicted noise levels substantially exceed the existing noise levels. The Iowa DOT defines “approaching” as being within one decibel of the NAC and defines “substantial” as being 10 decibels over the NAC. Table 3-22, *Noise Abatement Criteria (NAC)* describes the NAC in more detail.

Table 3-22. Noise Abatement Criteria (NAC)

Activity Category	L _{eq} (h) (dBA)	L ₁₀ (h) (dBA)	Description of Activity Category
A	57 (Exterior)	60 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of these qualities is essential if they are to continue to serve their intended purpose.
B	67 (Exterior)	70 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (Exterior)	75 (Exterior)	Developed lands, properties or activities not included in Categories A or B above.
D	-	-	Undeveloped lands.
E	52 (Interior)	55 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

Source: Code of Federal Regulations, Title 23 CFR Part 772-*Procedures for Abatement of Highway Traffic Noise and Construction Noise*, Federal Highway Administration, April 1992.

3.8.2.1 Traffic Generated Noise Levels

Noise impacts were calculated by applying the FHWA Version 2.5 computer program to receiver locations at noise sensitive sites throughout the project study area. TNM was developed to predict hourly L_{eq} values for free flowing and interrupted flow traffic conditions, and is generally considered to be accurate within ± 3 dBA.

Current traffic noise levels were measured at specific locations and times (see Table 3-19, *Noise Monitoring Locations*) and used to ensure the accuracy of the predictions generated by the noise model. To predict a conservative assessment of future traffic impacts, noise attenuating effects of buildings, trees, and foliage were not modeled. Table 3-23. *Predicted Existing and Future Noise Levels* contains the future traffic noise levels modeled by TNM for noise receivers identified in the Study Area.

Table 3-23. Predicted Existing and Future Noise Levels

Receiver ID	Residential/ Commercial/ Recreational	2003 Existing Noise Level (dBA) ¹	2030 Noise Level (dBA)				Noise Abatement Criteria (dBA)	Predicted Increase ¹ (dBA)				Approaches or Exceeds NAC in 2030 Build
			No Build	Alternative A	Alternative B	Alternative C		No Build	Alternative A	Alternative B	Alternative C	
N1	Residential	55	57	58	58	59	67	+2	+3	+3	+4	No
N2	Residential	53	54	56	56	56	67	+1	+3	+3	+3	No
N3	Residential	51	52	54	54	54	67	+1	+3	+3	+3	No
N4	Residential	50	51	52	52	53	67	+1	+2	+2	+3	No
N5	Commercial	63	64	64	64	65	72	+1	+1	+1	+2	No
N6	Commercial	65	66	68	67	68	72	+1	+3	+2	+3	No
N7	Commercial	65	67	66	67	70	72	+2	+1	+2	+5	No
N8	Residential	54	56	57	57	57	67	+2	+3	+3	+3	No
N9	Residential	58	59	58	59	59	67	+1	0	+1	+1	No
N10	Commercial	55	56	56	58	57	72	+1	+1	+3	+2	No
N11	Commercial	62	64	63	63	63	72	+1	+1	+1	+1	No
N12	Commercial	58	60	59	60	62	72	+2	+1	+2	+4	No
N13	Commercial	64	65	60	61	65	72	+1	-4	-3	+1	No
N14	Commercial	61	62	61	60	61	72	+1	0	-1	0	No
N15	Commercial	65	67	66	66	66	72	+2	+1	+1	+1	No
N16	Commercial	65	66	65	65	65	72	+1	0	0	0	No
N17	Commercial	66	67	66	66	66	72	+1	0	0	0	No
N18	Commercial	53	55	54	54	54	72	+2	+1	+1	+1	No
N19	Residential	56	57	56	56	56	67	+1	0	0	0	No
S1	Recreational	57	58	58	58	58	67	+1	+1	+1	+1	No
S2	Recreational	60	62	59	61	60	67	+2	-1	+1	0	No
S3	Commercial	60	61	56	57	59	72	+1	-4	-3	-1	No

¹ Predicted increase is the difference between 2030 Noise Levels for 2003 Existing Noise levels for each of the build alternatives.
Source: HDR, *Noise Study Report I-29 Sioux City Interstate Study*, March 2007.

No-Build Alternative

The amount of traffic on I-29 would increase in 2030 without any improvements to the roadway. The No Build Alternative would result in an increase in noise levels by a maximum of two (+2) dBA over the 2003 modeled existing noise levels throughout the project study area. None of the 22 receivers modeled approach or exceed the NAC. Therefore, noticeable impacts in ambient noise environment would not occur if the No Build Alternative is implemented.

Alternative A

The 2030 traffic noise estimates indicate that Alternative A increases the noise levels at 14 of the 22 modeled noise receiver locations, decreases the noise levels at three of the 22 noise receiver locations, and has no change at five of the 22 receiver locations. Alternative A would increase the noise in 2030 by a maximum of three (+3) dBA and decrease by a maximum of four (-4) dBA over the 2003 modeled existing noise levels. Since the average human ear is not able to

hear a difference in noise unless the change is increased or decreased by three or more dBA, only a slight change in noise would be noticeable under this alternative. None of the 22 noise receivers approach or exceed the NAC. Therefore, noticeable impacts to the ambient noise environment would not occur if Alternative A were implemented.

Alternative B

The 2030 traffic noise estimates indicate that Alternative B increases the noise levels in 16 of the 22 noise receivers, decreases the noise levels in three of the 22 noise receivers, and has no change on three of the 22 receivers modeled. Alternative B would increase the noise in 2030 by a maximum of three (+3) dBA and decrease by a maximum of three (-3) dBA over the 2003 modeled existing noise levels. Since the average human ear is not able to hear a difference in noise unless the change is increased or decreased by three or more dBA, no change in noise would be noticeable under this alternative. None of the 22 noise receivers approach or exceed the NAC. Therefore, noticeable impacts to the ambient noise environment would not occur if Alternative B were implemented.

Alternative C

The 2030 traffic noise estimates indicate that Alternative C increases the noise levels in 16 of the 22 noise receivers, decreases the noise levels in one of the 22 noise receivers, and has no change on five of the 22 receivers modeled. Alternative C would increase the noise by a maximum of five (+5) dBA and decrease by a maximum of one (-1) dBA over the 2003 modeled existing noise levels. The average human ear would be able to detect a slight change in noise at one receiver location, N7 near 1001 TriView Avenue, where the change in noise is 5 dBA. However, none of the 22 noise receivers approach or exceed the NAC. Therefore, adverse impacts to the ambient noise environment would not occur if Alternative C were implemented.

3.8.2.2 Traffic Noise Abatement Strategies

Because of the absence of adverse potential noise impacts resulting from the analyzed alternatives, noise traffic abatement strategies (such as the installation of noise walls or other barriers) were not considered.

3.9 Cultural Resources

3.9.1 Affected Environment

Cultural resources are those sites or structures, including their landscape settings that exemplify the cultural, architectural, economic, social, political, or historic heritage of the area or its communities. The cultural resource studies that were conducted as a part of this project, and are discussed in further detail below, were sent on to the State Historical Society of Iowa through the Cultural Resource Section of the Iowa DOT. Correspondence of this coordination is in Appendix A, *Agency Coordination*.

3.9.1.1 Archaeological Resources

A Phase I Archaeological Survey covered approximately 1,400 acres within the project study area and approximately 120 acres of potential borrow areas located outside the project study area. The study included pre-field research, such as looking at previous studies and area history, bucket auger tests, shovel tests, and hand probe cores (Benn, 2005). No prehistoric material was recovered and no early historic remains were located within the project study area or the potential borrow sites.

The majority of the project study area is covered by modern development and buried utility lines. Over half of the study area is located on historic river sediments and modern fill. Within the project study area, testing occurred near the Dace Avenue ramp, near the Hamilton Boulevard Interchange, and inside Chris Larsen Park. The site near Dace Avenue revealed nineteenth century historic brick, glass, concrete, composite siding, and slag that probably represented debris remaining from occupancy by stockyard workers. The material was recorded as a new archaeological site (13WD157). Because these materials date back to the late Nineteenth to middle twentieth century and were not considered to have significant research value, the site was recommended as not eligible for the National Register of Historic Places (NRHP), and no additional archaeological investigation is needed. These findings were received by the State Historical Society of Iowa (SHPO) on July 22, 2005. Iowa SHPO has 30 days to respond to reports once submitted, and a concurrence with the findings is assumed if no response is received. A copy of this correspondence is found in Appendix A, *Agency Coordination*.

Both of the potential borrow sites are approximately 60 acres in size and are located outside the project study area. Both sites are located within the Loess Hills and have heavily eroded soil due to steep hills and cultivation. One site is located near the U.S. 20 and U.S. 75 interchange located northeast of the I-29/Pearl Street Interchange by approximately two miles. The other site is near the U.S. 75 and Outer Drive North intersection located southeast of the I-29/Pearl Street Interchange by approximately four miles. No cultural materials were found on either of the potential borrow sites and no additional archaeological investigation is needed. These findings were received by SHPO on November 16, 2007. Iowa SHPO concurred with the findings on December 13, 2007. A copy of this correspondence is found in Appendix A, *Agency Coordination*.

