

**I-80/380 SYSTEM INTERCHANGE**

JOHNSON COUNTY, IOWA

Project #

IMN-080-6(235)239-0E-52

**ENVIRONMENTAL ASSESSMENT**

Submitted Pursuant to 42 USC 4332(2)(c)

By The

U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION

and

IOWA DEPARTMENT OF TRANSPORTATION  
OFFICE OF LOCATION AND ENVIRONMENT

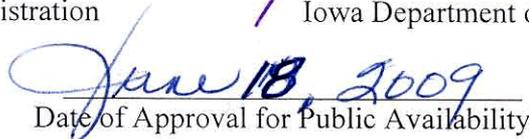
The signatures constitute acceptance of the general project location and concepts described in the environmental document unless otherwise specified by the approving officials. However, such approval does not commit to approve any future grant requests to fund the Preferred Alternative.



For the Iowa Division Administrator  
Federal Highway Administration



For the Office of Location and Environment  
Iowa Department of Transportation



Date of Approval for Public Availability

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## Preface

The Transportation Equity Act of the 21st Century (TEA-21) (23 CFR) mandated environmental streamlining to improve transportation project delivery without compromising environmental protection. In accordance with TEA-21, the environmental review process for this project has been documented as a streamlined environmental assessment (EA). This document addresses only those resources or features that apply to the project. This allowed study and discussion of resources present in the study area, rather than expense of effort on resources that were absent or unaffected. Although not all resources are discussed in the EA, they were considered during the planning process and are documented in the Streamlined Resource Summary (see Appendix A).

Table 1 lists the resources considered during the environmental review for the project. The first column with a check means the resource is present in the study area. The second column with a check means the impact to the resource warrants more discussion in this document. The other listed resources have been reviewed and are included in the Streamlined Resource Summary.

**TABLE 1**  
Resources Considered

SOCIOECONOMIC		NATURAL ENVIRONMENT	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Land Use	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Wetlands
<input checked="" type="checkbox"/>	<input type="checkbox"/> Community Cohesion	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Surface Waters and Water Quality
<input type="checkbox"/>	<input type="checkbox"/> Churches and Schools	<input type="checkbox"/>	<input type="checkbox"/> Wild and Scenic Rivers
<input checked="" type="checkbox"/>	<input type="checkbox"/> Environmental Justice	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Floodplains
<input checked="" type="checkbox"/>	<input type="checkbox"/> Economic	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Wildlife and Habitat
<input type="checkbox"/>	<input type="checkbox"/> Joint Development	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Threatened and Endangered Species
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Parklands and Recreational Areas	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Woodlands
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Bicycle and Pedestrian Facilities	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Farmlands
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Right-of-Way		
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Relocation Potential		
<input type="checkbox"/>	<input checked="" type="checkbox"/> Construction and Emergency Routes		
<input type="checkbox"/>	<input checked="" type="checkbox"/> Transportation		
CULTURAL		PHYSICAL	
<input checked="" type="checkbox"/>	<input type="checkbox"/> Historical Sites or Districts	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Noise
<input checked="" type="checkbox"/>	<input type="checkbox"/> Archaeological Sites	<input type="checkbox"/>	<input type="checkbox"/> Air Quality
<input type="checkbox"/>	<input type="checkbox"/> Cemeteries	<input checked="" type="checkbox"/>	<input type="checkbox"/> Mobile Source Air Toxics (MSATs)
		<input type="checkbox"/>	<input type="checkbox"/> Energy
		<input checked="" type="checkbox"/>	<input type="checkbox"/> Contaminated and Regulated Materials Sites
		<input type="checkbox"/>	<input type="checkbox"/> Visual
		<input type="checkbox"/>	<input type="checkbox"/> Utilities
<input type="checkbox"/>	CONTROVERSY POTENTIAL Low		
<input checked="" type="checkbox"/>	Section 4(f): Coralville's Park, in the southeast quadrant of the interchange, would be affected, and therefore, Section 4(f) coordination would be required. FHWA proposes to make a 4(f) <i>de minimis</i> impact determination.		

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## **1. Description of the Proposed Action**

The proposal involves improvements to the Interstate 80/Interstate 380/U.S. 218 (I-80/I-380/U.S. 218) System Interchange. The study area, in Johnson County, is within the corporate boundaries of three communities: Coralville, Tiffin, and North Liberty (Figure 1).

The improvement involves replacing all loop ramps with directional ramps. I-80 would be upgraded to an eight-lane section (four lanes each direction) having a closed median with a barrier section separating directions of travel. To the east, the proposed eight-lane section would transition to the existing six lanes near the Coral Ridge/IA 965 Interchange. To the west, the proposed eight-lane section would transition to the existing four lanes at the Ireland Avenue interchange. I-380/U.S. 218 would be upgraded to a six-lane section through the System Interchange. South of the interchange, U.S. 218 would transition back to the existing four-lane section near 355th Street SW. To the north, I-380 would transition back to the four-lane section south of Forevergreen Road. For ease of reference, this document refers to the project as the “System Interchange.”

## **2. Project History**

I-80 is an important link in both the state and national transportation network. It is one of the primary east-west interstates traversing the country. I-380 serves an important regional role in connecting Iowa City, Cedar Rapids, and Waterloo to one another and through the I-80/I-380/U.S. 218 System Interchange, to the national interstate system. I-380 and U.S. 218 also serve as important links in the Avenue of the Saints corridor. The Avenue of the Saints is an access controlled divided highway that extends more than 600 miles from St. Paul, Minnesota, to St. Louis, Missouri.

I-80 in this area was built as a four-lane interstate in 1962. In 2000, an I-80 eastbound acceleration and merge lane was built. I-80 was then widened and reconstructed to accommodate six through lanes between the System Interchange and the Coral Ridge/IA 965 Interchange in 2004.<sup>1</sup> I-380 in this area was first built to a four-lane interstate north of I-80 around 1970. In 1982, U.S. 218 was reconstructed to a four-lane divided freeway south of I-80. Various roadway maintenance improvements have been made to I-80 and I-380/U.S. 218 over the years.

## **3. Purpose and Need for Action**

### **3.1 Purpose of the Proposed Action**

The purpose of the project is to enhance mobility and safety by improving ramp and mainline geometry, increasing traffic flow, and addressing safety issues associated with the current interchange design.

### **3.2 Need for the Proposed Action**

The need for the project is based upon four factors:

- Accommodating existing and future traffic volumes and capacity
- Updating roadway geometry and interchange design

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<sup>1</sup> While the pavement width can accommodate 6 lanes, presently only 5 are marked (3 westbound and 2 eastbound).

- Improving safety
- Enhancing travel continuity and access

### 3.2.1 Traffic Volumes and Capacity

Figures 2 and 3 show that significant traffic growth is expected in the study area. By 2030, traffic volumes are projected to at least double for the roadways approaching and leaving the interchange. Along U.S. 218 south of the interchange, traffic volumes are projected to triple. Traffic volumes on the ramps are expected to increase similarly. As shown in Figure 4, volume on both the loops and directional ramps generally is expected to at least double by 2030.

Highway capacity is typically represented by an indicator called level of service (LOS), which is denoted as a range from A (best) to F (worst). LOS A through C represent traffic conditions under which speeds are not impeded by other vehicles, and maneuverability within the traffic stream is good. LOS D describes traffic that is generally moving but borders on a threshold at which small increases in traffic flow may cause substantial increases in delay and decreases in speed. LOS E and F are indicative of frustrating stop and go conditions, significant delays, and reduced travel speeds, and motorists experience recurrent traffic flow breakdowns. The 2030 No-Action LOS is expected to be LOS D and below for all segments, with I-80 in particular performing at LOS F.

### 3.2.2 Geometry and Interchange Design

The design features and characteristics of the existing System Interchange were assessed to determine their compatibility with current design standards and policy. Four elements were found not to be ideal or not to meet current AASHTO<sup>2</sup> design criteria:

- **Weaving distance**—The weaving lengths<sup>3</sup> between adjacent loop ramps are very short leading to reduced capacities and to the higher frequency of crashes at these locations.
- **Loop ramp radii and vertical geometry**—Several loop ramps have radii less than the desirable 250 feet, and the eastbound to northbound loop ramp has a grade of nearly 5 percent, the desired maximum per current criteria. The result is a sharp turning roadway combined with steep grades.
- **Decision sight distance approaching the interchange from the west**—The curvature of the I-80 profile near Jasper Avenue obscures the approaching pavement markings delineating the exit ramp to U.S. 218 southbound. Current design criteria call for a flatter roadway profile to provide additional sight distance to the exit ramp, allowing an approaching driver more time to process and make a decision on upcoming route change.
- **Stopping sight distance on I-80 near Clear Creek**—The curvature of the I-80 profile near Clear Creek is too sharp, limiting the sight distance available to a distance less than current design criteria.

Rectification of these issues would improve safety and the flow of traffic through the interchange.

