# EXISTING CONDITIONS TECHNICAL REPORT

PARSONS

Planning and Environment Linkages (PEL) Study I-80 over Mississippi River Rock Island County, IL and Scott County, IA P-92-002-18

**IDOT District 2** July 2020



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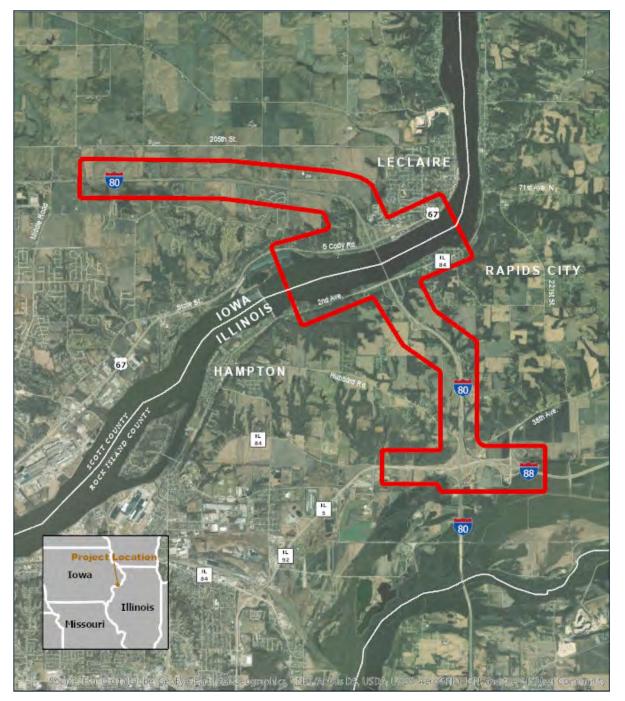
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# **1** Executive Summary

This Existing Conditions Technical Report (ECTR) is an essential part of Planning and Environmental Linkages (PEL) studies being undertaken for the project study area shown in **Figure 1**. This report introduces the project study area and provides a comprehensive understanding of conditions that currently exist. Existing conditions include roadway, drainage and bridge features, traffic operations and safety, and environmental, cultural, and socioeconomic resources. The study of existing conditions will identify key takeaways that will serve to guide the purpose and need development and alternative studies, and ultimately shape future improvements. The existing conditions presented in this ECTR represent a timeframe in the first quarter of year 2020.

FIGURE 1 - PROJECT STUDY AREA

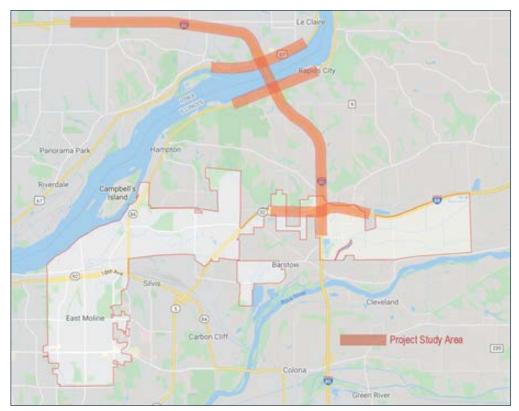




# 2 Study Area and Background

Beginning in Illinois, the project study area (**Figure 1**) encompasses the entire I-80/I-88 system interchange in all directions: west along IL 5/IL 92 to Denhardt Road/193<sup>rd</sup> Street N, south along I-80 approximately 3,200 feet, and east along I-88 (Ronald Reagan Memorial Highway) to Old IL 2 (38th Avenue). Continuing north along I-80, the project study area includes southbound and northbound Weigh Stations, a Rest Area (Frontage Road) for southbound traffic, full interchange access to IL 84 (2<sup>nd</sup> Avenue), and along IL 84 (2<sup>nd</sup> Avenue) west to 180<sup>th</sup> Street N and east to 19<sup>th</sup> Street. Continuing across the Mississippi River into Iowa, the project study area includes full interchange access to US 67 (S Cody Road), and along US 67 (S Cody Road) west to Sycamore Drive/Canal Shore Drive SW and east to Eagle Ridge Road. The project study area continues north and west along I-80 crossing under SW 35<sup>th</sup> Street and crossing over Wells Ferry Road before ending just east of Middle Road interchange.

The project study area is entirely in Rock Island County, Illinois and Scott County, Iowa. Corporate limits in or near the project study area are shown in **Figure 2** through **Figure 6**. The majority of the study area along I-80 in Illinois is unincorporated with only the I-80/I-88 system interchange area located in the City of East Moline (**Figure 2**).



#### FIGURE 2 - CITY OF EAST MOLINE, IL

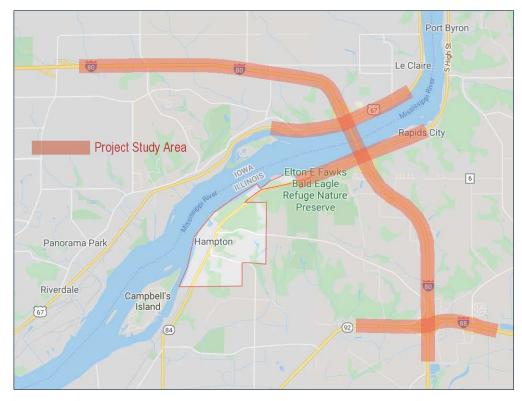
The Village of Hampton (Figure 3) and Village of Rapids City (Figure 4) along IL 84 in Illinois are near the west and east limits of the study area, respectively.

In Iowa, the study area is in the City of LeClaire to the east (**Figure 5**) and the City of Bettendorf to the west (**Figure 6**). There is a short segment of I-80 between the two cities that is in an unincorporated area. The unincorporated segment extends from approximately 257<sup>th</sup> Avenue (north side of I-80) to just west of Wells Ferry Road.

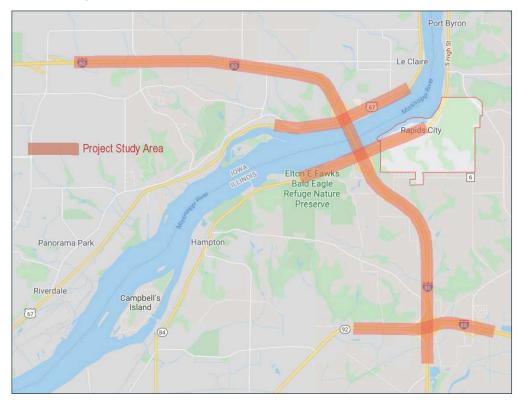
The project study area in Illinois is entirely in Hampton Township. The projects study area in Iowa is in the townships of LeClaire, Pleasant Valley, and Bettendorf.



#### FIGURE 3 - VIILLAGE OF HAMPTON, IL

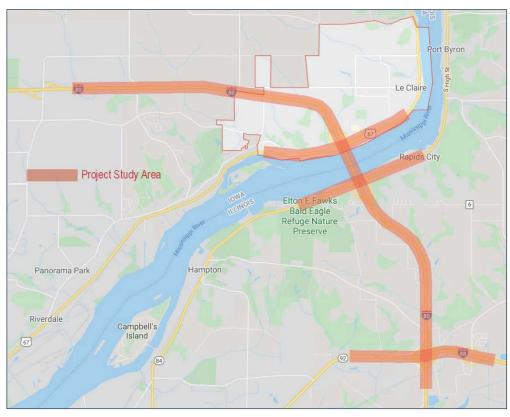


## FIGURE 4 - VILLAGE OF RAPIDS CITY, IL

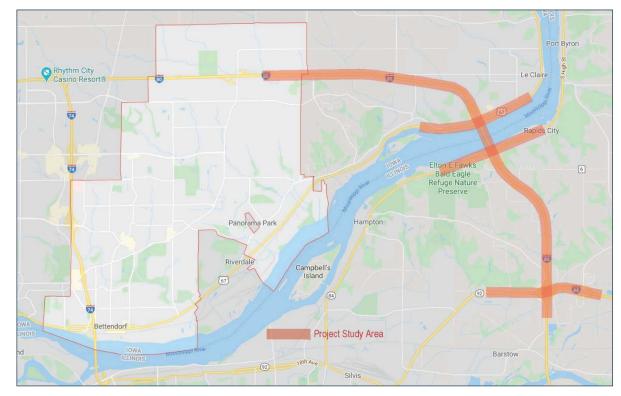




#### FIGURE 5 - CITY OF LECLAIRE, IA



#### FIGURE 6 - CITY OF BETTENDORF, IA





# **3** Previous and Ongoing Studies

# 3.1 Previous Studies

The only recent engineering study completed within the project study area was commissioned by the Illinois Department of Transportation (IDOT) District 2 in 2016 and completed in the first quarter of 2017. The study, "Feasibility Review, I-80 over the Mississippi River" dated March 2017, considered additional lanes across the Mississippi River on I-80 at the Illinois and Iowa border. The purpose for the review was to assist IDOT and Iowa Department of Transportation (Iowa DOT) in arriving at consensus on several key project planning elements as well as provide direction for future NEPA/Phase I studies. As such, the primary focus was to recommend whether the existing substructure should be completely removed or whether it should be reintegrated into new construction.

The review provided conclusions and recommendations for consideration in future NEPA/Phase I studies. However, it is important to note the review did not represent a "Feasibility Study" as defined by IDOT or Federal Highway Administration (FHWA).

The review recommended that removal of the existing substructure be pursued under further study and considered the preferred course of action over the re-use of the existing substructure. It is important to note the disadvantages of reusing the existing substructure emerged as the underlying basis for the recommendation. If analysis had yielded a greater disparity in overall cost between each case, the basis for the recommendation may have shifted. However, the uncertainty and resulting risk inherent to leaving the existing substructure in place is a reality and was a prominent factor in making the recommendation. It is also important to note that the advantages of replacing the existing substructure should be recognized as genuine and considered in context with the lifespan of the improvements being proposed.

The Feasibility Review can be viewed or downloaded in its entirety at the following FTP link: <u>https://knightea.egnyte.com/dl/FXOtH7CD1n</u>

# 3.2 Ongoing Studies

lowa DOT is studying I-80 from the Mississippi River bridge to I-280. The study is at the preliminary engineering/NEPA phase. Ultimately, the defined western project limits of this I-80 PEL Study will become the eastern project limits of the lowa DOT study.

# 4 Roadway/Roadside and Subsurface Analysis

Existing conditions with respect to roadway, roadside, and subsurface features will be studied in this section of the ECTR. Roadway and roadside features will be studied to better understand existing conditions, geometry, access, drainage, and right-of-way. This section of the ECTR will assess bridge and culvert conditions, delineate jurisdiction and maintenance limits, identify utilities in the project study area, and note any agreements associated with the aforementioned. The presence of bicycle, pedestrian, and transit facilities and movements will also be identified.

Policies, procedures and design aids utilized in the analysis of roadway and roadside features include the IDOT Bureau of Design and Environmental Manual (BDE Manual) and the Iowa DOT Design Manual (Iowa Design Manual). Both Illinois and Iowa DOTs make use of standard details that were also used in the assessment of roadway and roadside features. In order to accurately assess existing conditions, coordination with IDOT and Iowa DOT was undertaken to collect record drawings, CAD data, and aerial imagery.

Attached as **Exhibit A** are "Existing Condition Plan" aerial exhibits that identify the various elements noted in the discussion below.



# 4.1 Roadway/ Roadside Features

#### 4.1.1 ROADWAY GEOMETRIC DATA

The geometric properties of the roadway in the project study area were evaluated using record plans and existing topographical information drawn in CAD. The alignment of I-80 was originally constructed as part of the interstate highway system in the 1960s as a four-lane facility, which included the construction of US 67, a two-lane facility. I-88 was originally constructed in the 1970s as a four-lane facility and IL 84 was originally constructed in the 1930s as a two-lane facility. IDOT reconstructed I-80 in 2010 adding a lane in each direction to the median side from just south of IL 84 to approximately 4,000 feet north of the I-88/ I-80 system interchange. The additional inside lanes completed with that project were striped out and have operated as a wide shoulder since construction was completed. Permanent concrete crossovers were constructed just south of the IL 84 interchange ramps and just south of the project limits north of the I-88/ I-80 system interchange. Note that in 2013 the maximum speed limit on I-80 and I-88 in Illinois was increased from 65 mph to 70 mph. The speed limit on I-80 in lowa is 65 mph.

#### 4.1.2 ROADWAY GEOMETRIC DESIGN CRITERIA

Design criteria from both state DOTs were utilized in assessment of geometrics. **Table 1** through **Table 7** summarize the design criteria that were taken from the BDE Manual and the Iowa Design Manual.

**Table 1** identifies design criteria for urban freeways (new construction/reconstruction) per the IDOT BDE Manual that will be used to assess existing roadway geometric deficiencies along I-80 and I-88 in Illinois.

Design Element	I-80 or I-88	BDE Manual
Design Speed (mph)	75	
Superelevation (emax %)	8	44-5.D
SSD Vertical Curves (feet)	820	44-5.D, 31-3.A
SSD Horizontal Curves (feet)	820	31-3.A, 32-4
Minimum Radius (Emax=8%) (feet)	2,210	44-5.D, 32-2.D, 32-3.B
Maximum Grade Level (%)	4	44-5.D
Crest Vertical Curve K-value	312	44-5.D, 33-4.A
Sag Vertical Curve K-value	206	44-5.D, 33-4.E
Lane Widths (feet)	2@24'	44-5.A, 34-2.01
Cross Slope (ft/ft)	3/16"/ft	44-5.A
Shoulder Width (feet)	10" R, 10' L	44-5.A
Vertical Clearance (feet)	16'-0"	44-5.A
Median Width	60'	44-5.A

#### TABLE 1 – IDOT BDE DESIGN CRITERIA FOR URBAN FREEWAYS

**Table 2** identifies design criteria for urban freeways per the Iowa Design Manual that will be used to assess existing roadway geometric deficiencies along I-80 in Iowa.

**Table 3** identifies design criteria for interchange ramps per the IDOT BDE Manual that will be used to assess existing ramp geometric deficiencies at the IL 84 interchange with I-80 in Illinois.

**Table 4** identifies design criteria for interchange ramps per the IDOT BDE Manual that will be used to assess existing ramp geometric deficiencies at the I-80/I-88 system interchange in Illinois.



#### TABLE 2 - IOWA DOT DESIGN CRITERIA FOR URBAN FREEWAYS

Design Element	I-80	IA Design Manual
Design Speed (mph)	75	
Superelevation (emax %)	8	1C-1
SSD Vertical Curves (feet)	820	6D-1
SSD Horizontal Curves (feet)	820	6D-1
Minimum Radius (Emax=8%) (feet)	2,210	2A-2, 2A-3
Maximum Grade Level (%)	+4, -4	1C-1
Crest Vertical Curve K-value	312	1C-1
Sag Vertical Curve K-value	206	1C-1
Lane Widths (feet)	2@24'	3A-1
Cross Slope (%)	3	1C-1
Shoulder Width (feet)	10' R, 4' L	3A-1
Vertical Clearance (feet)	16'-0"	1C-1
Median Width	10'	1C-1

#### TABLE 3 – IDOT BDE DESIGN CRITERIA FOR THE I-80 INTERCHANGE RAMPS AT IL 84

Design Element	I-80 Ramp A	IL 84 Ramp B	I-80 Ramp C	IL 84 Ramp D	BDE Manual
Design Speed (mph)	30	35, 55	30	30, 55	
Superelevation (emax %)	8	8	8	8	37-4.F
SSD Horizontal Curves (feet)	200	250, 495	200	200, 495	37-4.F
Minimum Radius (feet)	214	314, 960	214	214,960	37-4.F
Maximum Grades (%)	+4, -6	+4, -6	+4, -6	+4, -6	37-4.F
Crest Vertical Curve K-value	19	29, 114	19	19, 114	37-4.F
Sag Vertical Curve K-value	37	49, 115	37	37, 115	37-4.F
Lane Widths (feet)	1@16'	1@16'	1@16'	1@16'	37-4.G
Shoulder Width (feet)	8' R, 6' L	8' R, 6' L	8' R, 6' L	8' R, 6' L	37-4.G

#### TABLE 4 - IDOT BDE DESIGN CRITERIA FOR THE I-80/I-88 SYSTEM INTERCHANGE RAMPS

Design Element	Southwest Ramps		Northwest Ramps		Northeast Ramps		Southeast Ramps		BDE Manual
Ramp ID	A1	B1	A2	B2	A3	B3	A4	B4	
Design Speed (mph)	35	45	35	45	35	45	35	45	
Superelevation (emax %)	8	8	8	8	8	8	8	8	37-4.F
SSD Horizontal Curves (feet)	250	360	250	360	250	360	250	360	37-4.F
Minimum Radius (feet)	314	587	314	587	314	587	314	587	37-4.F
Maximum Grades (%)	+4, -6	+4, -6	+4, -6	+4, -6	+4, -6	+4, -6	+4, -6	+4, -6	37-4.F
Crest Vertical Curve K-value	29	61	29	61	29	61	29	61	37-4.F
Sag Vertical Curve K-value	49	79	49	79	49	79	49	79	37-4.F
Lane Widths (feet)	1@16'	1@16'	1@16'	1@16'	1@16'	1@16'	1@16'	1@16'	37-4.G
Shoulder Width (feet)	8'R, 6'L	8'R, 6'L	37-4.G						



**Table 5** identifies design criteria for interchange ramps per the Iowa Design Manual that will be used to assess existing ramp geometric deficiencies at the US 67 interchange with I-80 in Iowa.

Design Element	US 67 Ramp B	I-80 Loop D	I-80 Ramp C	US 67 Loop E	IA Design Manual
Design Speed (mph)	50	30	50	30	
Superelevation (emax, %)	8	8	8	8	1C-1
SSD Horizontal Curves (feet)	425	200	425	200	1C-1
Minimum Radius (feet)	758	214	758	214	1C-1
Maximum Grades (%)	+5, -5	+7, -7	+5, -5	+7, -7	1C-1
Crest Vertical Curve K-value	84	19	84	19	1C-1
Sag Vertical Curve K-value	96	37	96	37	1C-1
Lane Widths (feet)	1@16'	1@18'	1@16'	1@18'	1C-1
Shoulder Width (feet)	6' R, 4' L	6' R, 4' L	6' R, 4' L	6' R, 4' L	1C-1

#### TABLE 5 - IOWA DOT DESIGN CRITERIA FOR THE I-80 INTERCHANGE RAMPS AT US 67

Table 6 identifies design criteria for urban arterials per the IDOT BDE Manual that will be used to assess existing roadway geometric deficiencies along IL 84 in Illinois.

#### TABLE 6 - IDOT BDE DESIGN CRITERIA FOR URBAN ARTERIALS

Design Element	IL 84	BDE Manual
Design Speed (mph)	55	
Superelevation (emax %)	6	32-3.A
SSD Vertical Curves (feet)	495	31-3.A
SSD Horizontal Curves (feet)	495	31-3.A, 32-4
Minimum Radius (feet)	1060	32-3.C
Maximum Grades Level (%)	+4, -4	48-6.C
Crest Vertical Curve K-value	114	33-4.A
Sag Vertical Curve K-value	115	33-4.E
Lane Widths (feet)	2@26'	48-6.A
Cross Slope (ft/ft)	1/4"/ft	48-6.A
Shoulder Width (feet)	0' R, 0' L	48-6.A
Vertical Clearance (feet)	14'-0"	48-6.A

 Table 7 identifies design criteria for urban arterials per the Iowa Design Manual that will be used to assess existing roadway geometric deficiencies along US 67 in Iowa.



#### TABLE 7 – IOWA DOT DESIGN CRITERIA FOR URBAN ARTERIALS

Design Element	US 67	IA Design Manual
Design Speed (mph)	45	
Superelevation (emax, %)	6	10-1
SSD Vertical Curves (feet)	360	6D-1
SSD Horizontal Curves (feet)	360	6D-1
Minimum Radius (feet)	643	2A-2, 2A-3
Maximum Grades (%)	+7, -7	1C-1
Crest Vertical Curve K-value	61	10-1
Sag Vertical Curve K-value	44	10-1
Lane Widths (feet)	2@24'	3A-1
Cross Slope (%)	2	10-1
Shoulder Width (feet)	0' R, 0' L	3A-1
Vertical Clearance (feet)	16'-0"	10-1

#### 4.1.3 ROADWAY GEOMETRIC DESIGN DEFICIENCIES

<u>Note</u>: The tabulated data that follows will highlight geometry that does not meet current design criteria for new construction/reconstruction as identified in the tables above. Only geometry that is deficient is tabulated below. The same deficiencies are also identified and noted on the "Existing Condition Plan" aerial exhibits attached as **Exhibit A**.

#### 4.1.3.1 Existing Horizontal Curvature – I-80 Mainline (IL and IA)

Mainline I-80 consists of four horizontal curves in the project study area. Two of the curves are located on the Illinois side between the Mississippi River and I-88, and two curves are located on the Iowa side of the Mississippi River. Three of the four horizontal curves fail to meet design criteria. On the Illinois side for Curve A084200 and A084210, the existing superelevation rates (3.3% and 3.8%) associated with the existing radii (5,730.12' and 4,912.16', respectively) are considered substandard.

Curve IA210 on the lowa side does not meet prevailing design criteria. According to the lowa Design Manual Section 1C-1, the minimum curve radius at a 75 mph design speed is 2,210'. The existing radius is 2,113.44', which is deficient due to being less than the minimum radius. The existing superelevation rate for Curve IA210 is 7.7%, which meets the maximum criteria of 8%. However, the radius associated with this curve is 2,113.44'. According to the Iowa DOT Design Manual Section 2A-3 Table 9, the superelevation is required to be 8% at the minimum required radius. Since the existing radius is even less than the minimum radius, the existing 7.7% superelevation is considered deficient. **Table 8** identifies deficient geometry along I-80 in Illinois and Iowa.

Alignment Curve Number	Design Element	Existing Condition	Design Criteria	Deficient	Exhibit A Sheet No.
A094000 (II)	Superelevation	3.3%	4.0% minimum <sup>(1)</sup>	~	7.0
A084200 (IL)	Radius	5,730.12'	2,210'		7,8
A094040 (III)	Superelevation	3.8%	4.6% minimum <sup>(1)</sup>	~	0
A084210 (IL)	Radius	4,912.16'	2,210'		9
14040 (14)	Superelevation	7.7%	8%	✓	4
IA210 (IA)	Radius	2,113.44'	2,210')	$\checkmark$	4

#### TABLE 8 - DEFICIENT CURVE GEOMETRY ALONG I-80 IN ILLINOIS AND IOWA



Review of existing lane widths, shoulder widths and median widths did not identify any deficiencies on roadways in the project study area. Shoulder widths across the Mississippi River Bridge do not meet the current requirements in the IDOT BDE Manual.

## 4.1.3.2 Existing Horizontal Curvature – I-80/IL 84 Interchange (IL)

The interchange at I-80 and IL 84 is considered a partial cloverleaf (parclo) interchange. There are four ramps: Ramps A, B, C and D. For this assessment, Ramp A is the I-80 westbound entrance ramp, Ramp B is the I-80 westbound exit ramp, Ramp C is the I-80 eastbound entrance ramp, and Ramp D is the I-80 eastbound exit ramp.

There are no geometric deficiencies found for either of the entrance ramps (Ramp A or Ramp C). There is one curve on each of the exit ramps, Ramp B and Ramp D, that fail to meet design criteria. For Ramp B, the curve number is R310 and for Ramp D the curve number is R200. Ramp B fails to meet criteria for superelevation rate while Ramp D fails to meet criteria for minimum radius. **Table 9** identifies deficient geometry at the IL 84 interchange with I80 in Illinois.

Alignment Curve Number	Design Element	Existing Condition	Design Criteria	Deficient	Exhibit A Sheet No.
	Speed	30 mph	35 mph		
R310 Ramp B	Superelevation	7.0%	8%	$\checkmark$	7
Kamp D	Radius	315.15'	314'		
	Speed	50 mph	55 mph <sup>(2)</sup>		
R200	Superelevation	8.0%	8%		7
Ramp D	Length	183.67'	140'		1
	Radius	690.00'	960'	$\checkmark$	

#### TABLE 9 - DEFICIENT GEOMETRY AT THE I-80/IL 84 INTERCHANGE IN ILLINOIS

(1) Value is determined from IDOT BDE Manual Figure 32-3.B and conservatively rounded to the nearest tenth of a percent.

(2) Exit terminal speed of 55 mph is determined from Figure 37-6.G of the IDOT BDE Manual.

## 4.1.3.3 Existing Horizontal Curvature – I-80/US 67 Interchange (IA)

The interchange at I-80 and US 67 is also considered a partial cloverleaf (parclo) interchange. There are four ramps: Ramp B, Loop D, Ramp C and Loop E. For this assessment, Ramp B is the I-80 eastbound exit ramp, Loop D is the I-80 eastbound entrance ramp, Ramp C is the I-80 westbound entrance ramp and Loop E is the I-80 westbound exit ramp. Ramp B, Loop D, and Ramp C have no deficiencies. There was one deficiency identified on Loop E. Loop E curve number IA320 failed to meet the design criteria for radius. **Table 10** identifies deficient geometry at the US 67 interchange with I-80 in Iowa.

TABLE 10 – DEFICIENT GEOMETRY AT I-80/US 67 INTERCHANGE IN IOWA									
Alignment Curve Number	Design Element	Existing Condition	Design Criteria	Deficient	Exhibit A Sheet No.				
	Speed	45 mph	50 mph						
IA320 Loop E	Superelevation	8.0%	8.0%		5				
Loop L	Radius	693.82'	758'	$\checkmark$					

## 4.1.3.4 Existing Horizontal Curvature – I-80/I-88 System Interchange (IL)

The interchange at I-80 and I-88 is a full cloverleaf interchange. There is a total of eight ramps, four exit ramps and four entrance ramps. The ramps are categorized as southwest, northwest, northeast, and southeast. The ramps labeled A are the inner loop ramps, and the ramps labeled B are the outer ramps. The majority of the ramps (seven out of eight) have substandard radii on the first curve after the exit taper, and some have multiple substandard radii. **Table 11** identifies deficient geometry at the I-80/I-88 system interchange in Illinois.



#### TABLE 11 - DEFICIENT GEOMETRY AT I-80/I-88 SYSTEM INTERCHANGE IN ILLINOIS

Alignment Curve Number	Design Element	Existing Condition	Design Criteria	Deficient	Exhibit A Sheet No.	
	Speed	30 mph	35 mph			
A004100210	Superelevation	8.0%	8%		11	
NE Ramp A1	Length	550.98'	100'		11	
	Radius	267.13'	314'	$\checkmark$	-	
	Speed	30 mph	35 mph			
A004100270	Superelevation	8.0%	8%		12	
SW Ramp A1	Length	299.11'	100'			
	Radius	258.20'	314'	$\checkmark$		
	Speed	30 mph	35 mph			
A004100290	Superelevation	8.0%	8%		10	
SW Ramp A1	Length	371.64'	100'		12	
	Radius	266.72'	314'	$\checkmark$	-	
	Speed	40 mph	45 mph			
A0041410 SW Ramp B1	Superelevation	8.0%	8%		12	
Sw Ramp B1	Radius	407.95'	587'	$\checkmark$		
	Speed	30 mph	35 mph		12	
A004100240	Superelevation	8.0%	8%			
NW Ramp A1	Length	562.14'	100'			
	Radius	267.93'	314'	$\checkmark$		
	Speed	40 mph	45 mph			
A0041380 NW Ramp B1	Superelevation	8.0%	8%		12	
	Radius	415.73'	587'	$\checkmark$		
	Speed	40 mph	45 mph			
A0041390 NW Ramp B1	Superelevation	8.0%	8%		12	
	Radius	476.27'	587'	$\checkmark$		
	Speed	30 mph	35 mph			
A004100310	Superelevation	8.0%	8%		10	
SE Ramp 1	Length	419.27'	100'		12	
	Radius	266.38'	314'	$\checkmark$		
	Speed	40 mph	45 mph			
A0041440 SE Ramp B1	Superelevation	8.0%	8%		12	
	Radius	420.62'	587'	$\checkmark$		
10044450	Speed	40 mph	45 mph			
A0041450 SE Ramp B1	Superelevation	8.0%	8%		12	
OF Hump D1	Radius	475.21'	587'	$\checkmark$		

#### 4.1.3.5 Existing Horizontal Curvature – I-88/Old IL 2 Interchange (IL)

The interchange at I-88 and Old IL 2 is a diamond interchange that consists of four ramps. **Table 12** identifies deficient geometry at the Old IL 2 interchange with I 88 in Illinois. Note that this assessment applies only to the west half of the interchange. Geometric data for the east half of the interchange could not be obtained.



#### TABLE 12 - DEFICIENT GEOMETRY AT I-88/OLD IL 2 INTERCHANGE IN ILLINOIS

Alignment Curve Number	Design Element	Existing Condition	Design Criteria	Deficient	Exhibit A Sheet No.
	Speed	40 mph	45 mph		
A0041480 SW Ramp A1	Superelevation	8.0%	8%		15
Sw Kamp A1	Radius	483.57'	587'	$\checkmark$	
	Speed	40 mph	45 mph		
A0041910 NW Ramp A3	Superelevation	8.0%	8%		15
NW Kallip AS	Radius	521.46'	587'	$\checkmark$	

#### 4.1.3.6 Existing Horizontal Curvature – I-88, IL-84 (IL), and US-67 (IA)

There were no deficiencies identified on I-88, IL 84, or US 67.

#### 4.1.3.7 Existing Vertical Curvature – All Study Routes (IL and IA)

Vertical curves for the corridor were evaluated against design criteria for rates of grade changes (K values) and vertical curve lengths (stopping sight distance). It was determined that all vertical curves in the project study area meet the current design criteria presented in **Table 1** through **Table 7** above.

#### 4.1.3.8 Existing Ramp Terminals – IL 84 (IL) and US 67 (IA)

The entrance loop ramps at the partial cloverleaf (parclo) interchanges at IL 84 and US 67 are sub-standard when compared to current criteria. The existing entrance loop ramp from US 67 to EB I-80 is a taper type with an existing acceleration lane length of 523.83' and a taper rate of 27.4:1. The existing entrance loop ramp from IL 84 to WB I-80 is a taper type with an existing acceleration lane length of 617.44' and a taper rate of 37.9:1. According to Figure 10-72 and Table 10-4 in the 2018 AASHTO Green Book, the design acceleration length is 1510' for a ramp with a 30 mph design speed to a highway with a 75 mph design speed, and the design taper rate is 50:1 to 70:1. Due to this, both existing loop ramps to I-80 do not meet current design standards. However, regarding the entrance ramp from IL 84, IDOT BDE 37-6.02(b)(4)(c) states:

<u>Low-Volume Conditions</u> – Where existing volumes on the mainline are low and where the slower entering vehicles will not reduce the level of service on the mainline, the use of the standard entrance terminal may be considered. The speed profile of merging trucks onto the mainline must be investigated and documented. However, provide sufficient right-of-way so that an auxiliary lane can be added in the future.

Ramp terminals to the I-80/I-88 System Interchange meet current design criteria.