3.9.1.2 Historic Structures

A Historical/Architectural Intensive Level Survey was conducted for 91 properties in the project study area (Nash, 2005). Of these 91 properties, 26 have at least one principal building that appeared to be over 50 years of age or older. The remaining 65 properties were less than 40 years old and were considered modern. Of the 26 properties evaluated, seven were found to either be listed, in the process of being listed, or eligible for listing on the NRHP. The Iowa SHPO concurred with these findings on October 2, 2005. A copy of this correspondence is in Appendix A, *Agency Coordination*. The locations of these structures are shown on Figures 3-4a, 3-4b, and 3-4c, *Human Environmental Resources*. The seven structures include:

- **Sergeant Floyd Riverboat** (97-04880) - This structure is located at 1000 Chris Larsen Park Road. The Sergeant Floyd River Museum and Welcome Center is a historic landmark and is listed on the NRHP. The museum is a dry-docked boat called the Sergeant Floyd. The boat was named after Sergeant Charles Floyd, the only member of the Lewis and Clark Expedition to die on the trek to the Pacific Northwest. The boat was constructed at the Howard Shipyards in Jefferson, Indiana in 1932 and served as a workhouse for the Missouri River Division of the USACE from 1933 to 1975. Among other things, the museum displays America's largest exhibit of scale Missouri River steamboat and keelboat models.
- **Grand Avenue (also known as Gordon Drive) Viaduct** (97-02775) - This Bridge spans over the Floyd River, railroad yards, and the Bacon Creek. The bridge is considered eligible for listing on the NRHP. The bridge was constructed in 1936. The bridge is over three-quarters of a mile long and is known as Iowa's longest grade-separation bridge other than the Chicago Northwestern Railroad structures. The bridge spans over South Floyd Boulevard, the Floyd River, the Chicago Northwestern Railroad tracks, South Steuben Street, Cunningham Drive, and the Bacon Creek. The bridge was designed in 1935 by a consulting firm out of Kansas City called Ash, Howard, Needles, and Tamman (AHNT).
- **Municipal Auditorium** (97-02774) - The Municipal Auditorium is located at 500 Gordon Drive. Construction began in 1942 but stopped because of World War II. Construction resumed in 1947 after the war and was opened in 1950. The Auditorium was designed by Sioux City local architect Knute E. Westerlind in 1941. The Auditorium is significant as a large-scale example of Art Moderne Depression-era public architecture. The Auditorium is currently in the process of being listed on the NRHP. The Tyson Events Center, located at 401 Gordon Drive, was constructed in 2003 on the same parcel of land as the Municipal Auditorium and the two facilities are connected. The legal description of the property being nominated for the NRHP includes the entire 10.9 acre parcel consisting of the Municipal Auditorium, Tyson Events Center, and one of the associated parking lots. The language in the nomination packet focuses solely on the Auditorium building which makes up approximately 0.9 acres of the 10.9 acre parcel. The remaining 10 acres consist of the Events Center and parking lot which are briefly mentioned in the nomination information but are non-contributing elements to the site's eligibility for the NRHP.
- **Hobson School** (97-02695) - This building is located at 222 South Floyd Boulevard. This building was constructed in 1938 and is an important example of the Streamline Moderne style, with an Art Deco entrance, purposefully used as an integral part of the educational building. It is an example of the style spread by the 1933 Chicago World's Fair. According to reports from the Sioux City Tribune, Hobson School was designed to be "Sioux City's most modern education plant," depicting an era in the scientific approach to society's needs.
- **Wall Street Mission** (97-02696) - This building is located at 304 South Floyd Boulevard. This building is also known as the Hobson Hall. It is eligible for listing on the NRHP for its role in the community's response to the South Bottoms immigrant residents. It also stands as a representative for a neighborhood now largely eliminated

by two larger civic projects. Hobson Hall, the two-part building was constructed in the 1920s, is an important example of a local community's efforts to assimilate the city's growing South Bottoms population of European immigrants. The Wall Street Mission became a part of the church missionary as settlement occurred during the late 19th and early 20th century. The closing of the packing house in the second half of the 20th century eliminated many of the South Bottoms jobs.

- **Octagonal house (97-03083)** - This house is located at 108 Kansas Street. The house is octagonal in shape and has been in existence since at least 1880. This house has been a local landmark and is seen repeatedly in artistic renderings city photographs from 1880 on. This two story house, though replacement of the stuccoed brick walls has been changed to siding and new windows have been installed, has two distinguishing features, its eight sides and its bluff top location which have remained intact for over 120 years. Much of the neighborhood surrounding the octagonal house represents a long period of construction and there are many vacant lots where houses have been removed, leaving the area with little potential as a historic district.
- **Simmons Hardware Company Building (97-04077)** - This building is located at 323 Water Street. This building is also known as the Battery Building and was constructed between 1905 and 1906 as a hardware warehouse for Simmons Hardware, a national chain. The building retains integrity of the Richardson Romanesque style, an early example of a national firm dictating their own architectural style rather than following local styles. The massive footprint of the building and its tall clock tower have made this building a notable presence in downtown Sioux City for 100 years.

3.9.2 Environmental Consequences

3.9.2.1 Archaeological Impacts

The archaeological site located near the Dace Avenue ramp was determined to have little research value and was recommended as not eligible for the NRHP. All three of the proposed alternatives do not impact this archaeological site. Archaeological impacts would not be expected to occur with the implementation of any of the three build alternatives.

3.9.2.2 Historic Structure Impacts

No Build Alternative

No impacts would occur under the No Build Alternative.

Alternatives A, B, and C

There are seven structures that are either on, are in the process of being listed, or are eligible for listing on the National Register of Historic Places (NRHP). None of these seven structures would be impacted by Alternatives A, B, or C.

Impacts would occur to one of the parking lots of the Municipal Auditorium/Tyson Events Center. All three of the build alternatives would impact the southwest corner of the Municipal Auditorium/Tyson Events Center parking lot. Alternative A would remove approximately 1.4

acres of the parking lot and convert it to use for roadway right-of-way. Alternative B would remove approximately 0.7 acres of the parking lot, and Alternative C would remove approximately 0.5 acres of the parking lot. Despite the impacts to the parking lot no impacts would occur to the Municipal Auditorium building. On October 22, 2007 FHWA concurred that no use of the Municipal Auditorium building would occur by constructing Alternatives A, B, or C. The Municipal Auditorium building is protected by Section 4(f) requirements, which is discussed in further detail in Section 3.11 *Section 4(f) Property*.

3.10 Parks, Recreational Areas, and Other Public Use Lands

3.10.1 Affected Environment

The 6-mile long Lewis & Clark Trail generally follows the course of the Missouri River through Riverside and Chris Larsen parks. The trail provides access to the recreational amenities found in the parks, including parking, restrooms, and playground/picnic areas. Several designated bicycle pathways and trails are located or under development in the vicinity of the I-29 project area (see Figures 3-4a, 3-4b, and 3-4c, *Human Environmental Resources*).

3.10.1.1 Lewis & Clark Trail and Other Associated Trails

The Lewis & Clark Trail (see Figures 3-4a, 3-4b, and 3-4c, *Human Environmental Resources*) is a six-mile long paved multiuse bicycle and pedestrian trail that begins in Riverside Park and generally follows the Big Sioux River and the Missouri River east and southward, terminating in Chris Larsen Park. The Lewis & Clark Trail is located between I-29 right-of-way and the Missouri River except where it exits Riverside Park north of I-29. This trail also connects with the Perry Creek and Floyd River Trails which extend northward into the City of Sioux City. The Iowa DOT and City of Sioux City both own individual properties on which the Lewis & Clark Trail is located, however the trail is maintained by the City of Sioux City. Resting benches are found adjacent to the facility over the length of this trail. The trail also provides access to individual features found in Chris Larsen Park.

The Perry Creek Trail (see Figures 3-4a, 3-4b, and 3-4c, *Human Environmental Resources*) runs along Perry Creek from Tri-View Avenue in the I-29 project study area north to Stone Park Boulevard. The Perry Creek Trail will be three miles long when completed in the summer of 2007 as a part of the Perry Creek flood control project. In the project study area, the Perry Creek Trail runs along the east side of Wesley Parkway, follows along the south side of 2nd Street past the Tyson Events Center, and is located on the west side of Pierce Street south to I-29. The Perry Creek Trail goes under I-29 and connects to the Lewis & Clark Trail in Chris Larsen Park south of the existing Nebraska/Pierce Street Interchange.

The Floyd River Trail (see Figures 3-4a, 3-4b, and 3-4c, *Human Environmental Resources*) is a three mile long multi-use trail that runs along the west levee of the Floyd River north of 4th Street to Outer Drive. In the project study area, the Floyd River Trail is located west of the existing Floyd Boulevard Interchange. The Floyd River Trail uses existing sidewalk along Floyd Boulevard and 4th Street to connect to the Lewis & Clark Trail in Chris Larsen Park south of the existing Floyd Boulevard Interchange.

3.10.1.2 Chris Larsen Park

Chris Larsen Park (see Figure 3-4a, 3-4b, 3-4c, *Human Environmental Resources*) is a 114 acre publicly-owned park and recreation facility located between the Missouri River and I-29 from Hamilton Boulevard east and south to the vicinity of Floyd Boulevard. The park contains several features, attractions, and improvements that make it an important keystone facility in the Sioux City regional park system. Some of those features and attractions include:

- Lewis & Clark Trail
- Lewis & Clark Interpretive Center and Garden of Discovery
- Anderson Dance Pavilion
- Flight 232 Memorial and Gardens
- Sergeant Floyd Welcome Center and Riverboat Museum
- Argosy Casino and associated restaurant
- Shelter, picnic areas, and playground
- Marina, boat launch, and food & drink facilities
- Maintained open space and other unclassified recreational areas

Individual properties in the park are owned by both the City of Sioux City and Iowa DOT. Sioux City owns approximately 65 acres, while Iowa DOT owns approximately 49 acres. Revocable lease agreements between Iowa DOT and the City of Sioux City are used for use rights on Iowa DOT-owned parcels where city facilities are located.

3.10.2 Environmental Consequences

Among the listed and described parks and recreation areas, portions of both Chris Larsen Park and the trail system, located on property adjacent to the existing south I-29 right-of-way line, are impacted by the three proposed Build Alternatives. These impacts are shown where Alternatives A, B, and C overlap with the resources shown on Figures 3-4a, 3-4b, and 3-4c, *Human Environmental Resources*. The Iowa DOT, FHWA, and City of Sioux City actively coordinated with each other to minimize potential impacts to Chris Larsen Park and the trails resulting from the construction of all three Build Alternatives.

No-Build Alternative

Maintenance and facility preservation activities associated with the No-Build Alternative would not require the acquisition of additional right-of-way, and they would not impact Chris Larsen Park or the trail system.

Alternative A

Alternative A would require the acquisition of approximately 5.7 acres of Chris Larsen Park adjacent to the existing I-29 right-of-way. This amount of property represents approximately 5 percent of the total park area. Of the 5.7 acres the State of Iowa owns approximately 0.8 acres

and the City of Sioux City owns approximately 4.9 acres. The park property that would be acquired for construction of this alternative is currently not actively used by park visitors and is considered passive-use open space or is paved for roadway use and parking lots. Temporary construction impacts to all three trails are likely to occur during construction of Alternative A and may require the temporary closure of the trail. However, after the construction of Alternative A is complete, the trails would be reopened and the trail system would no longer be impacted.

Alternative B

Alternative B would require the acquisition of approximately 4.1 acres of Chris Larsen Park, or approximately 3.6 percent of park area. Of the 4.1 acres the State of Iowa owns approximately 0.7 acres and the City of Sioux City owns 3.4 acres. Existing park property that would be needed for incorporation in right-of-way is located adjacent to the existing right-of-way and is not actively used other than for passive-use open space. Some minor amounts of paved ground would also be incorporated into new right-of-way. Temporary construction impacts to all three trails are likely to occur during construction of Alternative B and may require the temporary closure of the trail. However, after the construction of Alternative B is complete, the trails would be reopened and the trail system would no longer be impacted.