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<sup>2</sup>AASHTO: American Association of State Highway and Transportation Officials.

<sup>3</sup>Weaving length is the area between entrance and exit ramps where entering and exiting vehicles cross paths while merging and diverging from the Interstate.

### **3.2.3 Safety**

The weaving sections throughout the interchange have crash rates higher than the comparable statewide average. The statewide average total crash rate<sup>4</sup> for an interstate freeway section is 75 crashes per 100 million vehicle miles traveled (VMT) and a fatal+injury crash rate<sup>5</sup> of 28 crashes per 100 million VMT. The I-80 and I-380/U.S. 218 freeway sections interior to the System Interchange have total/fatal+injury crash rates of 230/54 and 124/30 crashes per 100 million VMT respectively. A high frequency of crashes was observed at these locations, many the result of merging, diverging, and weaving movements between loop ramps and the resultant capacity constraints at the System Interchange. These locations and the relationship between high crash locations and traffic volumes are depicted in Figure 4.

Between 1999 and 2003, the predominant crash types (Figure 5) were those often related to the geometric features of the roadway (broadside, rollover, fixed object/run-off-the-road, sideswipe and rear-end). Such crashes are indicative of fast braking or sudden lane changes to avoid conflict with vehicles entering a roadway.

### **3.2.4 Travel Continuity and Access**

I-80 and I-380/U.S. 218 are two of the most heavily traveled corridors in Johnson County, providing access to several attractions in Iowa City and Coralville, such as the University of Iowa, the University of Iowa Hospital and Clinic, a major regional, shopping mall in eastern Iowa (Coral Ridge Mall), and other developments in the Coralville area. Both routes are major trucking corridors in eastern Iowa, and local and regional commuters use the System Interchange daily. The proposed improvements to the interchange are an important element in facilitating the safe and efficient movement of goods and services locally, regionally, and nationally. They will provide better access to destinations in the Iowa City area.

## **3.3 Summary**

The proposed project is intended to enhance mobility and safety by improving ramp and mainline geometry, increasing traffic flow by adding capacity, and addressing safety issues associated with the current interchange design. The existing interchange has a higher than average crash rate, contains geometric elements that could be upgraded to more current design guidelines, and will experience traffic capacity concerns by 2030. Improvements that address these conditions would help the interchange to function and operate much more efficiently.

## **4. Alternatives**

This section discusses the alternatives investigated to address the project's purpose and need. A range of alternatives was developed, including slight variations to the road's alignment. The Build Alternative, alternatives considered but dismissed, and the Preferred Alternative are discussed below.

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<sup>4</sup> The "total crash rate" accounts for all crashes.

<sup>5</sup> The "fatal+injury rate" measures the rate of severe crashes by only including crashes resulting in fatalities and/or injuries.

## 4.1 No-Build Alternative

The No-Build Alternative represents base conditions for the study area. It involves long-term maintenance of the existing facility plus any committed improvements.<sup>6</sup> The No-Build Alternative would not address concerns related to geometric deficiencies, travel efficiency, or safety defined by the project purpose and need statement. Traffic volumes are projected to increase and by 2030 operations will be at unacceptable levels. Without major improvements, the crash rate is also expected to increase.

## 4.2 Alternatives Considered but Dismissed

The development of initial conceptual alternatives for the interchange took into account various engineering and environmental constraints within the study area. Four alternatives groups were developed, each containing various interchange configurations:

- **A Alternatives: Three Loops**—The A Alternatives retained three loops and removed one loop, replacing it with a directional ramp. Three interchange configurations (A1, A2, and A3) were developed (Figure 6).
- **B Alternatives: Two Loops**—The B Alternatives retained two loops and removed two loops, replacing them with directional ramps. Seven configurations (B1–B7) were developed (Figure 7).
- **C Alternatives: One Loop**—The C Alternatives retained one loop and removed three loops, replacing them with directional ramps. Two configurations (C1 and C2) were developed (Figure 8).
- **D Alternatives: No Loops**—The D Alternative (D1) removed all loops and replaced them with directional ramps in all quadrants (Figure 8).

### Screening Step 1

Screening was performed to narrow the range of conceptual alternatives. The alternatives were evaluated considering potential environmental and socioeconomic impacts, constructability, geometrics, and traffic operations. After reviewing the range of alternatives, two distinct criteria separated some alternatives from the others.

One criterion was related to the traffic operations and safety concerns with short weaving sections between adjacent entrance and exit loop ramps. The weaving sections were shown to have a high frequency of crashes with crash rates exceeding statewide averages under current conditions and the short weaving sections were shown to break down operationally under the no-build condition. Collector-distributor (C-D) roads were considered to remove the weaving movement from the freeway sections, but with the loop ramps the weaving sections on C-D roads still were short and raised concern. The lack of capacity and inability to address safety concerns were felt not to meet the project's purpose and need.

The other criterion was the use of unique loop ramp geometrics, namely wraparound loops designed to remove weaving sections and maintain loop ramps. The unique loop ramp designs

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<sup>6</sup> Committed improvements are those that have funding identified and there is a commitment to implement these improvements in the near future.

required a series of reverse curves and additional ramp or freeway bridges. Concerns with these configurations included driver expectation and confusion due to the unconventional loop ramp design and potentially higher construction cost when compared to other configurations in their respective alternative groups.

It was decided that any alternative that maintained a mainline weaving section or used unconventional loop ramp geometrics should be removed from further consideration. This resulted in the elimination of all A alternatives (A1, A2, and A3), two B alternatives (B6 and B7), and one C Alternative (C2). Alternative B4 was removed from further consideration because it was very similar to Alternative B1 geometrically, except that the westbound to northbound outer directional ramp in the northeast quadrant was pulled in tighter to the center of the System Interchange.

### **Screening Step 2**

The alternatives that advanced to the next stage of evaluation were B1, B2, B3, B5, C1, and D1. Construction phasing was added as a consideration in evaluating the various alternatives, recognizing that it may be necessary to construct the Preferred Alternative in phases as construction dollars become available and as capacity demands dictate. The order in which the existing loop ramps should be removed was prioritized as follows:

- Because the southbound to eastbound loop in the southeast quadrant carries the heaviest traffic volumes through the interchange, it was concluded that that loop should be replaced first and that the northbound to westbound loop ramp in the northeast quadrant be replaced next, as that would remove all weaving sections. Removing the two loops would provide a B Alternative configuration. It was agreed that this would be the minimum configuration constructed as an interim project, as it addressed the need to remove the loop ramp weaving sections.
- The third loop to be removed was determined to be the eastbound to northbound ramp in the southeast quadrant. The southeast quadrant loop carries more traffic and is also the loop thought to be perceived as a problem by the traveling public. Removal of the third loop ramp would result in a C Alternative configuration, also concluded to be an acceptable interim project.
- The last loop to be removed would be the westbound to southbound ramp, which was projected to carry the lowest volume of traffic of the four loop ramps. Removal of the final loop ramp would result in a D Alternative configuration.

While acceptable as interim scenarios, alternative concepts B and C were dismissed as ultimate build alternatives because neither B nor C would have the reserve capacity of directional ramps for all movements at the System Interchange compared to the D Alternative. Furthermore, retaining one or more loop ramps would not address publicly perceived safety issues with the loop ramps. The D Alternative was identified as the best ultimate solution because it would best meet future traffic needs, would address all safety and perceived safety concerns, and could be phased in over time and as money became available or need increased.

### **Screening Step 3**

In the final step of screening, the remaining alternatives were refined to allow for the interchange phasing and loop removal sequence starting with the remaining B alternatives (B1, B2, B3, and B5). The refined B alternatives were then built upon to create a set of C alternatives (C1, C2, C3, and C5). The resulting C alternatives were then built upon to develop a set of D Alternatives (D1,

D2, D3, and D5). The B Alternatives were then paired with the appropriate next tier C Alternative and then to the appropriate D Alternative to create four distinct groups of alternatives: B1 to D1 (Figure 9), B2 to D2 (Figure 10), B3 to D3 (Figure 11), and B5 to D5 (Figure 12).

These groups of alternatives were reviewed considering environmental and socioeconomic impacts, constructability, ramp geometrics, and cost. Of the four groups of alternatives, the estimated environmental impacts, constructability issues, geometrics, and cost were all felt to be similar, with the exception of the B5 to D5 Alternative group. The B5 to D5 Alternative concerns focused on locating the northbound to westbound and southbound to eastbound directional ramps near the center of the System Interchange, resulting in a true three level interchange with highly skewed top level bridges for the ramps. Because of this, it was felt that the B5 to D5 Alternative was the least feasible and so it was dismissed from further consideration.