#### 4.1.4 EXISTING ROADSIDE ELEMENTS

Roadside elements evaluated include foreslopes, backslopes, guardrail, cable guard, permanent concrete barrier wall, lighting standards, traffic signal installations, signposts, mast-arm ITS installations, and overhead sign structures.

#### 4.1.4.1 Existing Foreslopes and Backslopes (IL and IA)

To evaluate the existing foreslopes and backslopes, the most recent record plan cross sections were used. A majority of the foreslopes along the corridor are considered barn-roof and are recoverable within the clear zone. There are several areas along I-80 mainline where the backslope of the roadside ditch is 1:2.5 and the foreslope is 1:6. This design does not meet the preferred ditch cross sections identified in Figure 38-3.H of the BDE Manual; however, in these areas the toe of the backslope falls outside of the roadway clear zone. As such, the current foreslopes and backslopes are deemed acceptable.



#### 4.1.4.2 Existing Guardrail Installations (IL and IA)

Guardrail installations along I-80 in Illinois were replaced in 2010. A majority of the guardrail meets current IDOT design standards. However, the number of posts and post spacing have been revised in the most current Traffic Barrier Terminal, Type 6 standard. As such, the existing Type 6 terminals in Illinois do not comply with the most recent design standards. Guardrail installations along I-88 and IL 84 meet current IDOT design standards.

Cable guard installations along I-80 and guardrail installations along US 67 in Iowa meet current Iowa DOT design standards.

#### 4.1.4.3 Existing Concrete Barrier Wall (IL and IA)

There is an existing concrete median barrier wall along I-80 across the Mississippi River bridge. The concrete median barrier wall extends approximately 1,325' beyond the limits of the bridge on the Iowa side and approximately 1,475' on the Illinois side. The concrete median barrier wall in Illinois does not meet current IDOT design standards. IDOT Standard 637006 was updated in January of 2019 to revise the "F-Shape" barrier wall to a constant slope barrier wall. The existing concrete median barrier wall in Iowa meets current Iowa DOT design standards. Iowa DOT uses the "F-Shape" barrier.

#### 4.1.4.4 Lighting and Traffic Signal Installation (IL and IA)

Roadway lighting is present at all interchange entrance and exit ramp gore locations on I-80, as well as across the Mississippi River bridge. Lighting also exists along IL 84 and US 67 for at least the limits of access control and at Eagle Ridge Road on US 67. Infield and gore areas at the US 67 interchange in Iowa use high-mast lighting units. High-mast lighting units also exist throughout the I-80/I-88 system interchange and extends through the Old IL 2 (38th Avenue) interchange with I-88. All roadway lighting installations that exist within clear zones meet breakaway mounting requirements.

The I-80 interchange ramp connections to US 67 are signalized, as is Eagle Ridge Road to the east on US 67. These are the only traffic signal installations present in the project study area.

Roadway lighting and traffic signal elements located in the study area meet current design criteria in both Illinois and lowa.

#### 4.1.4.5 Signposts, Mast-Arm ITS Installations, and Overhead Sign Structures (IL And IA)

There is a variety of signpost installations throughout the project study area. All standard signpost assemblies located within the clear zone and not shielded by guardrail are breakaway. All mast-arm ITS installations for the weigh stations (Illinois only) and overhead sign structures (Illinois only) are shielded by guardrail.

All standard signpost assemblies, mast-arm ITS installations, and overhead sign structures meet current design criteria in both Illinois and Iowa.

#### 4.1.5 EXISTING PAVEMENT CONDITION

In order to evaluate the existing condition of the pavement, IDOT and Iowa DOT provided pavement condition reports. Note that record plan information indicates that the I-80 corridor in Iowa was resurfaced in 1996, and the I-80 corridor in Illinois was reconstructed in 2010 from just south of IL 84 to approximately 4,000 feet north of the I-80/I-88 system interchange. The existing pavement condition in Illinois and Iowa was reviewed and the findings are as follows.

#### 4.1.5.1 Illinois Condition Rating Survey (CRS)

IDOT uses a Condition Rating Survey (CRS) scale to assess and inventory pavement condition data. There are four categories IDOT uses to classify existing pavement condition:

- $\Rightarrow$  Poor:.....1.0  $\leq$  CRS  $\leq$  4.5
- $\Rightarrow$  Fair: ......4.6  $\leq$  CRS  $\leq$  6.0
- $\Rightarrow$  Satisfactory:....6.1  $\leq$  CRS  $\leq$  7.5
- $\Rightarrow$  Excellent: .......7.6  $\leq$  CRS  $\leq$  9.0



I-80 CRS figures vary from 8.1 and 8.5, which fall within the "Excellent" range. IL 84 CRS is rated at 6.8, which is classified as "Satisfactory". I-88 CRS figures vary from 6.9 and 7.6, which is considered "Satisfactory" to "Excellent". The CRS values are also identified and noted on the "Existing Condition Plan" aerial exhibits attached as **Exhibit A**.

IDOT District 2 Operations personnel indicated they maintain the service roads on both sides of I-80. It was noted that the pavement is in poor condition, and there are some drainage issues as a result of failed pipe culverts and failed drainage structures.

#### 4.1.5.2 Iowa DOT Pavement Condition Index (PCI)

Iowa DOT collects and distributes pavement condition via the online Pavement Management Information System (PMIS). Iowa DOT uses a Pavement Condition Index (PCI) to assess and inventory pavement condition data. There are five categories Iowa DOT uses to classify existing pavement condition:

- ➡ Very Poor:....0 to 20
- ➡ Poor:.....20 to 40
- ➡ Fair:.....40 to 60
- ➡ Good:.....60 to 80
- ➡ Excellent: ......80 to 100

I-80 PCI figures vary from 82 to 87, which is classified as "Excellent". US 67 PCI figures vary from 62 to 83, which is considered "Good" to "Excellent". The PCI values are also identified and noted on the "Existing Condition Plan" aerial exhibits attached as **Exhibit A**.

#### 4.1.6 ROADWAY RIGHT-OF-WAY AND ACCESS CONTROL

Existing Right-of-Way (ROW) and Access Control (AC) limits were developed based on record plan data and online GIS data. The ROW and AC limits are identified on the "Existing Condition Plan" aerial exhibits attached as **Exhibit A**. Given that the PEL predominately studies roadways on the interstate system, access is restricted by AC other than interchange access at IL 84, Frontage Road (Rest Area) (southbound only) and Old IL 2 (38th Avenue) in Illinois, and at US 67 in Iowa. Northbound and southbound ramp access is also provided along I-80 to the Weigh Station in Illinois.

Interchange "Exit" designations along I-88 are as follows:

- ⇒ Exit 2:.....Old IL 2 (38th Avenue) [Begin Project Study Area]
- ➡ Exit 1B:....I-80 West, DesMoines
- ⇒ Exit 1A:.....I-80 East to I-74, Peoria

Interchange "Exit" designations along I-80 in Illinois are as follows:

- ⇒ Exit 4A:.....IL 5/ IL 92 West, East Moline
- ⇒ Exit 4B:.....I-88/ IL 92 East, Sterling, Rock Falls
- ⇒ N/A:.....Weigh Station (northbound and southbound)
- ⇒ N/A:.....Frontage Road, Rest Area (southbound only)
- ⇒ Exit 1:....IL 84, East Moline, Savanna

Interchange "Exit" designations along I-80 in Iowa are as follows:

- ⇒ Exit 306: .....US 67, LeClaire, Bettendorf
- ⇒ Exit 301: ......Middle Road [End Project Study Area]

Along IL 84, studies will encompass various side road, commercial, residential and shared access locations, in addition to the I-80 interchange ramp connections. All of these access locations are stop controlled on the minor leg.

Along US 67, studies will also encompass various side road, commercial, residential and shared access locations, in addition to the I-80 interchange ramp connections. The I-80 interchange ramp connections to US 67 are signalized, as is Eagle Ridge Road to the east on US 67. All other access locations are stop controlled on the minor leg.



#### 4.1.7 ROADWAY DRAINAGE AND MAINTENANCE ISSUES

In general, existing roadway drainage features upon inspection appear to function as intended throughout the entire project study area except for the following: reporting from IDOT District 2 Operations personnel identify drainage issues along IL 84 due to ditches being silted in and failure of pipe culverts and drainage structures. Operations personnel also indicated that they maintain the service roads on both sides of I-80. It was noted that the pavement is in poor condition, and there are similar drainage issues as that on IL 84. No drainage or maintenance issues were identified by Iowa DOT personnel.

## 4.2 Bridge/ Culvert Conditions

**Table 13** and **Table 14** provide a summary of bridges and culverts within the project study area in Illinois and Iowa, respectively. The tables provide limited information extracted from the most recent bridge inspection reports. The condition ratings noted in the tables are limited to the deck, superstructure, and substructure along with the culvert rating as it applies. Other relevant data discussed in the reports will be described in the narrative that follows, such as inspector observations, geometric suitability, structure age, number of spans, and structure type. Structure locations are identified on the "Existing Condition Plan" aerial exhibits attached as **Exhibit A**.

#### TABLE 13 - BRIDGE CONDITION SUMMARY FOR ILLINOIS STRUCTURES

Facility Carried	Feature Crossed	Structure Number	Location	Deck Condition Rating	Superstr. Condition Rating	Substruct. or Culvert Condition Rating
I-80 SB	I-88 & IL 92	081-0012	2.5 mi NE of Silvis	6	6	6
I-80 NB	I-88 & IL 92	081-0013	2.5 mi NE of Silvis	6	6	6
I-80 NB & SB	Stream	081-1135	0.72 mi N of IL 5 (I-88)	N	N	6
I-88	Stream	081-2010	0.4 mi E of I-80	N	N	6
I-80	Stream	081-2031	0.3 mi S of I-88	N	N	6
I-80	MS River, IL 84, RR	081-0011	W of Rapid City	6	5	5
IL 5 (I-88)	Drainage Ditch	081-1011	0.41 mi W of I-80 Int.	N	N	7
IL 84	Drainage Ditch	081-1082	0.05 mi S of I-80	N	N	7
IL 84	Drainage Ditch	081-1083	0.18 mi N of I-80	N	N	7
IL 84	Drainage Ditch	081-1081	1.3 mi S of I-80	N	N	6
IL 84	Drainage Ditch	081-2025	1.4 mi S of I-80	N	Ν	6
IL 5 (I-88)	Drainage Ditch	Not Assigned	0.8 mi W of I-80 Int.	N	N	?



Facility Carried	Feature Crossed	Structure Number	Location	Deck Condition Rating	Superstr. Condition Rating	Substruct. or Culvert Condition Rating
I-80 EB	Middle Road	047620	3.6mi E of Jct. I-74	6	6	7
I-80 WB	Middle Road	047630	3.6 mi E of Jct I-74	6	6	7
I-80 EB	CO RD (Z-30)	047670	3.5 mi W of Jct US 67	6	7	6
I-80 WB	CO RD (Z-30)	047680	3.5 mi W of Jct US 67	6	6	6
Local Road (SW 35th Street)	I-80	047700	1.6 mi W of Jct US 67	4	7	7

#### TABLE 14 - BRIDGE CONDITION SUMMARY FOR IOWA STRUCTURES

#### 4.2.1 ILLINOIS STRUCTURES ASSESSMENT

#### ⇒ SN 081-0012 and SN 081-0013

These dual structures carry I-80 over I-88 and IL 92 at the southern end of the project study area. They each consist of four-span continuous steel superstructures supporting reinforced concrete decks. The original bridges were constructed in 1965 and reconstructed in 2008. Since the deck protection is reported as epoxy coated reinforcement, it's likely that the bridge decks were replaced in the 2008 reconstruction project, although a deck condition rating of 6 seems low if that is accurate. Bridge condition ratings (rating) range from "0" (failed condition) to "9" (excellent condition or new). Record plans were not made available, which would have been used to confirm the scope of the 2008 reconstruction project. The sufficiency ratings for these structures are reported as 93.3 and 93.4 out of a possible 100. Note that the under-clearance is reported as intolerable, which indicates that the bridges are a high priority for replacement.

Based on the condition ratings for each bridge, they are in satisfactory condition. It appears that the number of lanes reported as 4 and 2-way traffic on each bridge is reported incorrectly. The actual geometry of these bridges carries two through lanes and a ramp merge lane in one direction on the west bound bridge, and 2 one-way lanes on the eastbound bridge. For that reason, the sufficiency ratings may be incorrectly higher than they should be.

Inspector notes indicate that there are diagonal cracks in the approach slabs and bridge deck, along with transverse cracks in the deck at less than 5 foot spacing. These conditions are typical defects found in structures of this type. The element level inspections indicate that most elements lie in the condition state 1 and 2 with some minor quantities of the substructure in condition state 3.

#### ⇒ SN 081-1135

This single 10'x8' reinforced concrete box culvert is located about <sup>3</sup>/<sub>4</sub> mile north of the interchange of I-80 and I-88. The culvert carries I-80 over a stream and was constructed in 1964. The culvert is buried very deep with a reported fill depth of 47.8 feet over the top slab. The sufficiency rating is reported as 81.5 in the most recent report. The culvert rating of 6 considers this structure to be in satisfactory condition.

#### ⇒ SN 081-2010

This triple 12'x5' reinforced concrete box culvert is located on I-88 about 0.4 mile east of the interchange with I-80. The culvert carries I-88 and an adjacent frontage road over a stream and was constructed in 1977. The sufficiency rating is reported as 80.0 in the most recent report. The culvert rating of 6 considers this structure to be in satisfactory condition. The inspection report notes that there is no bridge railing or approach guardrail. The report also notes that the channel and channel protection is rated 4, meaning that it is poor and has advanced deterioration. Other inspection notes indicate that the center cell is filled with sediment and there is about 18 inches of sediment in the east and west cells.



#### ⇒ SN 081-2031

This structure is a double 10'x6' reinforced concrete box culvert that carries I-80 over a stream located 0.3 mile south of the interchange with I-88. It was originally constructed in 1965 and was reconstructed in 1976. The sufficiency rating is 81.6. There is guardrail mounted on the headwall at both ends of the culvert.

#### ⇒ SN 081-0011

The I-80 Bridge over the Mississippi River, IL 84, Burlington Northern Santa Fe Railway, Canadian Pacific Railroad, Canal Shore Drive, and US 67 is the primary structural component of this study. The bridge was originally constructed in 1967 and was reconstructed in 1996. The bridge superstructure consists of twenty-eight spans with seven distinct bridge units. There is a total of three multi-girder W36 rolled steel beam bridge units at the bridge ends, two on the lowa approach and one on the Illinois approach. The four center bridge units are two-girder welded steel plate girder systems with floor beams and stringers supporting the bridge deck. The middle bridge unit supporting the navigation channel span of 370 feet utilizes two pairs of variable depth welded steel plate girders as the main structural support. The center bridge unit contains a suspended span over the navigation channel with hinges located 66'-3'' from the main bridge piers #13 and #14. Cantilever spans are located in spans #12 and #15 with hinges placed at 23'-2'' from piers #12 and #15.

The 1996 reconstruction consisted of deck replacement and widening, structural steel repairs and painting, abutment modifications and pier repairs. The most recent inspection report dated 10/7/2019 lowered the deck condition rating from seven (7) to six (6) while the superstructure and substructure condition ratings remained at five (5). Scour has been a concern over the last few inspection cycles. At a minimum, the tops of footings have been exposed for piers 9 through 23, and scour has been observed to the bottom of footings at piers 11, 16 and 18. In 2013, a scour countermeasure contract was completed that consisted of installing grout bags around the perimeter of the footing at pier 16.

Although the sufficiency rating is currently 65.0 out of a possible 100, this bridge is not considered structurally deficient given that none of the major bridge components are rated "4" or less. Also, although the deck geometry is rated "4" (minimum adequacy to be left in place), the shoulder widths do not meet the current design criteria. The parapet walls and median barrier do not meet current design standards for test level or shape as the current standard requires test level 5 and constant slope parapet walls and barriers.

A Feasibility Review was completed in 2017 that provided a basis for consensus between IDOT and Iowa DOT on several key project planning elements as well as provide direction for future NEPA/Phase I studies. Refer to Section 3.1 Previous Studies for additional information. The Feasibility Review addressed bridge seat lengths required for seismic considerations and found that the abutment seat lengths are deficient. In addition, the hinges in spans 11, 13, and 15 are also deficient in length.

#### ⇒ SN 081-1011

This structure is a triple 5'x5' reinforced concrete box culvert that carries I-88 (IL 5) over a drainage ditch located 0.41 mile west of the I-80 interchange with I-88. The original construction date on the Master Structure Report is listed as 1900. That likely means that there was no reported date given in the Initial Inspection Report. The culvert is rated in good condition and no notable deficiencies are mentioned.

#### ⇒ SN 081-1082

This structure is a single 12'x6' reinforced concrete box culvert that carries IL 84 over a drainage ditch. It's located 0.05 mile south of I-80 along the west bank of the Mississippi River. The culvert is rated in good condition with some minor deterioration in the channel and channel protection. The original construction date is given as 1900, which means the construction date has not been correctly noted.

#### ⇒ SN 081-1083

This structure is a single 7'x4' reinforced concrete box culvert that carries IL 84 over a drainage ditch. It's located 0.18 mile north of I-80 along the west bank of the Mississippi River. The culvert is rated in good condition with some minor deterioration in the channel and channel protection. The original construction date is given as 1900, which means the construction date has not been correctly noted.



#### ⇒ SN 081-1081

This structure is located on IL 84 about 0.87 mile south of 180<sup>th</sup> Street, which is southwest of I-80 along the Mississippi River. According to information provided by IDOT, this structure is a single 5'x4' reinforced concrete box culvert with a culvert rating of 6 where a rating of 9 is considered new condition. The Structure Summary report was not available on the IDOT website for public bridge information.

#### ⇒ SN 081-2025

This structure is located on IL 84 about 1.4 miles south of I-80 along the Mississippi River. This structure is a 4 barrel 12'x5.2' reinforced concrete box culvert with a culvert rating of 6 where a rating of 9 is considered new condition. This structure was constructed in 1996. The Structure Summary report was obtained from the IDOT website for public bridge information. An inspection report was not provided for this structure.

#### ⇒ SN Not Assigned

This structure is a single 16'x8' reinforced concrete box culvert that carries IL 5 (I-88) over a drainage ditch located 0.8 mile west of the I-88 interchange with I-80. A Structure Summary report was not available on the IDOT website and it appears that it has not been assigned a structure number. A field inspection revealed that this structure is in very good condition. It is believed that the information provided by IDOT for structure number 081-1005 is the structure that carries the north frontage road across the same drainage ditch as this culvert, but is being reported as the structure that crosses IL 5.

#### 4.2.2 IOWA STRUCTURES ASSESSMENT

#### ⇒ SN 047620

This bridge carries eastbound I-80 over Middle Road and is located 3.6 miles east of the I-80 junction with I-74 in lowa. It was constructed in 1963 and is a 3-span multi-girder prestressed concrete superstructure bridge supporting a reinforced concrete bridge deck. The total structure length is 145'. The bridge deck was overlaid with dense low-slump concrete in 1982. The bridge is generally rated from satisfactory to good condition, although there are several maintenance recommendations associated with the latest inspection. They include replacement of the deck expansion joint glands due to damage and leakage, repair to the bridge cones due to erosion, and repair of beam #10 due to collision damage. The approach and transition guardrail are also noted as not meeting current design standards.

#### ⇒ SN 047630

This bridge carries westbound I-80 over Middle Road and is located 3.6 miles east of the I-80 junction with I-74 in lowa. It was constructed in 1963 and is a 3-span multi-girder prestressed concrete superstructure bridge supporting a reinforced concrete bridge deck. The total structure length is 145'. The bridge deck was overlaid with dense low-slump concrete in 1983. The deck geometry is rated intolerable, which indicates a high priority for replacement. The bridge is generally rated from satisfactory to good condition, although there are maintenance recommendations associated with the latest inspection. They include replacement of the deck expansion joint glands due to damage and leakage, and repair to the bridge cones due to erosion. The approach and transition guardrail are also noted as not meeting current standards. The existing bridge width is inadequate and is recommended for replacement regardless of any future improvements along I-80.

#### ⇒ SN 047670

This bridge carries eastbound I-80 over County Road (Z-30) and is located 3.5 miles west of the I-80 junction with US 67 in lowa. It was constructed in 1963 and is a 3-span multi-girder prestressed concrete superstructure bridge supporting a reinforced concrete deck. The total structure length is 154'. The bridge deck was overlaid with high performance concrete in 2017. Concrete barrier walls were installed on the inside of the existing bridge railings in 1983 which resulted in a curb to curb bridge width of 30.2 feet. The deck geometry is rated intolerable, which indicates a high priority for replacement, likely due to the narrow curb- to-curb width. The bridge is generally rated from satisfactory to good condition. The existing bridge width is inadequate and is recommended for replacement, regardless of any future improvements along I-80. Although the under-clearance is posted as 13'-7'', it is inconsistently rated superior to present desirable criteria.



#### ⇒ SN 047680

This bridge carries westbound I-80 over County Road (Z-30) and is located 3.5 miles west of the I-80 junction with US 67 in lowa. It was constructed in 1963 and is a 3-span multi-girder prestressed concrete superstructure bridge supporting a reinforced concrete deck. The total structure length is 154'. The bridge deck was overlaid with high performance concrete in 2017. Concrete barrier walls were installed on the inside of the existing bridge railings in 1983 which resulted in a curb to curb bridge width of 30.0 feet. The deck geometry is rated intolerable, which indicates ahigh priority for replacement, likely due to the narrow curb-to-curb width. The bridge is generally rated from satisfactory to good condition. The existing bridge width is inadequate and is recommended for replacement, regardless of any future improvements along I-80. The under-clearance (13'-7") is reported as intolerable, which indicates that the bridge is a high priority for corrective action.

#### ⇒ SN 047700

This bridge carries Local Road SW 35th Street over I-80. It was constructed in 1963 and consists of four spans constructed of a prestressed concrete multi-girder superstructure supporting a reinforced concrete deck. The overall length of the bridge is 234 feet. The abutments are stub abutments and the piers are single column hammerhead piers. The bridge deck is rated poor while the superstructure and substructure are rated in good condition. The approach guardrail and transitions to the bridge do not meet current design standards. The bridge was designed for H15 live load, but the operating rating is 57.5 tons and does not need to be posted for legal loads. Barrier walls on both sides of the bridge were installed in 1987. Beam #1 in span 3 was replaced and beam #4 was repaired in 2012. The left barrier rail in span #3 was replaced along with the replacement of beam #1 in span 3.

## 4.3 Jurisdiction and Maintenance

Jurisdiction of roadways in Illinois within the project study area are shown on **Figure 7**. Responsibility for maintenance of roadways is the same as jurisdiction with the exception of the service roads on both sides of I-80. IDOT District 2 Operations personnel indicated that they maintain the service roads. More detailed data regarding jurisdiction and maintenance may become available when this project transitions to a NEPA/Phase I study.

Jurisdiction of roadways in Iowa through the US 67 interchange are shown on **Figure 8**. Iowa DOT has jurisdiction of the remainder of the project study area in Iowa through the Middle Road interchange. Maintenance of roadways is assumed to also be with Iowa DOT. More detailed data regarding jurisdiction and maintenance may become available when this project transitions to a NEPA/Phase I study.

# 4.4 Railroads and Railroad Agreements

Class I railway lines exist on both sides of the Mississippi River between the river and either IL 84 or US 67. The railway line in Illinois is owned and operated by BNSF. The railway line in Iowa is owned by Canadian Pacific and operated by BNSF. A search for railroad agreements yielded no data. Additional data may become available when this project transitions to a NEPA/Phase I study

# 4.5 Utilities and Utility Agreements

Utility data was collected for the entire project study area. Data collected indicates that electric, gas, fiber optic, sanitary, and water facilities exist within the project study area. Each of these facilities exist in both Illinois and Iowa. Maps showing the locations of utilities within the project study area are included in **Exhibits B1-B5**. A design JULIE was not requested as part of the PEL study.

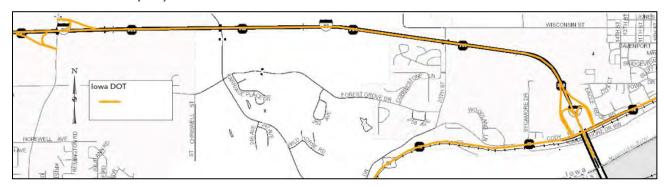
A search for utility agreements yielded no data. Additional data may become available when this project transitions to a NEPA/Phase I study.



#### FIGURE 7 – JURISDICTION MAP (ILLINOIS)



FIGURE 8 – JURISDICTION MAP (IOWA)

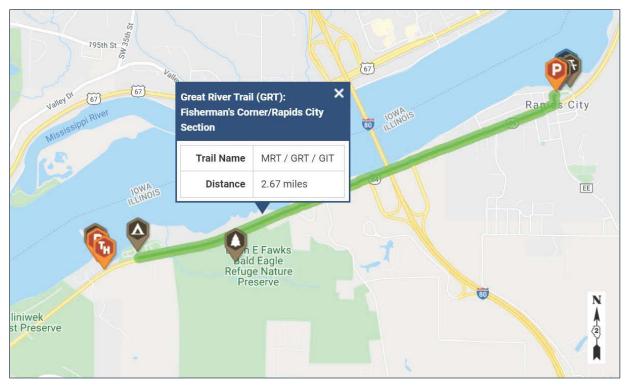


# 4.6 Bicycle and Pedestrian Facilities

The only published trail or multi-use path within the project study area is the Great River Trail (GRT) on the Illinois side of the river between the BNSF railroad tracks and IL 84 (north side of IL 84) (**Figure 9**). This section of the GRT is referred to as the "Fisherman's Corner/ Rapids City Section". The trail is also part of the Mississippi River Trail (MRT) and Grand Illinois Trail (GIT). The GRT is the only bicycle and pedestrian friendly accommodations in the project study area.



#### FIGURE 9 - GREAT RIVER TRAIL (GRT) LOCATION MAP



# **5** Traffic Operations Analysis

Traffic operations for mainline I-80, I-88 and the interchange ramps were analyzed for the Existing Year (2017) for the AM and PM peak hours. Future No-Build (2045) traffic analysis was completed for the same interstate segments for AM and PM peak hours.

## 5.1 Methodology

Highway Capacity Software (HCS) 2010 was used to analyze traffic operations. The analysis includes basic freeway segments, ramp merges and diverges, and weaving. Factors such as hourly volumes, percentage of heavy vehicles, number of lanes, and merging/diverging/weaving lengths were used as inputs to determine level of service (LOS). LOS ranges from A through F, which is based on density in passenger cars/mile/lane (pc/mi/ln). Lower densities provide better mobility and levels of service, while higher densities are usually indicative of increased congestion, slower speeds, and reduced levels of service. Table 15 lists the density thresholds for each level of service by analysis type.

LOS	Decie Freemen	Merrie (Diverse	We	aving
LUS	Basic Freeway Merge/Diverge	Freeways	C-D	
А	<= 11	<= 10	0 - 10	<= 12
В	> 11 - 18	> 10 - 20	> 10 - 20	> 12 - 24
С	> 18 - 26	> 20 - 28	> 20 - 28	> 24 - 32
D	> 26 - 35	> 28 - 35	> 28 - 35	> 32 - 36
E	> 35 - 45	> 35	> 35	> 36
F	> 45, Demand Exceeds Capacity	Demand Exceeds Capacity	v/c>1.00	v/c>1.00



# 5.2 Existing Volume/Capacity Results

Table 16 provides the traffic operations for the existing conditions (2017) by location and type for the AM and PM peakhours. Density is listed as passenger cars/mile/lane. Nearly all the segments operate at LOS A or LOS B in the existingconditions. One location—the I-80 eastbound PM diverge at the IL 84 exit ramp—operates at LOS C. Both IDOT and IowaDOT list LOS C as the design standard for urban interstates. Existing traffic volumes and levels of service are shown onExhibit C.

#### AM PM Direction Туре Route At LOS Density LOS Density Middle Rd to US-67 I-80 EB Freeway 8.8 А 14.0 В I-80 18.2 EB **US-67** Diverge 11.9 В В В I-80 EB **US-67** Merge 12.4 В 17.4 I-80 WB Middle Rd to US-67 Freeway 11.9 В 13.5 В I-80 WB **US-67** Diverge 16.0 В 19.9 В I-80 WB **US-67** 15.2 В 16.9 В Merge I-80 EB US-67 to IL-84 Freeway 10.5 А 15.1 В I-80 US-67 to IL-84 В 16.0 WB Freeway 12.8 В IL-84 Diverge 20.2 С I-80 EB 14.6 В I-80 WB IL-84 14.9 В 18.4 В Merge 9.2 I-80 EB IL-84 to Rest Stop Weave 6.2 А A I-80 Weigh Station to IL-84 11.2 В WB Weave 8.0 А I-80 EB **Rest Stop** Merge 10.9 В 15.4 В I-80 EB Weigh Station Diverge 2.9 А 7.8 Α Weigh Station 14.9 I-80 EB Merge 10.5 В В I-80 WB Weigh Station Diverge 14.8 В 19.7 В В I-80 EB IL-84 to I-88 9 А 13.1 Freeway I-80 WB IL-84 to I-88 15.1 В Freeway 11 А 12.3 17.3 В I-80 EB I-88 Diverge В I-80 EB I-88 Weave 6.2 А 9.8 А I-80 EB I-88 Merge 7.7 А 11.8 В Diverge I-80 WB I-88 13.1 В 16.9 В I-80 WB I-88 6.6 9.1 Α Weave А I-80 WB I-88 Merge 12.3 В 16.8 В I-80 EB I-88 to Cleveland Freeway 6.6 А 10.4 Α I-80 WB I-88 to Cleveland Freeway 9.2 А 12.3 В I-88 EB W of I-80 Freeway 3.6 А 6.4 Α I-88 WB W of I-80 А 5.0 А Freeway 5.1 I-88 EB I-80 Diverge 5.9 А 9.3 А I-88 I-80 EB Weave 4.0 А 6.7 A I-88 WB I-80 Diverge 7.0 А 8.2 А I-88 WB I-80 Weave 3.8 А 6.0 А I-88 WB I-80 Merge 6.0 А 5.8 А I-80 to Old IL 2 I-88 EB Weave 3.9 А 6.5 А Old IL 2 I-88 EB Merge 4.8 А 7.6 A I-88 WB I-80 to Old IL 2 2.9 А 3.4 A Freeway

#### TABLE 16 - I-80/I-88 EXISTING CONDITIONS (2017) TRAFFIC OPERATIONS

Existing Conditions Technical Report - I-80 over Mississippi River, S-92-002-18, Rock Island County, IL and Scott County, IA



Douto	Direction	At Two		AM		РМ	
Route	Route Direction	At	Туре	Density	LOS	Density	LOS
I-88	WB	Old IL 2	Diverge	6.6	А	7.7	А
I-88 CD	WB	I-80 to Old IL 2	Weave	5.2	А	5.1	А
I-88	WB	Old IL 2	Merge	4.0	А	4.2	А
I-88	EB	E of Old IL 2	Freeway	4.6	А	7.2	А
I-88	WB	E of Old IL 2	Freeway	4.2	А	5.1	А

# 5.3 Future No-Build Volume/Capacity Results

**Table 17** provides the traffic operations for the future no-build conditions (2045) by location and type for the AM and PM peak hours. Density is listed as passenger cars/mile/lane. Along with the projected increase in traffic by the year 2045 is an incremental increase in densities. Most of the segments are expected to operate at LOS A or LOS B in the future no-build conditions, with several segments expected to operate at LOS C. Both IDOT and Iowa DOT list LOS C as the design standard for urban interstates. Future no-build traffic volumes and levels of service are shown on **Exhibit D**.