Alternative C

Alternative C would require the acquisition of approximately 5.6 acres of Chris Larsen Park, which is approximately 4.9 percent of the entire park area. Of the 5.6 acres the State of Iowa owns approximately 0.3 acres and the City of Sioux City owns 5.3 acres. Park property that would be needed for additional right-of-way is located adjacent to existing I-29 right-of-way. The 5.4 acres of land that would be incorporated into new right-of-way is used as passive open space and is not actively used by park patrons. Temporary construction impacts to all three trails are likely to occur during construction of Alternative C and may require the temporary closure of the trail. However, after the construction of Alternative C is complete, the trails would be reopened and the trail system would no longer be impacted.

3.10.3 Indirect Impacts

It is not expected that improvements to I-29 would trigger conversion of the existing park and recreation facilities near the I-29 corridor to other uses because of the City of Sioux City's desire to maintain these areas as an attractive riverfront amenity. Loss of terrestrial habitat stemming from needed right-of-way is not a concern in Chris Larsen Park as the facility is a mostly disturbed and comprised of non-native habitat including grass lawns and isolated pockets of trees. Wildlife found in the park is consistent with urban environments. Noise impacts from increased traffic on I-29 is not expected to affect activities or park facilities as the park is already located in an urban area and is not considered a serene noise environment.

3.11 Section 4(f) Properties

3.11.1 Affected Environment

A Section 4(f) resource is any significant publicly-owned park, recreation area, or wildlife and waterfowl refuge, and any land from a historic site of national, state, or local significance. Section 4(f) properties are protected resources and opportunities to avoid or mitigate potential impacts to the properties must be explored.

3.11.1.1 Publicly-Owned Park and Recreation Areas

The FHWA, Iowa DOT, and City of Sioux City determined that not all of the parcels that make up Chris Larsen Park or the Lewis & Clark Trail met the definition of a Section 4(f) resource. Of the 16 parcels that make up Chris Larsen Park, 3 are owned by Iowa DOT and 13 parcels are owned by the City of Sioux City. The parcels that are owned by the Iowa DOT are not Section 4(f) resources because of a revocable lease agreement with the City of Sioux City. It was also determined that there was “No Use” of the Lewis & Clark Trail, Perry Creek Trail, and the Floyd River Trail that crossed the Iowa DOT parcels.

Of the remaining 13 parcels owned by the City of Sioux City, only 4 met the definition of a Section 4(f) resource. In July 2006, the FHWA concurred that 7 of the 13 city-owned parcels did not meet the definition of a Section 4(f) resource. These parcels include the riverboat casino, marina, restaurant, future hotel and associated parking lot parcels. These parcels are not Section 4(f) resources because they are owned by private, for profit, companies or because their uses were more for entertainment than recreation.

The 4 parcels that were determined Section 4(f) resources include the Flight 232 Memorial and gardens, a playground, open space, and maintained open space with a parking lot for park and trail users. Figures 3-4a, 3-4b, and 3-4c, *Human Environmental Resources*, displays the park and recreation areas and segments of the Lewis & Clark Trail, Perry Creek Trail, and Floyd River Trail that are Section 4(f) resources in the vicinity of the I-29 project corridor.

3.11.1.2 Wildlife or Waterfowl Refuges

There are no wildlife or waterfowl refuges within the project study area. The closest conservation area is Wimson Park located approximately six miles south of the southern project area limit. This conservation area is managed by the Woodbury County Conservation Board.

3.11.1.3 Historic Sites

There are seven historic structures considered to be Section 4(f) resources in or near the project study area. These structures were discussed in more detail in Section 3.9.1.2, *Historic Structures*. The seven structures are:

- Sergeant Floyd Riverboat - 1000 Chris Larsen Park Road.
- Grand Avenue (also known as Gordon Drive) Viaduct - Spans over the Floyd River, railroad yards, and the Bacon Creek.
- Municipal Auditorium - 500 Gordon Drive.
- Hobson School - 222 Floyd Boulevard.
- Wall Street Mission - 304 South Floyd Boulevard.
- Octagonal house - 108 Kansas Street.
- Simmons Hardware Company Building - 323 Water Street.

3.11.1.4 Section 6(f) Properties

Parks and recreational areas that are improved with funds from the Land and Water Conservation Act (LAWCON) of 1965 are federally protected by the U.S. Department of Interior, and managed by the Iowa DNR, due to stipulations under this Act. Resource areas that are improved with these funds are known as Section 6(f) resources.

There are three Section 6(f) parcels in the project study area described in legal documents and property descriptions from September 6, 1991. According to these legal documents, funds from LAWCON were used for acquisition or development of real estate for the Sioux City Riverfront Trail (project number 19-01156). All three Section 6(f) parcels are located within Chris Larsen Park. Two of these Section 6(f) parcels are located west of Wesley Parkway and one is located east of Wesley Parkway as shown in Figures 3-4a, 3-4b, and 3-4c, *Human Environmental Resources*.

3.11.2 Environmental Consequences

No Build Alternative

No impacts would occur to the Section 4(f) or the Section 6(f) properties under the No Build Alternative. In addition, no impacts to the historic structures would occur under the No Build Alternative.

Alternatives A, B, and C

All three of the Build Alternatives would impact portions of Chris Larsen Park that are Section 4(f) resources but would not have adverse effects on the activities, features, and attributes of Chris Larsen Park. Alternative A would impact approximately 4.9 acres, Alternative B would impact approximately 3.4 acres, and Alternative C would impact approximately 5.3 acres of Section 4(f) property. The impacted Section 4(f) resources to be incorporated into permanent right-of-way are not currently used by park patrons except as passive open space, parking areas, and paved roadway. The FHWA concurred on October 22, 2007 that the portions of Chris Larsen Park proposed to become roadway right-of-way under the three Build Alternatives would not impact the recreational use, features, or activities of the Park. The Sioux City Parks and Recreation Department concurred that the impacts to Chris Larsen Park would not impact the

activities, features, or attributes of the park in a letter dated January 24, 2008. Copies of these correspondences are included in Appendix A, *Agency Coordination*.

Temporary impacts would occur to the Lewis & Clark Trail, Perry Creek Trail, and Floyd River Trail from the construction of all three Build Alternatives. It is likely that some relocation of segments of the Trails may be necessary but would be relocated in the same general vicinity to maintain connectivity to the existing trail system after the Build Alternatives are constructed. Since the Trails would essentially be unchanged from the proposed improvements the FHWA concurred with a “No Section 4(f) Use” of the Trails on October 22, 2007.

No historic Section 4(f) resources would be impacted by Alternatives A, B, or C. However, impacts would occur to one of the parking lots of the Municipal Auditorium/Tyson Events Center as described in Section 3.9.2.2, *Historic Structures Impacts*. Despite the impacts to the parking lot from the three Build Alternatives, no impacts would occur to the Municipal Auditorium building, which is the Section 4(f) resource. On October 22, 2007 FHWA concurred that no use of the Municipal Auditorium building occurs by constructing Alternatives A, B, or C.

Alternative A, B, and C would not impact the Section 6(f) parcels. The footprints for all three Build Alternatives are immediately adjacent to the Section 6(f) parcel located west of Wesley Parkway. The footprints of the proposed Build Alternatives do not cross the property line into the Section 6(f) parcels.

3.12 Regulated Materials

3.12.1 Affected Environment

The purpose of the regulated materials review is to identify properties along the project corridor that are, or could be, contaminated with regulated materials. For the purposes of this document, the term “regulated materials” is an all-inclusive term used to describe materials that require special management to protect human health and the environment. The term includes materials regulated as solid waste, hazardous materials, hazardous substances, hazardous wastes, petroleum products, and other materials or emissions defined and regulated by state and federal laws. Regulated materials include the generation, storage, disposal, and release of any hazardous substance or petroleum product within the scope of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Resource Conservation and Recovery Act (RCRA). Contamination of properties typically occurs from past use and improper handling or disposal of regulated materials. Right-of-way acquisition or construction of the proposed action on or near contaminated properties may pose legal liabilities, project delays, construction safety concerns, or impacts to the natural environment if impacted soil or groundwater is encountered. Early identification of these properties is an important consideration in project planning and design, and in the development of alternatives.

Regulated materials are transported on I-29 (through the project corridor) under regulatory authority of the U.S. Department of Transportation (US DOT) and the Iowa DOT’s Office of Motor Vehicle Enforcement’s Hazardous Materials Unit.

As a result of the environmental investigations in the project corridor regulated materials like CERCLA hazardous waste sites, RCRA hazardous waste generators, underground and aboveground storage tanks, and leaking storage tanks were identified in the project corridor. The following Iowa DOT studies were used to determine regulated materials within the project study area:

- *Expanded Categorical Exclusion for I-29 and Hamilton Boulevard Interchange Improvements* (Hamilton Boulevard Study) - Howard R. Green Company, September 2003; and
- *Limited Phase I Environmental Site Assessment* (ESA) - Howard R. Green Company, September 2006.

The September 2003 *Hamilton Boulevard Study* identified the eight recognized Environmental Conditions (RECs) sites in the Hamilton Boulevard Interchange area. Table 3-24, *Hamilton Boulevard Study RECs* describes these RECs and their locations are shown in Figures 3-5a, 3-5b, and 3-5c, *Regulated Materials*.

Table 3-24. Hamilton Boulevard Study RECs

REC Number	Facility Name	Description of REC
132	MLR TYM Marina 1100 Larsen Park Rd.	The Marina is located on Sioux City's Missouri riverfront. The site had a release of petroleum product or suspected release of petroleum product on or before 1994. The site had three fuel tanks removed. Residual soil contamination is suspected onsite. Currently, no further action is required.
200	Iowa DOT Maintenance Garage 200 S. Hamilton Blvd.	This site is currently used as a filling station and maintenance garage for heavy equipment. The site had a high-risk regulated fuel tank removed in 1989. The EDR data search revealed other regulated USTs onsite.
201	Container Corp. & Jefferson Smurfit 1601 Tri View Ave.	This site is currently used as an integrated manufacturer of paperboard and paper-based packaging. The site had a non-regulated heating oil tank removed in 1986. Residual free-product is suspected onsite. The EDR data search revealed other possible regulated USTs onsite. This site is listed as a RCRA generator.
202	Maggies Mini-Mart 1203 Tri View Ave.	This site is currently used as a filling station. The site had a release of petroleum product or suspected release of petroleum product in 1990. Currently, no further action is required. The EDR data search revealed other possible regulated USTs onsite.
203	I L L Inc. (Little Welding Shop and Air Products and Chemicals, Inc.) 1100 Tri View Ave.	This site was not listed on EDR, EPA, or Iowa DNR database reports. Given the business names potentially located onsite and their associated hazards, this site is a suspected RCRA generator. Aerial photo analysis also revealed possible air emission sources indicating active air construction permits likely for one or both businesses located at the same physical address.
204	Sioux City WTP 1101 Tri View Ave.	This site is a drinking water treatment plant. The EDR data search revealed the site is a RCRA generator. Hazardous chemicals normally associated with water disinfection are present onsite.
205	Bekins Merchandise Storage 1153 Tri View Ave.	This site provides transportation, distribution, and warehousing services for corporate and private customers. The site is registered as a small quantity generator of hazardous waste.