The remaining three groups of alternatives were refined and vertical alignments developed. All three alternatives were shown to work vertically. The comparative differences between the ultimate D alternatives were as follows:

- The D1 Alternative provided overall smoother ramp geometrics than the other two because the ramps consisted of reverse curves, whereas the D2 and D3 alternatives both had broken back curves (successive curves in the same direction with short tangent sections between them). Reverse curves are typically easier to drive than broken-back alignments.
- Bridge design and construction were identified as distinguishable characteristics. The D1 Alternative provided fairly square crossings, but the D2 and D3 alternatives had one or more large directional flyover bridges with undesirable skews over the freeway, which complicates the design and construction of the bridges.
- Alternative D1 was more “spread out,” with the directional flyover and flyunder ramps farther from the center of the System Interchange, thus lowering its overall height. In comparison, the D2 and D3 Alternatives pull one or more of the directional ramps towards the center of the System Interchange, increasing the height of the interchange along with bridge and earthwork quantities. As a result, the D2 and D3 alternatives cost more than Alternative D1, but Alternative D1 requires a larger footprint than the others.

Evaluating these differences in roadway geometrics, bridge design and construction, staging and cost, Alternative D1 was identified as the preferred ultimate build option. Both the B1 and C1 Alternatives were felt to be adequate interim options to consider during future engineering studies and design.

### **4.3 Preferred Alternative**

Figure 13 details the preferred interchange configuration, D1, which would replace all loop ramps with directional ramps. The configuration would result in a 2½-level directional system interchange. Single entrance and exit ramp design with secondary ramp splits would be constructed. For example, eastbound I-80 traffic destined for northbound I-380/U.S. 218 or southbound U.S. 218 would exit I-80 at a single diverge location. A second diverge location would be constructed to separate the southbound and northbound destined traffic exiting I-80 on the ramps. System Interchange ramps would be either single- or two-lane ramps, depending on traffic volumes and operations.

I-80 mainline would be an eight-lane section (four lanes each direction) having a closed median with a barrier separating directions of travel. Travel lanes would be 12 feet wide with 12-foot outside and inside shoulders. To the east, the proposed eight-lane section would transition to a six-lane section (three lanes each direction) near the Coral Ridge/IA 965 interchange (tying into a current Iowa Department of Transportation (DOT) project widening I-80 from two lanes each direction to three lanes each direction). To the west, the proposed eight-lane section would transition to the existing four lanes (two each direction) at the Ireland Avenue interchange.

I-380/U.S. 218 would be a six-lane section through the System Interchange. South of the System Interchange, U.S. 218 mainline would tie back to the existing four-lane section north of the Melrose Avenue interchange. North of the System Interchange, I-380/U.S. 218 mainline would tie back to the existing four-lane section south of the Forevergreen Road overpass. I-380/U.S. 218 mainline would consist of 12-foot travel lanes with 12-foot inside and outside shoulders. A 64-foot depressed grass median would separate directions of travel and would transition to the existing 50-foot grass median near Forevergreen Road.

Most of the directional ramps at the System Interchange are proposed to be 16 feet wide with 6-foot outside and 4-foot inside shoulders. The westbound to northbound and southbound to eastbound directional ramps would be two-lane ramps, since they carry the heaviest ramp movements through the interchange. The eastbound diverge from I-80 mainline would also be a two-lane exit to meet the operational needs at the diverge point. The southbound leg of the ramp would taper to single-lane ramps following the secondary split, whereas the northbound leg would be a single lane. The two-lane directional ramps would consist of two 12-foot travel lanes with 10-foot outside and 6-foot inside shoulders. Auxiliary lanes would be added to the I-80 mainline east approach in both the eastbound and westbound directions. Auxiliary lanes would be required on the north leg of the interchange because of the two-lane entrances to and exits from I-80. An auxiliary lane would also be needed on the west leg of the interchange in the eastbound direction to accommodate the two lane diverge to I-380/U.S. 218. All auxiliary lanes would be 12 feet wide.

Because of the wider cross section of I-80, new ramp connections would be required at the Ireland Avenue and Coral Ridge/IA 965 interchanges. At Ireland Avenue, new ramp connections would be required for the westbound exit ramp and the eastbound entrance ramp. Both ramps would remain single-lane ramps and tie into the existing ramp cross-section. At the Coral Ridge Avenue/IA 965 interchange, the westbound on ramp would require a new connection but would remain a single lane ramp with the tie to I-80 being the westbound auxiliary lane. The eastbound exit ramp would be converted to a two-lane exit to provide lane balance on I-80 at the diverge. The added ramp lane would be carried toward the side road so that it could be tied to the existing ramp pavement where the roadway widens to add turn lanes. Some connections may be required for the tapers of the eastbound and westbound entrance loops, depending on the location of I-80 mainline transition to a six-lane section.

I-80 and I-380/U.S. 218 both would have a design speed of 70 mph (posted speed of 65 mph). Outer directional ramps at the System Interchange would have a design speed of 60 mph with the directional flyover and flyunder ramps at 50 mph.

Local side roads (Jasper and Kansas avenues) would be modified as part of the project. Because of the wider I-80 mainline cross-section, the Jasper Avenue crossing over I-80 mainline would be reconstructed with a new bridge. The location of Jasper Avenue would remain unchanged from its current location, as vertical profile adjustments are needed only for the new crossing

over I-80. The new profile would be tied to the existing roadway as quickly as possible. Because of the new ramp configurations and wider interchange footprint at the System Interchange, Kansas Avenue in the southwest quadrant of the interchange would be relocated. The side road would be relocated to the west and south of its current location, providing access to residences from the south instead of from the north.

#### **4.4 Potential Interim Build Alternatives**

Because of funding constraints, it may be necessary to construct the build alternative in two or more construction phases. Several construction phasing scenarios are being considered, but the scenario to be constructed ultimately will depend on available funding. An interim configuration would remain in service until additional construction funds are available or until traffic needs dictate further expansion. If adequate funds are available, the build interchange could still be constructed without staging.

The phasing scenarios consist of removing the loop ramps and replacing them with directional flyover/flyunder ramps at the system interchange. Coordinated, sequential removal of the loop ramps will address the traffic and safety issues of the existing interchange. To address the immediate needs, it was determined that any interim configuration would at least remove all weaving sections between the existing loop ramps.

The sequential removal of the loop ramps would result in interim interchange configurations consistent with a B or C alternative, as noted. A “B” configuration would remove and replace the southbound to eastbound and northbound to westbound loop ramps. A “C” configuration would replace all loop ramps except the westbound to southbound loop ramp. The phasing scenarios being considered are:

- Existing to B configuration, then B configuration to C configuration, then C configuration to ultimate interchange
- Existing to C configuration, then C configuration to ultimate interchange

The ultimate interchange would be designed to accommodate interim projects. Regardless of the phasing sequence selected, any interim configuration would require partial or full reconstruction of I-80, I-380/U.S. 218/IA 27, and U.S. 218/IA 27 mainlines, the four outer directional ramps at the system interchange (eastbound to southbound, northbound to eastbound, westbound to northbound, and southbound to westbound), and relocation of Jasper and Kansas Avenues. Further engineering studies are required to determine the extent of reconstruction required for these mainline, ramp, and side road roadways under each potential phase of reconstruction. Any interim project would maintain no fewer than the number of existing travel lanes along I-80, I-380/U.S. 218/IA 27, U.S. 218/IA 27 roadways, and all movements at the system and adjacent service interchanges would be maintained. Impacts associated with the interim project would not exceed those of the ultimate project.

## **5. Impacts**

This section describes the socioeconomic, cultural, natural, and physical environments in the project corridor that will be affected by the proposed Build Alternative. Resources with a check in the second column on Table 1 are discussed below.

## 5.1 Socioeconomic Impacts

### 5.1.1 Land Use

The study area is within the corporate limits of North Liberty, Tiffin, and Coralville (see Figure 14). Land uses along I-80 east of the I-80/I-380 interchange tend to be commercial, whereas uses along I-80 west of the interchange tend to be agricultural. Land use along I-380 north of I-80 is primarily agricultural. Along U.S. 218 south of I-80 land use is a mix of agricultural, park, and industrial uses.

Lands north of I-80 and west of I-380 are within the City of Tiffin. Properties within the study area generally are wooded areas, farmland, and farmsteads. The north end of the study area along I-380 is farmland within the community of North Liberty.

Lands east of I-380/U.S. 218, both north and south of I-80, are within the City of Coralville. Land uses include a mix of industrial/warehousing uses and residential uses. Industrial/warehouse uses include Hawkeye Foodservice Distribution Center, Beisser Lumber Company, and Consumer Coop Society. Residential development consists of Western Hills Mobile Estates Mobile Home Park. Lands to the southeastern part of the interchange are being developed as parkland by the City of Coralville. Further south of the interchange on the east side of U.S. 218 is Klein Quarry (River Products Company, Inc.), an active quarry. Lands to the southwest of the I-80/380 interchange (also within Coralville) contain agricultural lands and farmstead residences.

The proposed improvements are consistent with the Johnson County Council of Government's (JCCOG)<sup>7</sup> Long-Range Multi-Modal Transportation Plan as well as Johnson County's Land Use Plan.<sup>8</sup> The proposed interchange improvement is also consistent with the comprehensive plans adopted by the cities of Coralville,<sup>9</sup> Tiffin,<sup>10</sup> and North Liberty.<sup>11</sup> These communities' plans emphasize the importance of improving local transportation facilities and services to accommodate anticipated growth in the area.