### TABLE 17 - I-80/I-88 FUTURE NO-BUILD CONDITIONS (2045) TRAFFIC OPERATIONS

			_	A	M	Р	M
Route	Direction	At	Туре	Density	LOS	Density	LOS
I-80	EB	Middle Rd to US-67	Freeway	10.8	Α	17.3	В
I-80	EB	US-67	Diverge	14.3	В	22.1	С
I-80	EB	US-67	Merge	14.3	В	20.3	С
I-80	WB	Middle Rd to US-67	Freeway	15.1	В	17.1	В
I-80	WB	US-67	Diverge	19.5	В	24.1	С
I-80	WB	US-67	Merge	18.7	В	20.8	С
I-80	EB	US-67 to IL-84	Freeway	12.3	В	17.7	В
I-80	WB	US-67 to IL-84	Freeway	15.6	В	19.6	С
I-80	EB	IL-84	Diverge	16.8	В	23.3	С
I-80	WB	IL-84	Merge	18.1	В	21.8	С
I-80	EB	IL-84 to Rest Stop	Weave	6.9	А	10.0	В
I-80	WB	Weigh Station to IL-84	Weave	9.4	Α	13.2	В
I-80	EB	Rest Stop	Merge	11.7	В	16.5	В
I-80	EB	Weigh Station	Diverge	3.8	Α	9.1	А
I-80	EB	Weigh Station	Merge	11.2	В	16.1	В
I-80	WB	Weigh Station	Diverge	17.0	В	22.7	С
I-80	EB	IL-84 to I-88	Freeway	9.7	Α	14.1	В
I-80	WB	IL-84 to I-88	Freeway	12.8	В	17.6	В
I-80	EB	I-88	Diverge	13.2	В	18.6	В
I-80	EB	I-88	Weave	8.1	Α	12.0	В
I-80	EB	I-88	Merge	8.2	А	12.7	В
I-80	WB	I-88	Diverge	14.6	В	18.8	В
I-80	WB	I-88	Weave	7.1	А	9.7	А
I-80	WB	I-88	Merge	13.9	В	18.8	В
I-80	EB	I-88 to Cleveland	Freeway	7.1	А	11.1	В
I-80	WB	I-88 to Cleveland	Freeway	10.5	А	14.0	В
I-88	EB	W of I-80	Freeway	4.0	А	7.1	А



Dauta	Direction	At	Turne	A	M	Р	M
Route	Direction	At	Туре	Density	LOS	Density	LOS
I-88	WB	W of I-80	Freeway	5.2	A	5.0	А
I-88	EB	I-80	Diverge	6.4	А	10.1	В
I-88	EB	I-80	Weave	5.6	А	9.3	А
I-88	WB	I-80	Diverge	10.1	В	12.0	В
I-88	WB	I-80	Weave	4.4	A	4.5	А
I-88	WB	I-80	Merge	6.0	А	5.9	А
I-88	EB	I-80 to Old IL 2	Weave	5.8	A	9.4	А
I-88	EB	Old IL 2	Merge	7.6	A	11.4	В
I-88	WB	I-80 to Old IL 2	Freeway	4.6	A	4.8	А
I-88	WB	Old IL 2	Diverge	10.0	A	11.9	В
I-88 CD	WB	I-80 to Old IL 2	Weave	8.9	A	8.9	А
I-88	WB	Old IL 2	Merge	4.9	А	5.0	А
I-88	EB	E of Old IL 2	Freeway	7.0	A	10.9	А
I-88	WB	E of Old IL 2	Freeway	7.0	A	8.6	А

# 6 Traffic Safety Analysis

IDOT and Iowa DOT provided a crash summary developed from a crash analysis tool (program). Crash data was limited to review of results produced by the crash analysis tool. Crash results were produced for the years 2014 through 2018. The data was reviewed and compared with existing roadway geometric deficiencies and statewide or nationwide averages.

# 6.1 Illinois Crash Data Analysis

IDOT provided crash data that was analyzed using the Illinois Crash Data Analysis tool. A total of 297 crashes were identified along I-80, I-88, and interchange ramps within the Illinois project study area.

Illinois had no recorded fatalities for the 5-year study period. Crash severity is broken down as A, B, and C type injuries, and Property Damage Only (PD). The injury types are defined as follows:

- A − Severe Injury
- ➡ B Moderate Injury
- ➡ C Possible Injury

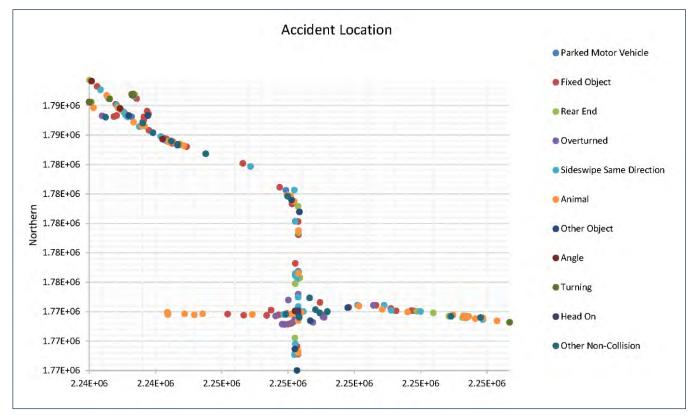
A summary of results shows that 81% of the crashes involved property damage only, 5% involved severe injuries, 11% involved moderate injuries, and 3% involved a possible injury. Three-quarters of the crashes involve the following crash types: fixed object (36%), overturning (28%), or a rear end collision (11%). Refer to **Figure 10** for an illustration of crash densities and **Figure 11** for an illustration of crash severity by year.

# 6.2 Iowa Crash Data Analysis

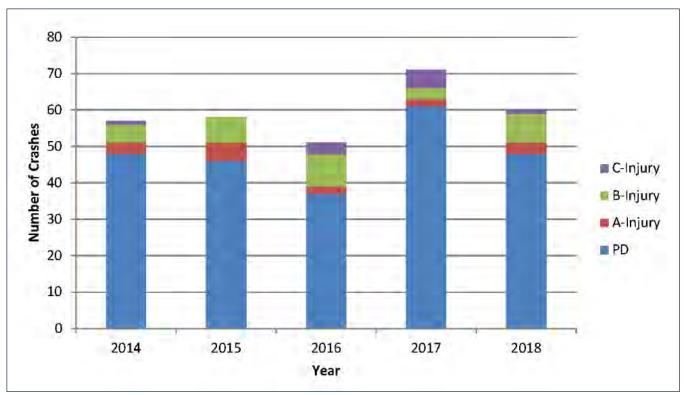
Iowa DOT crash data was analyzed using the Iowa Crash Analysis Tool. A total of 223 crashes involving 332 vehicles were identified along I-80 and interchange ramps within the Iowa project study area. Iowa had 3 recorded fatalities in the 5-year study period. Property damage only represented 77% of the crashes, 3% involved a fatality or a serious injury, 10% involved a minor injury, and 10% involved a possible/unknown injury. Refer to **Figure 12** for an illustration of crash densities and **Figure 13** for an illustration of crash severity by year.





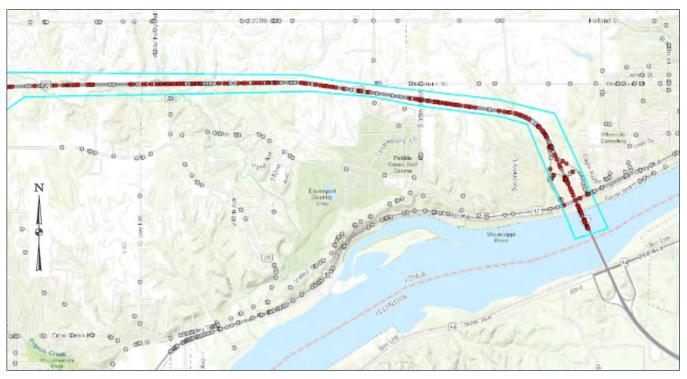


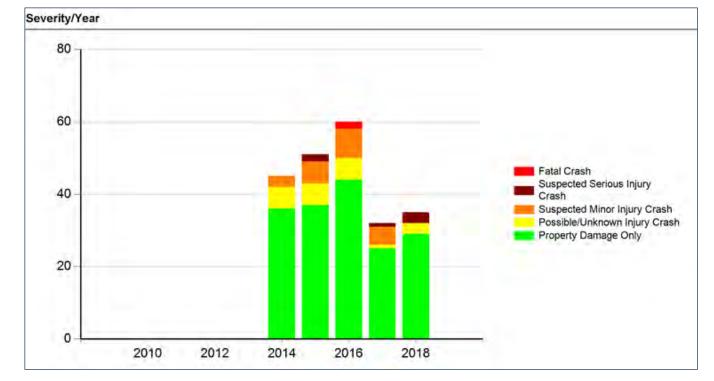






#### FIGURE 12 - I-80 AND RAMP CRASH DENSITIES (IOWA)





#### FIGURE 13 - I-80 AND RAMP CRASH SEVERITIES (IOWA)



# 6.3 Study Area Crash Rates

Crashes in Illinois were studied to determine how injury and fatality rates compared to state and national averages. Year 2017 state and national data was readily available and aligned well with crash data years analyzed. **Table 18** provides injury and fatality rates per 100 million vehicle miles traveled (VMT) in Illinois, Iowa, and nationally. The rates are compared to rates calculated for the Illinois and Iowa project study areas separately and then combined. For the PEL project study area, an average of total injuries and fatalities for the years 2014 through 2018 was used to compare with the 2017 state and national data. The study area VMT was calculated using existing average daily traffic (Exhibit C) and study area roadway lengths where crash data was provided.

#### TABLE 18 - INJURY AND FATALITY RATES PER 100 MILLION VEHICLE MILES TRAVELED (VMT)

Rate Type (4)	Source Statistics			I-80 PEL Project Study Area		
Kate Type (*)	US Stat (1)	IL Stat (2)	IA Stat (3)	IL	IA	IL+IA
2017 Injury Rate per 100 Million VMT	85.5	86.5	55.9	22.0	33.2	25.6
2017 Fatality Rate per 100 Million VMT	1.16	1.01	0.98	0.00	1.46	0.48

(1) Source: USDOT, NHTSA's National Center for Statistics and Analysis, Traffic Safety Facts 2017

https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812806

(3) Source: Iowa Motor Vehicle Crashes - 1925 to 2018 (used stats for 2017) https://iowadot.gov/mvd/stats/crashhistory.pdf

(4) Year 2017 data is the most recent year statistics are available for US, IL and IA

Crash rates in the project study area are substantially lower than state and national averages. The same holds true for the injury crash rate in lowa, However, the fatality crash rate in the lowa project study area is higher than state and national averages. When considering the entire project study area, injury and fatality crash rates are substantially lower than state and national averages.

Further study of crash data will be undertaken in Phase I (i.e., NEPA phase), where special attention to factors contributing to higher crash concentrations will be considered, such as geometric deficiencies identified in this ECTR.

# 7 Environmental Review and Evaluation

This environmental review and evaluation are based on the existing information collected from various databases. This information will be used to help determine where further surveys will be required once alternatives to be carried forward have been identified. Also, known areas of importance can be avoided during alternatives development and evaluation. In addition to the Mississippi River, this project will cross 15 streams. The Mississippi River, Spencer Creek, and one unnamed stream have designated 100-year floodplains and floodways. Four other unnamed streams have designated 100-year floodplains. There is one public park, one forest preserve/refuge (i.e., natural area), and the Great River Trail within the project study area which should be avoided. Forested habitat is located within the project study area that could represent potential habitat for the federally endangered Indiana bat and the federally threatened northern longeared bat. In addition, there are three federally endangered mussels and one Illinois-threatened mussel located in the Mississippi River downstream of the project study area. The bald eagle occurs in the project study area in the Illiniwek Forest Preserve and the Elton E. Fawks Bald Eagle Refuge. The peregrine falcon has been known to nest on the I-80 bridge over the Mississippi River. Wetlands are located along the Mississippi River west of I-80 and south of the I-80/I-88 interchange. Five archaeological sites are located in Illinois. A portion of the Lock and Dam No. 14 Historic District, which is listed on the National Register of Historic Places (HRHP), is located in the project study area in lowa. There are also community facilities, regulated substances, and wells in the project study area. Most of the surrounding land use consists of agriculture.

<sup>(2)</sup> Source: Illinois 2017 Crash Facts & Statistics http://www.idot.illinois.gov/Assets/uploads/files/Transportation-System/Resources/Safety/Crash-Reports/crashfacts/2017%20Crash%20Facts.pdf



# 7.1 Methodology

Information was collected from various sources and existing GIS databases.

- Data Acquisition. GIS data was acquired for a one-mile buffer of the I-80 PEL project study area. Requests to access downloadable data at multiple agency levels was requested. In the event that data was not available from primary sources, secondary sources were pursued. A triage process was used to rank, and vet sources as new data became available. Where GIS data was not available, published figures were acquired.
- Data Manipulation. Effort was made to preserve the attributes and spatial reference of each source. Minimal attribute edits for spelling and place name corrections were made. Certain datasets featured in Exhibits E through P required location approximation and geocoding. Data attributes were parsed, aggregated, joined, and normalized where necessary (notes added to file descriptions where applicable).
- ➡ Cartographic Representation. In order to preserve the integrity of datasets acquired, and to allow for future aggregation and scalability, data sources were preserved (as-is) at the source files but grouped like sources by appearance and renamed layers for readability.

# 7.2 Environmental Resources in Study Area

- Floodways and Floodplains. There are floodways and 100-year floodplains in the project study area along the Mississippi River, Spencer Creek, and an unnamed stream west of the I-80/US 67 interchange that crosses I-80 west of the curve in Iowa as shown on Exhibit E. A 100-year floodplain is located along another unnamed stream that crosses I-80 south of the I-80/I-88 interchange in Illinois.
- ⇒ Rivers, Lakes, and Streams. Rivers, Lakes and Streams are shown on a Wetlands and Streams Map (Exhibit F). There are 15 stream crossings of I-80 in the project study area, including the Mississippi River. In Iowa, Spencer Creek and eight unnamed tributaries to Spencer Creek cross I-80. One unnamed stream crosses the I-80/US 67 interchange, and another unnamed stream crosses I-80 northwest of the I-80/US 67 interchange. In Illinois, one unnamed stream crosses the western half of the I-80/IL 84 interchange, and two other unnamed streams cross I-80 north and south of the I-80/I-88 interchange.
- ⇒ Public Parks and Recreation Areas/Section 4(f) Resources are shown on Exhibit G. There are no public parks in the project study area in Iowa. Schuler's Shady Grove Park in the Village of Rapids City is the only park in the project study area in Illinois. There is a conservation easement on land along the Mississippi River in Iowa, west of I-80. The Great River Trail follows the Mississippi River in Illinois and crosses under I-80 (Exhibit O). The Elton E. Fawks Bald Eagle Refuge is an Illinois Nature Preserve and is located in the project study area west of I-80. The Illiniwek Forest Preserve is an Illinois Natural Area. The Mississippi River is a Sovereign River in Iowa. Therefore, any construction will require a sovereign lands construction permit from Iowa Department of Natural Resources.

**Endangered and Threatened Species.** The U.S. Fish & Wildlife Service lists several federally listed species for Scott County, lowa and Rock Island County, Illinois, which could potentially be in the project study area. There are several forested areas, as shown on **Exhibit G**, that could represent potential habitat for the federally endangered Indiana bat (*Myotis sodalis*) and the federally threatened northern long-eared bat (*Myotis septentrionalis*) (both bats are listed for Illinois and Iowa). The eastern prairie fringed orchid (*Platanthera leucophaea*) is a federally threatened species listed for Rock Island County. The federally threatened prairie bush clover (*Lespedeza leptostachya*), western prairie fringed orchid (*Platanthera praeclara*), Mead's milkweed (*Asclepias meadii*), and the eastern massasauga rattlesnake (*Sistrurus catenatus*) are listed for Scott County. The federally endangered rusty patched bumble bee (*Bombus affinis*) is also listed for Scott County. There are three federally endangered mussel species for both Iowa and Illinois known to be located about 500 feet west (downstream) of the project study area (and 1.6 miles west of I-80). These are the Higgin's-eye pearly mussel (*Lampsilis higginsii*), sheepnose mussel (*Plethobasus cyphyus*), and spectaclecase mussel (*Cumberlandia monodonta*). The Illinois-threatened black sandshell mussel (*Ligumia recta*) is also known to be in this mussel bed. There is a population of Illinois-threatened butterfly mussels (*Ellipsaria lineolata*) located within the project study area west about 0.6 miles downstream of I-80 (**Exhibit G**).



All of the listed species for Scott County, Iowa are shown in **Table 19**. Iowa DNR has not indicated if any of these species are in the project study area. However, the Iowa DOT has stated that there are no documented occurrences of any Iowa state-listed threatened and endangered species in the project study area (personal communication Mary Kay Solberg). Illinois DNR listed the species which could potentially be in the project study area which are described above. The bald eagle (*Haliaeetus leucocephalos*) is listed as being in the project study area in the Illiniwek Forest Preserve and the Elton E. Fawks Bald Eagle Refuge. The bald eagle is no longer a listed species, but it is still protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. In addition, the peregrine falcon (*Falco peregrinus*), which is also protected under the Migratory Bird Treaty Act, has been known to nest on the I-80 bridge over the Mississippi River. Further surveys will be required for all of these species once alternatives to be carried forward are determined.

Common Name	Scientific Name	Class	(*) Iowa Status	Federal Status
Central Newt	Notophthalmus viridescens	Amphibians	Т	
Bald Eagle	Haliaeetus leucocephalus	Birds	S	
Barn Owl	Tyto alba	Birds	E	
Peregrine Falcon	Falco peregrinus	Birds	S	
Grass Pickerel	Esox americanus	Fish	Т	
Lake Sturgeon	Acipenser fulvescens	Fish	E	
Butterfly	Ellipsaria lineolata	Mussels	Т	
Creeper	Strophitus undulatus	Mussels	Т	
Higgin's-Eye Pearly Mussel	Lampsilis higginsii	Mussels	E	E
Pistolgrip	Tritogonia verrucosa	Mussels	E	
Round Pigtoe	Pleurobema sintoxia	Mussels	E	
Sheepnose	Plethobasus cyphyus	Mussels	E	E
Spectaclecase	Cumberlandia monodonta	Mussels	E	E
Yellow Sandshell	Lampsilis teres	Mussels	E	
Byssus Skipper	Problema byssus	Insects	Т	
Regal Fritillary	Speyeria idalia	Insects	S	
Rusty Patched Bumble Bee	Bombus affinis	Insects		E
Zebra Swallowtail	Eurytides marcellus	Insects	S	
Indiana Bat	Myotis sodalis	Mammals	E	E
Northern Long-eared Bat	Myotis septentrionalis	Mammals		Т
Southern Bog Lemming	Synaptomys cooperi	Mammals	Т	
Southern Flying Squirrel	Glaucomys volans	Mammals	S	
American Speedwell	Veronica americana	Plants	S	
Earleaf Foxglove	Tomanthera auriculata	Plants	S	
Globe Mallow	Malvastrum hispidum	Plants	S	
Golden Aster	Heterotheca villosa	Plants	S	
Heart-leaved Plantain	Plantago cordata	Plants	S	
Hill's Thistle	Cirsium hillii	Plants	S	
Lake Cress	Armoracia aquatica	Plants	S	
Lance-leaved Violet	Viola lanceolata	Plants	S	
Low Hairy Ground-cherry	Physalis pubescens	Plants	S	
Mead's Milkweed	Asclepias meadii	Plants	E	Т
Orange Grass St. John's Wort	Hypericum gentianoides	Plants	E	
Prairie Bush Clover	Lespedeza leptostachya	Plants	Т	Т
Purple Angelica	Angelica atropurpurea	Plants	S	
Rose Turtlehead	Chelone obliqua	Plants	S	
Schreber's Aster	Aster schreberi	Plants	E	

#### TABLE 19 - LISTED SPECIES IN SCOTT COUNTY, IOWA



Common Name	Scientific Name	Class	(*) Iowa Status	Federal Status
Summer Grape	Vitis aestivalis	Plants	S	
Sweet Indian Plantain	Cacalia suaveolens	Plants	Т	
Valerian	Valeriana edulis	Plants	S	
Waxleaf Meadowrue	Thalictrum revolutum	Plants	E	
Western Prairie Fringed Orchid	Platanthera praeclara	Plant	Т	Т
Alkali Muhly	Muhlenbergia asperifolia	Plants	S	
Bulrush	Scirpus pedicellatus	Plants	S	
Drooping Bluegrass	Poa languida	Plants	S	
Field Sedge	Carex conoidea	Plants	S	
Glomerate Sedge	Carex aggregata	Plants	S	
Grassleaf Rush	Juncus marginatus	Plants	S	
Great Plains Ladies'-tresses	Spiranthes magnicamporum	Plants	S	
Green's Rush	Juncus greenei	Plants	S	
Pony Grass	Eragrostis reptans	Plants	S	
Sedge	Carex gracilescens	Plants	S	
Slender Dayflower	Commelina erecta	Plants	Т	
Slender Fimbry	Fimbristylis autumnalis	Plants	S	
Slender Ladies'-tresses	Spiranthes lacera	Plants	T	
Slender Sedge	Carex tenera	Plants	S	
Small White Lady's Slipper	Cypripedium candidum	Plants	S	
Tall Cotton Grass	Eriophorum angustifolium	Plants	S	
Ledge Spikemoss	Selaginella rupestris	Plants	S	
Northern Adder's-tongue	Ophioglossum pusillum	Plants	S	
Blanding's Turtle	Emydoidea blandingii	Reptiles	Т	
Copperbelly Water Snake	Nerodia erythrogaster neglecta	Reptiles	E	
Eastern Massasauga	Sistrurus catenatus	Reptiles	E	Т
Ornate Box Turtle	Terrapene ornata	Reptiles	Т	
(*) Species Status: E = Endangered;	T = Threatened; S = Special Concern			

- Wetlands. National Wetland Inventory (NWI) sites are also shown on the Wetlands and Streams Map (Exhibit F). There are wetlands located within the project study area, south of the I-80/I-88 interchange in Illinois and along the Mississippi River west of I-80. These will be delineated in the field after alternatives to be carried forward are determined. If possible, these wetlands should be avoided. If this is not practicable, they must be mitigated.
- ⇒ Prime Farmland. Prime Farmland is shown on the Prime Farmland Map, Exhibit H. There are numerous areas of prime farmland within the project study area in both Iowa and Illinois. There are also areas of Farmland of Statewide Importance. It is assumed that the existing I-80 right-of-way is no longer prime farmland because it was disturbed during construction.
- ➡ Cultural Resources. The Archaeological and Historic Resources in the study area are shown on Exhibit I. In Iowa, the Lock and Dam No. 14 Historic District, which is part of the Upper Mississippi River 9-foot Channel, is partially in the project study area in Iowa and is listed on the National Register of Historic Places (NRHP)(https://www.nps.gov/parkhistory/online\_books/rmr/2/contents.htm HAER at https://www.loc.gov/item/ia0183/). In Illinois, there are five archaeological sites which will warrant avoidance or further investigation (Illinois State Archaeological Survey). The NRHP and the Historic and Architectural Resources Geographic Information System (HARGIS) listings for Rock Island County do not list any properties, districts, or landmarks within the project study area.
- Air Quality. No portion of this project is within a designated nonattainment or maintenance area for any of the air pollutants for which the USEPA has established standards. Accordingly, a conformity determination under 40 CFR Part 93 ("Determining Conformity of Federal Actions to State or Federal Implementation Plans") is not required. In

accordance with the IDOT-IEPA "Agreement on Microscale Air Quality Assessments for IDOT Sponsored Transportation Projects," this project is exempt from a project-level carbon monoxide air quality analysis because the highest design-year approach volume on the busiest leg of the intersection is less than 5,000 vph or 62,500 ADT.

Noise. A detailed noise analysis will not be conducted as part of this PEL study. The detailed analysis will be conducted on the alternatives selected to be carried forward for further study in Phase I (i.e., NEPA phase). The majority of the land use in the study area is comprised of agricultural fields and, to a much lesser extent, residential development.

# 7.3 Regulated Substances and Groundwater Resources

Regulated Substances sites are shown on Exhibit J. There are two sites shown in the project study area in lowa. One site is the water treatment plant, and the other is the sewage treatment plant for the City of LeClaire. The Illinois State Geological Survey (ISGS) conducted an assessment for the project study area and completed a Site Assessment Letter Report (SALR) on July 11, 2019. They conducted a site inspection of 144 sites. Table 20 summarizes those sites that appeared on a regulated substances list (US EPA, IEPA, or IEMA) that are within the project study area. No sites on the CERCLIS/SEMS, RCRA CORRACTS, or landfill lists were identified within the project study limits as part of the SALR. This tabular data is specific to this ISGS Report and it did not include GIS locations. Therefore, not all of them are shown on the exhibit. Further investigation, specifically a Preliminary Environmental Site Assessment (PESA), will be required if these sites are impacted by the proposed project. Sites with GIS data that are within the project study area are shown on Exhibit J, and additional features were not included in the table.

ISGS SITE #	ADDRESS	LISTED AS (AGENCY #)	
3691-5	I-80 M.M. 0 to 4.8 (Barstow Rd. to Mississippi River)	inactive RCRA (USEPA #ILR000004317) BOL (IEPA #1610605001, IEPA #1610706031); non-LUST (IEMA #870942, #902735, #910907, #960448, #990665, #H2001 0258, #H-2007-1487, #H-2008-1497, #H-2008-1499, #H-2011-1007, #H-2012-1178, #H-2012-1179, #H-2018-0018); ERNS (ERNS #886089, ERNS #1204732)	
3691-15	Rick's Tree Service 1910 193rd St. N. East Moline, IL	BOL (IEPA #1610650060)	
3691-19	McArter Construction Service 19300 IL 5/IL 92 East Moline, IL	BOL (IEPA #1610255096) RCRA (USEPA #ILD 984808469 BOL (IEPA #1610705007)	
3691-20	Snack Distribution Services 19280 IL 5/IL 92 East Moline, IL	non-LUST (IEMA #H-2017-0972	
3691-29	IDOT Silvis Maintenance Yard 1500 214th St. N. Silvis, IL	inactive RCRA (USEPA #ILD984835447) BOL (IEPA #1610705009) LUST (IEMA #20731)	

#### TABLE 20 - SITES THAT APPEARED ON IL REGULATED SUBSTANCES LISTS

PARSONS



ISGS SITE #	ADDRESS	LISTED AS (AGENCY #)		
		UST (OSFM #3015179)		
3691-32	Falcon Farms Trailer Park 2507 214th St. N. Port Byron, IL	BOL (IEPA #1618125001)		
3691-33	McCarthy Improvement Co. 20800 Friedens Rd. Port Byron, IL	BOL (IEPA #1610605008)		
3691-74	Weigh Station, I-80 M.M. 1.9 East Moline, IL	non-LUST (IEMA #820181, IEMA #H-2007-0885, IEMA #H-2017-0560) ERNS (ERNS #840249)		
3691-117 & 3691-118	Rapids City Storage 1902 2nd Ave. Rapids City, IL (Mixed-Use Building)	BOL (IEPA #1610605004)		
3691-122	McCarty's Auto Shop 2028 2nd Ave. Rapids City, IL	BOL (IEPA #1610605007)		
3691-123	Enright's Car Wash 2040 2nd Ave. Rapids City, IL	non-LUST (IEMA #H-2016-0769)		
3691-135	Living Lands & Waters 17624 IL 84 N. East Moline, IL	active RCRA (USEPA #ILR000173286) BOL (IEPA #1610255147)		
3691-138	Midwest Haiverson 18120 IL 84 East Moline, IL	active RCRA (USEPA #ILR000004150) BOL (IEPA #1610255066)		
3691-144	Mississippi River I-80 M.M. 0	"Not Supporting" in categories of Fish Consumption & Primary Contact Recreation non-LUST (IEMA #892273)		
Source:       Illinois State Geological Survey, Environmental Site Assessments Section (July 11, 2019).         Site Assessment Letter Report for I-80: Rapids City & LeClaire, Rock Island Co. (Report 3691).         Illinois State Geological Survey.         72 pp.				

- ➡ Wells. The ISGS SALR for the project dated July 11, 2019 also lists public and community well sites in Illinois. These well sites are listed in Table 21. The proposed project crosses wellhead protection recharge areas for these sites. This information is not available as GIS data but is described in the ISGS Report. If the GIS address was not found for these sites, they were not included on Exhibit J. There are three public wells within the project study area in Iowa (Exhibit J).
- ⇒ Sole Source Aquifers. The Mahomet Sole Source Aquafer is the only sole source aquifer in Illinois and the project study area does not fall within the project review area for this aquifer. There are no sole source aquifers in Iowa.



#### TABLE 21 - PUBLIC AND COMMUNITY WELLS, ILLINOIS

BUSINESS		ADDRESS	ISGS SITE #	
Rapids City 3 Wells – no address				
Falcon Farms	Falcon Farms Trailer Park 2507 214th St. N. Port Byron, IL		3691-32	
Peace Lutheran Church		20828 Friedens Rd. Port Byron, IL	3691-46	
Mississippi Rapids Rest Area		I-80 Mile Marker 0.6 Rapids City, IL	3691-129	
Source:       Illinois State Geological Survey, Environmental Site Assessments Section (July 11, 2019).         Site Assessment Letter Report for I-80: Rapids City & LeClaire, Rock Island Co. (Report 3691).         Illinois State Geological Survey.         72 pp.				