REC Number	Facility Name	Description of REC
206	General Motors Rochester Products Division (Former Zenith Radio) 1801 Zenith Dr.	This site was a division of General Motors that manufactured carburetors, and related components including emissions control devices and cruise control systems. Solvent contamination of groundwater has been documented. Contaminants include: 1,1-DCA; 1,2-DCE; 1,1-DCE; and TCE. Contaminants have been detected in down gradient Sioux City water supply wells. A signed (Record of Decision (ROD) document is available and describes the permanent remedy (i.e., containment wells) for this Superfund site. The site was a RCRA small quantity generator that received four RCRA violations since 1984.
207	General Motors Rochester Products Division (Former Zenith Radio) 1805 Zenith Dr.	Solvent contamination of groundwater has been documented at this site. Contaminants include: 1,1-DCA; 1,2-DCE; 1,1-DCE; and TCE. Contaminants have been detected in down gradient Sioux City water supply wells. A signed ROD document is available and describes the permanent remedy (i.e., containment wells) for this Superfund site. The site was a RCRA small quantity generator that received four RCRA violations since 1984.

The Limited Phase I (ESA) (Howard R. Green Company, September 2006) was performed on properties in the I-29 study area corridor. The investigated area includes approximately 150 acres and approximately 110 individual parcels. Investigators searched state and federal databases records for any information linked to the parcels along the proposed interstate alignments and right-of-way acquisitions. A third party, Environmental Data Resources, Inc. (EDR) conducted a review of federal, state, and local environmental databases in July 2006. A reconnaissance of the project study area was conducted on August 8-10, 2006. The reconnaissance was intended to identify areas of known or potential contamination by hazardous substances. This process was noninvasive, meaning no environmental sampling was conducted. Interviews with city officials were conducted on August 23 and 25, 2006. In addition, the following public entities were contacted to identify potential regulated waste sites in the project study area:

- Sioux City Fire Department
- Sioux City Engineering Department
- Pearl Street Research Center

A landfill was reportedly encountered during construction of the Wesley Parkway Bridge during the late 1950's and early 1960's. In addition, significant changes in the width of the river channel are apparent from historical aerial photographs indicating possible filling of areas with materials. Dumping of debris and fill materials along riverbanks was a common historical practice. The composition of the materials used during historical filling along the riverfront likely varied depending on what type of materials were readily available at the time.

Current and historical railroad operations are located adjacent to and within the proposed project area. Coal and diesel storage and combustion emissions can result in the accumulation of considerable amounts of petroleum compounds and metals at rail yards and along railroads. Additional contaminant sources may include petroleum leaks from passing trains and accidental spills during transport, loading, or unloading. Railroad tie preservatives may contain substances

(e.g. arsenic, creosote, and pentachlorophenol) that can leach out into surrounding soil and groundwater.

The construction of the I-29 segment through Sioux City was completed in 1961. Paint coatings used on bridges during this time period may have contained lead compounds. Any modifications to or reconstruction of bridges along the segment may require special abatement and handling procedures to protect human health and the environment.

Areas of known or potential contamination by hazardous substances are referred to as recognized environmental conditions. A recognized environmental condition (REC) is a term defined in American Standard Testing and Materials (ASTM) Standard Practices E 1527-05 for Phase I Environmental Site Assessments and refers to the presence of a release of regulated substances into the environment. It excludes minimal conditions that would not be subject to an enforcement action.

A review of public records and on-site investigation identified 170 RECs located within or adjacent to the project study area. Due to the quantity of sites within the project corridor, the identified RECs were prioritized as high-risk, moderate-risk, or low-risk for potential to impact the proposed improvements of the I-29 Sioux City Interstate Study. In the project corridor, 14 sites were identified as being high-risk REC sites which indicates that they have known or suspected presence of contamination above minimum Iowa DNR cleanup levels or require further subsurface investigation. The high-risk sites are listed in Table 3-25, *High-Risk Recognized Environmental Conditions (RECs)*. The REC Number in the Table corresponds to the REC Number shown in Figures 3-5a, 3-5b, and 3-5c. Generally, these high risk sites would warrant further soil and groundwater testing to determine the nature and extent of contamination as part of a property transaction.

The evaluation of environmental impairment and reference to Iowa DNR cleanup levels stem from the regulatory programs outlined in the Iowa Administrative Code (IAC). Evaluation of environmental impairment not associated with USTs involves risk-based evaluation and response action through the voluntary Land Recycling Program (LRP) as set forth in IAC 567-137(457B) *Chapter 137: Iowa Land Recycling Program and Statewide Response Action Standards* (IAC 137). In the event that contamination is associated with USTs, IAC 137 defers to the evaluation criteria outlined in IAC 567-135(455B) *Chapter 135: Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks* (IAC 135).

Table 3-25. High-Risk RECs

REC Number	Facility Name	Description of REC
24	Handy LC 110 Nebraska St.	Currently, a Chili's Restaurant occupies this site, which is the same location as REC 117. This site was used as a filling station. The site had a release of petroleum product or suspected release of petroleum product on or before 1990. The site had three high-risk regulated fuel tanks removed in 1992. Several monitoring wells exist in the parking lot.
34	HCI-Heritage Express 711 Gordon Dr.	This site is currently used as a filling station and had a release of petroleum product or suspected release of petroleum product on or before 1990. The site had a regulated fuel tank removed in 1990. Other active regulated fuel tanks and non-regulated hoist oil tanks are located onsite.
38	Holiday Station (Van Wyhe Enterprises, LLC) 1005 Gordon Dr.	Currently this site has been an auto service station since 1949 and prior to that used as a junk yard. The site had a release of petroleum product or suspected release of petroleum product on or before 1995. The site had three high-risk regulated fuel tanks removed in 1995. Residual free-product is suspected onsite. The EDR data search revealed other possible regulated USTs onsite. This site is listed as a RCRA generator.
45	Mid-America Dairymen (I L L INC) 205 S. Court St.	This site was used as a filling station. Several monitoring wells exist in the parking lot. The site had a release of petroleum product or suspected release of petroleum product on or before 1995. The site had five regulated fuel tanks removed in 1995. Residual groundwater contamination is suspected onsite. Currently, no further action is required.
46	Bill's 76 Service (Jolin Jon J) 1017 Dace Ave.	This site has been a filling station since 1949. The site had a release of petroleum product or suspected release of petroleum product on or before 1994 and was later closed. Residual soil contamination is suspected onsite. The EDR data search revealed other possible regulated USTs onsite.
57	MidAmerican Energy (Sioux City Gas and Electric) 223 S. Iowa St.	This site has been a gas and electric power plant since 1949 and currently has underground storage tanks. The site is listed as a CERCLIS-NFRAP site. The site is listed as a RCRA conditionally exempt small quantity generator.
58	Hobson Kitchen (Sioux City Community School District) 222 S. Floyd Blvd.	Several monitoring wells were found on site as well as vent pipes from underground storage tanks. The site had a release of petroleum product or suspected release of petroleum product on or before 1991. The site had one regulated fuel tank removed in 1991. Residual groundwater contamination is suspected onsite. Currently, no further action is required. The EDR data search revealed other possible regulated USTs onsite.
60	Ivy's Liquor Store (Nguyen Liquors INC) 301 S. Floyd Blvd.	This site is currently used as a filling station. The site had one tank repaired in 1990 to stop a fuel leak. Residual free-product is suspected onsite. Groundwater and soil contamination is suspected onsite. The EDR data search revealed other possible regulated USTs onsite.
67	Saunders Oil Company 506 S. Floyd Blvd.	Aboveground storage tanks have been evident on this site since 1938. The site had a release of petroleum product or suspected release of petroleum product on or before 1990. Four diesel tanks were removed. Free product is suspected onsite. The EDR data search revealed other possible regulated UST/ASTs onsite.

REC Number	Facility Name	Description of REC
68	Nutra-Flo Company 514 S. Floyd Blvd.	Large railcars with various hazardous chemicals were noted onsite. Historical data indicated several spills have occurred onsite. Numerous storage tanks are located on the property. One fuel tank was removed. Residual soil contamination is suspected onsite from various organic and inorganic chemicals. The site is a RCRA conditionally exempt small quantity generator that has received four RCRA violations since 1998.
73	John Morrell & Co. 1200 Bluff Rd.	This site is a small quantity generator and has had three reported anhydrous ammonia spills over the last five years, and received two RCRA violations since 2000.
100	Former Auto Repair 1109 Dace Ave.	This site has been used for auto repair since 1949. This site has a leaking underground storage tank and underground storage tanks. Residual groundwater contamination is suspected onsite. Currently, no further action is required.
101	Former Gas Station 1122 Dace Ave.	This site was used as a filling station. This site has a leaking underground storage tank and underground storage tanks. Residual groundwater contamination is suspected onsite. Currently, no further action is required.
117	Midtown APCO 611 Gordon Dr.	This site is currently a Chili's Restaurant (same location as REC 24). This site was used as a filling station. Several monitoring wells exist in the parking lot.

3.12.2 Environmental Consequences

Potential and known regulated material impacts are presented in the following sections for three build alternatives and the No-Build Alternative.

The Iowa DOT conducted a review of the project corridor in August 2006. The Iowa DOT concluded that the proposed roadway alignments could involve sites potentially impacted with regulated materials. Further, it has been determined that not all of the sites could be avoided by the project alternatives. For any contaminated parcel needed for right-of-way expansion, further subsurface investigation is recommended in order to define the precise location and concentration of potential contamination. Right-of-way expansion onto these parcels could expose construction workers to regulated materials during roadway construction or during the relocation or installation of public utilities. Additionally, these parcels could expose Iowa DOT to contaminant cleanup cost liabilities.

The Iowa DOT reviewed the USEPA listing of potential, suspected, and known hazardous waste or hazardous substance sites in Iowa (that is, the Comprehensive Environmental Response Compensation and Liability Information System [CERCLIS]) on February 28, 2007 to ascertain whether the project will affect any listed sites. One CERCLIS site, General Motors, S.C., was identified in the project corridor for all three Build Alternatives. The proposed project will neither involve nor affect any other CERCLIS sites in the project corridor.

No Build Alternative

Under the No-Build Alternative there would be no change in environmental conditions along the project corridor. Known regulated material sites would continue to be addressed through the existing Iowa DNR or EPA regulatory processes.