The proposed improvement, which addresses the existing and future travel demands in the area, is not expected to be a catalyst for future development. It is expected that development will occur with or without the improvement. The improved interchange does not provide enhanced land use accessibility beyond what exists, as it does not connect to the street system, nor does it provide new access points to either I-80 or I-380/U.S. 218. As a System Interchange, its function is to merely allow the exchange of traffic between two facilities. To gain access to the areas adjacent to the interchanges, a traveler would still need to exit I-80 at the Coral Ridge Avenue or Ireland Avenue interchanges, I-380 at Forevergreen Road, or U.S. 218 at Melrose Avenue, and then travel local roads. Because the System Interchange will not improve direct access to adjacent land, it is not expected to spur growth or development. As there is an interchange at this location, the proposed improvements will merely improve safety and function.

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<sup>7</sup> JCCOG is the metropolitan planning organization (MPO) for the Iowa City urbanized area.

<sup>8</sup> Johnson County Land Use Plan, December 1998.

<sup>9</sup> Coralville Community Plan, March 1998.

<sup>10</sup> City of Tiffin Comprehensive and Land Use Plan, 2001.

<sup>11</sup> North Liberty Comprehensive Plan, 2005.

### **5.1.2 Section 4(f) Resources: Parklands and Recreational Areas**

Through field investigations, two park properties were identified within the project limits: one in Tiffin, one in Coralville (see Figure 15). Follow-up meetings and correspondence occurred with both communities regarding existing and planned uses for these properties (documented in Appendix B). Coordination with the Federal Highway Administration (FHWA) was undertaken to determine whether either property qualified for Section 4(f) protection.

Section 4(f) of the U.S. Department of Transportation Act of 1966, as amended, provides that the Secretary of Transportation “shall not approve any program or project that requires the use of any publicly-owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state or local significance or land of an historic site of national, state, or local significance as determined by the officials having jurisdiction thereof unless there is no feasible and prudent alternative to the use of such land and such programs or project includes all possible planning to minimize harm resulting from the use.” The term “Section 4(f)” is replaced by the term “Section 303” in the *2008 Safe Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users* (SAFETEA-LU). However, in keeping with current guidance from FHWA and the U.S. DOT, this EA retains the term “Section 4(f).”

FHWA and Iowa DOT have developed a Section 4(f) decision making process to determine the eligibility of properties or sites for protection under Section 4(f) and to evaluate them relative to the alternatives being considered. The Section 4(f) decision process involves five steps:

1. Is the property 4(f) eligible?
2. Is there a use of the 4(f) property?
3. Can the 4(f) property be avoided?
4. Can the impacts to the 4(f) property be minimized?
5. What documentation is needed?

#### ***Tiffin Park***

The City of Tiffin has property adjacent to I-380 near Route 6 that is designated as a park. The property owned by the City is 88 acres in size and extends west from I-380 about 3,800 feet (3/4 mile). The property is bisected by Jasper Avenue. The land west of Jasper Avenue (about 71 acres) is developed with park facilities, including 4 baseball fields and 3 soccer fields. The land east of Jasper Avenue (about 17 acres) does not contain any recreation facilities and are presently farmed for row crops. In a meeting with the City of Tiffin staff to ascertain its future plans for the property, the City advised that it does not have any formally adopted plans for use of the property east of Jasper Avenue, but there are several potential future recreation uses for the site, including more ball fields, parking, play equipment, and a potential train depot park-and-ride (for the “Hawkeye Express” train to Iowa City). However, these potential uses for the property have not been formalized. FHWA concluded that the farmed part of Tiffin Park adjacent to I-380 does not qualify for 4(f) protection.

#### ***Coralville Creekside Park***

Coralville Creekside Ballpark is located in the southeast quadrant of the I-80/I-380 Interchange. The site is 163 acres in size, and facilities include softball fields, parking area, and a concession stand. In the northern part of the property, between 340th Street and I-80, the City has constructed a 5.8-acre wetland mitigation site and is investigating other areas on the property as

future wetland mitigation and stream restoration sites. The City plans to incorporate a trail through the area with interpretive signage and picnic areas. The proposed trail is part of the planned regional Clear Creek Trail. The City's overall plan is that the northern part of the property be natural open space for passive recreation. Two barns are located on the western edge of the Coralville Creekside Ballpark property, south of 340th Street. The barns are not listed, or eligible for listing, on the National Register of Historic Places, but the City considers them to be locally important and intends to use the area near the barns for meetings, festivals, and the farmers' market. The long-term plan includes restoring the barns and using them as the basis for education on the history of the area. FHWA concluded that the Coralville Creekside Park is subject to Section 4(f) protection as a public park/recreation area.

A 16-acre strip of right-of-way adjacent to the southeastern quadrant of the I-80/380/U.S. 218 interchange and adjacent to I-80 will be required from Coralville Creekside Park. The areas adjacent to the interchange and interstate are not presently used for recreation purposes. Of the 16 acres required, 2.9 acres of impact are to the City's wetland mitigation site (discussed in more detail in subsection 5.2.1, Wetlands), 8 acres are to wooded areas (typically second growth forest, with understory plant species indicative of a history of heavy grazing—discussed in more detail in subsection 5.2.6, Woodlands), and 5 acres are old agricultural field areas. The barns on the western edge of the park property would not be affected directly but would be closer to the proposed right-of-way and roadway. Under the proposed roadway improvements, the north barn would be roughly 30 feet away from the proposed right-of-way and 110 feet away from the proposed roadway ramp. The south barn would be 170 feet away from the proposed right-of-way, and 270 feet away from the proposed roadway ramp.

The City and Iowa DOT have been working together to develop mitigation and enhancement options (trails, wetland areas, etc.) for the area of the park between 340th Street and I-80, and continue to sort out specific details. Taking into account the level of impact, along with all measures to avoid and minimize the impacts and any mitigation and enhancement measures developed by the City and Iowa DOT, FHWA proposes to make a *de minimis* determination. *De minimis* impacts to 4(f) resources are those that do not "adversely affect the activities, features and attributes" of the resource. This impact assessment is based on the level of impact, after consideration of any measures to minimize harm, including avoidance, minimization, mitigation, and enhancement measures. The positive benefits of any mitigation measures must be taken into account when determining whether the impact to the Section 4(f) resource is *de minimis*.

### **5.1.3 Bicycle and Pedestrian Facilities**

The JCCOG Area Trails Map<sup>12</sup> shows a proposed trail in the study area between Coralville and Tiffin (see Figure 16). The plan shows the trail extending along Clear Creek from the east, through the City of Coralville's park property, and crossing under I-80 adjacent to Clear Creek. From there, the trail is to extend and cross under I-380 either at Clear Creek or at U.S. 6 and extend west through Tiffin's park property. The proposed System Interchange improvements would not preclude trail extensions under either I-80 or I-380. As the planned trail is shown to be adjacent to Clear Creek, it is expected that trail accommodation could be provided within the culverts or the bridges that will cross the creek. It is expected that these details will be addressed in subsequent phases of design, when detailed drainage plans are developed.

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<sup>12</sup> Johnson County Council of Governments. JCCOG Area Trails Map, April 2005.

#### **5.1.4 Right-of-Way**

The Preferred Alternative would require acquisition of 134.8 acres of land for roadway purposes. Most of the new right-of-way (113.4 acres) would be in the form of strip right-of-way acquisitions adjacent to the existing facility. The remaining 21.4 acres would be new right-of-way associated with the relocation of Kansas Avenue, in the southwestern quadrant of the interchange. In addition, 389.1 acres of right-of-way would continue to be used, bringing the total amount of right-of-way for the improved System Interchange to 523.9 acres.

#### **5.1.5 Relocation Potential**

The Preferred Alternative would displace five houses, four in the southwestern quadrant of the interchange and one on the east side of I-380, north of I-80 (Figure 17). No business displacements would occur. Acquisition of property will follow the requirement of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (Uniform Act) (42 USC 4601 et seq.) and the Iowa relocation assistance law (Iowa Code 316), which establishes a uniform policy for the fair and equitable treatment of displaced persons that serves to minimize the hardships of relocation.

#### **5.1.6 Construction and Emergency Routes**

Minimal delays and road closures are expected during construction of the System Interchange. Two lanes of traffic in each direction would be maintained for I-80 and I-380/U.S. 218, and all interchange movements would be maintained during construction. Short duration delays and closures may be required for typical roadway and bridge construction activities near existing roadways. Delays and closures typically would occur during off-peak hours. Nighttime construction could be used to minimize any impacts. Reductions to one lane of traffic in each direction during nighttime operations could further minimize impact. Short-term closures would be accompanied by a marked detour route.