# 7.4 Land Use and Socioeconomics

- ➡ Zoning. Zoning maps are shown on Exhibit K. The available zoning data was a mixture of GIS and PDF maps. Only published maps from each municipality were used. Zoning for both Illinois and Iowa within the project study area is a mixture of agricultural, residential, commercial, and industrial use. Outside of the City of LeClaire, most of the project study area in Iowa is zoned as agricultural, except for one single-family residential area. The City of LeClaire within the project study area is zoned as mostly low density residential, and some commercial areas. The majority of the project study area in Illinois is zoned agricultural. There are also some commercial and residential areas.
- Land Use. Available existing land use maps are shown on Exhibit L, and available future land use maps are shown on Exhibit M. There are commercial, residential, agricultural, and recreational areas within the project study area. The most common existing land use in both Iowa and Illinois is agriculture. The City of LeClaire and Village of Rapids City have mostly low density residential and commercial areas. There are some proposed residential areas at the west end of the project in Iowa shown on Exhibit M. There are some existing parks as well as proposed recreation/open space areas for LeClaire in the project study area (Exhibit M and N). There are also proposed shared use paths and recreational trails located in the western portion of the project study area and in LeClaire (Exhibit N).
- Pedestrian and Bicycle Facilities. The Community Facilities Map (Exhibit O) shows a pedestrian and bicycle facility (The Great River Trail) crossing under I-80 and parallel to the Mississippi River on the Illinois side. There is a proposed recreational trail on the Iowa side, parallel to the Mississippi River and crossing under I-80, and another proposed recreational trail crossing under I-80 west of the curve in Iowa (Exhibit N). There is also a proposed shared use paths crossing I-80 and going along I-80 at the west end of the project study area (Exhibit O).
- Community Facilities. Community facilities are shown on Exhibit O. This shows churches, cemeteries, parks, schools and paths near the project study area. The existing and proposed paths are described above. Exhibit O shows Pleasant Valley Junior High School, and the LeClaire Sewage Treatment Plant as facilities within the project study area in Iowa. Community facilities in the project study area in Illinois include St. John Catholic Church, Rapids City Post Office, Mississippi Rapids Rest Area, and Yost Cemetery.
- Transportation Plans. The Quad Cities Metro LRTP (Long Range Transportation Plan) 2045 Plan was adopted by the Bi-State Regional Commission on March 23, 2016. There are four projects on I-80 planned for construction between 2026 and 2045.
  - I-80 Mississippi River Bridge, which is this current project being studied.
  - I-80 Reconstruction Iowa Quad Cities which will expand I-80 to 6 lanes from the Mississippi River to Walcott, Iowa.
  - I-80 Construct a new interchange at the west city limits of LeClaire, Iowa (in the vicinity of 257th Avenue).
  - I-80 Upgrade the interchange at Middle Road in Iowa.



⇒ Environmental Justice Populations. In accordance with Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations and FHWA Order 6640.23A, FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, potential Environmental Justice (EJ) populations were identified within the project study area. As part of this evaluation, U.S. census block groups were identified that fall within the project study area. These block groups represent the Affected Community (AC) were minority and low-income information was obtained from the U.S. Census Bureau's American Community Survey 5-year estimates (2014-2018). In addition, the Davenport-Moline-Rock Island, IA-IL Metropolitan Statistical Area (MSA) was used as the Community of Comparison (CAC) in order to determine if any of the block groups (i.e., ACs) represent EJ populations.

Block groups were identified as an EJ population if they met the following thresholds.

- Block groups where the minority or low-income population equaled or exceeded 50 percent of the population in that block group.
- Block groups where the percentage of minority or low-income population is at least 10 percentage points higher than the minority or low-income population percentage for the Davenport-Moline-Rock Island, IA-IL MSA.

Based on this evaluation, one block group (204002) was identified within the project study area as an EJ population for minorities (**Exhibit P**). This block group is located along IL 84 west of the I-80 bridge.

#### 7.5 List of GIS Sources

See Exhibit Q for a list of environmental review GIS sources.

#### 8 Site Visit

A field review of existing conditions was performed on February 19, 2020. The field review of the project study area was performed to verify record data collected from various sources. The site visit resolved several questions that arose following office review of record data such as the existence of culverts that drain the infields of the partial clover leaf interchanges at US 67 and IL 84. Also discovered were the Sycamore Creek bridges located to the west of I-80 carrying US 67, BNSF Railroad and Frontage Road across the creek. Data collected in the field was used to verify, and update as necessary, existing conditions discussed in this ECTR and as detailed on the **Exhibit A**, "Existing Condition Plan" aerial exhibits.

#### **9** Key Takeaways from the Study of Existing Conditions

The study of existing conditions identified several key takeaways that should be noted.

- Roadway horizontal geometry is deficient along mainline I-80 at several locations as well as along interchange ramps in the project study area. The mainline horizontal deficiencies and ramp deficiencies are attributed to change in design standards and increase in posted speed limit. The I-80/I-88 full cloverleaf system interchange is an obsolete design by current standards, which results in most of the ramps being horizontally deficient. The partial cloverleaf interchange ramps at IL 84 and US 67 have horizontal deficiencies that are minor in comparison to the I-80/I-88 system interchange.
- Concrete median barrier wall in Illinois no longer meets current design standards. The "F Shape" barrier wall design has been replaced with a constant slope barrier wall. The "F Shape" barrier wall is still the current design standard in lowa.
- ⇒ None of the structures in the project study area are considered structurally deficient.
- Being the impetus for the PEL, the Mississippi River Bridge, it is important to note that reusing the existing substructure remains a topic in question under a scenario where the structure would be rehabilitated as opposed to completely removed. The "Feasibility Review" discussed in Section 3.1 and 4.2.1 of this ECTR provides a summary



and resource for further review and understanding of existing conditions related to the Mississippi River bridge. For various reasons, the Feasibility Review recommends that removing the substructure be pursued for further study and considered the preferred course of action above leaving the substructure in place.

- Roadway capacity in the project study area operates at a high level of service (LOS) under current conditions and future no-build conditions. With the exception of only a few LOS C results in future no-build, all roadways and ramps in the project study area operate at LOS A or LOS B. Both IDOT and Iowa DOT list LOS C as the design standard for urban interstates.
- Injury and fatality crash rates in the Illinois project study area are substantially lower than state and national averages. The same holds true for the injury crash rate in lowa, However, the fatality crash rate in the lowa project study area is higher than state and national averages. When considering the entire project study area, injury and fatality crash rates are substantially lower than state and national averages.
- Environmental resources in the project study area include the Mississippi River and 15 streams, one public park, one forest preserve/refuge, and the Great River Trail. Forested habitat is located within the project study area that could represent potential habitat for the federally endangered Indiana bat and the federally threatened northern long-eared bat. Three federally endangered mussels and one Illinois-threatened mussel are located in the Mississippi River downstream of the project study area. The bald eagle occurs in the project study area in the Illiniwek Forest Preserve and the Elton E. Fawks Bald Eagle Refuge and the peregrine falcon has been known to nest on the I-80 bridge over the Mississippi River. Wetlands are located along the Mississippi River west of I-80 and south of the I-80/I-88 interchange. Five archaeological sites are located in Illinois and a portion of the Lock and Dam No. 14 Historic District, which is listed on the NRHP, is located within the project study area in lowa.



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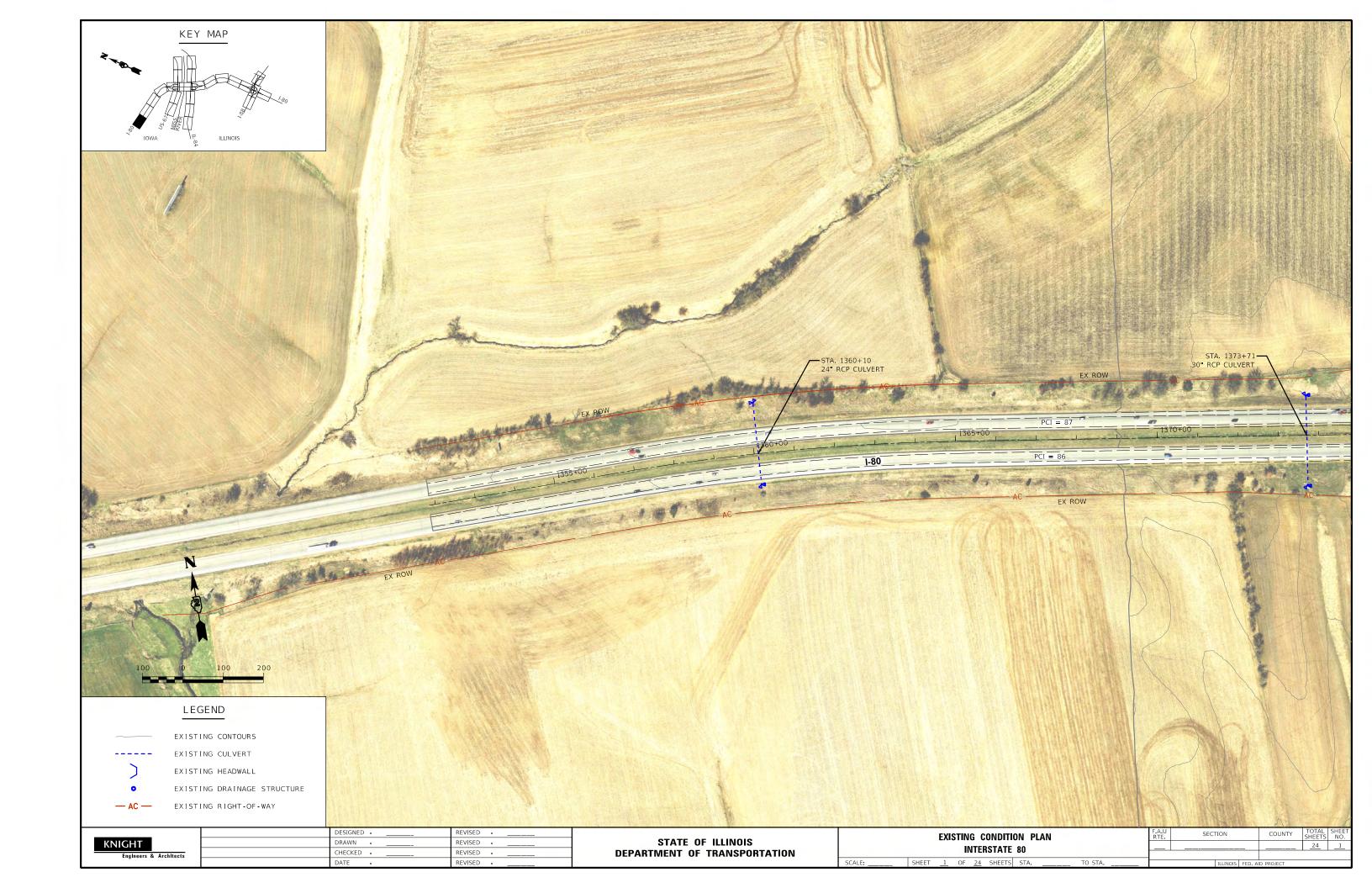
## List of Exhibits

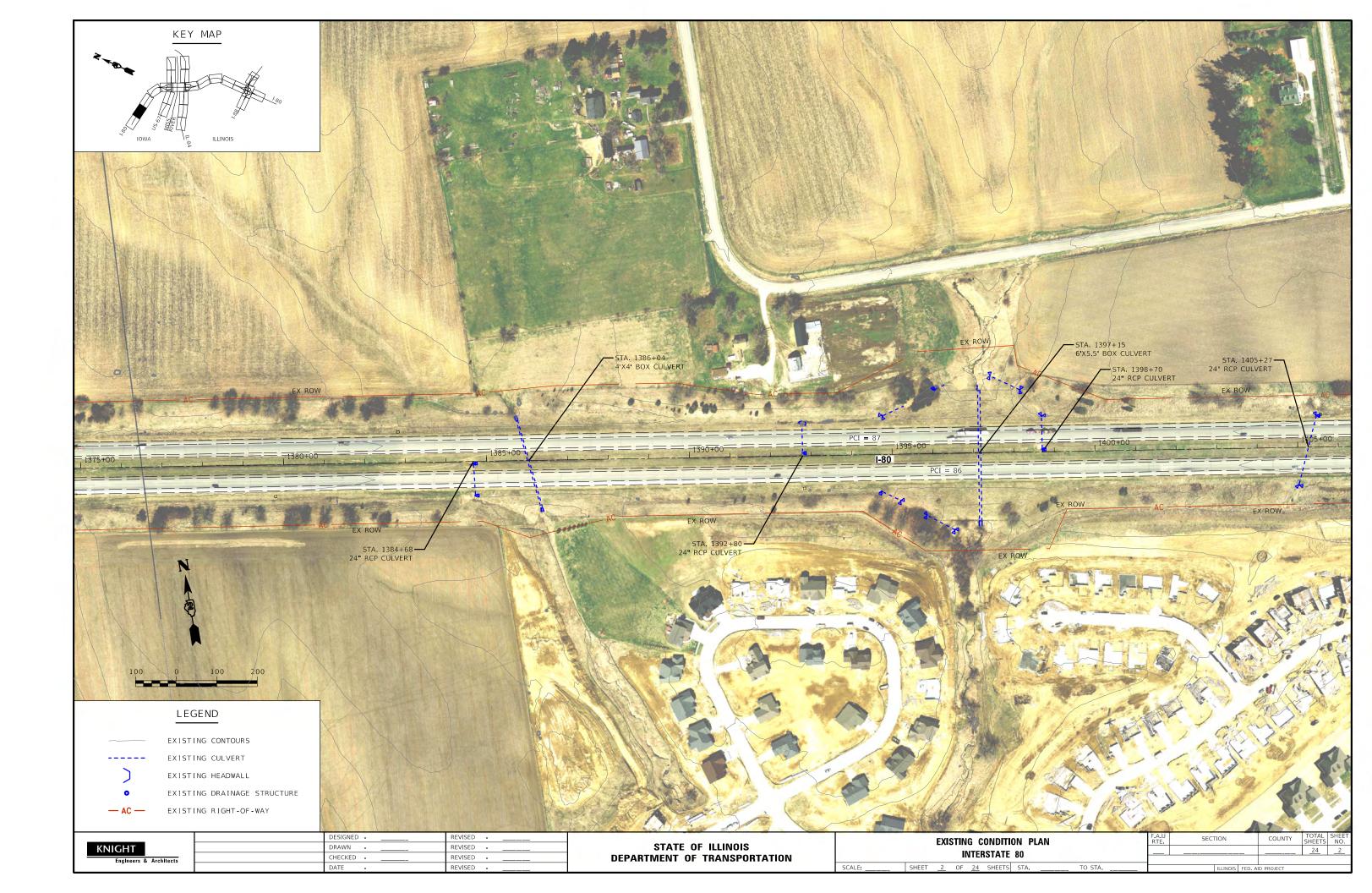
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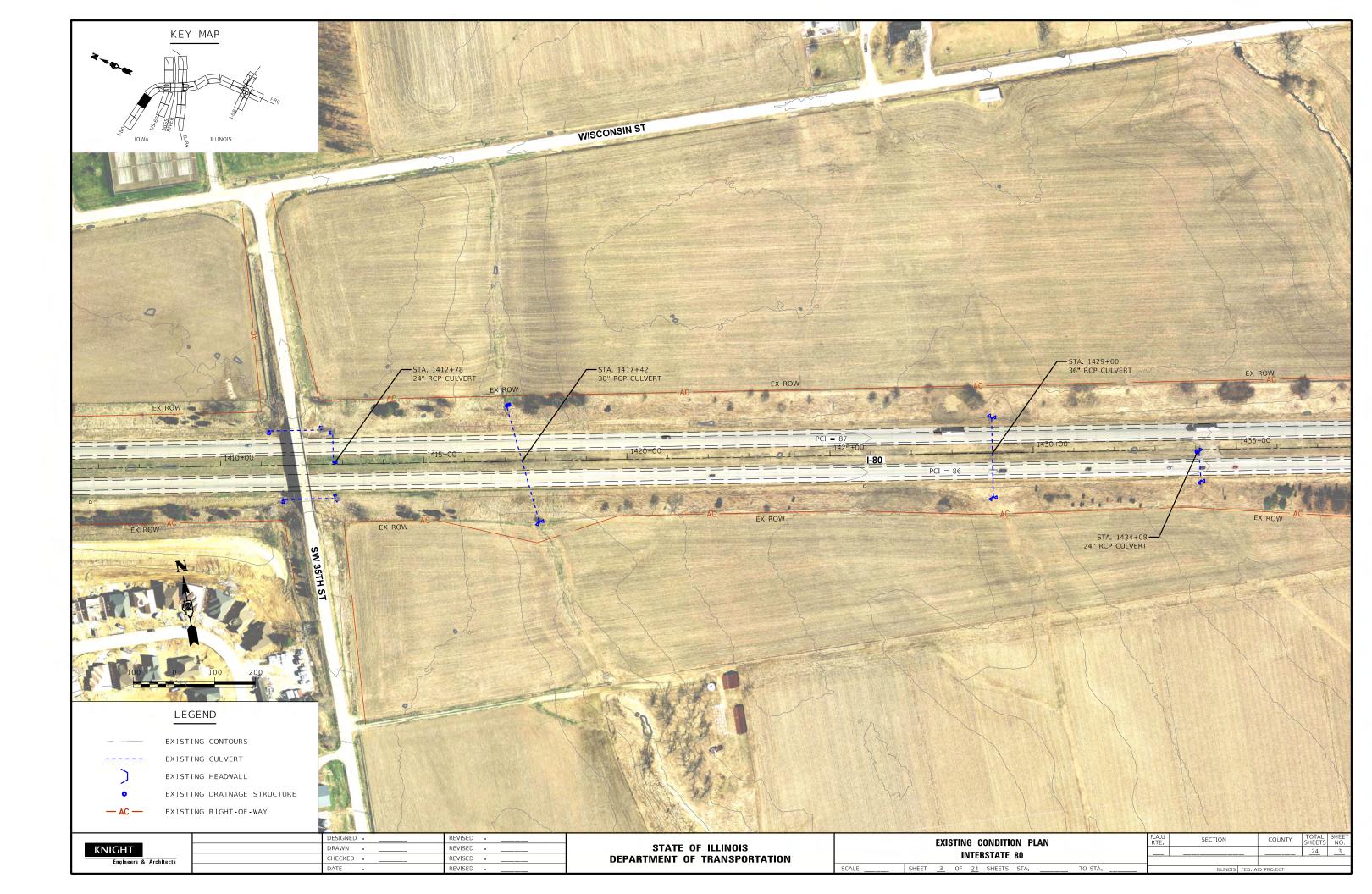
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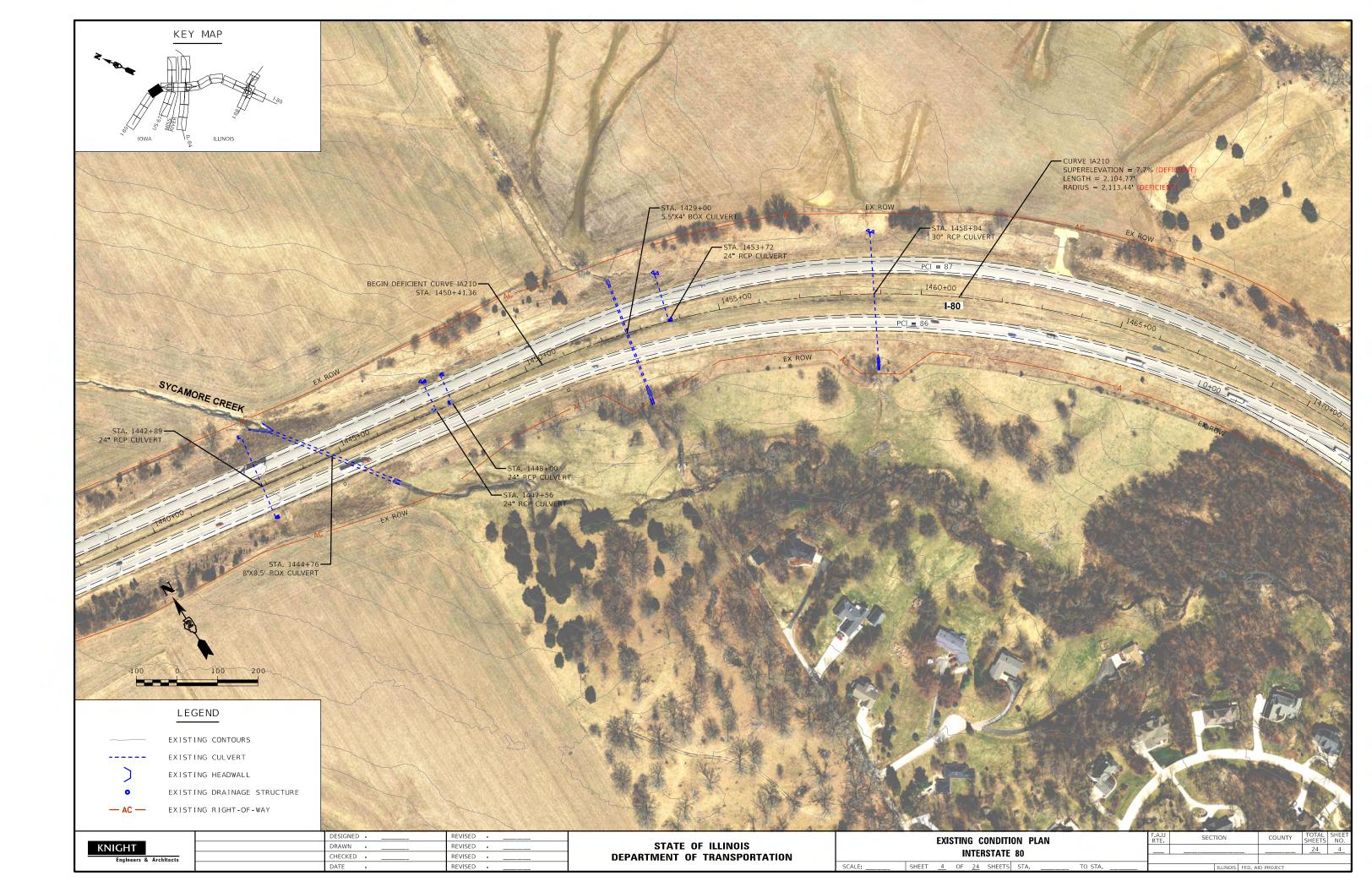
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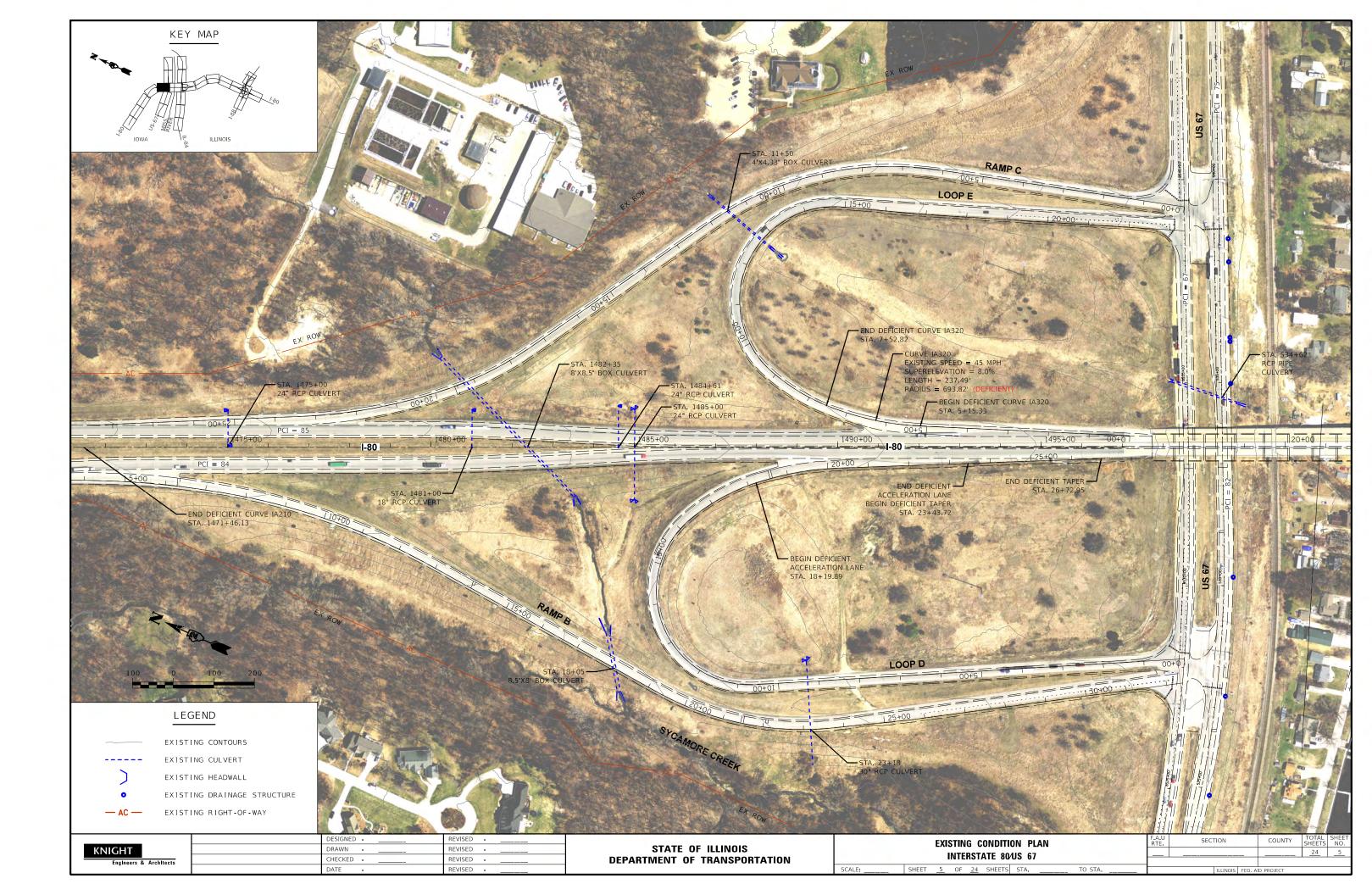