Alternative A

Alternative A would cause the lowest total area impact on properties with recognized environmental conditions (RECs) among the Build Alternatives. The proposed roadway alignment under this alternative will impact 1.8 acres (3.29%) of potentially contaminated parcels in the project corridor. The REC sites with the most potential for concerns regarding regulated materials under Alternative A include 1100 Tri View Ave (I L L Inc.), 301 S. Floyd (Nguyen Liquors, INC), 514 S. Floyd (Nutra-Flo Company), and 1101 Tri View Avenue (Sioux City Water Treatment Plant (WTP)). These sites have potential soil and groundwater contamination or they generate regulated material waste on-site.

Although Alternative A has no right-of-way acquisition planned for several REC sites, potential subsurface contamination from these facilities could create additional environmental impacts on the proposed alternative. Residual soil contamination from several leaking underground storage tank REC sites (RECs 34, 38, 45, 46, 57, 58, 100, 101, 117, 132 as presented in Table 3-23, *High-Risk Recognized Environmental Conditions* and RECs 200-202 as presented in Table 3-22, *Hamilton Boulevard Study RECs*) within the project corridor and the CERCLA cleanup site (REC 206 and 207 as presented in Table 3-22, *Hamilton Boulevard Study REC*) should be investigated prior to commencing construction activities.

Table 3-26, *Impacted REC Parcel Report – Alternative A*, identifies potential REC parcel impacts associated with Alternative A. These sites are depicted on Figures 3-5a, 3-5b, and 3-5c, *Regulated Materials*.

Table 3-26. Impacted REC Parcels Report - Alternative A

Parcel Name	Address	PIN Number	Parcel Impact Summary		
			Total (acres)	Impact (acres)	% of Total
Bekins Merchandise Storage Inc	1153 Tri View Ave.	894729335001	5.99	< 0.01	0.02
City of Sioux City WTP	1101 Tri View Ave.	891729451004	8.08	0.67	8.25
Handy LC	110 Nebraska St.	894728383003	1.39	0.03	1.91
I L L Inc.	1100 Tri View Ave.	894729377003	0.57	0.57	99.36
John Morrell & Co	1200 Bluff Rd.	894734301001	13.05	0.31	2.38
Nguyen Liquors, INC	301 S. Floyd Blvd.	894733232002	0.38	0.06	15.07
Nutra-Flo Co	514 S. Floyd Blvd.	894733277011	3.47	0.05	1.30
Nutra-Flo Co (barge facility)	514 S. Floyd Blvd.	894733277011	1.38	0.15	10.52
Saunders Oil Co	506 S. Floyd Blvd.	894733277007	0.52	< 0.01	0.01
Sioux City LLC C STE 303	1805 Zenith Dr.	894729351001	2.11	< 0.01	0.02
Sioux City LLC	1801 Zenith Dr.	894730476001	18.32	< 0.01	0.01
Total			55.25	1.82	3.29
Total Parcels = 11 Parcel Impact Percentage Summary: Average = 12.62, Maximum = 99.36, Minimum = 0.01.					

Alternative B

Alternative B would cause the next lowest total area impact on REC properties in the project corridor. The proposed roadway realignment under this alternative will impact 2.0 acres (3.56%) of potentially contaminated properties in the project corridor. The REC sites with the most potential impact under Alternative B include 1100 Tri View Ave (I L L Inc.), 205 S. Court (Mid-American Dairymen), 301 S. Floyd (Nguyen Liquors, INC), 514 S. Floyd (Nutra-Flo Company), 1005 Gordon Drive (Holiday Station), 1200 Bluff Road (John Morrell & Co.), and 1101 Tri View Ave (Sioux City WTP). These sites have potential soil and groundwater contamination or they generate regulated material waste on-site.

Similar to Alternative A, Alternative B right-of-way acquisition and construction could be affected by REC sites that exist outside of planned right-of-way. Contaminants from leaking underground storage tank sites outside of proposed right-of-way can impact both soil and groundwater within proposed right-of-way as they move vertically and horizontally with groundwater movement. Residual soil contamination from leaking underground storage tanks found at several REC sites (34, 46, 57, 58, 100, 101, 117, 132 as presented in Table 3-23, *High-Risk Recognized Environmental Conditions* and RECs 200-202 as presented in Table 3-22, *Hamilton Boulevard Study RECs*) within the project corridor and the CERCLA cleanup site (REC 206 and 207 as presented in Table 3-22, *Hamilton Boulevard Study RECs*) should be investigated prior to commencing construction activities.

Table 3-27, *Impacted REC Parcel Report – Alternative B*, identifies all potential parcel impacts associated with Alternative B. These sites are depicted on Figures 3-5a, 3-5b, and 3-5c, *Regulated Materials*.

Table 3-27. Impacted REC Parcels Report - Alternative B

Parcel Name	Address	PIN Number	Parcel Impact Summary		
			Total (acres)	Impact (acres)	% of Total
Bekins Merchandise Storage Inc	1153 Tri View Ave.	894729335001	5.99	< 0.01	0.01
City of Sioux City WTP	1101 Tri View Ave.	891729451004	8.08	0.64	7.87
I L L Inc.	1100 Tri View Ave.	894729377003	0.57	0.57	99.36
Mid-American Dairymen	205 S. Court St.	894733205004	0.92	0.11	27.50
John Morrell & Co	1200 Bluff Rd.	894734301001	13.05	0.31	2.38
Nguyen Liquors, INC	301 S. Floyd Blvd.	894733232002	0.38	0.06	14.82
Nutra-Flo Co	514 S. Floyd Blvd.	894733277011	3.47	0.07	1.89
Nutra-Flo Co (barge facility)	514 S. Floyd Blvd.	894733277011	1.38	0.15	10.52
Saunders Oil Co	506 S. Floyd Blvd.	894733277007	0.52	< 0.01	0.06
Sioux City LLC C STE 303	1805 Zenith Dr.	894729351001	2.11	< 0.01	0.02
Sioux City LLC	1801 Zenith Dr.	894730476001	18.32	< 0.01	0.01
Holiday Station	1005 Gordon Dr.	894733203002	0.35	0.06	18.22
Total			55.13	1.96	3.56%
Total Parcels = 13 Parcel Impact Percentage Summary: Average = 14.05, Maximum = 99.36, Minimum = 0.01.					

Alternative C

Alternative C would cause the highest total area impact on REC properties in the project corridor. The proposed roadway realignments under this alternative will impact 2.2 acres (4.02%) of potentially contaminated properties in the project corridor. The REC sites with the most potential impact under Alternative C include 301 S. Floyd (Nguyen Liquor INC), 514 S. Floyd (Nutra-Flo Company), 506 S. Floyd (Saunders Oil Company), 1200 Bluff Road (John Morrell & Co.), and 1101 Tri View Ave (Sioux City WTP). These sites have potential soil and groundwater contamination or they generate regulated material waste on-site.

Although Alternative C has no right-of-way acquisition planned for the following high-risk REC sites, potential subsurface contamination from these facilities could create additional environmental impacts on the proposed alternative. Residual soil contamination from leaking underground storage tanks found at several REC sites (24, 34, 38, 45, 46, 57, 58, 100, 101, 117, 132 as presented in and RECs 200-203 as presented in Table 3-22, *Hamilton Boulevard Study RECs*) within the project corridor and the CERCLA cleanup site (REC 206 and 207 as presented in Table 3-22, *Hamilton Boulevard Study RECs*) should be investigated prior to commencing on-site construction activities.

Table 3-28, *Impacted REC Parcel Report – Alternative C* identifies potential parcel impacts associated with Alternative C. These sites are depicted on Figures 3-5a, 3-5b, and 3-5c, *Regulated Materials*.

Table 3-28. Impacted REC Parcels Report - Alternative C

Parcel Name	Address	PIN Number	Parcel Impact Summary		
			Total (acres)	Impact (acres)	% of Total
Bekins Merchandise Storage Inc	1153 Tri View Ave.	894729335001	5.99	< 0.01	0.01
City of Sioux City WTP	1101 Tri View Ave.	891729451004	8.08	0.70	8.69
I L L Inc.	1100 Tri View Ave.	894729377003	0.57	0.00	0.00
John Morrell & Co	1200 Bluff Rd.	894734301001	13.05	0.33	2.52
Nguyen Liquors, INC	301 S. Floyd Blvd.	894733232002	0.38	0.07	18.81
Nutra-Flo Co	514 S. Floyd Blvd.	894733277011	3.47	0.72	20.77
Nutra-Flo Co (barge facility)	514 S. Floyd Blvd.	894733277011	1.38	0.18	13.12
Saunders Oil Co	506 S. Floyd Blvd.	894733277007	0.52	0.16	30.44
Sioux City LLC C STE 303	1805 Zenith Dr.	894729351001	2.11	< 0.01	0.02
Sioux City LLC	1801 Zenith Dr.	894730476001	18.32	< 0.01	0.01
Total			53.87	2.17	4.02
Total Parcels = 10 Parcel Impact Percentage Summary: Average = 9.44, Maximum = 30.44, Minimum = 0.00.					

3.13 Visual Resources/ Aesthetics

3.13.1 Affected Environment

In general, this section describes how the interstate looks from two primary viewing perspectives. The two perspectives are from vehicles driving on I-29 and their view of the project study area and Sioux City and then from people who are in Sioux City viewing the interstate system.

The I-29 project study area contains three different areas of visual resources. These areas are:

- Western End - Northern project study area limit to Wesley Parkway
- Central Area - Wesley Parkway to Floyd Boulevard
- Southern End - Floyd Boulevard to the southern project study area limit

As a person views I-29 in the northern end of the project study area, the existing viewshed² includes commercial properties to the north and parkland to the south. The commercial properties include buildings such as warehouses, office space, retail, and restaurants. The area to the south is Chris Larsen Park that extends throughout the majority of the project study area on the south. In the northern end of this park, the amenities include a boat launch area, marina, a restaurant, an actual dry docked riverboat that functions as a museum, welcome center, picnic areas, associated parking lots, and a paved trail that connects these amenities. This section of the project study area includes on and off ramps for the Hamilton Boulevard Interchange and the tri-level Wesley Parkway Interchange.

Looking toward the downtown area, between Wesley Parkway and Floyd Boulevard, the existing viewshed includes commercial properties to the north and parkland to the south. The commercial properties in this section of the project study area are generally taller than and are located closer together than those located in the northern end. In addition to numerous hotels, restaurants, gas stations and big box type retail stores; the Tyson Events Center and the Sioux City Convention Center are located in this area. Looking to the south, Chris Larsen Park includes an outdoor amphitheater, flower garden, playgrounds, memorial garden, the Argosy Riverboat Casino, associated parking lots, and trail that connects these amenities. This section of the project study area includes on and off ramps for the Wesley Parkway Interchange, Nebraska and Pierce Street Interchange, and the Floyd Boulevard Interchange.