Local access to all properties would be maintained while relocating Kansas Avenue. The Jasper Avenue bridge over I-80 may need to be closed to construct the new side road bridge. Local access to houses along Jasper Avenue would be maintained from the north and south.

Significant impacts to emergency response are not expected, since major closures are not expected. Some delays may occur because of congestion in and around work zones.

There may be short-term interruptions to freight rail service while reconstructing the bridges over the Iowa Interstate Railroad at I-80 and I-380. Construction would be coordinated with the railroad to avoid or minimize any impact.

#### **5.1.7 Transportation**

Improvements to the interchange are not expected to affect other modes of transportation. Temporary impacts to the Iowa Interstate rail line are discussed in subsection 5.1.6 and impacts to bicycle path connections in subsection 5.1.3. The proposed improvements necessitate changes to several side roads and frontage roads near the System Interchange, as discussed below.

In the southwestern quadrant of the interchange, Kansas Avenue would be relocated because of impacts from the construction of the interchange and relocation of ramps. Iowa DOT coordinated with the adjacent property owners and discussed various options for that area. As a result of the

discussions and review of right-of-way needs, it was determined that relocating Kansas Avenue to the south and providing access back to the existing parcels along existing Kansas Avenue is preferred.

West of the System Interchange, a new Jasper Avenue bridge over I-80 is needed because the I-80 roadway section will be widened, and the existing bridge over I-80 is not large enough to accommodate the new width of I-80. It is expected that the location of the Jasper Avenue bridge generally will remain unchanged. During construction of the new bridge, temporary closures or partial closures of Jasper Avenue over I-80 could be required at various times during construction. These details will be addressed during the next stages of design, and development of construction staging plans.

## 5.2 Natural Environment Impacts

### 5.2.1 Wetlands

Field investigations of the study area were undertaken in July 2004 and April and July 2008. The investigations consisted of onsite surveys and review of published data, including soil maps, NWI maps, and USGS stream gage data. Fifteen wetlands, totaling 35.2 acres in area, were identified (Figure 18).

**TABLE 2**  
Potential Impacts to Wetlands

Wetland Number	Wetland Type	Wetland Size (acres)	Area Affected (acres)	Proposed Mitigation (acres)
1	Narrow fringe of floodplain forest (not mapped)	0.23	—	
2	PEMF	0.87	—	
3	Riparian fringe of floodplain forest (not mapped)	0.28	0.07	
4	Sedge meadow (PEMB)	4.15	0.05	
5	Narrow floodplain forest (not mapped)	2.62	0.4	
5a	Forested depression (PFO1A)	6.44	0.07	
6	PEMC	1.13	—	
7	Excavated pond (PUBGh)	0.48	0.3	
8	Former creek bottom or backwater of tributary (not mapped)	0.5	—	
9	Not mapped	5.84	—	
10	Headwaters of an intermittent flowing ditch (Not mapped)	0.5	—	
11	Extension of Wetland #9 (Not mapped)	2.96	—	
12	Not mapped	0.15	—	
13	Not mapped	1.92	—	
14	PEMB	1.28	0.15	
—	Coralville's wetland mitigation site: wet meadow	5.8	2.9	
<b>Total</b>		<b>35.2</b>	<b>3.94</b>	

The proposed improvements would affect seven wetland areas (W#3, W#4, W#5, W#5a, W#7, W#14, and Coralville's Creekside Park wetland mitigation site). Total wetland impacts would be 3.94 acres: 2.9 acres at Coralville's wetland mitigation site, and 1.04 acres in the other six delineated wetlands.

Wetland impacts have been avoided and minimized to the extent practicable. It may be possible to reduce impacts during detailed design by minimizing the amount right-of-way required, modifying ditch slopes, and oversizing culverts or bridges. For wetlands that cannot be avoided, measures to minimize impacts will be considered. Wetlands or wetland areas that cannot be avoided will be mitigated at a minimum ratio of 1.5:1. Total mitigation required will be determined by the regulating agency. Wetland mitigation is expected to be provided at an established wetland mitigation bank within the same watershed as the Project (see email from Roger Larsen to Dan Holderness on 11/28/2008 in Appendix B—4(f) Coordination). The Iowa DOT would purchase mitigation credits from the wetland bank. The U.S. Army Corps of Engineers (USACE) requires that a Section 404 Permit be issued under the Clean Water Act if the proposed action involves the discharge of dredged or fill material into jurisdictional waterways or wetlands. The Iowa Department of Natural Resources (DNR) will require a Section 401 Water Quality Certification. If required, the Iowa DOT will prepare a joint application for submittal to the USACE and the Iowa DNR as part of this permitting process.

### **5.2.2 Surface Waters and Water Quality**

The Iowa DNR issues State Water Quality Certification pursuant to Section 401 of the Clean Water Act. The USACE requires State Certification before a Section 404 permit can be issued. Section 401 Certification represents the Iowa DNR's concurrence that the project certified is consistent with the Water Quality Standards of the State of Iowa as set forth in Chapter 61, Iowa Administrative Code 567.

Site investigations occurred in July 2004, and in April and July 2008. The study area lies within the watersheds of Clear, Buffalo, and Deer creeks. Each is tributary to the Iowa River. Eleven waters of the U.S. were identified within the study area during field investigations (Figure 19). There are also several excavated livestock ponds. The land cover immediately surrounding these water bodies is mostly row-cropped agriculture and pastured agriculture. Several large stands of riparian forest are adjacent to parts of some water bodies. The *Final 2004 Section 303(d) USEPA-Approved Iowa Impaired Waters* lists Clear Creek as a Category 3a Water. This means that there are insufficient data to determine whether any uses are met, and that no uses were assessed (see Table 3). Other data<sup>13</sup> from the U.S. Environmental Protection Agency (USEPA) show that reaches of Clear Creek are impaired from organic enrichment. They also indicate that other water bodies in the watershed of the study area (Lower Iowa—Hydrologic Unit Code 07080209) are impaired as a result of biological oxygen demand, *E. coli* and other bacteria, and nitrates. The agricultural land cover in the study area is the likely cause of impairment through organic enrichment, siltation, excessive nutrients, and fertilizer and pesticide runoff.

The proposed improvements to the System Interchange would require six new stream crossings (bridges or culverts). These stream crossings, which occur under both existing and future improvements, are as follows: two crossings of Clear Creek, three crossings of Clear Creek

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<sup>13</sup> USEPA "'Surf Your Watershed". <http://cfpub.epa.gov/surf/locate/index.cfm>

**TABLE 3**

Summary of Water Quality Data for Waters of the U.S. in the I-80/ I-380 Study area

<b>Water Body Name</b>	<b>Use Designation<sup>a</sup></b>	<b>Impairment/ Impairment Cause</b>	<b>Notes</b>
<b>WUS #1</b> (unnamed tributary of Clear Creek)	Unspecified	Undetermined	Intermittent. Channelized. Substrate silt and sand. Surrounding land use is row-cropped agriculture.
<b>WUS #2</b> (unnamed tributary of Clear Creek)	Unspecified	Undetermined	Intermittent. Channelized. Substrate silt and sand. Surrounding land use is row-cropped agriculture.
<b>WUS #3</b> (Clear Creek)	Category 3a <sup>b</sup> water	Undetermined	Perennial. Channelized in part. Substrate silt and fine sand. Surrounding land use is riparian forest in some reaches, row-cropped agriculture in others.
<b>WUS #4</b> (unnamed tributary of Clear Creek)	Unspecified	Undetermined	Intermittent. Channelized. Substrate silt and sand. Surrounding land use is row-cropped agriculture.
<b>WUS #5</b> (unnamed tributary of Clear Creek)	Unspecified	Undetermined	Intermittent. Channelized. Substrate silt and sand. Surrounding land use is pastured agriculture.
<b>WUS #6</b> (unnamed tributary of Clear Creek)	Unspecified	Undetermined	Intermittent. Channelized. Substrate silt and sand. Surrounding land use is row-cropped agriculture.
<b>WUS #7</b> (Clear Creek)	Category 3a <sup>b</sup> water	Undetermined	Perennial. Flows eastward. Is incised about 12 feet below the surrounding landscape
<b>WUS #8</b> (unnamed tributary of Clear Creek)	Unspecified	Undetermined	Perennial. Substrate is a mosaic of sand, silt, and gravel. Stream is incised roughly 6 feet from surrounding steeply sloping landscape.
<b>WUS #9</b> (unnamed tributary of Clear Creek)	Unspecified	Undetermined	Intermittent. Substrate is nearly entirely fine sand. Stream is not incised into surrounding landscape.
<b>WUS #10</b> (headwaters of WUS #8)	Unspecified	Undetermined	Intermittent and flows through culverts. Is roughly 2 feet wide and 4 inches deep and incised 3 feet into the base of a very steep wooded ravine. Substrate is mostly silt.
<b>WUS #11</b> (unnamed tributary of Clear Creek)	Unspecified	Undetermined	Pond formed from the impoundment of an unnamed tributary of Clear Creek.