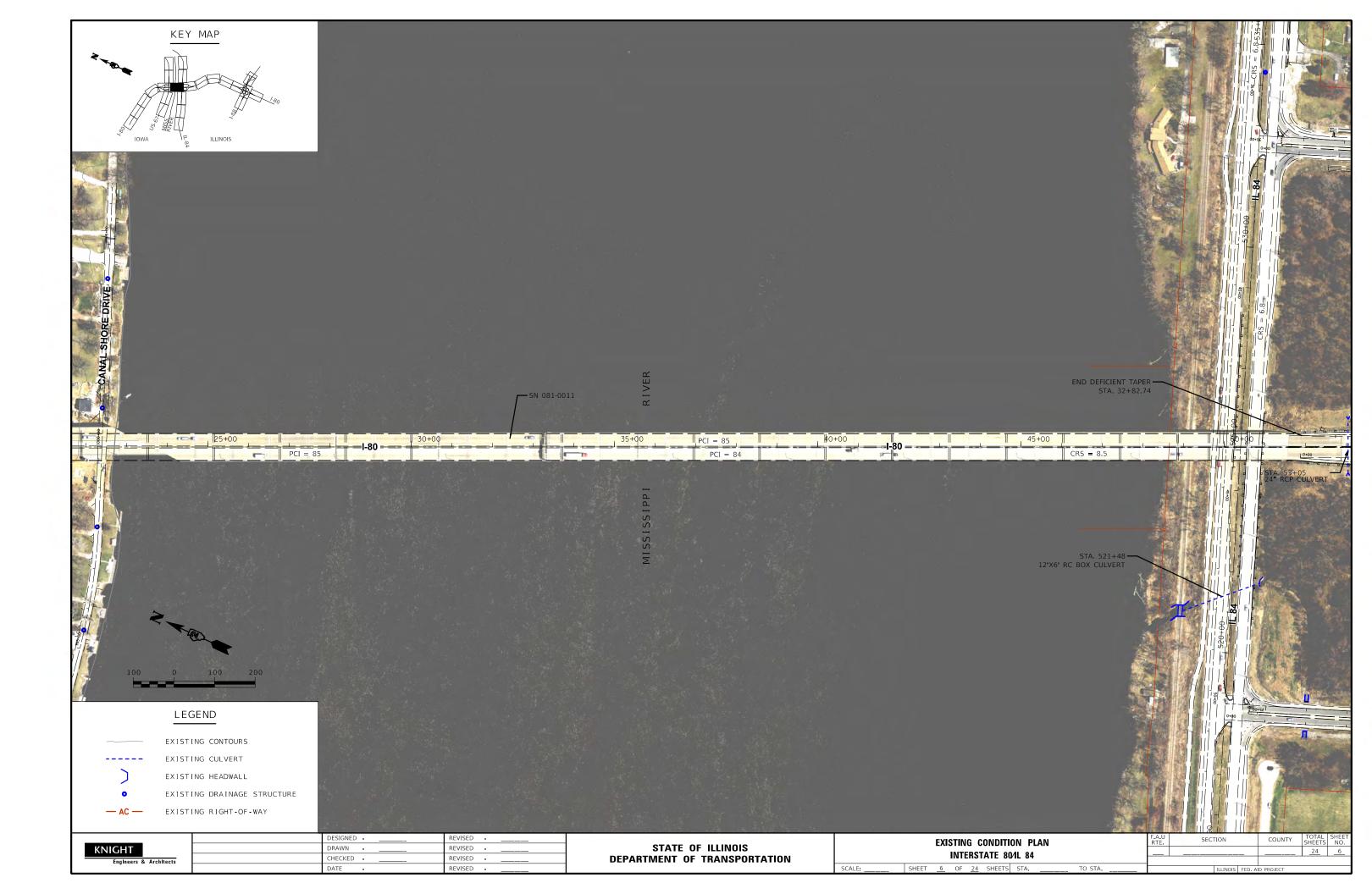


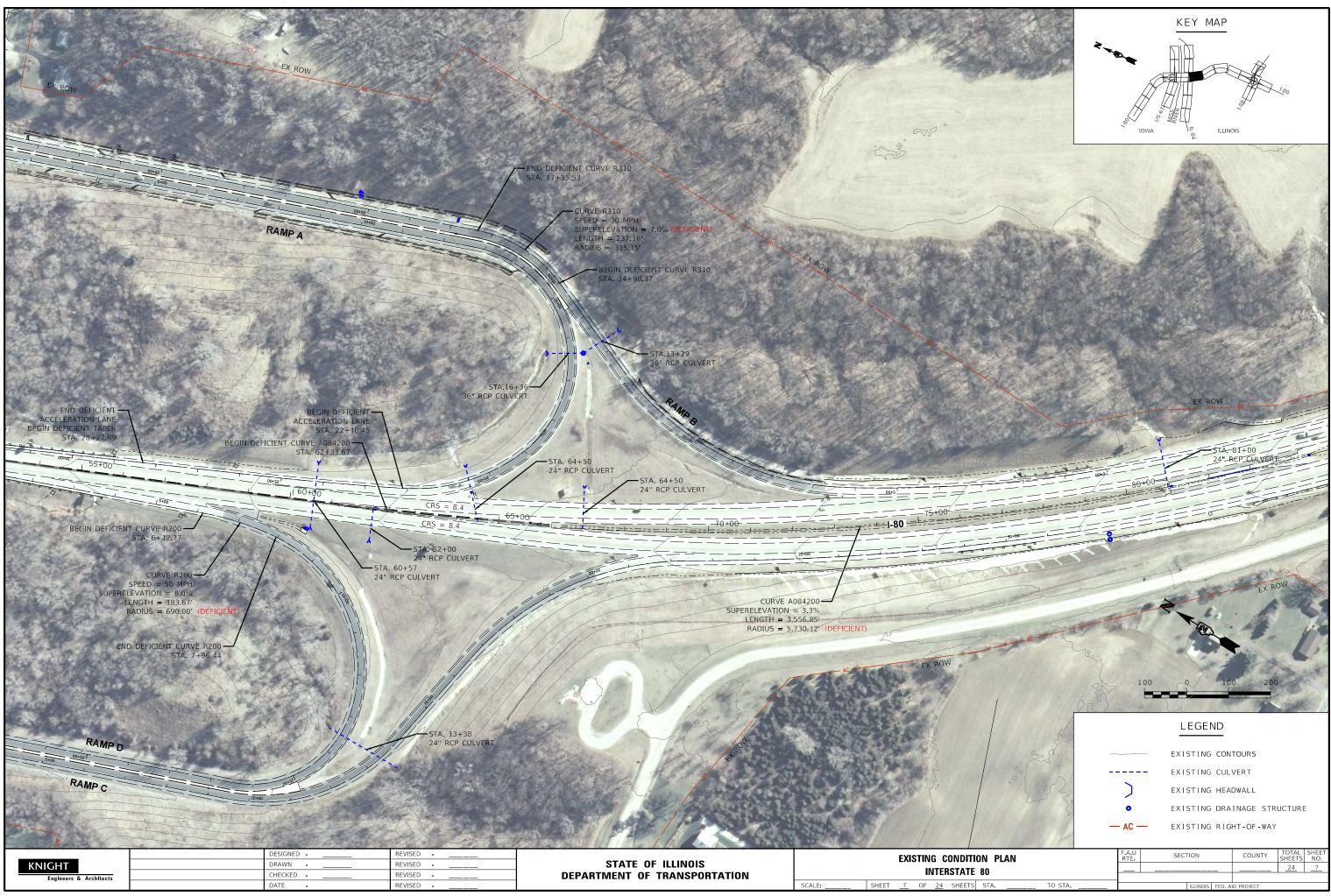






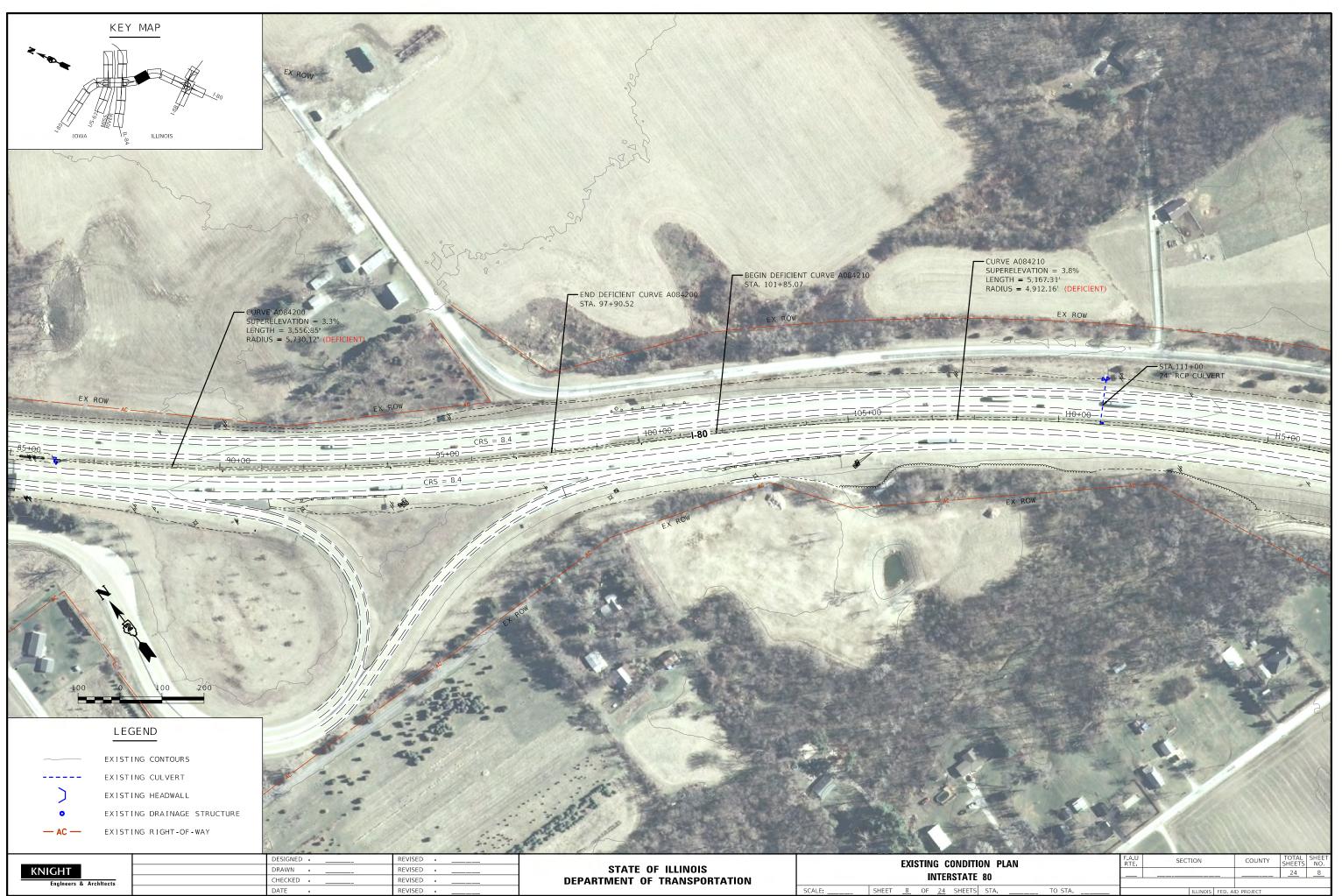




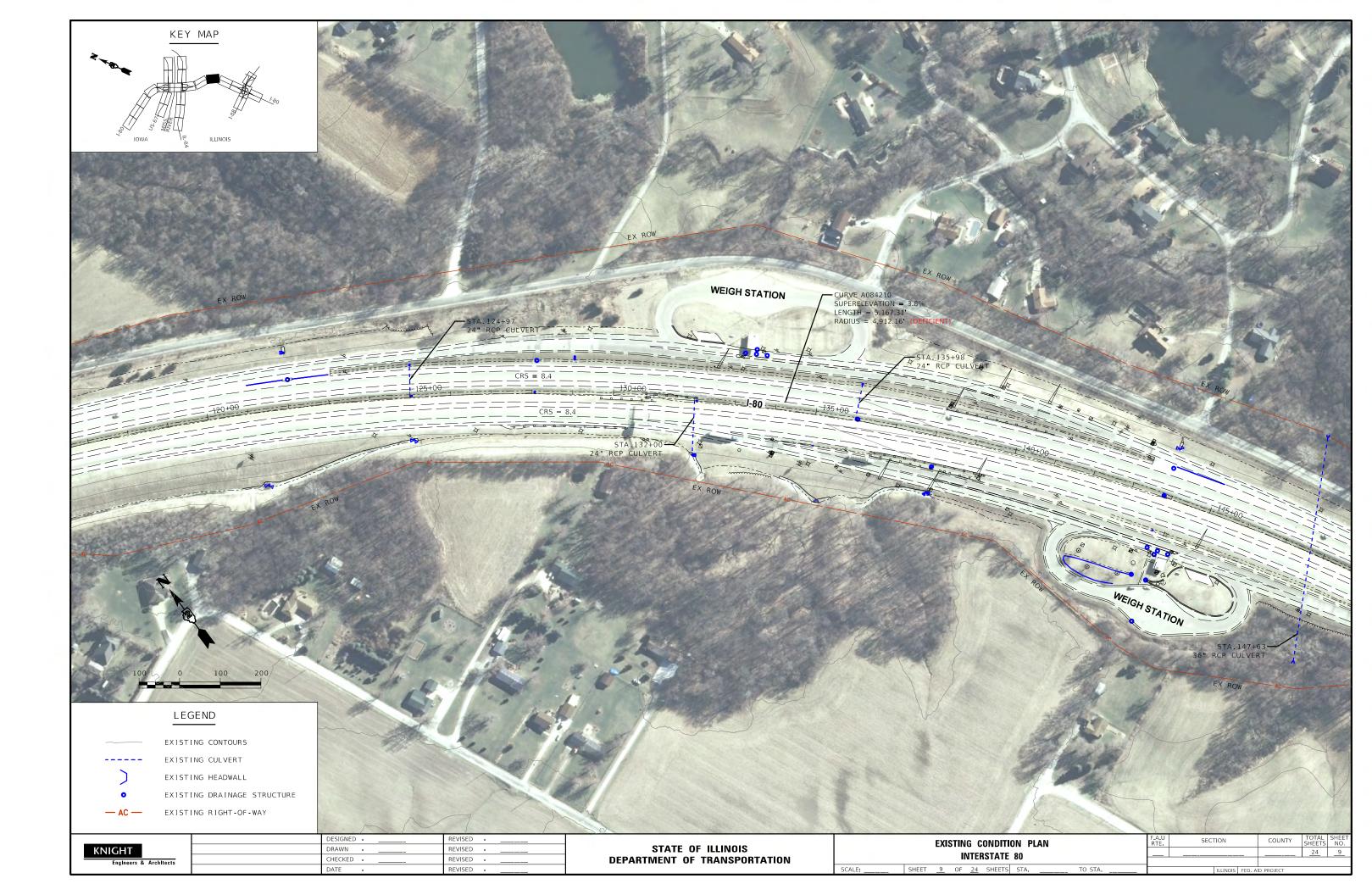


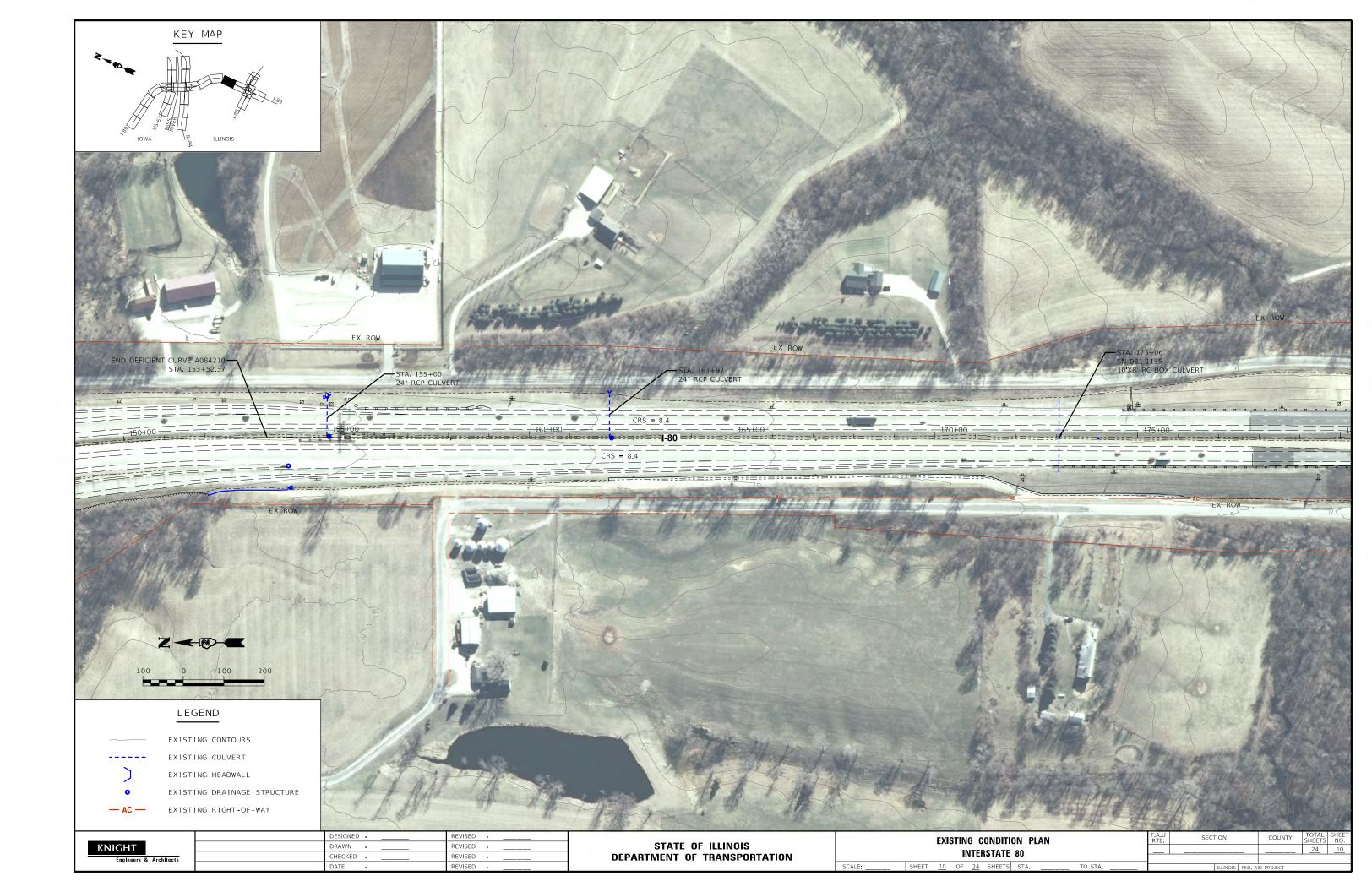
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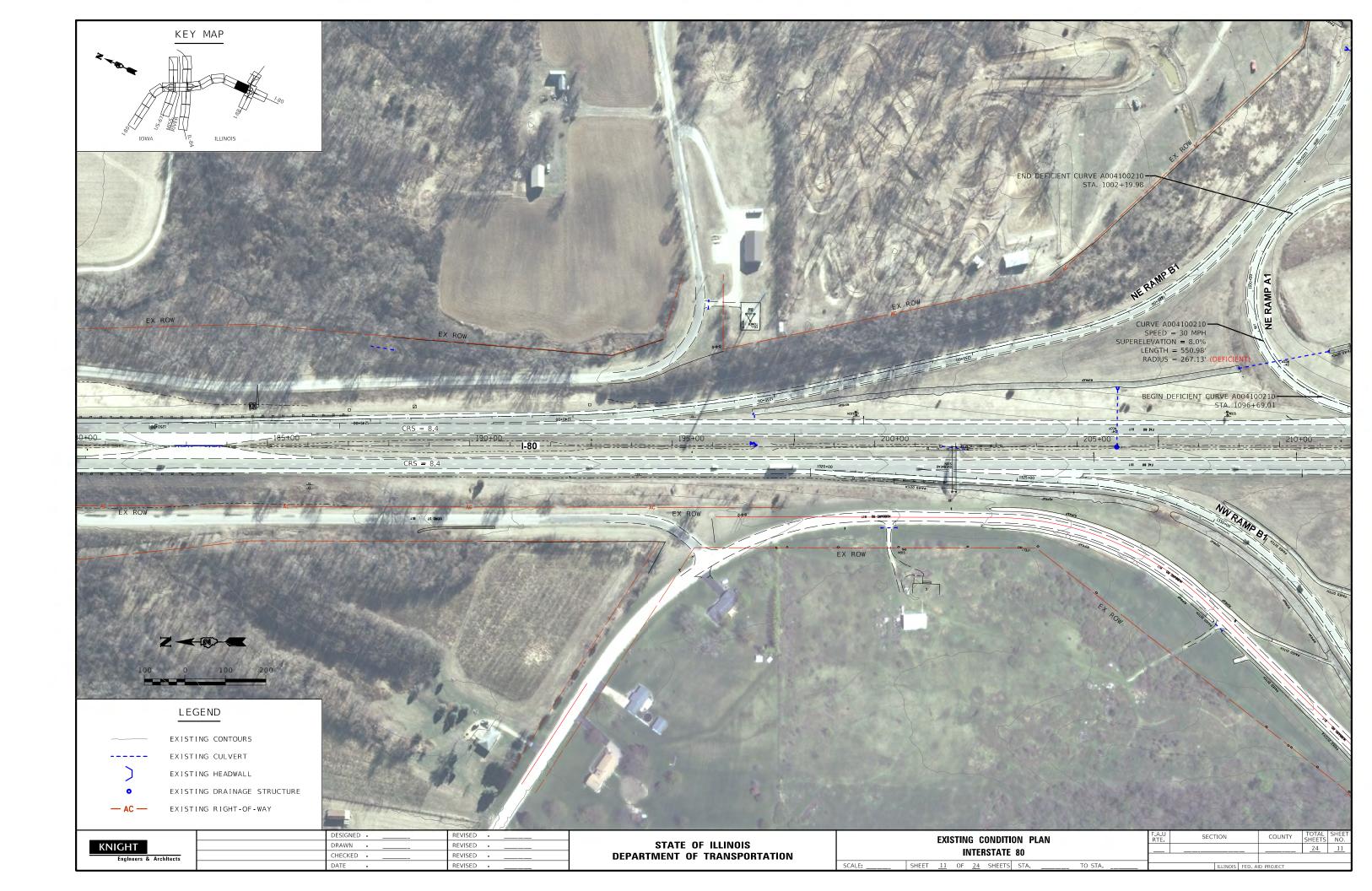
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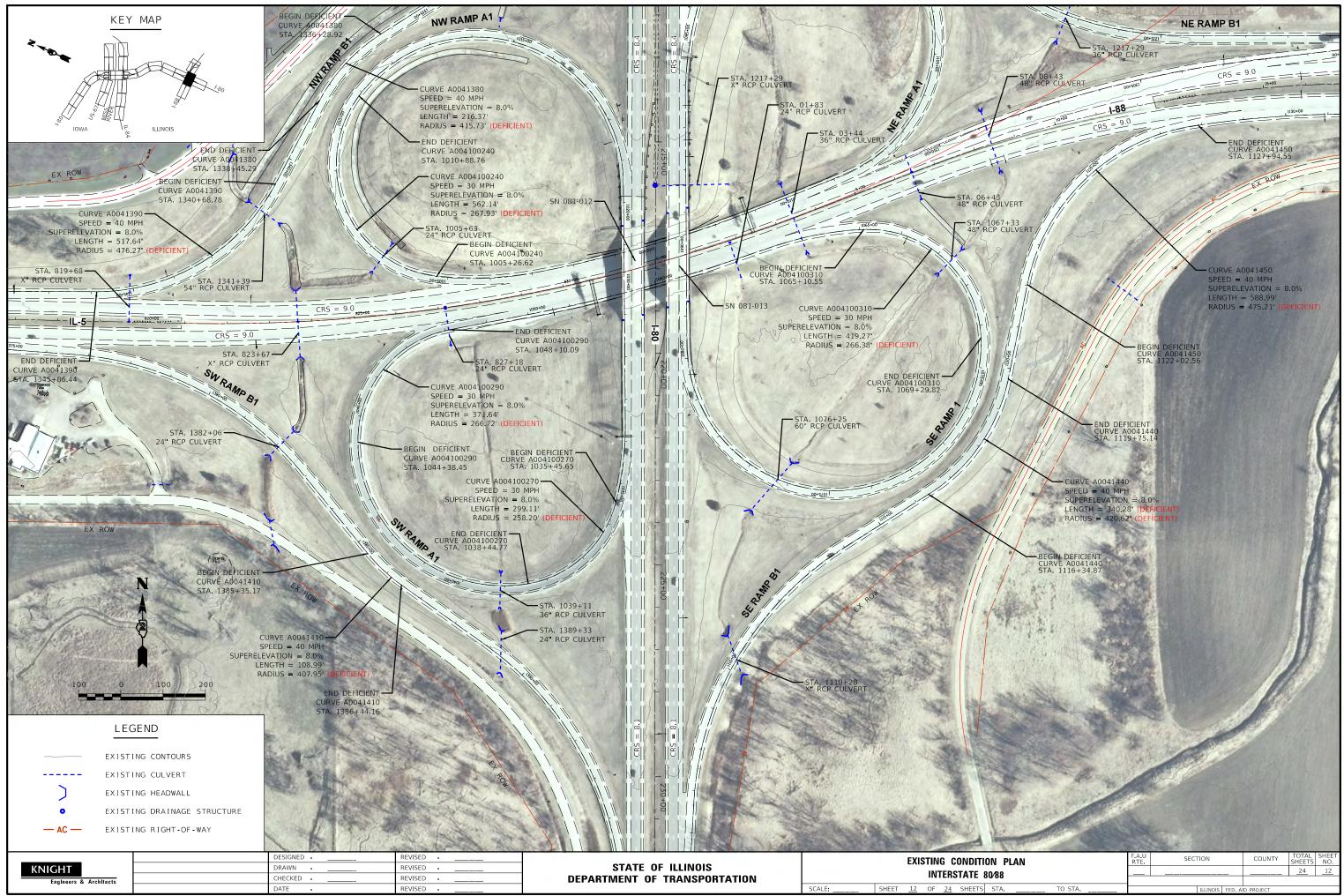


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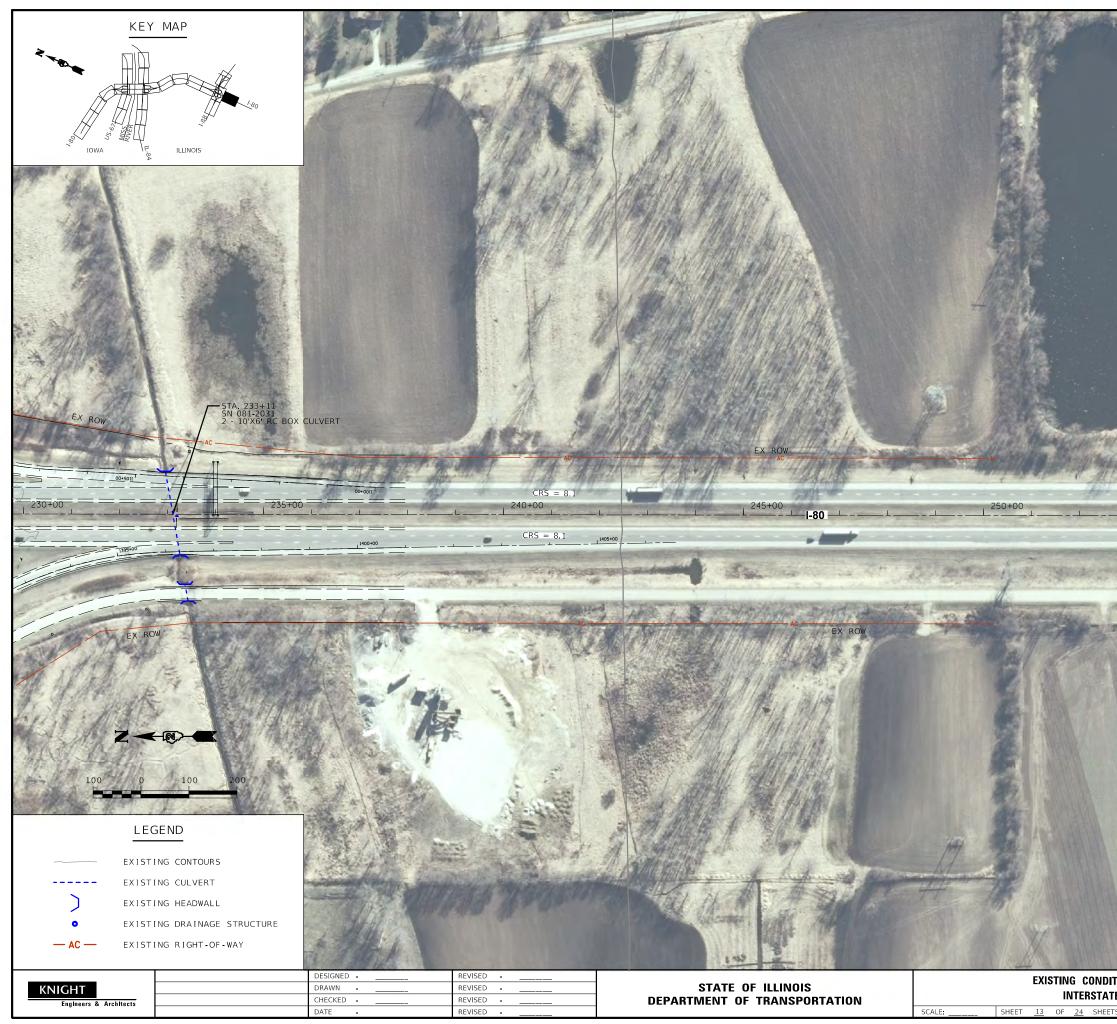