The existing view of the southern portion of the project study area includes more industrial type properties to the north/east and the Missouri River to the south/west. The industrial properties include the Nutra Flo property with several tall, above ground storage tanks; a tall brown wall that blocks the view of a portion of the John Morrell hog processing plant. In addition, the Floyd

² In general, a “viewshed” is defined as an area of land, water, and other environmental elements that is visible from a fixed vantage point.

River and Bacon Creek are man-made drainage structures that flow under I-29 towards the Missouri River. To the south/west, the viewshed includes a grassy slope towards the Missouri River. Roadway vehicle passengers are able to see river boat and barge traffic while driving along I-29. This section of the project study area includes on- and off-ramps for the Floyd Boulevard Interchange in addition to the truss style BNSF Railway Bridge that spans the Missouri River.

3.13.2 Environmental Consequences

In general, the viewshed in the project study area would be similar to what currently exists if any of the proposed build alternatives were constructed. I-29 would appear wider, with six travel lanes instead of four, and some of the on and off ramps would appear to be located slightly different than what currently exists.

The viewshed, from a vantage point along the mainline of I-29 improved corridor under any of the build alternatives, would be similar to the existing viewshed. The view along I-29 in the northern end and in the downtown area of the project study area includes commercial properties to the north and parkland to the south. The view along I-29 in the southern end of the project study area includes industrial type properties to the north/east and the Missouri River to the south/west.

The differences between the three build alternatives are the configuration of on and off ramps between Wesley Parkway and Floyd Boulevard. Because the location of proposed exit ramps differs among Alternatives A, B, and C, the view as a driver approaches each of these ramps would be different slightly from each other and from existing conditions.

Two areas that would change slightly under all three build alternatives would be the Nebraska/Pierce Interchange and the Wesley Parkway Interchange. The vertical profile of I-29 would change near the Nebraska/Pierce Interchange in the downtown area under all three build alternatives. Lowering the hill in this area could slightly improve the view of downtown Sioux City or the riverfront area from I-29. Under all three build alternatives, the tri-level interchange at Wesley Parkway would be reduced to a bi-level interchange. Both of these changes in the vertical appearance of the interstate are expected to enhance the viewshed of the downtown area or the riverfront area from I-29. Conversely, the viewshed from the downtown area or riverfront area looking at the improved interstate under any of the build alternatives is expected to be slightly enhanced.

From the vantage point of the bluffs that over look the interstate and downtown area, the viewshed of the proposed improvements under any of the Alternatives would be similar to the existing viewshed. One would see more pavement as the interstate is widened to six lanes with additional pavement from collector and distributor roads. The overall aesthetic appeal of the corridor would remain relatively unchanged as landscape enhancements have not been incorporated into any of the Alternatives.

3.14 Energy

The operation of vehicles and construction of highway projects consume energy. Vehicle energy consumption includes the use of petroleum-based and alternative fuels to travel on the roadway. Fuel usage is affected by the vehicle type, roadway grades and other geometric characteristics, speed, congestion, and other factors. Construction-related energy consumption includes manufacturing new materials and equipment to construct the roadway as well as fuels used for construction equipment operation.

The construction of any of the three Build Alternatives would require the consumption of energy to remove and add new pavement, structures, and other related construction activities. The process of making Portland cement used in the concrete for the proposed improved roadway is also an energy intensive process. However, the energy consumed to construct one of the proposed Build Alternatives could be at least partially offset by newer and smoother pavements, more consistent and decreased grades, reduced congestion, and uniform travel speeds, which would all help to reduce vehicle fuel consumption.

3.15 Construction and Operational Impacts

Construction work associated with the implementation of all three of the proposed build alternatives would include:

- Clearing and grubbing
- Grading of the road bed and embankments
- Constructing drainage ways and ditches
- Constructing bridges

- Paving operations
- Landscaping

Construction impacts are generally temporary and end shortly after the project is completed. Impacts typically associated with construction include effects on air quality, increase in noise levels, traffic and accessibility issues, and solid waste disposal issues. Construction impacts would be limited to minimal impacts originating from planned and future maintenance projects under the No-Build Alternative.

Removing vegetation and topsoil during initial clearing, grubbing, and grading work presents the potential for erosion. Areas adjacent to the Missouri River, Floyd River, Perry Creek, Bacon Creek, and wetland areas in the project study area have the greatest potential for adverse water quality impacts. Drainage ditch construction also provides a source of sedimentation to these waterways. Temporary air quality impacts may be caused by dust from the construction site and in use of on-site concrete making equipment or rubble crushing equipment. These types of

construction activities could impact the air and water quality temporarily through the duration of construction. Construction of the Floyd River Bridge could have temporary adverse impacts on water quality because of an increase in sediment loading. More information on construction and operational impacts to surface waters can be found in Section 3.3, *Surface Water and Water Quality*.

3.15.1 Erosion and Sediment Control

According to the Iowa DOT's *Design Manual*, proper erosion control methods would be employed to minimize erosion and sedimentation. Erosion control devices would be installed before the onset of construction work that could cause erosion. Temporary or permanent erosion control methods would include silt fences, retention basins, detention ponds, interceptor ditches, seeding and sodding, riprap on exposed banks, erosion mats, and mulching. Disturbance of streamside vegetation would be kept to a minimum. Disturbed areas would be seeded or stabilized upon completion of construction and potentially intermittently prior to completion of construction if necessary.

Drainage systems would be maintained, restored, or re-established in a manner that would not impound water. Construction staging areas would be selected in accordance with special provisions to ensure that the staging areas would not adversely affect water resources.

The Iowa DOT's *Construction Manual* requires contractors to reduce the amount of soil leaving the project site. In addition to methods mentioned previously to control erosion, stabilized crop seeding is identified as the most effective erosion control device and would be applied during the grading process. The contractor would also be required to submit an erosion control work plan. This plan should list the following:

- The materials and equipment to be used;
- The location and timing of installation of silt fences, silt basins, and other temporary erosion control measures outlined on Standard Road Plan RL-9-Temporary Erosion Control Measures; and
- The schedule for placement of stabilizing crop seeding and fertilizing.

3.15.2 Air Quality and Dust Control

The primary potential construction impact on air quality would be fugitive dust or particulates resulting from soil exposed to wind and traffic. The quantity of fugitive dust from the construction activities would vary depending on the construction location, the activities, the moisture of the soil, and weather conditions like speed of the wind and rain. Construction activities may generate fugitive dust that may be a nuisance in nearby areas. However, the contribution of the proposed project to the total suspended particulates in the surrounding area would be small and occur for a short duration.

During construction, blowing dust from areas cleared or excavated for access or construction purposed can be minimized in several ways. Water can be applied to unpaved road surfaces. The effectiveness of watering for fugitive dust control depends on the frequency or application. During dry conditions, it is estimated that watering an entire area twice daily would reduce dust emissions by as much as 50 percent. These measures would be employed as needed during construction of the proposed improvements to control fugitive dust. Construction vehicles would also emit carbon monoxide, hydrocarbons, and nitrogen oxides. Ambient concentrations, however, would not be increased significantly by operation of construction vehicles and machinery.

The contractor would be responsible for controlling the dust and airborne dirt generated by construction activities. When circumstances warrant, such as at a site with low levels of petroleum contamination, a specific dust control plan would be developed. The contractor and Iowa DOT would review the nature and extent of the dust generating activities and cooperatively develop specific types of control techniques appropriate to that specific situation.

3.15.3 Construction Noise

Construction noise would be controlled in accordance with *Iowa DOT Policy Number 500.07-Highway Traffic Noise Analysis and Abatement*. Construction noise would be minimized by the use of mufflers on construction equipment. Air compressors would meet federal noise level standards and would, if possible, be located away or shielded from sensitive noise receivers, especially during night time hours.

3.15.4 Traffic

A traffic management plan would be developed and implemented during the construction phase of the project to provide reliable access to residences, businesses, community facilities and services, and local roads. A preliminary staging plan was developed for this project to determine the feasibility of constructing each of the build alternatives. Refinements to this plan would occur during the design phase of this project. The preliminary staging plan was based on the following assumptions:

- Two lanes of traffic would be maintained in both directions on the mainline of I-29, except for one likely site in the area of Bacon Creek Bridge where a single lane in each direction would be maintained;
- No two consecutive ramps would be closed at the same time;
- No designated detoured traffic routes would utilize Chris Larsen Park Road;
- Active traffic would continue during I-29 bridge construction at most locations. Limited closures would be allowed for setting beams and pouring bridge decks at night, on weekends, and on non-event dates; and
- Pedestrian traffic in the project study area would be maintained when possible during construction.

All three build alternatives would be constructed in a similar fashion. The first step would be to construct the portions of the improvements that are located “in the clear”, meaning they are off to the side of traveled lanes, or are needed to setup for the first major construction activities. The second step would be to construct the outside lanes in the northbound direction. The third step would be to construct the remaining improvements to the northbound lanes. The fourth step would be to construct the southbound lanes while traffic is using the newly constructed northbound lanes. Additionally, segmentation of the project construction could occur during any of the steps listed above to accommodate funding constraints.

3.15.5 Solid and Hazardous Waste

In accordance with the state and federal regulations, the contractor would dispose of grass, shrubs, trees, old pavement, miscellaneous debris, and other solid waste generated during construction.

Special response measures would be required should accidental spills of hazardous materials and wastes during construction or if subsurface contamination is found during construction occur. These occurrences would be handled in accordance with the local government response procedures. The first response is typically through the local fire department and emergency service personnel to ensure public safety and to contain the substance from harming the environment. Depending on the nature and location of the spill, the Iowa DNR would be notified to provide additional instructions regarding cleanup.

3.16 Cumulative Actions and Impacts

The Council on Environmental Quality (1997) defines cumulative impacts as “The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions” (40 CFR § 1508.7). Unlike direct impacts, which are well defined and occur most often within the vicinity of the proposed alignment, and indirect impacts, which occur within a limited geographic area, cumulative impact analysis seeks to generate a broader understanding of overall impacts to resources over time and geography.

The cumulative effects of the I-29 improvement project are the sum of its direct and indirect impacts, added to those impacts of past, present, and reasonably foreseeable future actions of other projects. The predominant factor in this project’s indirect and cumulative effects analysis is the anticipated changes to and conversion/redevelopment of existing land uses that the project Build Alternatives would cause in the project corridor in Sioux City, Iowa.

The I-29 project has the potential for indirect and cumulative impacts. For example, improved access in the downtown area of Sioux City could stimulate greater use of vacant office space downtown or the creation of new businesses and existing business expansions. Increased business activity creates job opportunities that attract employees to the area. New employees relocating to the area could spur residential development, which in turn impacts schools and

community support facilities and services. Additional residents also create demand for additional businesses and services, and thereby creating the potential for further development. Indirect effects from the proposed project itself are discussed above in the *Environmental Consequences*, subsections for those resources that might be subject to indirect effects.