<sup>a</sup> Source: Final 2004 Section 303(d) USEPA-approved Iowa Impaired Waters.

<sup>b</sup> Insufficient data to determine if uses are met; no uses assessed.

tributaries, and one crossing of Deer Creek. The total length of all streams within the proposed footprint is roughly 4,100 feet. However, length of stream actually affected will not be determined until subsequent phases of design. Measures to avoid and minimize impacts to stream resources will be developed in the detailed design phase for the interchange. Where impacts to stream resources cannot be avoided, compensatory stream mitigation will be provided.

### **5.2.3 Floodplains**

Executive Order 11988, Floodplain Management (42 FR 26951), requires that federal agencies identify potential floodplain encroachment of projects they fund and that they assess the impacts of encroachment on human health, safety, and welfare and on the natural and beneficial values of the floodplain. Federal Emergency Management Agency (FEMA) mapping was used to

determine the extent of the 100-year floodplain within the study area (the area expected to flood at least once every 100 years).

Deer, Buffalo, and Clear creeks are located in the study area along with numerous tributaries to Clear Creek. Buffalo Creek crosses the far northern section of the study area but has no associated floodplain. Deer Creek, which is south of the System Interchange and crosses U.S. 218, has 100-year floodplain associated with the stream. Clear Creek has extensive floodplain associated with it, and involves areas north and east of the System Interchange, as well as the northeast quadrant of the interchange itself. The Clear Creek tributaries do not have any associated floodplain. Figure 19 shows stream crossing locations and floodplain within the study area.

The proposed improvements would continue to cross the Clear Creek and Deer Creek floodplains (the tributaries to Clear Creek do not have 100-year floodplains associated with them). The total area of Clear Creek's 100-year floodplain within the proposed footprint would be 71.2 acres and that of Deer Creek's would be 6.5 acres (see Table 4), although actual amount of encroachment would not be that high. Specific floodplain impact would be determined in subsequent design phases, when detailed drainage studies are completed.

**TABLE 4**  
Preferred Alternative, Preliminary Stream and Floodplain Impacts

	<b>Stream Crossing Length within Proposed Footprint</b>	<b>Area of 100-year Floodplain Impact (acres)</b>
Clear Creek	Two totaling 1,800 ft	71.2
Clear Creek Tributaries	Three totaling 1,800 ft	0
Deer Creek	One totaling 500 ft	6.5

A determination regarding the extent of regulated work will be developed during the final stage of design. It is expected that Section 401 water quality certification will be required, as will state floodplain construction permits. Appropriate permit application materials will be prepared and forwarded to the USACE and the Iowa DNR for processing and approval once the project enters the design phase.

#### **5.2.4 Wildlife and Habitat**

The field surveys were undertaken in July 2004 and in April and July 2008. All lands within the project area were surveyed. Field investigations included extant natural plant communities and areas of sandy soils as mapped by the NRCS. Sandy soils throughout the Midwest, where relatively undisturbed, tend to support uncommon plant communities and protection for rare species.

Three prairie<sup>14</sup> areas were identified in the project area. Those areas historically have been farmed and, according to the Johnson County Farm Service Administration (FSA), all three recently were part of the Conservation Reserve Program<sup>15</sup> (CRP). The CRP encourages farmers to convert highly erodible cropland or other environmentally sensitive acreage to vegetative cover, such as tame or native grasses, wildlife plantings, trees, filter strips, or riparian buffers. The mesic prairie remnants observed in the project area were mostly planted, of low floristic diversity, and with an assemblage of species very tolerant to disturbance.

<sup>14</sup>Prairie refers to a plant community that principally supports native warm season grasses and forbs, with few trees.

<sup>15</sup> The Conservation Reserve Program (CRP) is a voluntary program for agricultural landowners. Through CRP, farm owners can receive annual rental payments and cost-share assistance to establish long-term, resource conserving covers on eligible farmland. The CRP designation generally runs 10-15 years. Parcel 1 and Parcel 2's CRP designation just expired September 30, 2008; the east portion of Parcel 3's CRP designation expired in approximately 2006 and the west portion has never been in CRP.

Combined, the three areas total 24.1 acres (see Figure 20). The Preferred Alternative would affect 2.1 acres (Table 5).

**TABLE 5**  
Prairie Remnant Areas within the Study Area

Prairie Areas	Total Area (ac)	Area Affected (ac)
Prairie Parcel #1	14.8	1.7
Prairie Parcel #2 (grass fringe)	2.0	0.1
Prairie Parcel #3	7.3	0.3

### 5.2.5 Threatened and Endangered Species

In a letter dated May 4, 2005, the U.S. Fish and Wildlife Service (USFWS) identified six federal species of concern. In a letter dated April 5, 2005, the Iowa DNR identified one state concern species as potentially occurring in the study area (Table 6). The I-80/I-380 study area was surveyed for federal- and state-listed threatened and endangered species in July 2004 and April and July 2008. No state-listed plant or animal species were found, but potential habitat was found for the eastern massasauga rattlesnake, Indiana bat, and bald eagle.

**TABLE 6**  
Threatened and Endangered Species Potentially Occurring in the Study area

Common Name	Scientific Name	Status
Indiana bat	<i>Myotis sodalis</i>	State and federal endangered
Bald eagle <sup>a</sup>	<i>Haliaeetus leucocephalus</i>	Federal threatened and state endangered
Prairie bush clover	<i>Lespedeza leptostachya</i>	Federal threatened
Western prairie fringed orchid	<i>Platanthera praeclara</i>	Federal threatened
Eastern prairie fringed orchid	<i>Platanthera leucophaea</i>	Federal threatened
Eastern massasauga rattlesnake	<i>Sistrurus catenatus catenatus</i>	State endangered and federal candidate
Ornate box turtle	<i>Terrapene ornata</i>	State threatened

<sup>a</sup>As of August 8, 2007, the bald eagle is no longer on federal the list of threatened and endangered species, but it remains protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. The bald eagle is, however, still a state-listed endangered species.

The eastern massasauga rattlesnake, a federal candidate species and an endangered species in the state of Iowa, has been documented to occur in Johnson County and two counties adjacent to Johnson County. The species prefers low-lying moist habitat at the perimeter of marshes and shrubby wetlands. Fifteen wetlands totaling 35.2 acres were found in the study area (impacts are discussed in subsection 5.3.1). Although only 3.9 acres of the 7 wetlands would be affected, some areas may contain potentially suitable habitat for the rattlesnake. Field surveys found that the potential habitat present is marginal. Row-cropping throughout the area further reduces the likelihood of the species being present. Based on this information, a Determination of Effect form was completed, indicating that the Preferred Alternative may affect the species, but not likely adversely. The form was submitted to the USFWS for concurrence on the determination and coordination with USFWS will continue.

The Indiana bat, endangered at both the state and federal levels, prefers stream corridors with well-developed riparian areas that are forested with submature to mature trees. The trees may be either dead or alive, but they must have exfoliating bark, broken limbs, or cavities. Many species of trees have been documented as used for summer roosting or as maternity trees. While the Indiana bat has not been documented in Johnson County, it has been documented in four

counties immediately adjacent to Johnson County (Muscatine, Louisa, Washington, and Iowa). Three areas of riparian forest along Clear Creek contain trees that provide potential summer roosting habitat for the Indiana bat. One is in the northwestern quadrant of the interchange, another in the northeastern quadrant, and the third in an area south of I-80 and west of Route 6 (on the City of Coralville’s park/natural area site). Strip right-of-way for roadway improvements would be required near all three areas. Any clearing of trees or vegetation would occur within the period September 16 to April 14, which is outside the summer roosting months for Indiana bat. A Determination of Effect form was completed, indicating that the Preferred Alternative may affect, but is not likely to adversely affect, this species. The form was submitted to the USFWS for concurrence on the determination and coordination with USFWS will continue. Bald eagles, which are endangered<sup>16</sup> in the state of Iowa, use supercanopy trees that are dead or partially dead, or that have some branches that are leafless, standing along permanent water bodies. Some marginal perching habitat for the bald eagle is present in forested riparian areas adjacent to Clear Creek, south of I-80 and west of U.S. 6 (on the City of Coralville’s park/natural area site). Although within the study area, the area is not within the proposed project footprint and would not be affected directly by the proposed improvements.

### 5.2.6 Woodlands

Forested parcels were surveyed in the study area during July 2004, April 2008, and July 2008 field investigations (Figure 20). Five areas containing extant degraded remnants of mesic forest or wet-mesic forest were identified. All sites contain second growth forest, with understory plant species indicative of a history of heavy grazing. These five forested tracts total 161.8 acres in area, of which 44.5 acres would be affected as a result of the proposed alternative (Table 7).