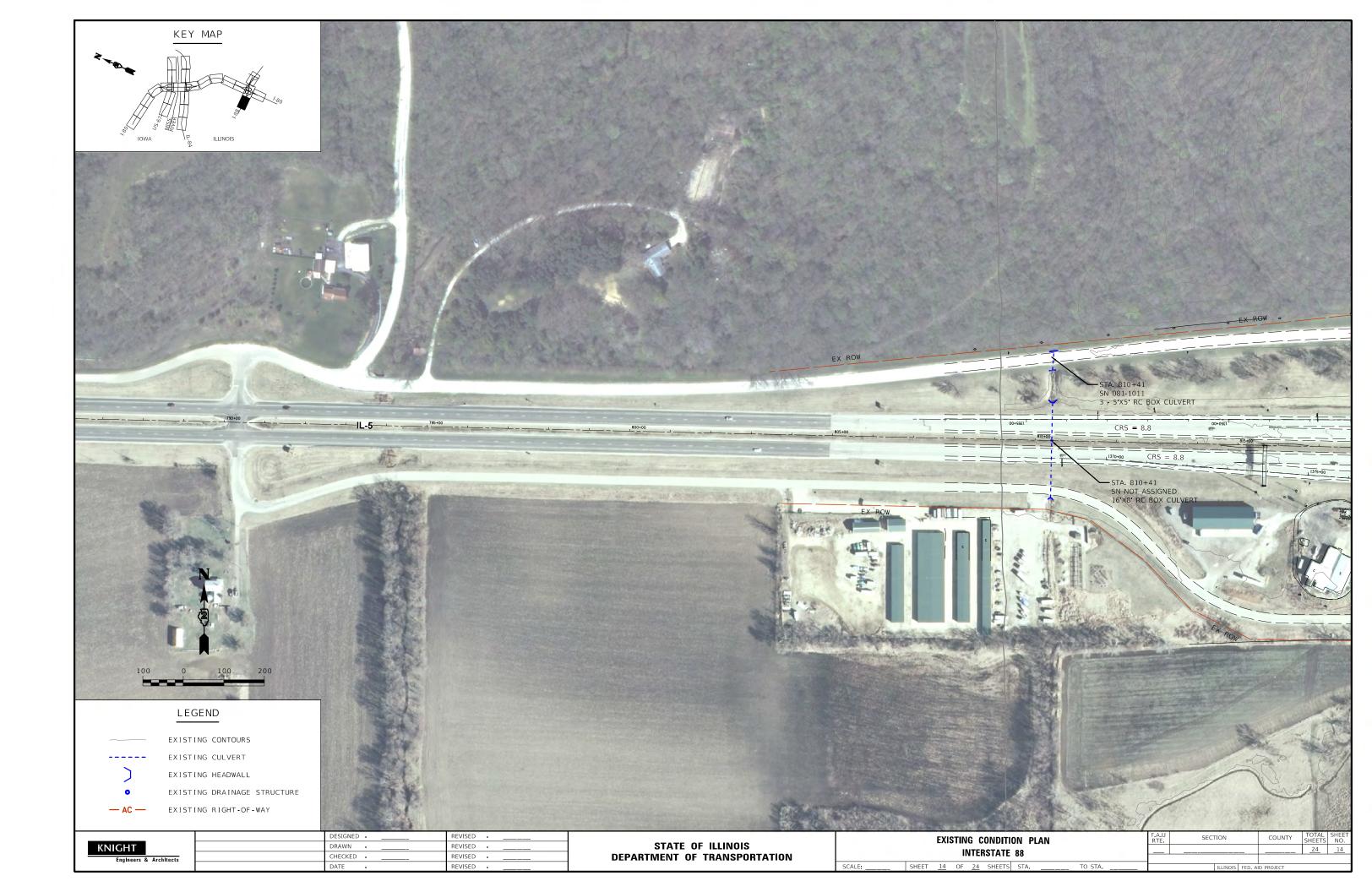


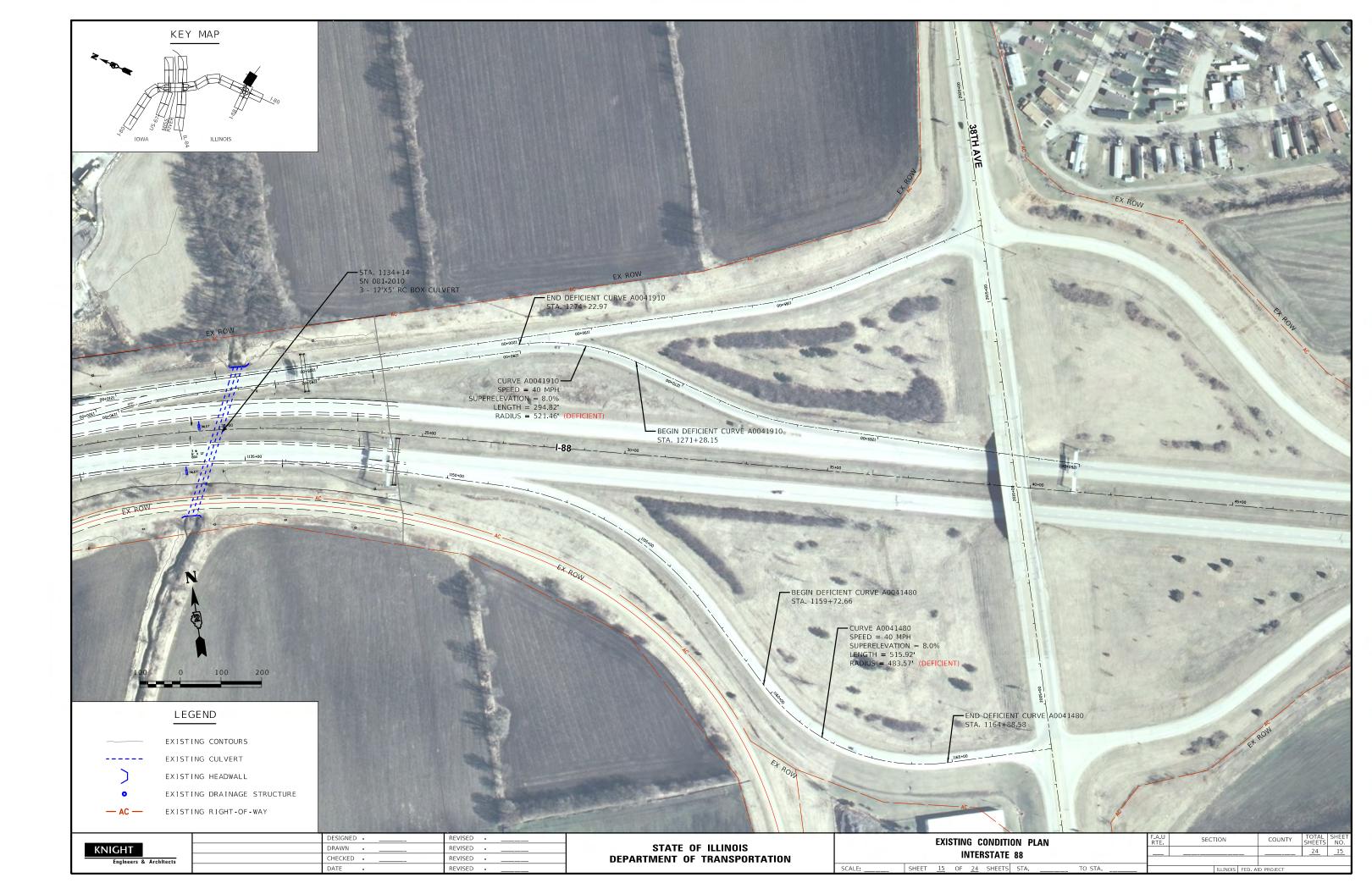


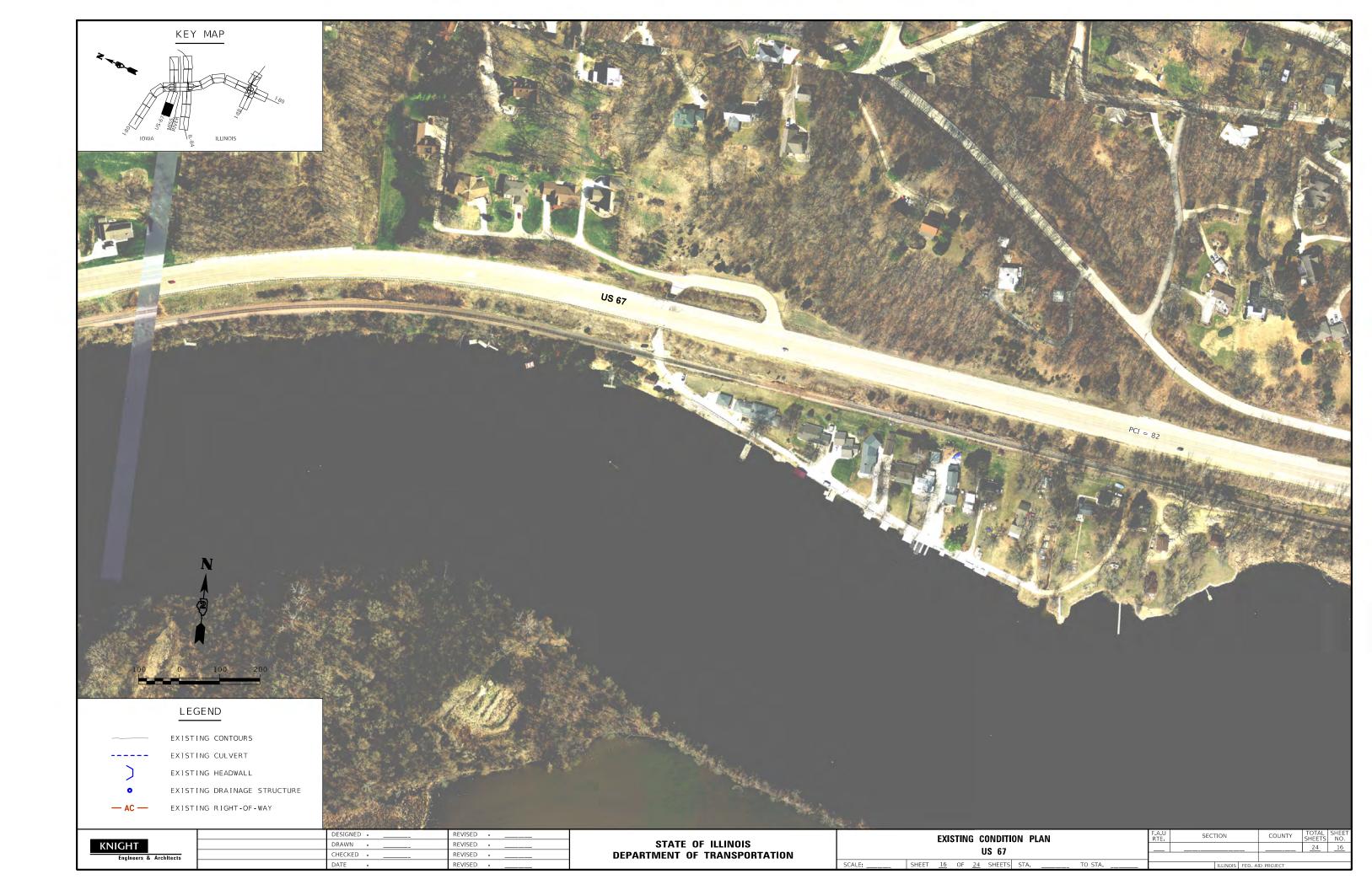
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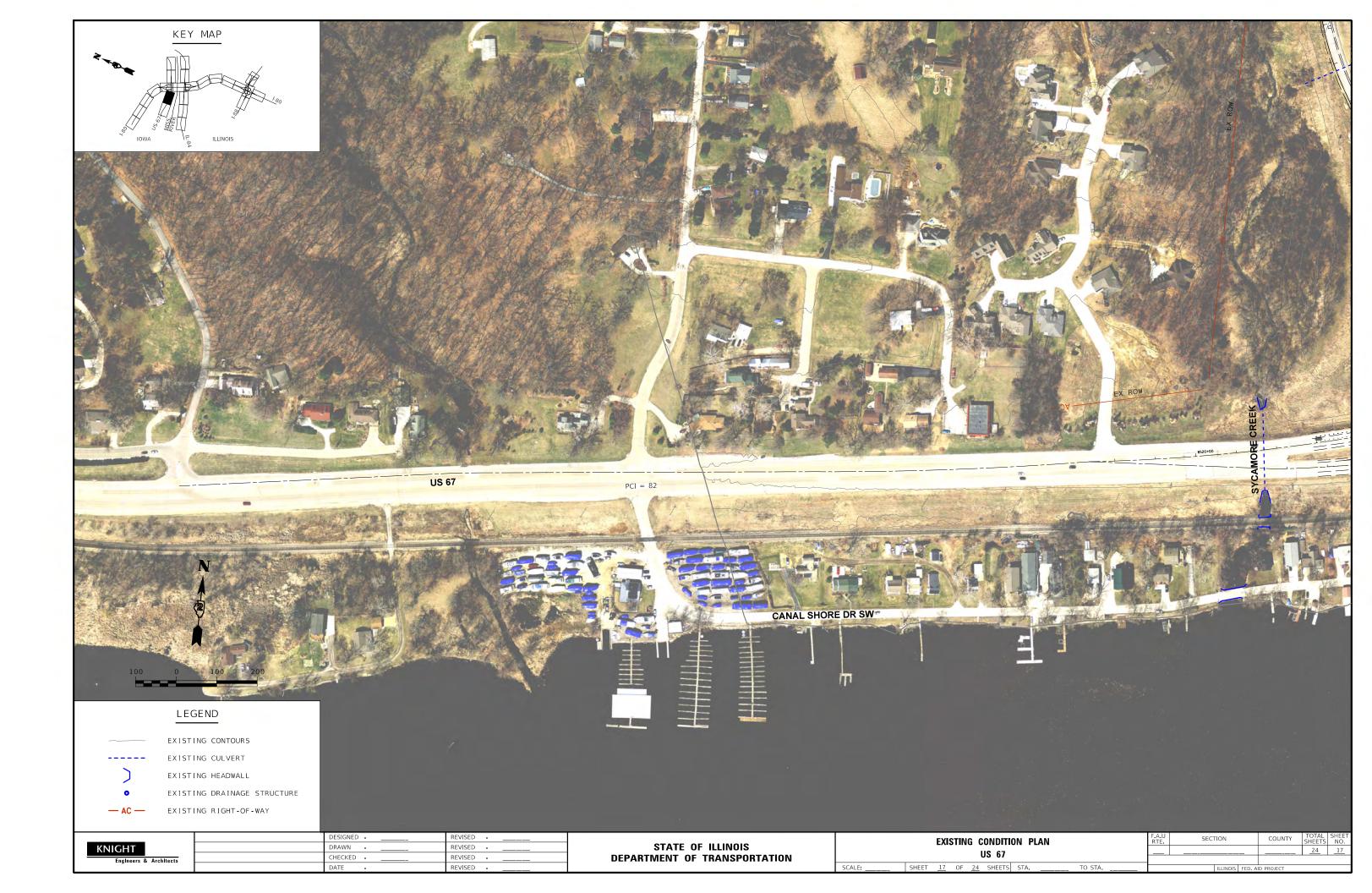


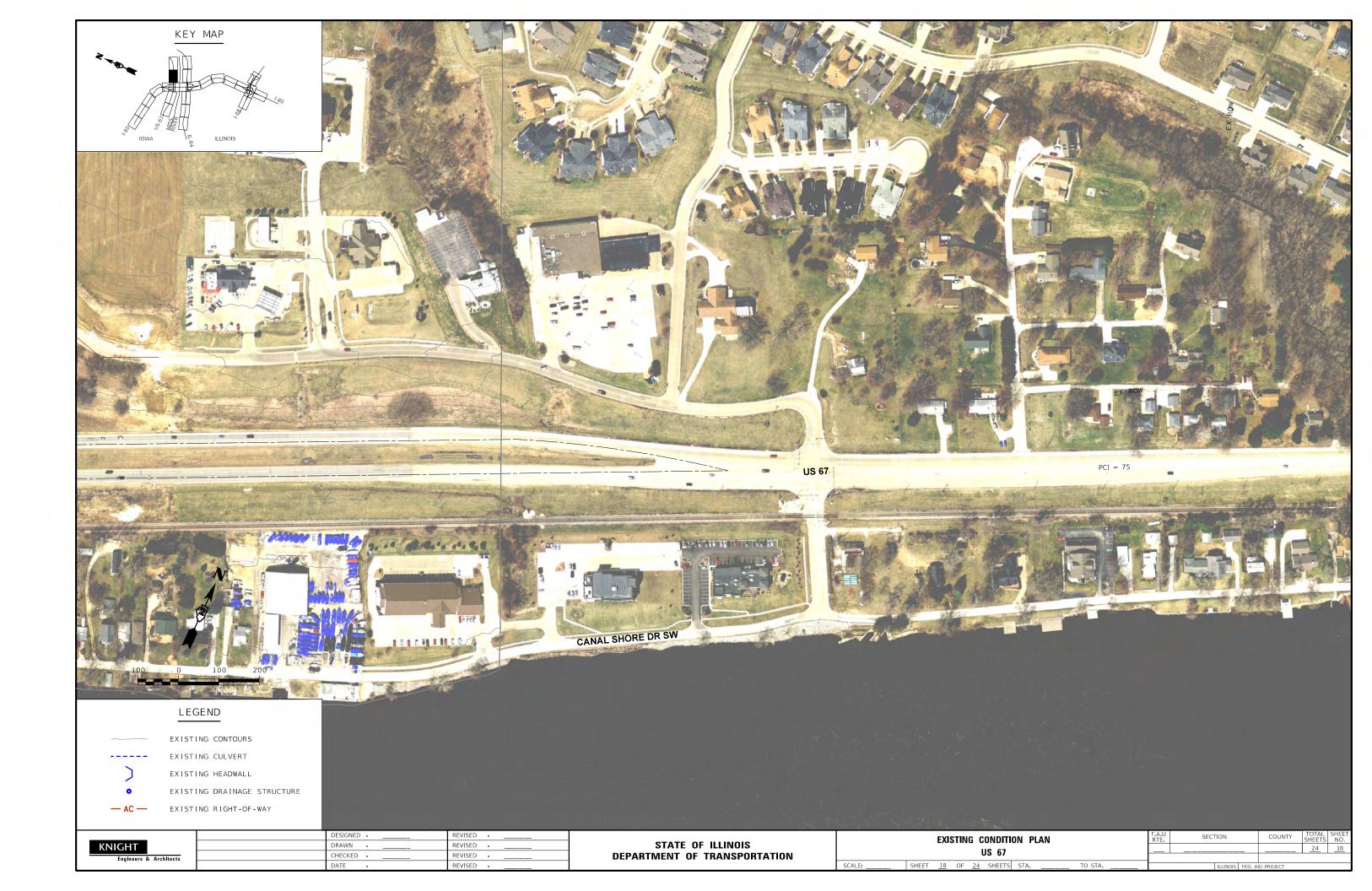
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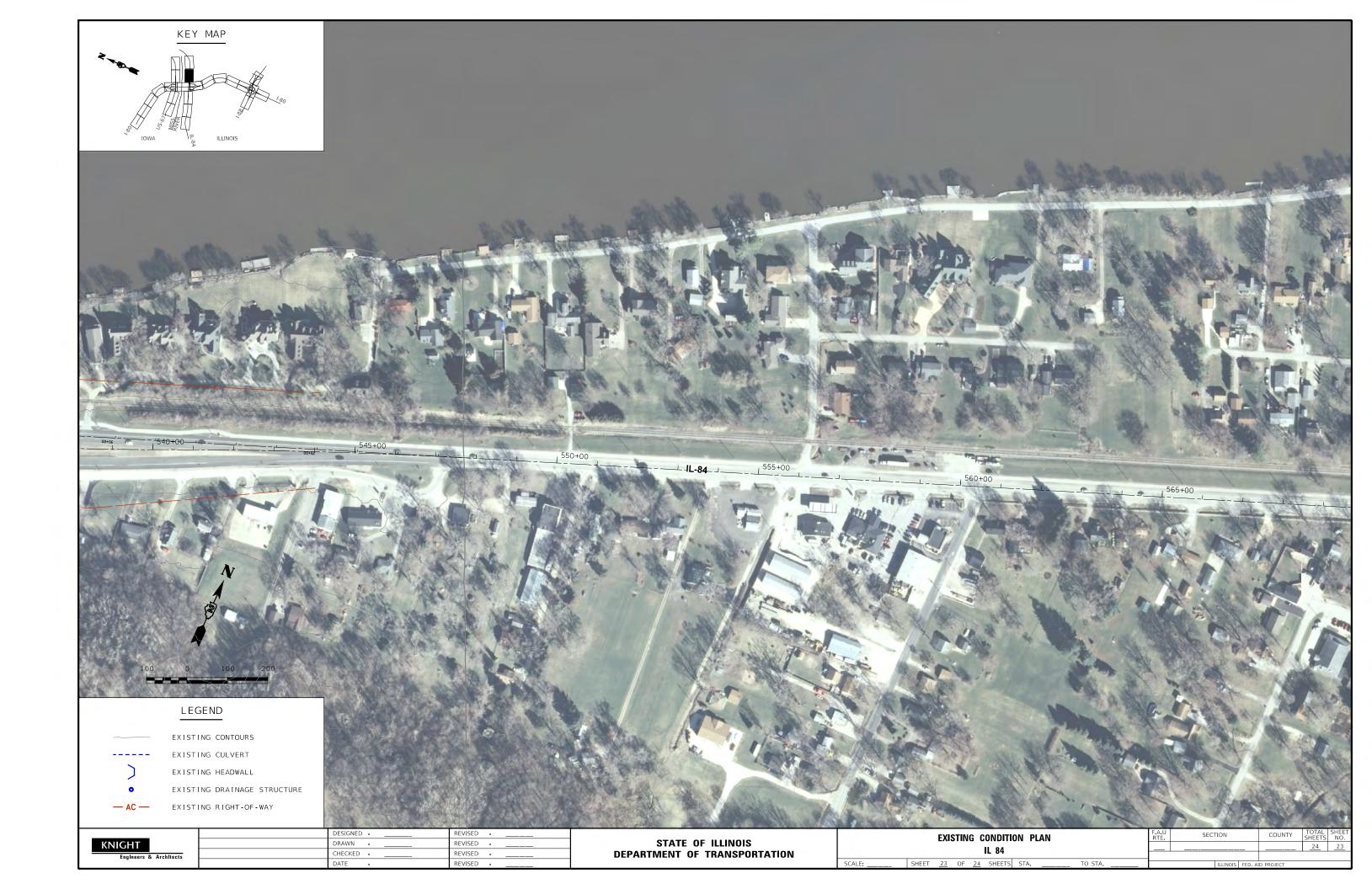










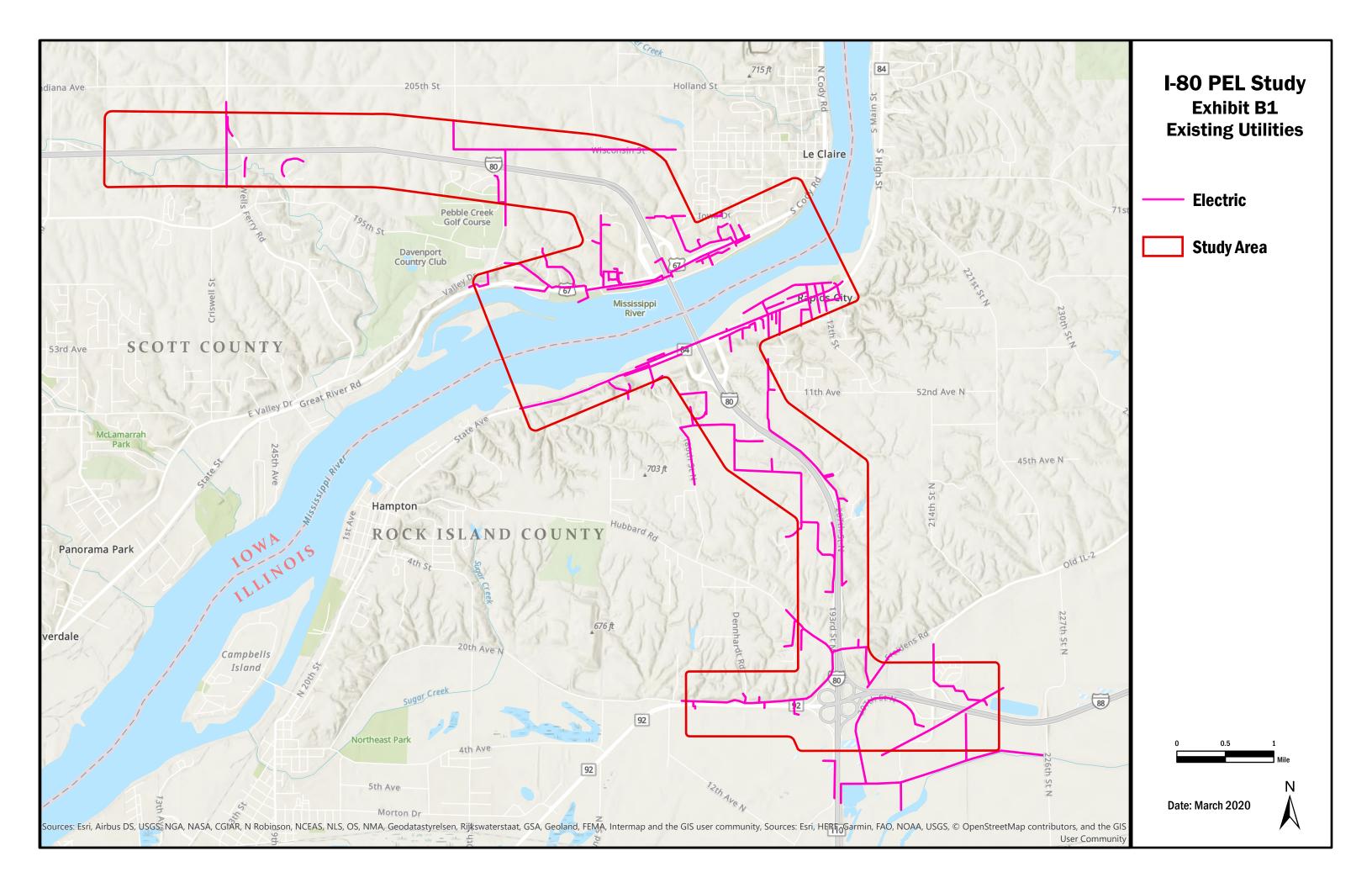


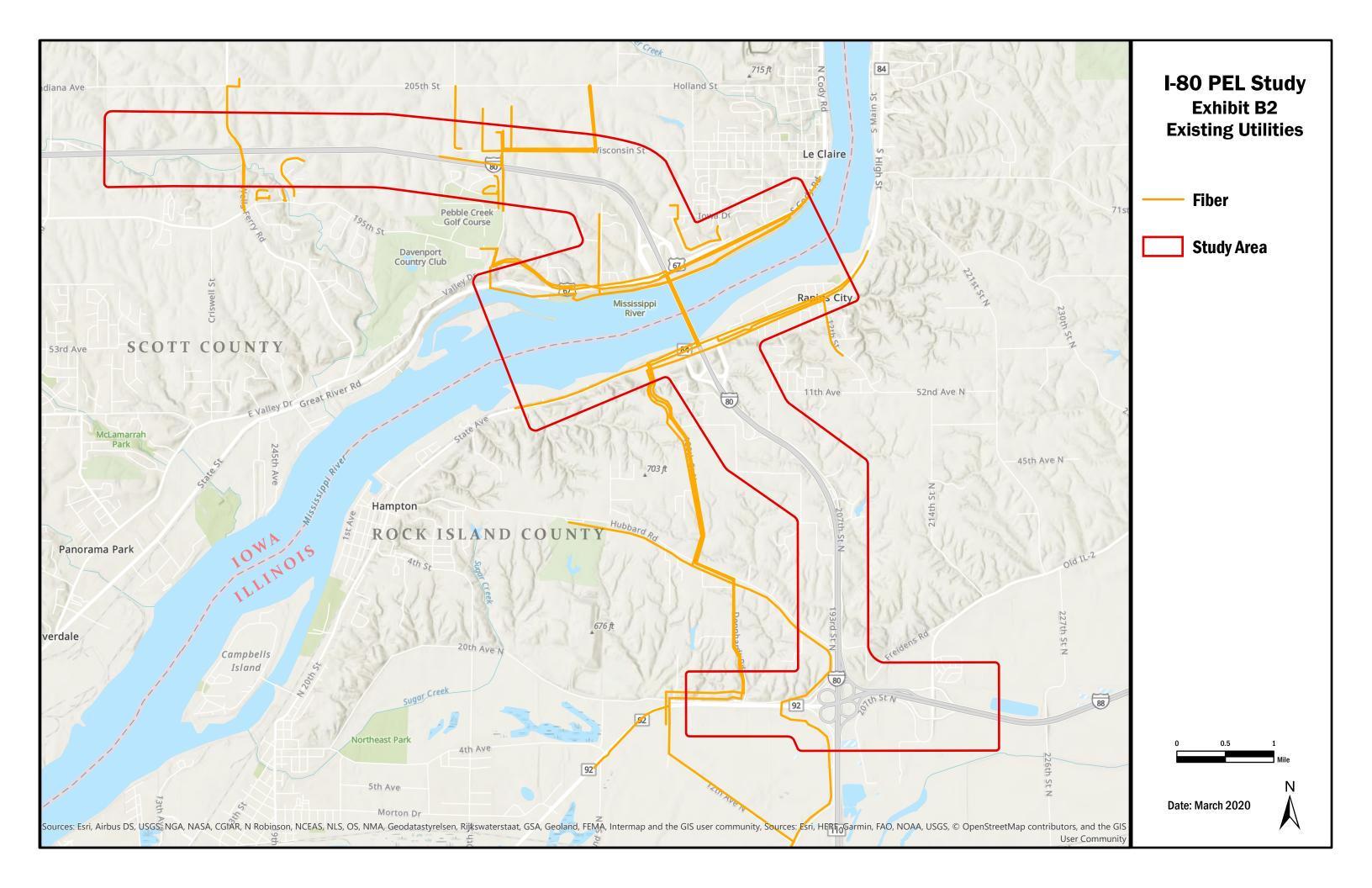


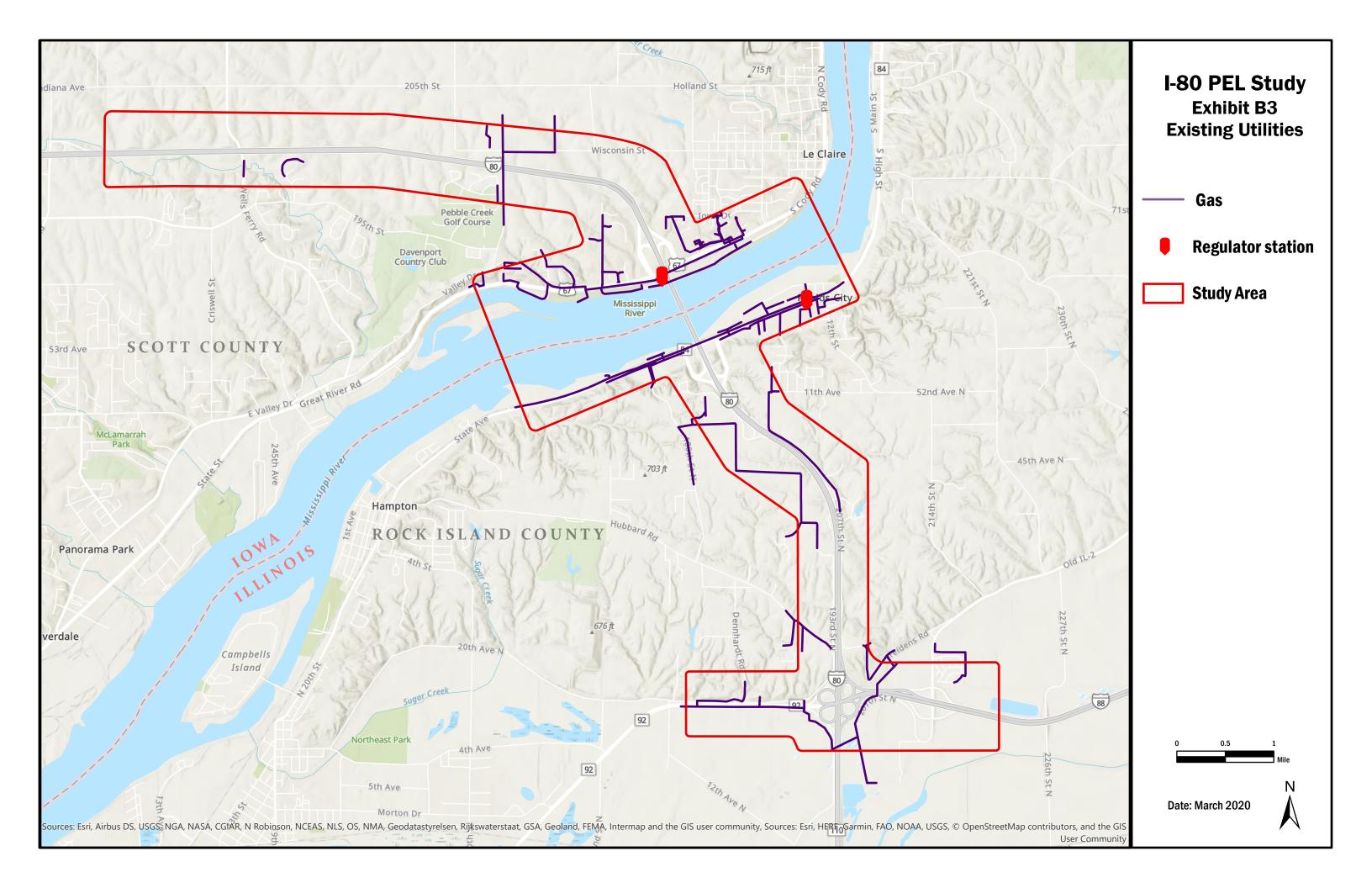
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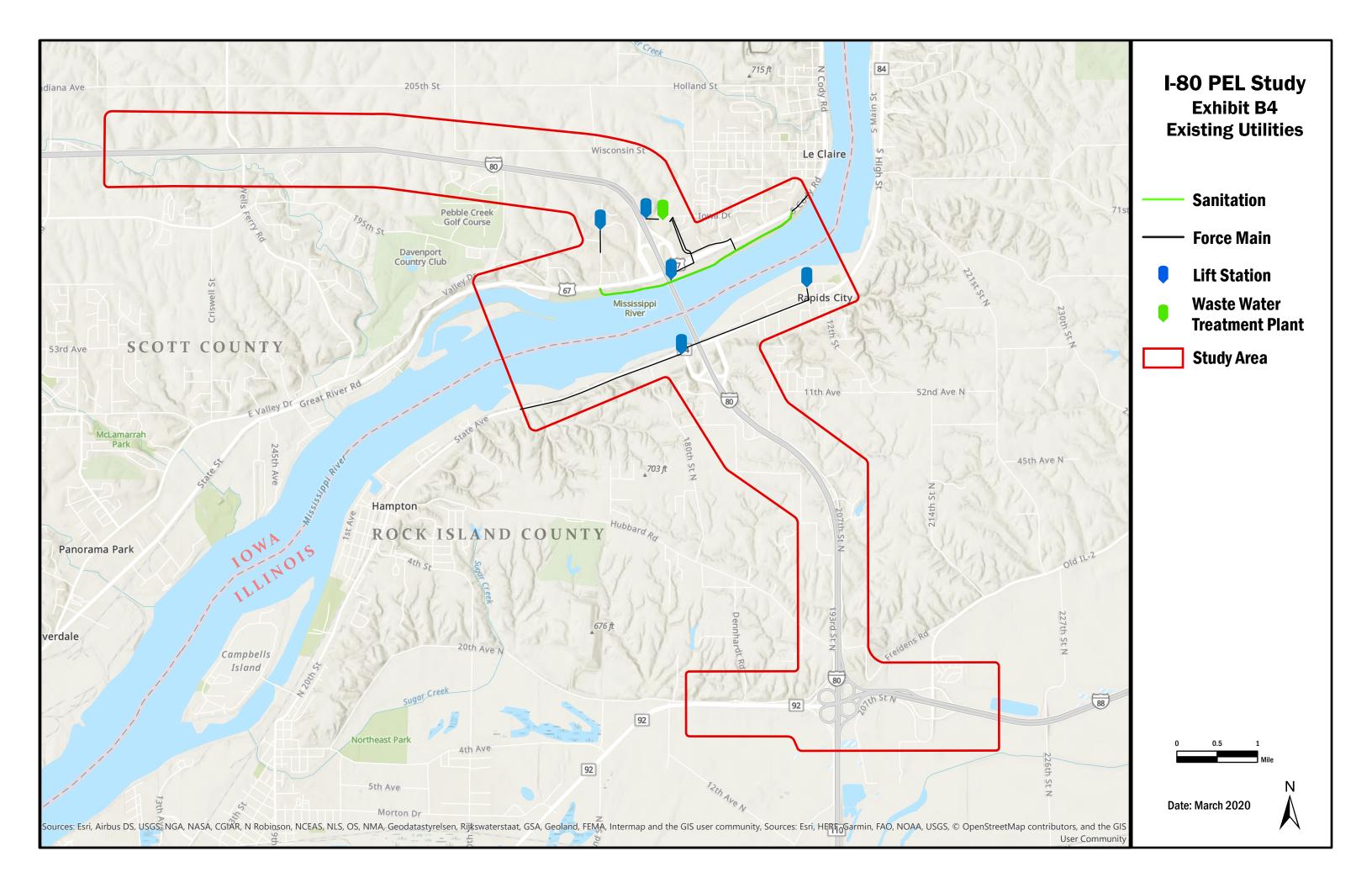
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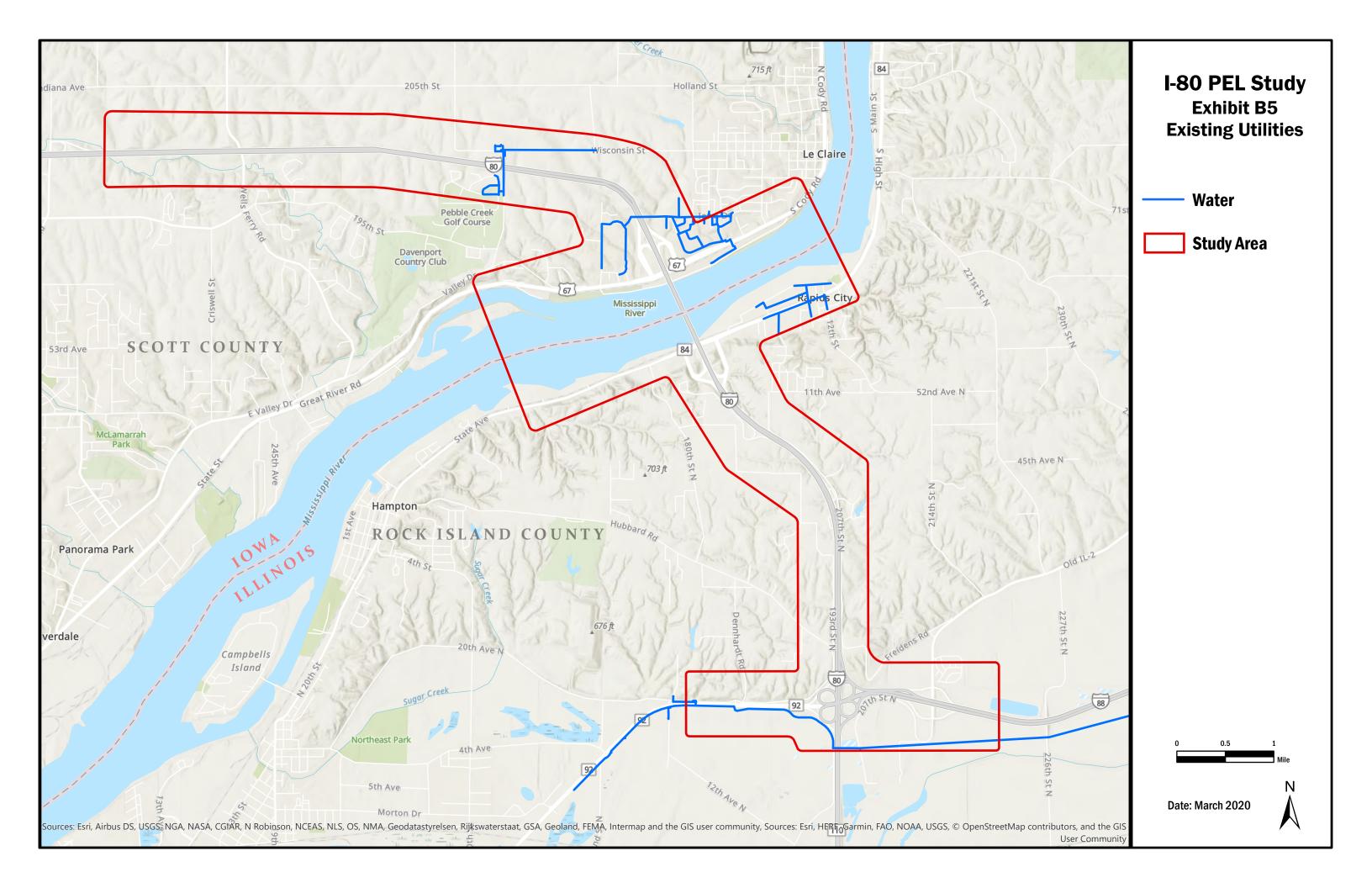
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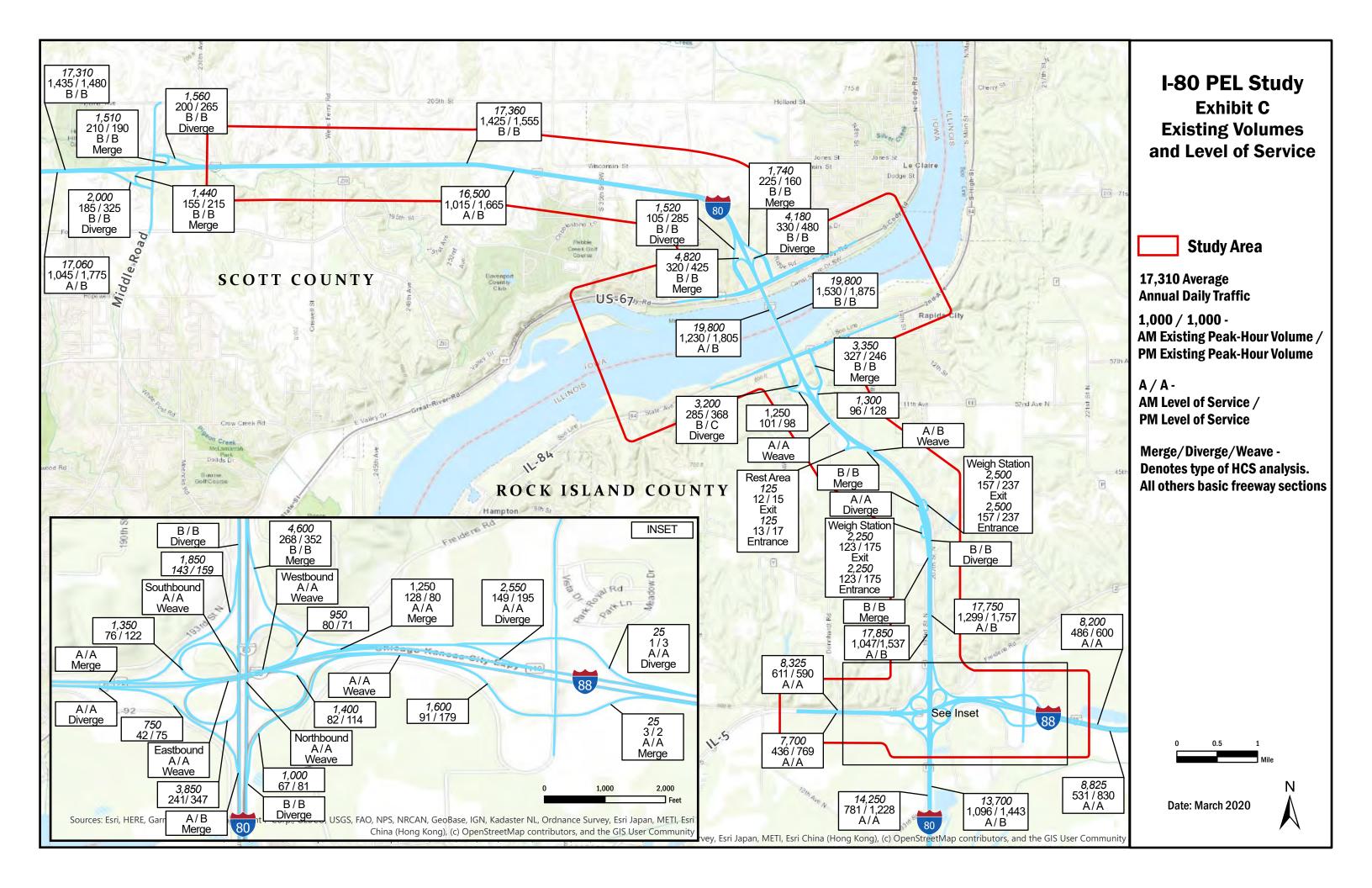