Resource Areas Analyzed

The cumulative impacts for three resource areas, land use, traffic and transportation systems, and Socioeconomics, were considered cumulative effect issues that warranted detailed analysis for this project due to the proposed action having a substantive direct and/or indirect impact on these specific resources or resource areas. Other resource areas subject to potential direct and indirect impacts were evaluated and the potential for cumulative impacts was determined to be negligible based upon that no substantive direct or indirect impact on the resource areas would likely occur. As a result, those resource areas were not presented in this cumulative impact analysis. The resource areas not discussed with regard to potential cumulative impacts included:

- Public facilities and services;
- Noise;
- Wetlands and surface waters;
- Ecological Resources;
- Stormwater and drainage;
- Floodplains; and
- Visual and aesthetics.

The potential for cumulative effects on land use, traffic and transportation, and socioeconomics resource areas in the Sioux City region would result from the direct conversion of existing privately-owned parcels to public right-of-way. Changes in or reconfigurations of access to the land uses in the area could also potentially contribute to changes in land uses. It is not expected that construction of any of the three Build Alternatives would generate wholesale changes in land use away from the vicinity of the project corridor as the I-29 corridor and surrounding vicinity are densely developed with commercial, industrial, and some residential land uses. In areas where the corridor is not considered urbanized or developed, topography and other geographical limitations exist so that development of those areas is unfeasible or highly unlikely.

The conversion of commercial and industrial property to right-of-way by any of the three alternatives could potentially displace existing business and associated buildings, resulting in potential localized social and economic impacts. Impacts could range from job relocations or losses leading to loss of income, short-term property and sales tax losses, and consolidation and redevelopment of parcels.

Transportation system impacts include minor changes in circulation in downtown areas of the City of Sioux City, especially in areas in close vicinity to the existing I-29 roadway. Construction of any of the Build Alternatives is expected to result in increased mobility in the

project area resulting from decreased congestion and reconfigured access points that better distribute traffic to the downtown area.

Past, Present, and Future Actions

Several past, present, and reasonably foreseeable future actions, when considered with the potential impacts of the proposed I-29 improvements, could affect the resources identified as subject to potential cumulative effects in the project corridor. Those more noteworthy past, present, and reasonably foreseeable actions that may have either impacted (directly or indirectly) traffic operations or resources in the project area include the following:

North American Free Trade Act (NAFTA) - NAFTA is a comprehensive trade agreement linking Canada, the United States, and Mexico in a free trade sphere. NAFTA went into effect on January 1, 1994. The Act called for immediately eliminating duties on half of all U.S. goods shipped to Mexico and gradually phasing out other tariffs over a period of about 14 years. Restrictions were to be removed from many categories, including motor vehicles and automotive parts, computers, textiles, and agriculture. The treaty also protected intellectual property rights (patents, copyrights, and trademarks) and outlined the removal of restrictions on investment among the three countries. Provisions regarding worker and environmental protection were added later as a result of supplemental agreements signed in 1993. A suspected result of NAFTA includes an increase of truck and rail shipments between Canada, the United States, and Mexico. I-29, via I-35, is a primary linking route between Canada and Mexico and has seen a steady rise in truck volumes providing one of four interstate crossing points into Canada.

Army Corps of Engineers' (USACE) "Spring Pulse" on the Missouri River – The Revised (March 2006) Missouri River Mainstem Reservoir Master Water Control Manual prepared by the USACE includes provisions for a "spring pulse", or seasonal rise, on the Missouri River. The plan for a seasonal rise was developed in response to the US Fish & Wildlife Services' amended Biological Opinion document that stated a spring rise would be beneficial to habitat and spawning habits of the endangered pallid sturgeon. The USACE had traditionally attempted to maintain a steady, limited-fluctuation flow to maintain the 9-foot deep navigable channel for barge shipping from Sioux City to points south.

As a result of the spring rise, less water is typically available for release by the Missouri River dam system during the drier summer months. Spring rains and snowmelt runoff were typically stored in reservoirs for release during the drier summer and fall seasons to maintain the minimum water level needed for barge navigation. A multiyear drought in the upper reaches of the Missouri River watershed has shortened or eliminated barge shipping seasons the past few years due to low water levels, and intentional spring water level rises which reduce available water storage for release to maintain minimum levels needed for barge traffic.

The reduction or elimination of barge shipping seasons has resulted in the shift in mode of transport of goods that were previously shipped via barge. During the spring, barge traffic primarily carried fertilizer northward to terminals for distribution to agricultural operations, while fall shipments primarily carried harvested grain southward. These former barge shipments have shifted to rail and truck transportation modes, adding additional truck volumes to the regional highway system and I-29.

Stockyards Area Redevelopment – The Environmental Protection Agency (EPA), in cooperation with the City of Sioux City, selected the Stockyards area as a brownfields redevelopment project to assess, clean up, and reuse a 215-acre tract of land at the confluence of the Missouri and Floyd Rivers. Once a thriving industrial center for the livestock processing industry, the area has been declining since the 1950's with only a few packing plants remaining in business. Proposed reuse of the site includes agribusiness, light manufacturing, high technology, and warehouse and transportation facilities. While the area does not have direct access to I-29, future traffic volumes generated by the reuse facilities could potentially use the Floyd Boulevard interchange and I-29 to reach regional destinations.

I-29 Improvements – Two improvement projects on I-29 adjacent to this project corridor are currently underway. Iowa DOT efforts to improve I-29 west of the project corridor from the Big Sioux River (Iowa – South Dakota border) to Judd Street would include reconfiguring the Riverside Boulevard interchange geometry to increase safety, enhance connections to the local arterial system, and alleviate some merging issues between the Hamilton Boulevard and Riverside Boulevard interchanges. The project would be designed to accommodate future mainline I-29 expansion to six lanes.

Adjacent to the south end of the I-29 project corridor, the Iowa DOT is proposing to reconfigure the I-29 and US 20 system interchange and Singing Hills Interchange geometry and widen I-29 to six lanes. These improvements are also intended to alleviate merging issues between those two interchanges and enhance local arterial connections. The south termini of this project is approximately $\frac{3}{4}$ mile south of the Sioux Gateway Airport/Sergeant Bluff interchange and extends northward to $\frac{1}{4}$ mile south of the BNSF railroad Missouri River bridge structure.

The combination of these two projects on I-29, the possibility of a new interchange in the vicinity of 235th Street, and construction of any of the proposed Build Alternatives associated with this project could impact the amount of traffic utilizing I-29 and the overall functionality of I-29 through Sioux City. The roadway facility would become more attractive to use because of increased safety and capacity. Likewise, improvements to I-29 could indirectly spur development at interchanges and locations currently suffering from connectivity issues.

The Iowa DOT also programs other projects within the regional transportation system that can indirectly affect traffic and functionality of I-29. An example of such a project would be the maintenance of the Gordon Drive viaduct.

Other Planned Improvements – In addition to the I-29 improvements, there are other planned improvements to the area as identified in the Siouxland Interstate Metropolitan Planning Council Metropolitan Planning Organization's (SIMPCO) September 7, 2006 *2030 Long Range Transportation Plan*. These include major pavement rehabilitations on several city arterials including Hamilton Boulevard, Gordon Drive, Riverside Boulevard (IA12), Dakota Avenue, the US75 / US20 bypass, and Lewis Boulevard. Other notable projects planned for the area include, reconstruction of Villa Avenue from Panoah to Leonard Street, Floyd Boulevard / Dace Avenue Intersection improvements, reconstruction of Hamilton Boulevard from Wesley Parkway to West 1st Street, and the US Highway 77 Missouri River Bridge Rehabilitation.

Potential Cumulative Impacts

Analysis of the proposed I-29 project improvements, combined with other past, present, and reasonably foreseeable actions revealed the potential for cumulative impacts upon land use, socioeconomics, and the transportation system. Those impacts included:

Land Use – The direct conversion of land uses from non-transportation to transportation right-of-way would range from 15 to 18 acres of existing commercial and industrial property. The magnitude of the cumulative land use effects of the proposed action and other actions is minor. The proposed I-29 improvements are located in a densely developed commercial and industrial corridor. There is little vacant land available for development driven by the proximity to the I-29 roadway. However, redevelopment of existing commercial properties in the corridor could be spurred by transportation improvements. Land use policies and management at the local level can guide the orderly redevelopment of property at acceptable locations. The local zoning ordinance would restrict redeveloped properties to uses that are acceptable and appropriate for the given zone.

In addition, all of the proposed I-29 Build Alternatives were coordinated with local officials to ensure interstate access points and local street connections were consistent with the comprehensive plan's future land use plan. Also, construction of any one of the proposed three Build Alternatives has the potential to create excess parcels once construction is completed and traffic has been successfully transitioned to the new roadway facility. Excess parcels may provide additional property for redevelopment, including relocation of businesses displaced by construction of one of the proposed Build Alternatives. The ability to relocate within the general proximity of prior business operations can effectively minimize impacts to that business.

Socioeconomics - The magnitude of the cumulative socioeconomic effects of the proposed action and other actions is substantive. The original construction of I-29 combined with the other cumulative actions described above has contributed substantially to the social economy in the Sioux City MSA. The incremental effect of the proposed action addressed in this document is minor as relocation options in the vicinity of the I-29 corridor for businesses displaced by any of the proposed alternatives are likely to be available. Additionally, the Sioux City commercial property market is active with available properties throughout the metropolitan area providing ample opportunities to relocate. However, commercial property market conditions can and do change quickly, and the availability of vacant properties may vary in the future.

Construction of any of the proposed alternatives would likely result in new property and parcels available for redevelopment in the immediate vicinity of the I-29 corridor. Although none of the business that would be required to relocate due to construction of any of three proposed Build Alternatives are considered highway-oriented businesses, meaning that they are generally dependent upon pass-by traffic for customers, vacant excess parcels created by the proposed alternatives would be ideal for such businesses to locate. Relocation opportunities for industrial-based businesses, including distribution, warehousing, and chemical storage are available in several industrially-zoned areas in the metropolitan area. Reasonably foreseeable future actions such as development of an industrial and commercial area near 235th and I-29 would create additional opportunities for favorable relocation.

The availability of both commercial and industrial properties for relocation does not guarantee that displaced business would choose to occupy those properties or continue operations in the Sioux City metropolitan area.

Workers employed by businesses required to relocate are expected to maintain employment with those businesses. Those employees not wishing to relocate with their employer could be expected to find employment elsewhere in the Sioux City MSA. Several industries in the region have seen large gains in employment in recent years, including the manufacturing, retail trade, accommodation and food services, and finance and insurance business sectors. A low unemployment rate coupled with moderate to fast growth in those industries indicates an availability of employment opportunities if employees of displaced businesses wish to seek new employment opportunities.