**TABLE 7**  
Forested Parcels within the Study Area

Forest Parcels	Description	Total Area (acres)	Area Affected (acres)
#1	Submature second growth mesic/wet-mesic forest includes basswood, American elm, hackberry, box elder, bur oak, and silver maple. This is the largest contiguous wooded area within the study area.	73.5	25.9
#2	Submature second growth mesic forest includes American elm, hackberry, and bur oak trees.	7.0	3.2
#3	Mosaic of submature second growth mesic/wet-mesic forest includes hawthorn, osage orange, and box elder trees.	15.0	2.1
#4	Submature second growth wet-mesic forest includes American elm, box elder, silver maple, and eastern cottonwood trees.	15.4	1.9
#5	Submature second growth wet-mesic forest includes white mulberry, silver maple, and box elder trees.	50.9	11.4
<b>Total</b>		<b>161.8</b>	<b>44.5</b>

Iowa Code 314.23, Environmental Protection, provides for the protection and preservation of woodlands, as follows: Woodland removed shall be replaced by plantings as close as possible to

<sup>16</sup> While the bald eagle is no longer on federal the list of threatened and endangered species (as of August 2007), it is still on the state-listed endangered species list in Iowa.

the initial site, or by acquisition of an equal amount of woodland in the general vicinity for public ownership and preservation, or by other mitigation deemed comparable to the woodland removed, including the improvement, development, or preservation of woodland under public ownership.

## **5.2.7 Farmlands**

The purpose of the Farmland Protection Policy Act of 1981 is “to minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland to non-agricultural uses, and to assure that Federal programs are administered in a manner that, to the extent practicable, will be compatible with State, unit of local government, and private programs and policies to protect farmland.”

The study area contains large areas of prime farmland as defined by the U.S. Department of Agriculture, Natural Resources Conservation Service. Most of the study area serves agricultural purposes and is largely planted in row crops (i.e., corn and soybeans). There are also limited areas of pasture/grazing lands and livestock feeding areas within the study area. The high percentage of prime farmland in the study area makes it impossible to avoid farmland impacts. The project would affect 90.5 acres of lands designated as agricultural/farmland. Of that, 51.8 acres are important soils, 29.2 acres are prime soils, and the remaining 9.5 acres are neither prime nor important soils. USDA form AD-1006 was submitted to the NRCS and a Farmland Conversion Rating of 260 was obtained from NRCS for prime farmland (letter from NRCS dated August 1, 2008 and included in Appendix C).

The relocation of Kansas Avenue would sever three farm properties (see Figure 21). Although the local roadway alignment generally is along the western part of the property for one parcel and along the northern part for the other two parcels, it is possible that some small landlocked parcels would result. In subsequent design phases, the alignment would be further refined to attempt to avoid and minimize property parcel impacts.

## **5.3 Physical Impacts**

### **5.3.1 Noise**

Two areas of potential noise sensitive receptors were identified near the project location: the small group of homes in the southwest quadrant of the interchange, and Coralville’s recreational property in the southeast quadrant. The front-line land uses in the northeast and northwest quadrants is agricultural. There are no sensitive receptors in those areas.

The recreational property being developed in the southeast quadrant was purchased by the City of Coralville after studies of the system interchange began. The property formerly was in intensive agricultural use and was not considered a noise sensitive land use. Further, the distance to part of the property where outdoor human use is expected is greater than 500 feet, the distance typically protected by noise abatement measures.

In the southwest quadrant, several homes are expected to be displaced by the proposed project. The other homes are sufficiently distant from the project area that noise abatement is not likely to be effective.

Although traffic volumes at the interchange would increase in the future, noise levels are not expected to exceed FHWA noise abatement criterion. Although traffic noise effects are expected

to be minor, it is recommended that noise effects be considered when future land use in the area of the reconstructed interchange is discussed.

During construction, dump trucks, graders, bulldozers, and pavement construction equipment will be employed. Noise generated by construction equipment varies greatly, depending on equipment type, model, make, duration of operation, and specific type of work being performed. Adverse effects related to construction noise are expected to be localized, temporary, and transient. The following measures will be taken to minimize noise:

- Install and maintain effective mufflers on equipment.
- Locate equipment and vehicle storage area as far from residential areas as possible.
- Limit unnecessary idling of equipment.
- Limit noisy procedures to daylight hours where possible.

#### **5.4 Cumulative Impacts**

A cumulative impact is “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. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time” (40 CFR 1508.7). Cumulative impacts include the direct and indirect impacts of a project together with impacts from reasonably foreseeable future actions. For a project to be reasonably foreseeable, it must have advanced far enough in the planning process that its implementation is likely. Reasonably foreseeable future actions are not speculative, are likely to occur based on reliable sources, and are typically characterized in planning documents.

CEQ regulations developed for implementing NEPA require the assessment of cumulative impacts of federal, state, and private actions. An analysis was conducted in accordance with CEQ guidance (CEQ, January 1997; June 24, 2005) and other sources, including FHWA’s “Interim Guidance: Questions and Answers Regarding Indirect and Cumulative Impact Considerations in the NEPA Process” (January 2003) and its “Position Paper: Secondary and Cumulative Impact Assessment in the Highway Project Development Process” (April 1992).

Section 5, *Impacts*, of this report indicates that the proposed Build Alternative would affect wetlands, surface water resources, floodplains, and farmlands. It would also cause displacements. Therefore, these resources are the focus of the cumulative impacts analysis.

Several projects are planned or under construction in or near the study area. Some may not occur during the same period as the System Interchange project, but they are included here because past and future actions have to be considered in the cumulative impacts analysis (CEQ, June 24, 2005). The following are ongoing or reasonably foreseeable future projects:

- Coralville continues to develop its park at the southeast quadrant of the interchange. Additional softball fields, parking, and trails are planned. The northern part of the property (between 340th Street and I-80) will contain restored wetland areas, trails, and interpretive signage and picnic areas. The barns on the property will be retained and used as an interpretive/education center.
- The Westcorp Industrial Park, at the northeast quadrant of the interchange, will continue to be developed. The 140-acre site is developed with nine buildings, all containing light

industrial uses. The City of Coralville states that areas in the industrial park remain to be developed, and that similar light industrial uses will be added to the area in the future.

- A mixed-use commercial and residential subdivision is under construction at the western edge of the study area, north of I-80. The lands adjacent to I-80 near Ireland Avenue are planned to be commercial development (no specific businesses have been determined); those closer to Jasper Avenue will contain residential uses (most likely a mix of single- and multi-family).

The System Interchange project will have impacts within and adjacent to the highway right-of-way. Specifically, 3.94 acres of wetlands would be directly affected by the proposed improvements. There are six creek crossings (two of Clear Creek, three of Clear Creek Tributary, one of Deer Creek) of 4,100 feet of stream channel within the study limits, some part of which would be affected. The two crossings of Clear Creek and one of Deer Creek would require fill in the floodplain. Within the study limits, 90.5 acres of farmland would be affected, and five residences would be displaced. Some aspects of the other ongoing projects would affect the same resources. For instance, the Coralville Park is the location for several of the delineated wetlands and affected streams. The site with proposed residential development on the west end of the study area also contains wetlands. Table 8 summarizes the cumulative impacts of the project and ongoing projects.

**TABLE 8**  
Potential Cumulative Effects

<b>Resources Affected</b>	<b>Direct and Indirect Effects</b>	<b>Potential Cumulative Effects</b>
Wetlands	Conversion of 3.94 acres for roadway improvements	Combined regional effects of wetland impacts associated with other regional transportation and other development projects, include loss of habitat, loss of water quality, and flood attenuation benefits.
Water Resources/ Floodplain	Replace bridges or culverts at 6 stream crossings. 100-year floodplain encroachment at Clear Creek and Deer Creek	Increased sedimentation and pollutant loading; altered hydrology; potential impact to designated water uses; habitat fragmentation and loss; more rapid, higher discharge runoff pattern.
Farmland	Conversion of 90.5 acres	Loss of productive farmland, although most is strip right-of-way adjacent to the System Interchange.

The System Interchange has been designed to avoid and minimize impacts to resources. As a result of coordination with regulatory and resource agencies, the proposed improvement was developed to minimize impacts to stream channels and wetlands. Remaining impacts that cannot be avoided will be mitigated. Impacts to farmlands will be minimized by using existing right-of-way to the maximum extent possible and by avoiding diagonal severances.

The overall cumulative impact of the System Interchange, the ongoing projects, and the reasonably foreseeable future projects to the resources examined in this EA have been evaluated and are not considered collectively significant.

## **5.5 Streamlined Resource Summary**

Resources not discussed in the EA are located in Appendix A, which includes information about the resources, the method used to evaluate them, and when the evaluation was completed.

## 6. Disposition

The streamlined EA concluded that the proposed project is necessary for safe and efficient travel within the project corridor and that the project meets the purpose and need. The project will have no significant adverse social, economic, or environmental impacts of a level that would warrant an environmental impact statement. Final alternative selection will occur following completion of the public review period and a public hearing. Unless significant impacts are identified as a result of public review or at the public hearing, a finding of no significant impact will be prepared for this proposed action as a basis for federal-aid corridor location approval. Table 10 lists required permits.