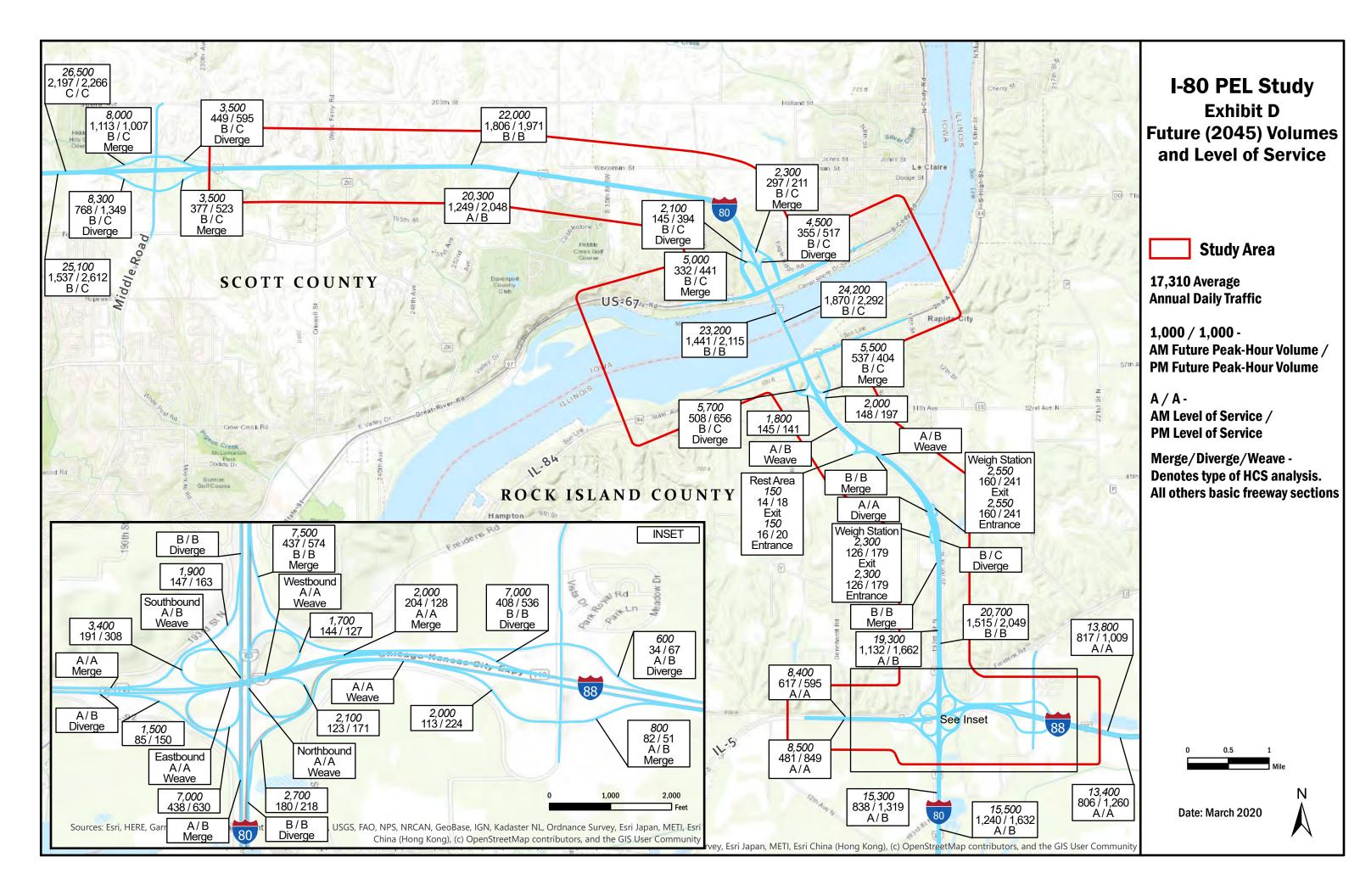


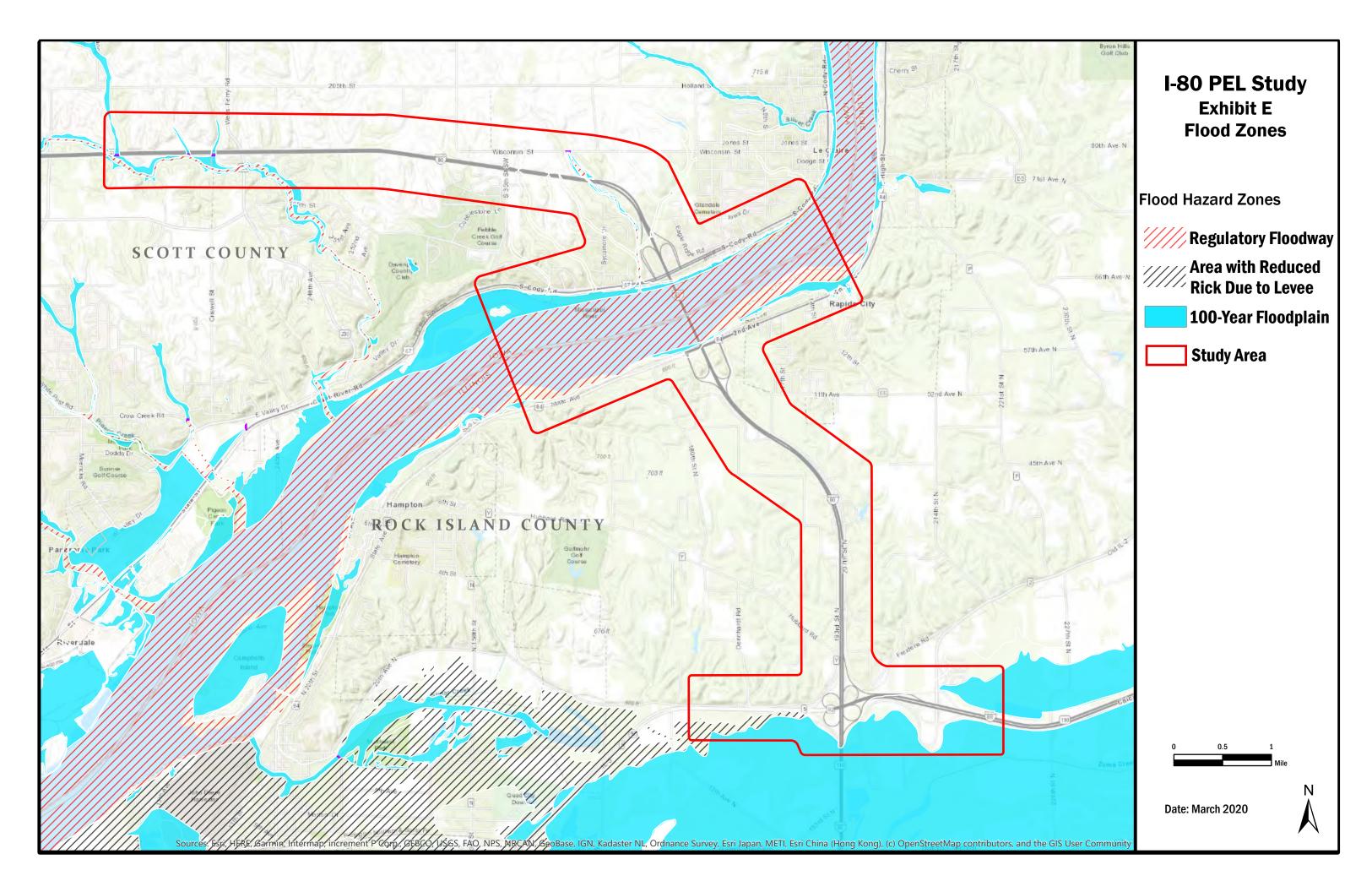


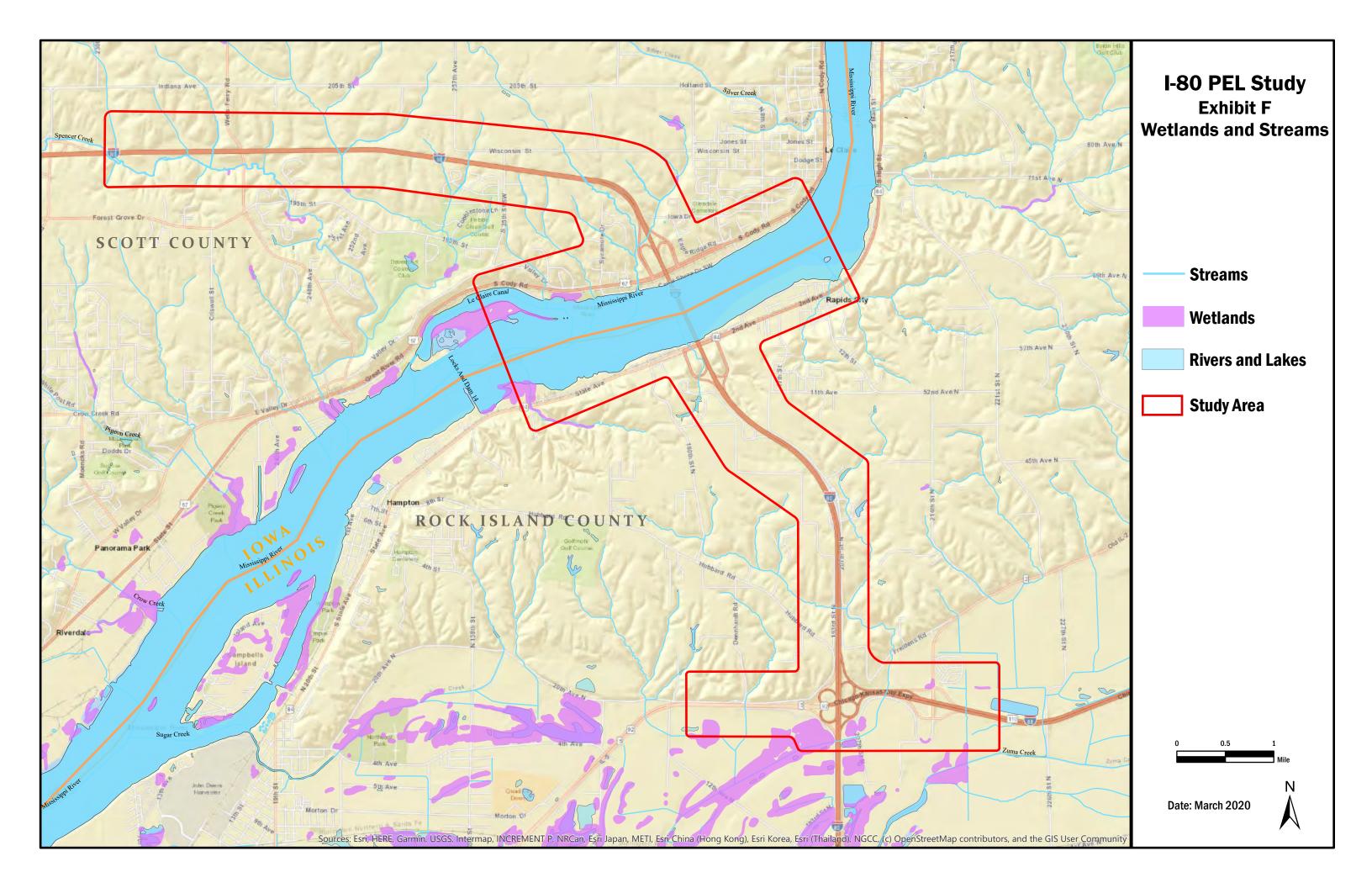


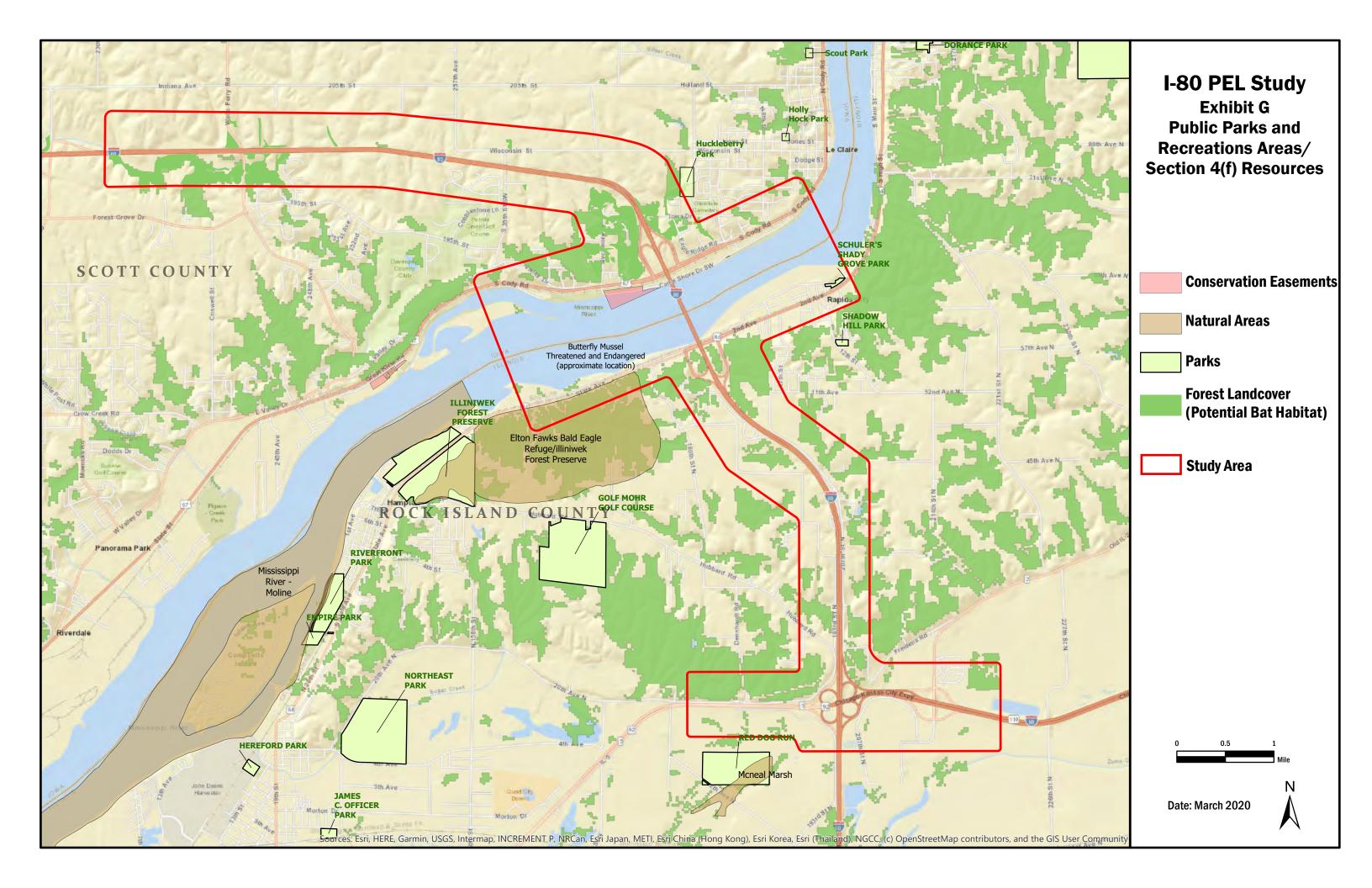


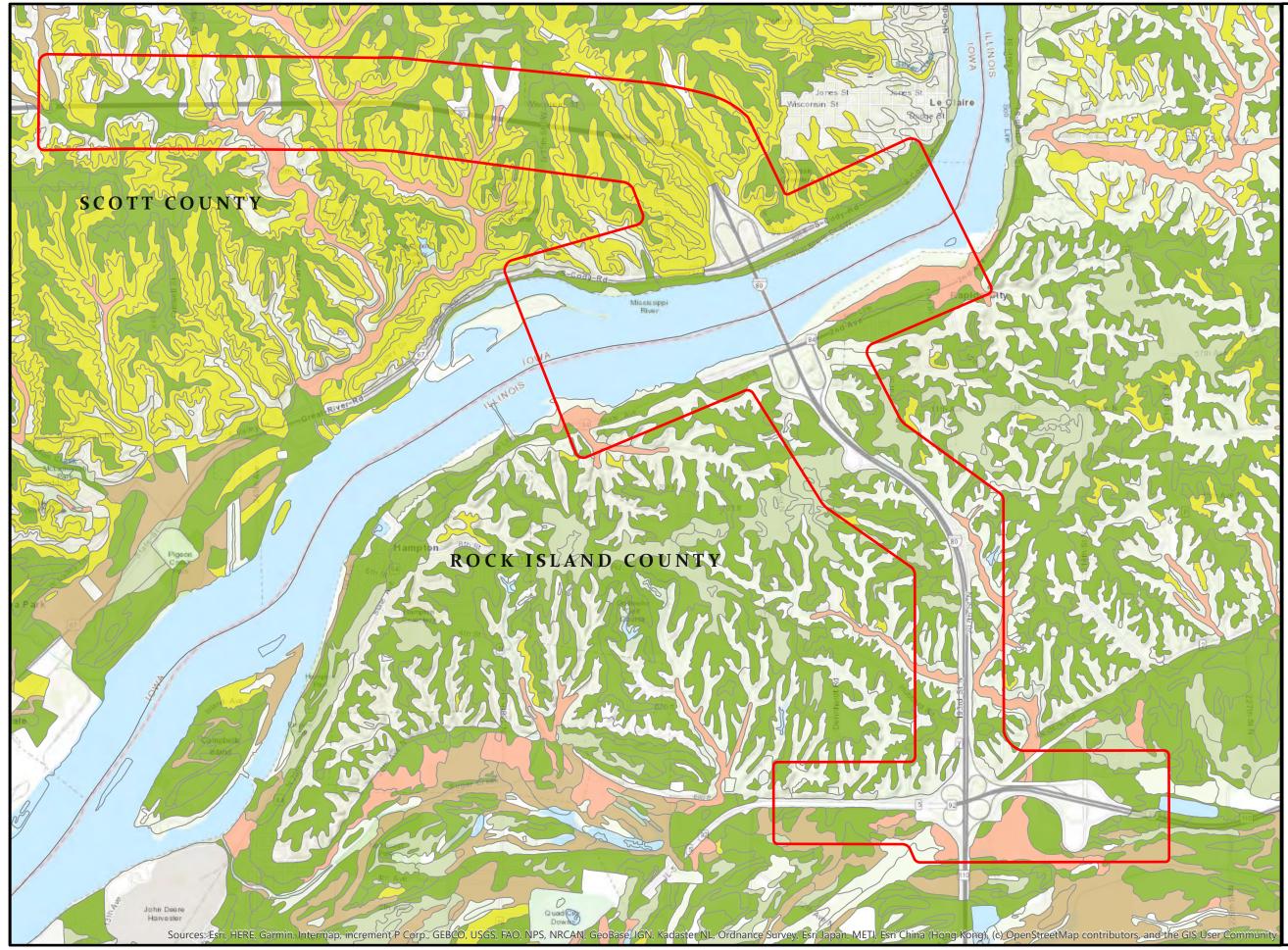












## I-80 PEL Study Exhibit H Prime Farmland

## Farm Class



All areas are prime farmland

Farmland of local importance



Farmland of statewide importance



Not prime farmland



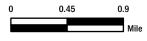
Prime farmland if drained

Prime farmland if drained and either protected from flooding or not frequently flooded during the growing

Prime farmland if irrigated

Prime farmland if protected from flooding or not frequently flooded during the growing season