While all three Build Alternatives involve the relocation of some businesses, including national, regional, and local companies, the reconstruction of I-29 has the potential to improve the overall competitive position of the Sioux City metropolitan area through improved access to downtown Sioux City. Businesses that are not displaced by any of the alternatives may still be impacted by changes to the transportation system, including changes to and reconfigured access points, as well as potential redevelopment initiatives undertaken by the City of Sioux City. Other cumulative actions coupled with I-29 improvements would improve mobility through the metropolitan area and could improve the ability to attract and retain businesses that depend on efficient goods movement and services.

Access changes associated with the proposed alternatives could result in beneficial and adverse impacts on some businesses in close proximity to the I-29 corridor. Retail businesses and other types of businesses dependent upon accessibility and visibility would be more directly affected by the physical proximity and access to a roadway. Although there are limited numbers of highway-oriented businesses near I-29 in downtown Sioux City, those that are located in the area could have their competitive position affected, both positively and negatively, by changes in access. The proposed alternative alignments and connections to the downtown area have been designed to minimize impacts to businesses while providing acceptable levels of accessibility.

An improved I-29 roadway facility can be expected to have a net positive overall impact on property values over the long-term, with improved access stimulating business development and retention. While values of individual properties may decline, the cumulative impact on property values is expected to be positive for the downtown Sioux City Downtown Central Business District, the City of Sioux City itself, and the Siouxland region as a whole.

While a direct loss of property tax revenue would be a result of the proposed Build Alternatives, cumulative actions combined with the proposed improvements in the I-29 corridor would result in improved mobility in the region. As previously discussed, transportation is one key factor that attracts businesses to specific locations. Improvements to the I-29 corridor could prove to be a catalyst that can result in redevelopment in the corridor. Such development would ultimately result in an increase in property taxes, likely offsetting property tax losses associated with construction of any of the Build Alternatives.

The long-range business impacts of reconstructing I-29 would also be a function of and dependent on regulatory controls such as tax incentives, future land use plans, and zoning regulations. Assuming that regulatory controls contribute to a favorable business climate, proposed improvements to I-29 would improve mobility throughout the Sioux City region and improve its ability to attract and retain businesses that depend on efficient and effective movement of goods and services.

Traffic and Transportation System – The magnitude of the cumulative traffic and transportation system effects of the proposed action and other actions is substantive. The original construction of I-29 combined with the other cumulative actions described above has contributed substantially to the overall effectiveness and utility of the transportation system in the Sioux City MSA. Proposed improvements to I-29 would result in additional improved mobility benefiting the Sioux City region. While the proposed improvements may represent a minor increment in the overall functionality of traffic on the Sioux City MSA transportation system, they are important to the continual improvement in safety and efficiency of that system. The improved mobility, including upgraded safety features, improved access to downtown Sioux City and points beyond, and increased system capacity would make downtown Sioux City more attractive for commerce. As more jobs are created, greater number of employees and patrons would be expected to utilize the improved I-29 roadway and subsequently put higher traffic volume demands on the system.

Likewise, the other cumulative actions described above would continue to have effects upon the local traffic and transportation system. NAFTA, reduced barge shipping due to low water conditions, other I-29 improvements, and the Stockyards redevelopment have been and would be expected to continue to generate higher amounts of pass-through heavy truck traffic as well as localized truck traffic participating in economic activity associated with those actions. Although the combination of effects of these actions would increase heavy truck traffic and traffic in general on the Sioux City regional and local transportation system, 2030 transportation modeling efforts have shown that reasonable traffic growth on the system can be accommodated during that timeframe.

3.17 Relationship of Local Short-Term Uses versus Long Term Productivity

All transportation projects require the investment or commitment of some part of resources found in the existing environment. *Short-term* refers to the immediate consequences of the project; *long-term* relates to its direct or secondary effects on future generations.

Short-term consequences of the proposed build alternatives include:

- Relocation of and impacts on businesses.
- Removal of private properties from tax rolls, thereby reducing property tax base.
- Conversion of floodplain and wetland to transportation use.

- Inconveniences to residents, business owners/suppliers, and employees during construction.

Some long-term benefits that may be realized from the recommended alternative include:

- An efficient transportation corridor along the Missouri River and through Sioux City that would provide better access for both daily commuting trips, special events trips, and interstate traffic.
- Improved motorist safety and convenience and reduced energy usage.
- Potential for new tax base in the project area by providing modern transportation infrastructure to accommodate the movement of goods and services and orderly residential and commercial development.
- Enhanced employment growth for the region, including increased wages and salaries.
- Regional economic development, including growth in the industrial sector.
- Reduced current and forecasted traffic congestion on the road network in the I-29 corridor area.
- The identification and preservation of protected resources.

The proposed I-29 improvements are developed from comprehensive transportation planning that considers the need for present and future traffic movement within the context of present and future land use development and the environment. Therefore, the local short-term impacts and use of resources by the proposed action is consistent with the maintenance and enhancement of long-term productivity.

3.18 Irreversible and Irretrievable Commitments of Resources

Implementation of the proposed action involves a commitment of a range of natural, physical, human, and fiscal resources. Land used in the construction of the proposed roadway improvements is considered an irreversible commitment during the time that the land is used for a highway facility. However, if a greater need arises for use of the land or if the highway facility is no longer needed, the land can be converted to another use. At present, there is no reason to believe such a conversion will ever be necessary or desirable.

Considerable amounts of fossil fuels, labor, and highway construction materials such as cement, aggregate, and bituminous material would be expended during construction of the proposed roadway improvements. Additionally, large amounts of labor and natural resources are used in the fabrication and preparation of construction materials. These materials are generally not retrievable. However, they are not in short supply and their use would not have an adverse effect upon continued availability of these resources. Any construction would also require a substantial one-time expenditure of both state and federal funds, which are not retrievable.

The commitment of these resources is based on the concept that residents in the immediate area, region, and state would benefit by the improved quality of the transportation system. These benefits would consist of improved accessibility and safety, savings in time, and greater availability of quality services which are anticipated to outweigh the commitment of these resources.

3.19 Permits and Related Approvals

No permits are required for the No-Action alternative.

The build alternatives could require the following permits for water resources:

- A water quality certification under Section 401 of the Clean Water Act, as amended would be required from Iowa DNR.
- A Section 404 permit, issued by the USACE, may be required for this project.
- A floodplain permit would be required from the Iowa DNR for work within floodplains.
- A Rivers and Harbors Act Section 10 permit, issued by the USACE, would be required for construction, modification, replacement, or removal of any bridge or causeway over a navigable waterway. (A Section 401 Water Quality Certification will be required as part of this permit.)
- The construction of the build alternatives would result in the disturbance of 1 or more acres of total land area and therefore required to obtain a National Pollutant Discharge Elimination Permit (NPDES) permit for stormwater discharges from the construction sites. The procedures and specifications in the NPDES permit and associated storm water pollution prevention plan (SWPPP) would ensure that BMPs are followed by the highway contractor.

In addition, the build alternatives would require the following permits and approvals:

- **Section 106** - Archaeological and historical surveys were conducted as part of the project in compliance with Section 106 of the National Historic Preservation Act of 1966, as amended. Requirements for Section 106 of the National Historic Preservation Act will be fulfilled to the satisfaction of the Iowa SHPO and coordination with the state historic preservation officer would continue throughout the design process.
- **Utilities** - Coordination with utility providers would also be required during design and construction to coordinate the relocation and replacement of utilities crossing the right-of-way as well as those using existing right-of-way permits and agreements.
- **Sovereign Lands Construction Permit** - This is a joint permit with floodplain development permit granted by the Iowa DNR.

3.20 Summary of Impacts

A comparison of impacts is described in Table 3-29.

Table 3-29. Summary of Impacts

Resource Area	No Build Alternative	Alternative A	Alternative B	Alternative C
Land Use				
Right of Way	No Impact	18.2 acres	15.0 acres	16.4 acres
Navigation	No Impact	No Impact	No Impact	No Impact
Utilities	No Impact	Adverse Impact	Adverse Impact	Adverse Impact
Socioeconomics				
Environmental Justice	No Impact	No Impact	No Impact	No Impact
Business Relocations	No Impact	6 businesses 8 structures	7 businesses 9 structures	4 businesses 4 structures
Property Taxes	No Impact	\$4 million decrease	\$2 million decrease	\$1.5 million decrease
Surface Water	No Impact	< 1% increase	< 1% increase	< 1% increase
Wetlands and Waters of the U.S.	No Impact	0.1 acres	0.1 acres	No Impact
Floodplains	No Impact	Negligible Impact	Negligible Impact	Negligible Impact
Ecological				
Federal Listed Species	No Impact	Bald Eagle* & Pallid Sturgeon Habitat	Bald Eagle* & Pallid Sturgeon Habitat	Bald Eagle* & Pallid Sturgeon Habitat
Air Quality	No Impact	Beneficial Impact	Beneficial Impact	Beneficial Impact
Noise	No Impact	No Impact	No Impact	No Impact
Cultural Resources				
Archeological	No Impact	No Impact	No Impact	No Impact
Historic Structures	No Impact	1.4 acres	0.7 acres	0.5 acres
Parks and Recreational Areas	No Impact	5.6 acres	4.0 acres	5.4 acres
Section 4(f) Properties	No Impact	No Impact	No Impact	No Impact
Regulated Materials	No Impact	10 parcels 1.8 acres	13 parcels 2.0 acres	10 parcels 2.2 acres
Visual Impacts	No Impact	Negligible Impact	Negligible Impact	Negligible Impact

* The bald eagle is proposed for delisting from the Federal Threatened and Endangered Species list in the fall of 2007.

Environmental Analysis

Figure 3-1a. Existing Land Use & Utilities

11x17 Graphic

Figure 3-1b. Existing Land Use & Utilities

11x17 Graphic

Figure 3-1c. Existing Land Use & Utilities

11x17 Graphic

Figure 3-2a. Proposed Additional Right-of-Way Needed

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Figure 3-2b. Proposed Additional Right-of-Way Needed

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Figure 3-2c. Proposed Additional Right-of-Way Needed

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Figure 3-3a. Natural Environmental Resources

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Figure 3-3b. Natural Environmental Resources

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Figure 3-3c. Natural Environmental Resources

11x17 Graphic

Figure 3-4a. Human Environmental Resources

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Figure 3-4b. Human Environmental Resources

11x17 Graphic

Figure 3-4c. Human Environmental Resources

11x17 Graphic

Figure 3-5a. Regulated Materials

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Figure 3-5b. Regulated Materials

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Figure 3-5c. Regulated Materials

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