**TABLE 9**  
Summary of Impacts

<b>Issue</b>	<b>No Action</b>	<b>Preferred Alternative</b>
Approximate Length (mi)		
Level of Service (design year 2030)	Level/rolling terrain	Level/rolling terrain
I-80	LOS F	LOS C
I-380 north	LOS E	LOS C
U.S. 218 south	LOS D	LOS C
Interchange ramps	LOS F	LOS C
Average Daily Traffic (design year 2030)		
I-80 west of System Interchange	90,100 vehicles per day	90,100 vehicles per day
I-80 east of System Interchange	100,300 vehicles per day	100,300 vehicles per day
I-380 north of System Interchange	81,900 vehicles per day	81,900 vehicles per day
U.S. 218 south of System Interchange	67,900 vehicles per day	67,900 vehicles per day
Right-of-way acquisition (acres)	0	134.8
Farmland Impacts (acres)	0	90.5
Conservation Reserve Program / Prairie Areas (acres)	0	2.1
Wetland Impacts (acres)	0	3.94
Woodland Impacts (acres)	0	44.5
Displacements	0	5
Parkland/Bike Trail	No property required from park; no change to current trail system	16 acres of strip right-of-way required from Coralville park property. Potential to design bridges/culverts to accommodate bicycle path between Coralville and Tiffin, per JCCOG's trail plan

**TABLE 10**  
Permits and Approvals

<b>Permit or Approval</b>	<b>Granting Agency</b>	<b>Reason</b>
Section 404 permit, Clean Water Act	USACE	Authorization is required to place dredged or fill material in wetlands or other waters of the U.S. This would occur from pier or culvert placements in Clear, Buffalo, or Deer Creeks and any tributaries, and likely under Nationwide Permit 14. In addition to authorization for permanent impacts, Nationwide Permit 33 may be required for temporary impacts related to construction access.
Sovereign Lands Construction Permit	Iowa DNR	This permit is required for construction on, above, or under state-owned water and land in Iowa.
Section 401 of the Clean Water Act, Water Quality Certification	Iowa DNR	This certification is required as part of the Section 9 bridge permit and Section 404 permit issuance.
National Pollutant Discharge Elimination System general stormwater discharge permit for construction activities, Clean Water Act	Iowa DNR	The National Pollutant Discharge Elimination System permit, required for construction sites greater than 1 acre in size, authorizes (with implementation of permit-specified mitigation) the discharge of stormwater associated with site construction activities.
Floodplain Development Permit, including no-rise certification	Iowa DNR	A Floodplain Development Permit must be obtained from state-designated agencies as authorized by FEMA for various types of floodway/floodplain development as part of participation in the National Flood Insurance Program.
Section 7 of the Endangered Species Act	USFWS	Section 7 consultation with the USFWS must occur regarding potential impacts on threatened and endangered species and their habitats.
Air Quality Construction Permit	Iowa DNR	The permit is required if a new emission unit is needed for construction (such as portable batch plant for paving applications). Acquisition of the permit may be the responsibility of the roadway construction contractor.

## **7. Comments and Coordination**

### **7.1 Agency and Tribal Coordination**

Early agency coordination commenced in March 2005, through letters to federal, state, and local government agencies to announce the initiation of the I-80/I-380 System Interchange Improvement Project and to solicit feedback from agencies on their relevant areas of expertise. The entities listed in Table 11 were contacted as part of the early coordination efforts. Appendix D contains written responses to the early coordination request.

Important issues identified or raised in as a result of this coordination included the following:

- Overall support for interchange improvements
- Identification of federal and state threatened and endangered species, and species of concern (both plant and animal)
- Information regarding a USACE Section 206 feasibility/concept study of Clear Creek south of I-80 on property owned by the City of Coralville (a project that has, to date, been unfunded)

**TABLE 11**  
Agency and Tribal Coordination

<b>Agency Type</b>	<b>Agency</b>	<b>Date of Response</b>
Federal	Federal Highway Administration, Iowa Division	
	U.S. Army Corps of Engineers	4/18/2005
	U.S. Environmental Protection Agency	
	U.S. Department of Agriculture, Natural Resource Conservation Service	3/24/2005
	U.S. Fish and Wildlife Service	5/4/2005
	Federal Emergency Management Agency	
	U.S. Department of the Interior	
State	State Historic Preservation Officer	3/29/2005
	Iowa Department of Natural Resources / Conservation & Recreation Division	4/5/2005
	Iowa Department of Natural Resources / Environmental Protection Division	
	Iowa Department of Natural Resources / Environmental Services Division	3/30/2005
	Iowa Department of Economic Development	
Iowa Department of Agriculture and Land Stewardship		
Regional	Johnson County Council of Governments	4/21/2005
County	Johnson County Department of Planning and Zoning	
	Johnson County Conservation Department	
	Johnson County Board of Supervisors	
	Johnson County Soil and Water Conservation District	
Local	City of Coralville	4/28/2005
	City of Tiffin	
Other	Iowa City Area Chamber of Commerce	3/2005
	Hawkeye Food Service	3/28/2005

- Suggestion that an interchange at I-380/U.S. 6 be considered as a future improvement (This was determined to be infeasible in accordance with AASHTO guidance regarding interchange spacing as well as being unable to design an interchange that would fit within the physical limitations of the location.)
- Information about planned trail extensions and a wetland restoration site in the southeast quadrant of the interchange

Under the guidance of Section 106 of the National Historic Preservation Act of 1966 (16 USC 470f), states are required to coordinate with Indian tribes if a project could affect lands with cultural or religious significance. Each state has its own process of notification. Iowa employs a four-step process, beginning with early coordination. The following tribes were contacted to seek comment concerning the project:

- Otoe-Missouria Tribe
- Iowa Tribes
- Sac and Fox Nations (Meskwakis)

To date, no responses have been received.

## **7.2 NEPA / 404 Merge Coordination**

The project has followed Iowa DOT's Can-Do<sup>17</sup> development process. Coordination occurred in conjunction with the NEPA/404 Merge<sup>18</sup> process, as a component of the Can-Do process. Agencies involved in the process included USACE, USFWS, USEPA, and Iowa DNR. Information, including meeting summaries and correspondence, is provided in Appendix E. Agency coordination consisted of meetings on the following concurrence points: (1) project purpose and need, (2) alternatives to be analyzed (3) alternatives to be carried forward, and (4) the Preferred Alternative.

On October 26, 2005, a meeting was held to introduce the project and to review the purpose and need and the alternatives to be analyzed. Concurrence on these two points was not requested at the meeting because a public meeting had not yet been held. Iowa DOT, FHWA, and CH2M HILL were present. Representatives from Iowa DNR, USACE, and USFWS attended.

A second meeting was held on July 26, 2006, to request formal concurrence for points #1, #2, and #3. Iowa DOT and CH2M HILL attended to present the project. Representatives from USACE and Iowa DNR attended. USFWS and USEPA did not attend but submitted written comments in advance of the meeting. Concurrence on all three points was obtained at the meeting.

A third meeting was held on July 23, 2008, to obtain concurrence for point #4. Iowa DOT, FHWA, CH2M HILL, and a representative from USACE attended. USFWS, USEPA, and Iowa DNR did not attend but requested that the presentation and meeting summary notes be forwarded to them for review and comment. USACE concurred with point #4 at the meeting. The other three agencies concurred by e-mail following the meeting.

## **7.3 Public Involvement**

### **7.3.1 Public Information Meeting**

A public information meeting was held on March 28, 2006, from 5:00 to 7:00 PM at Iowa City West High School in Iowa City. The meeting was an open-house format, with CH2M HILL and Iowa DOT available to answer questions and to receive comments. Displays included aerial photographs of the project, traffic data, alternative concepts developed, and those to be carried forward for detailed analysis. About 40 citizens, and representatives from Iowa DOT and the consultant team, attended the meeting. Most concerns that were expressed related to residential displacements. Iowa DOT provided a written response to one resident concerned about impact to her property.

### **7.3.2 Public Hearing**

A public hearing will be held in summer 2009 to present the findings of this draft EA and the proposed 4(f) *de minimis* determination, and to obtain public comment on the EA and the project. Exhibits will be available for review, staff will be available to discuss the project, and a court reporter will be available take formal comments at the hearing.

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<sup>17</sup> The purpose of the Can-Do process is to strengthen the partnership among Iowa DOT, FHWA, and other agencies by streamlining and shortening project development without losing program integrity and quality. The process incorporates planning, design, agency coordination, and public involvement elements, and it integrates compliance with NEPA and Section 404 of the Clean Water Act.

<sup>18</sup> The NEPA/404 concurrent process was initiated to streamline project decision making on federal aid highway projects requiring an Individual Section 404 permit. The rationale for conducting the NEPA and Section 404 permit processes concurrently is to help expedite project decision making by executing one overall federal public interest decision for a federal aid project, rather than separate decisions at various points in time that could require an agency to revisit its decision based on another agency's decision.