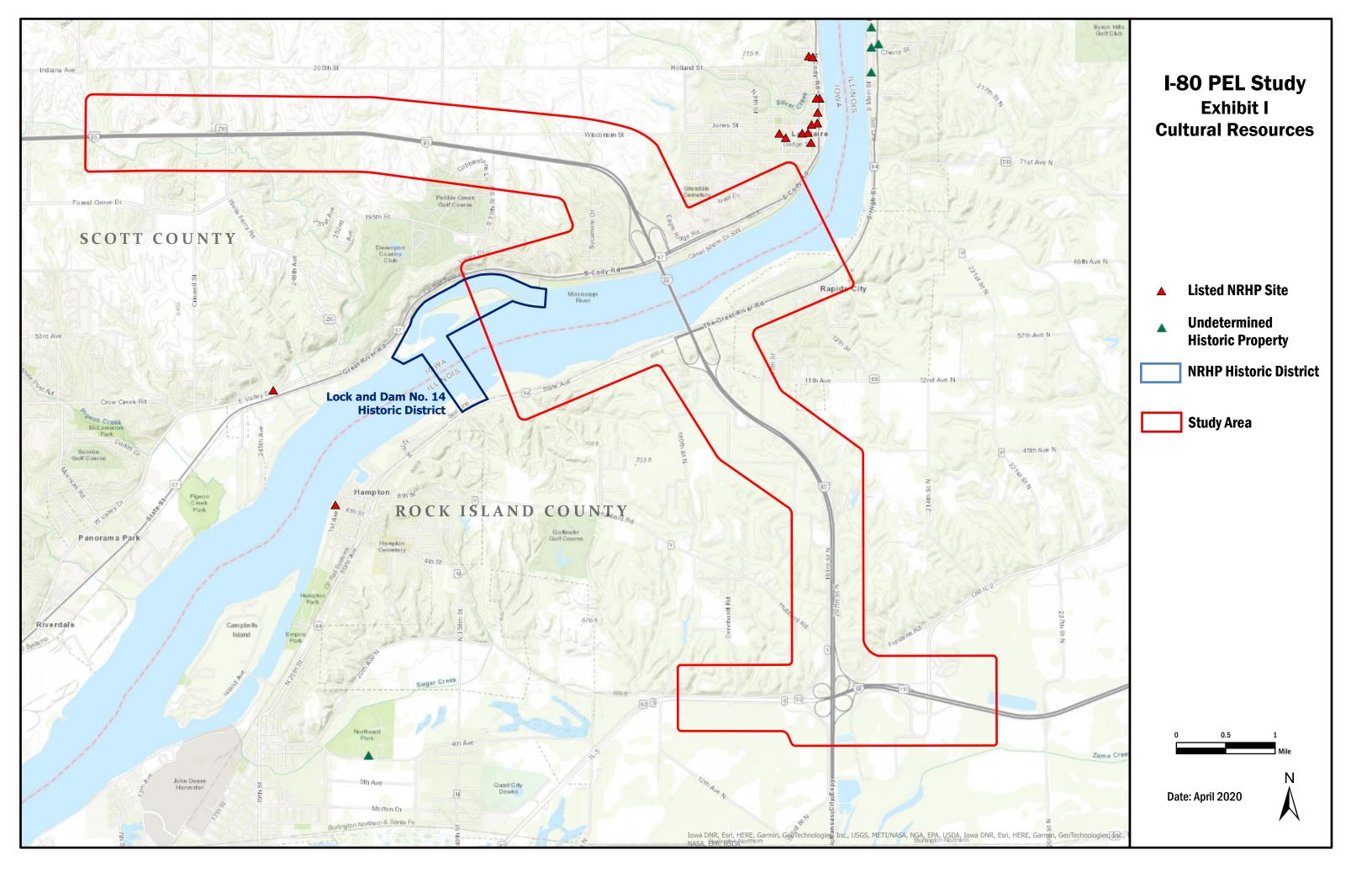


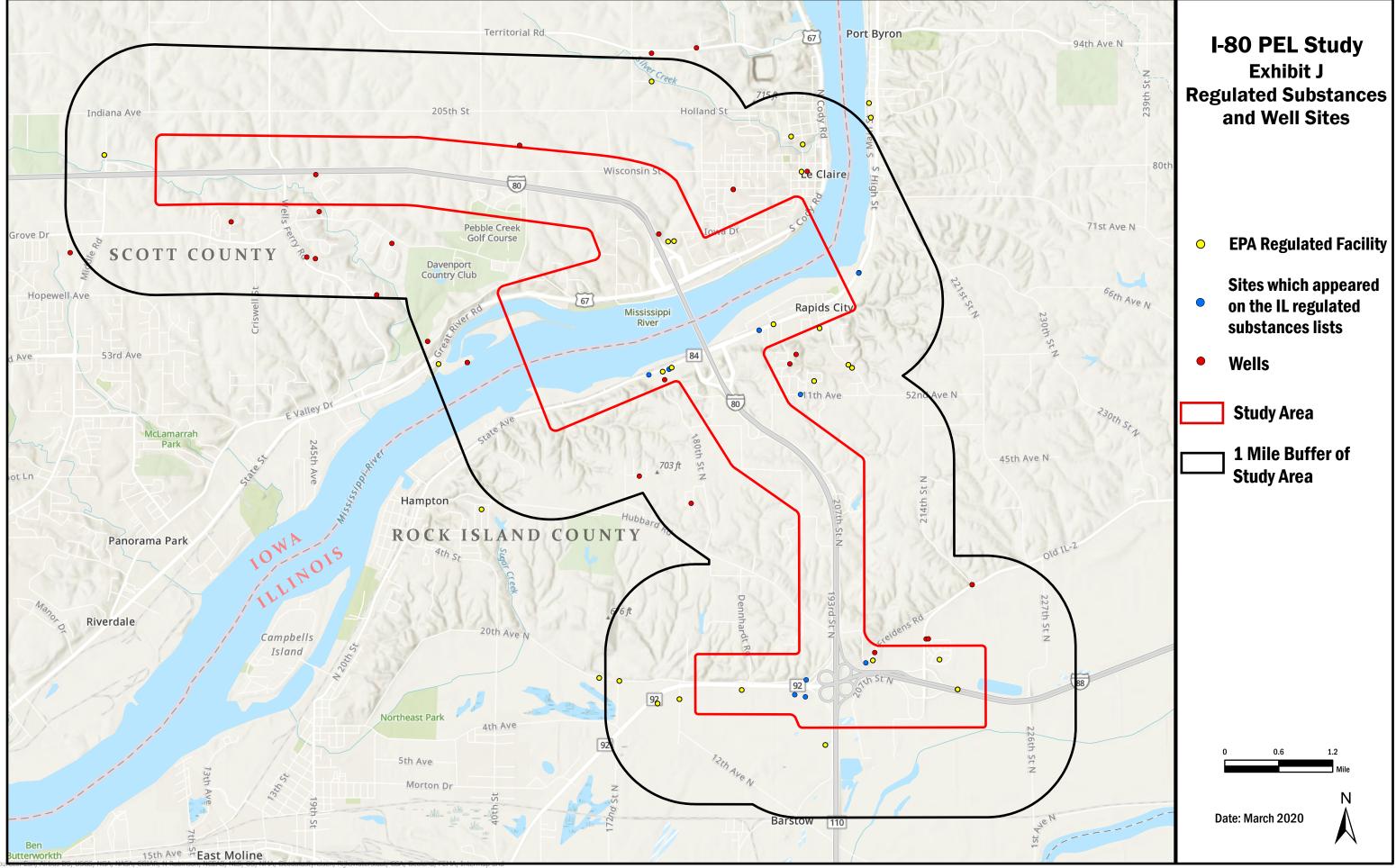


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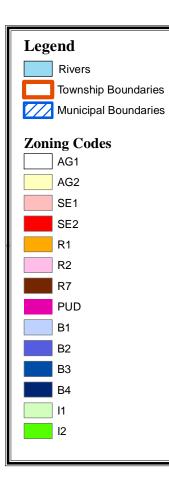


the GIS user community, Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

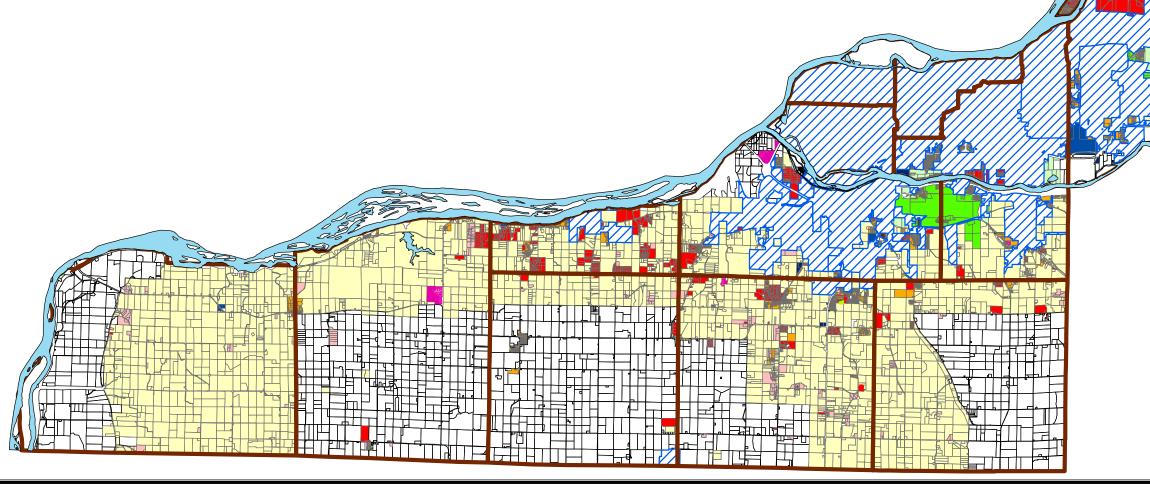
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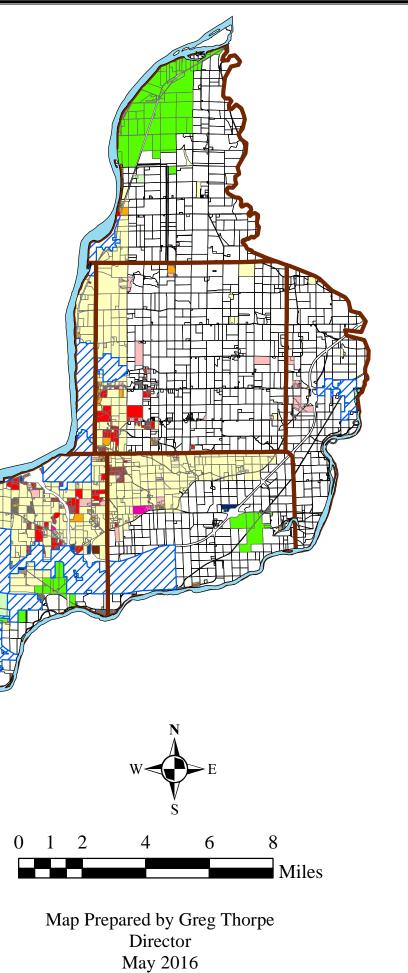
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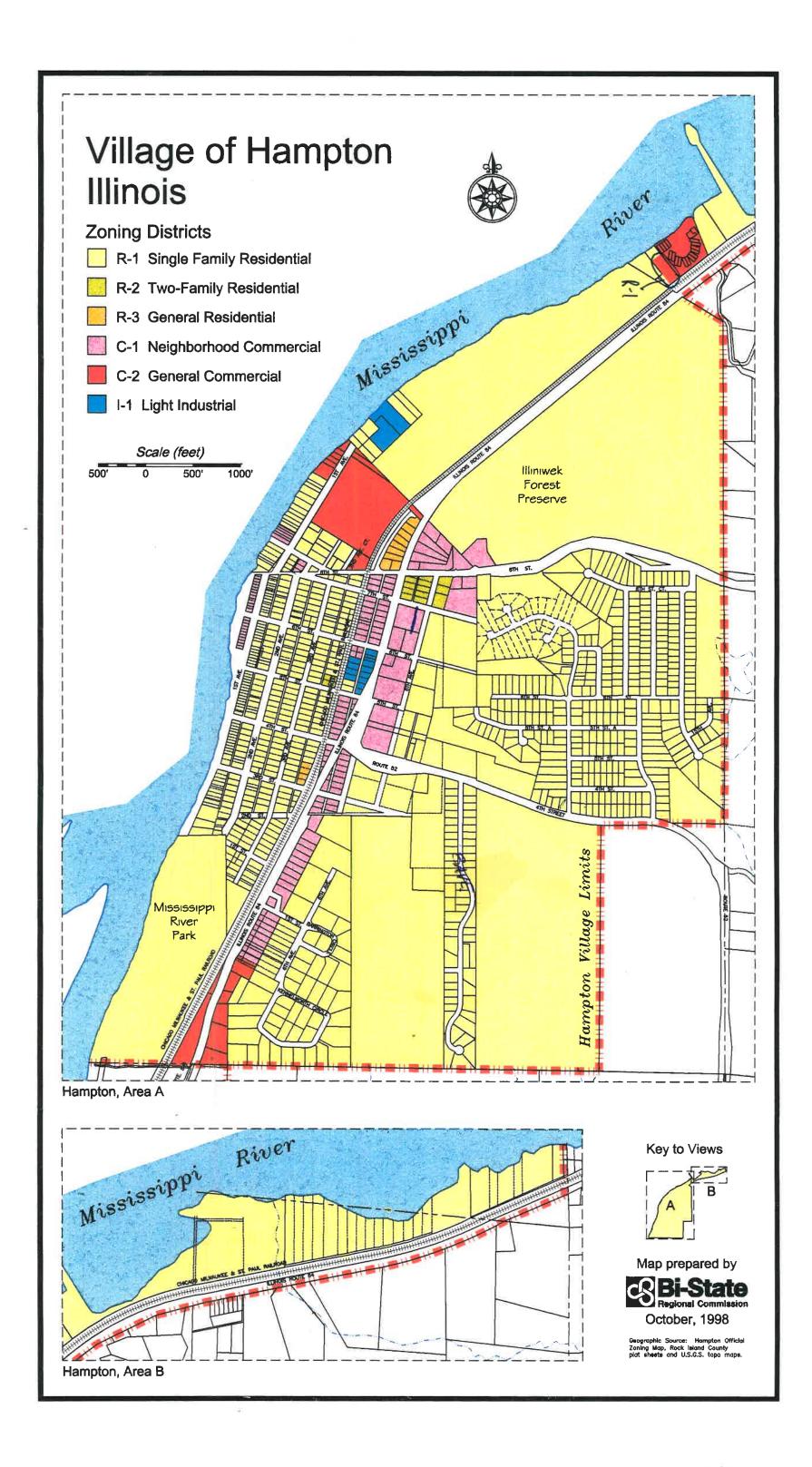


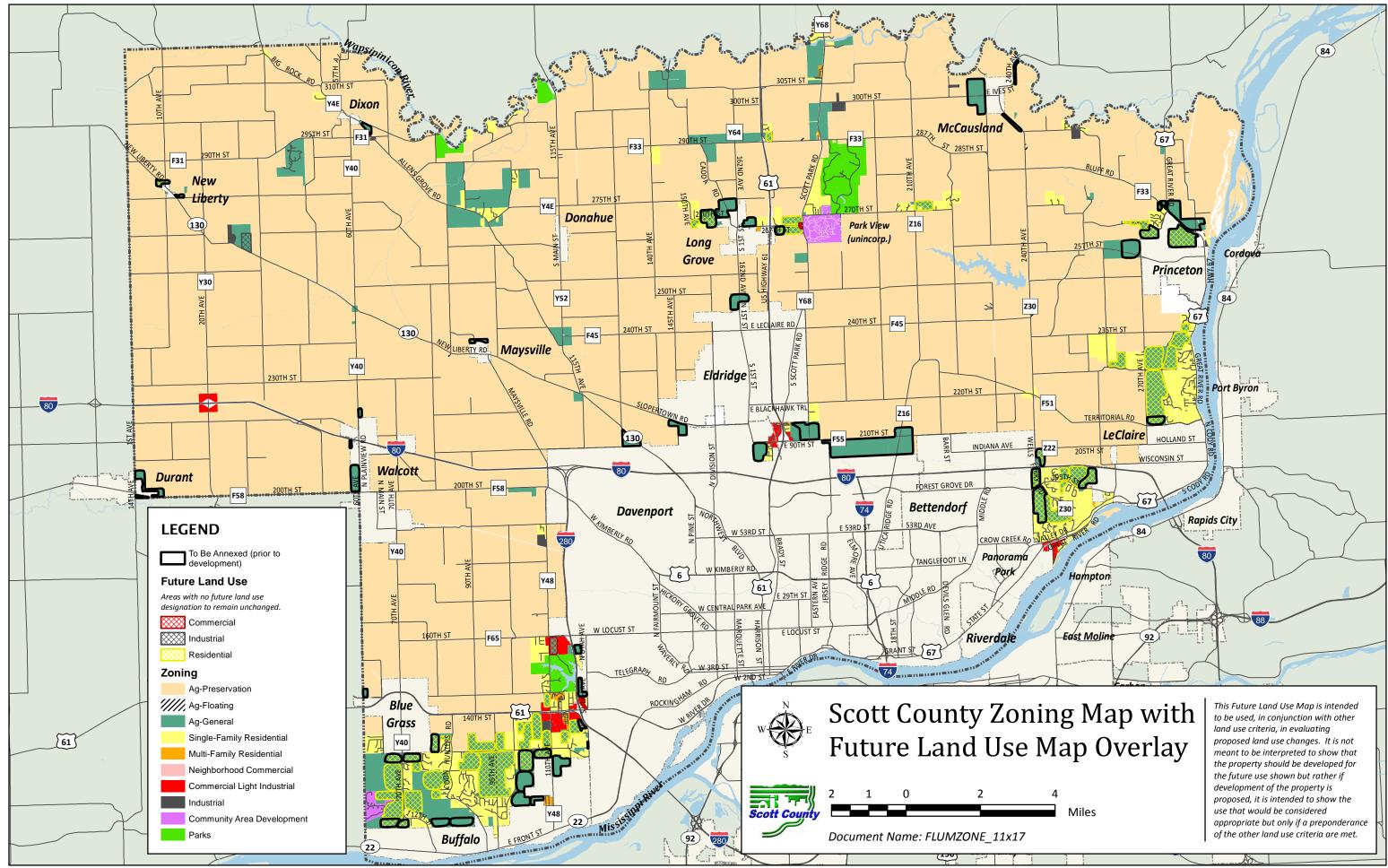


# UNINCORPORATED ROCK ISLAND COUNTY ZONING MAP











To Be Annexed (prior to

development)

**Future Land Use** Areas with no future land use

Commercial

Industrial

Residential

Ag-Preservation

Single-Family Residential

Multi-Family Residential

Ag-General

Industrial

Parks

Document Name: FLUMZONE 11x17 Inset

**Community Area** Development

designation to remain

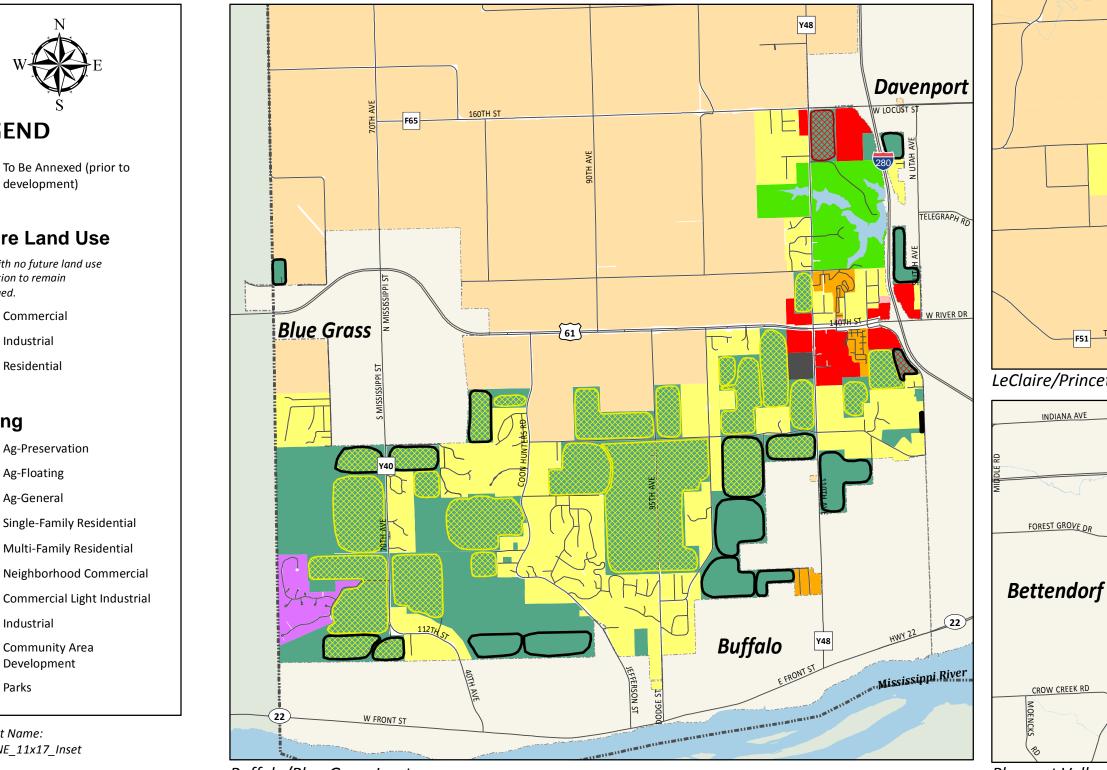
unchanged.

Zoning

Ag-Floating

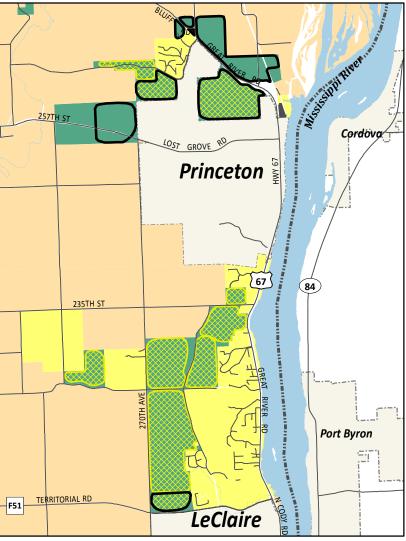
LEGEND

# Scott County Zoning Map with Future Land Use Map Overlay Inset Areas



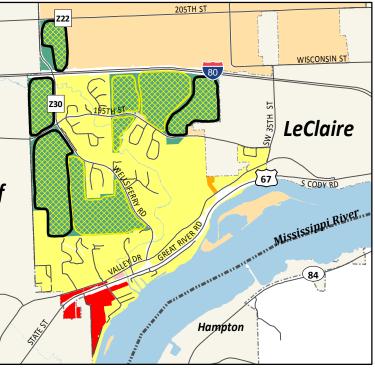
Buffalo/Blue Grass Inset

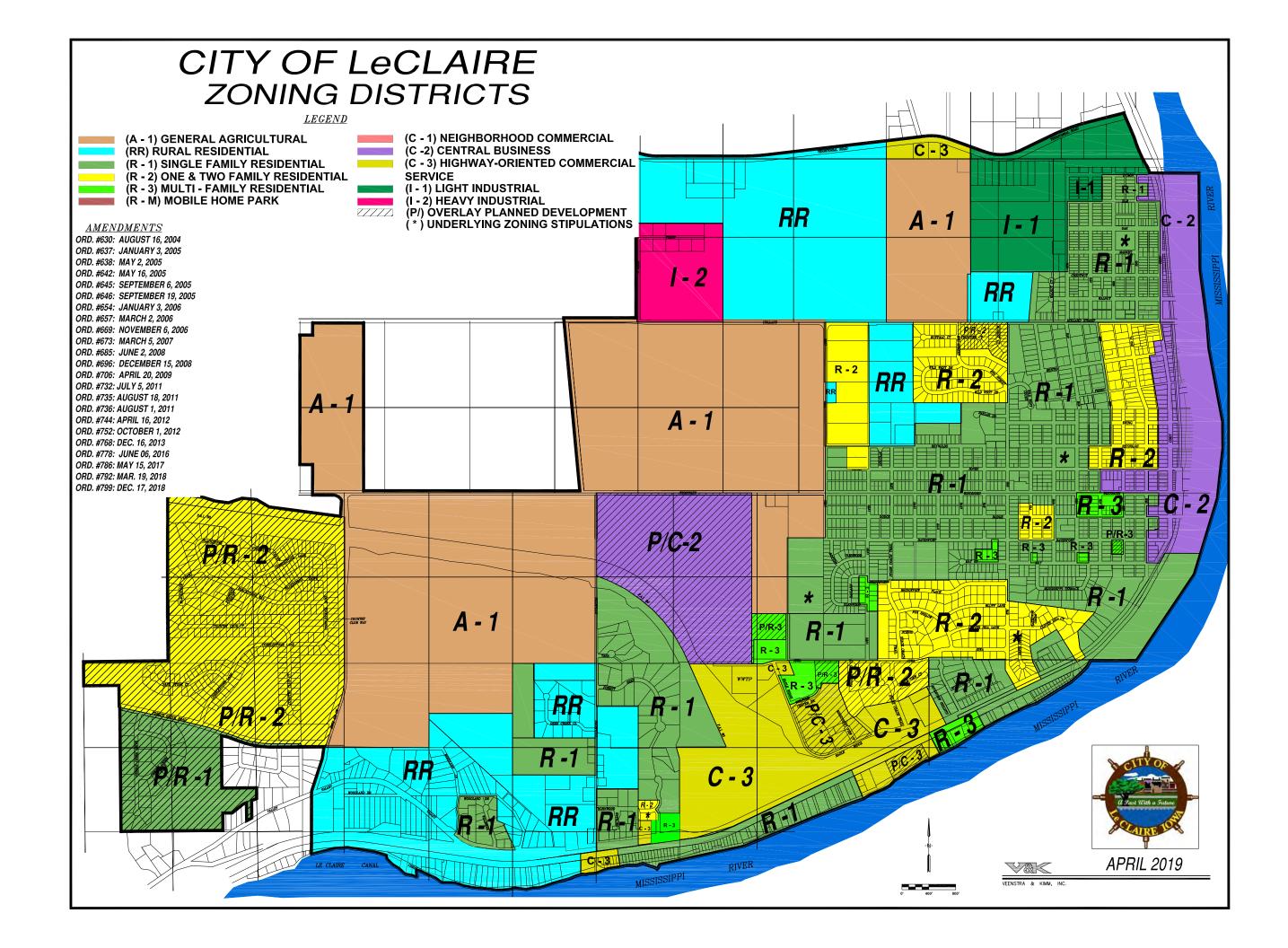
Pleasant Valley Inset

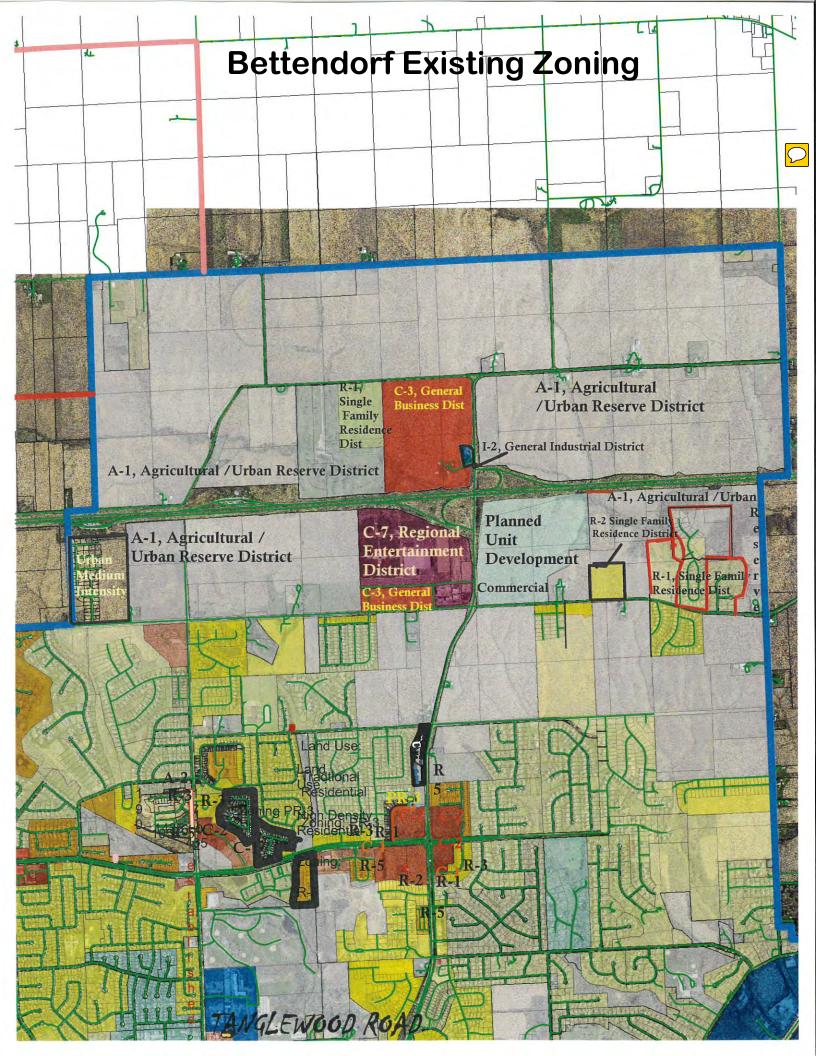


LeClaire/Princeton Inset

INDIANA AVE







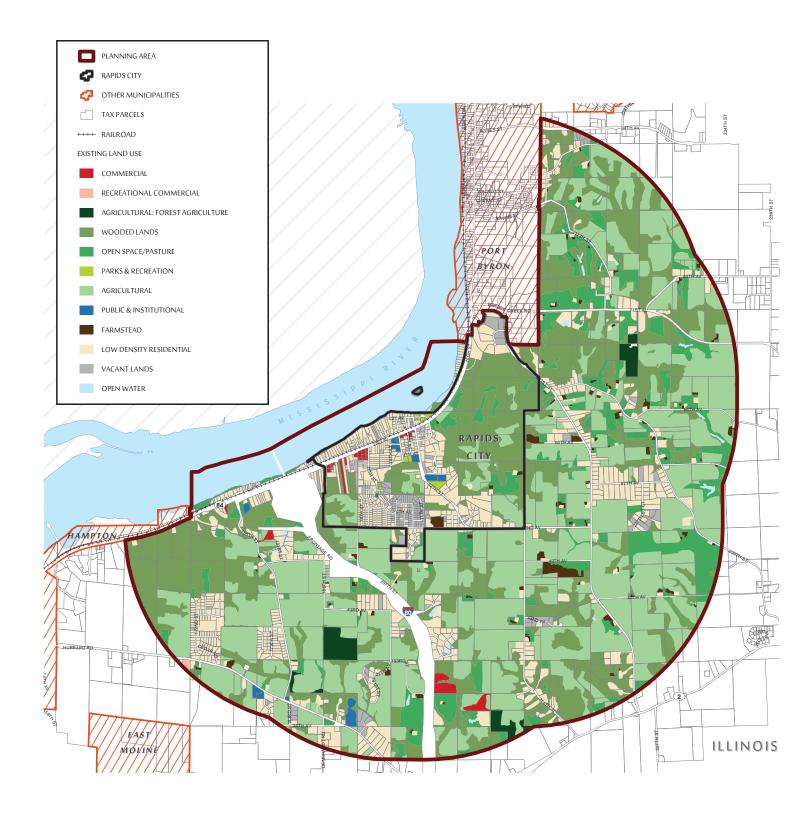
# EXHIBIT L

Existing Land Use



## APPENDIX A COMMUNITY INDICATORS

## Existing Land Use Map - Plan Area



# EXHIBIT M

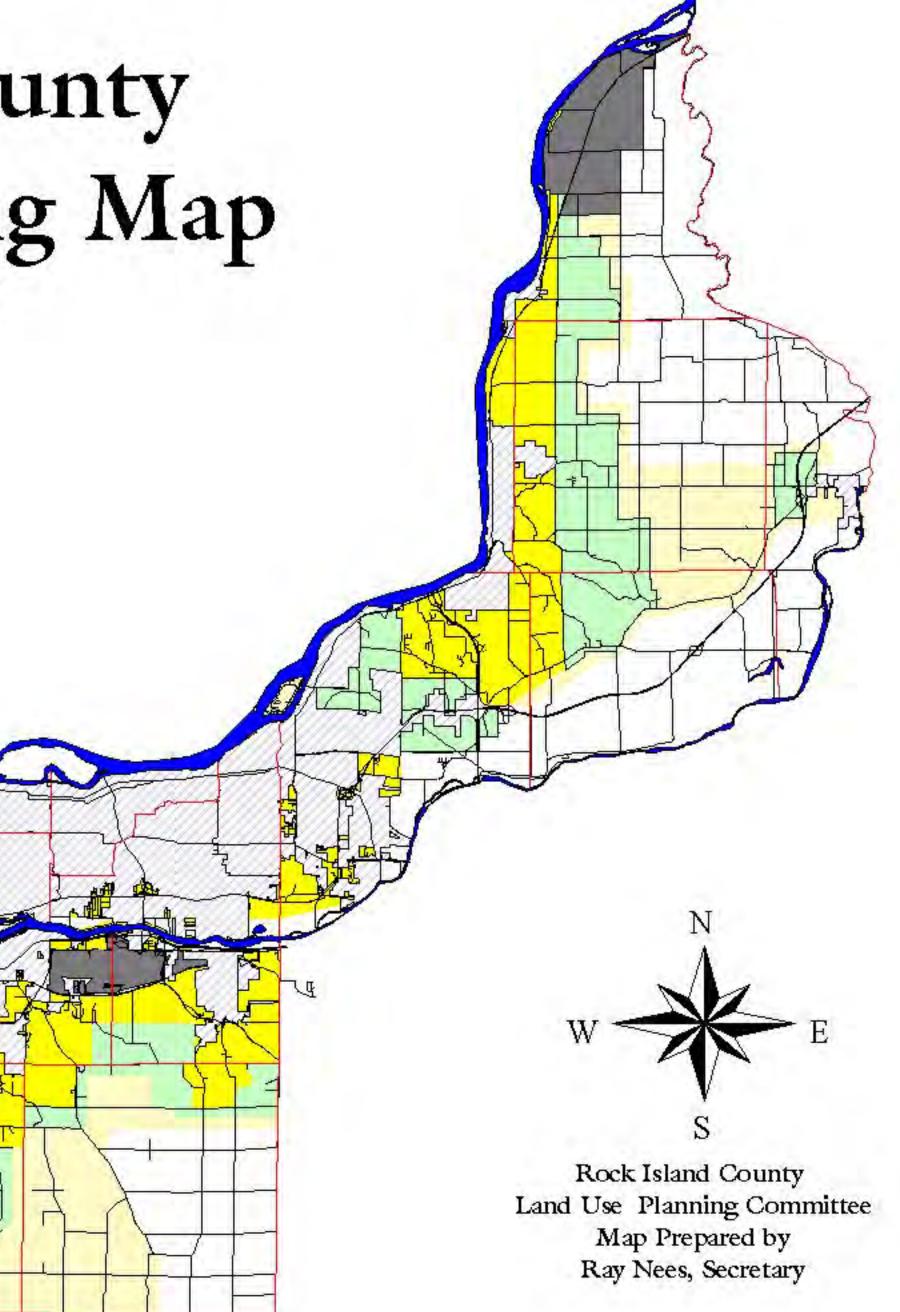
**Future Land Use** 



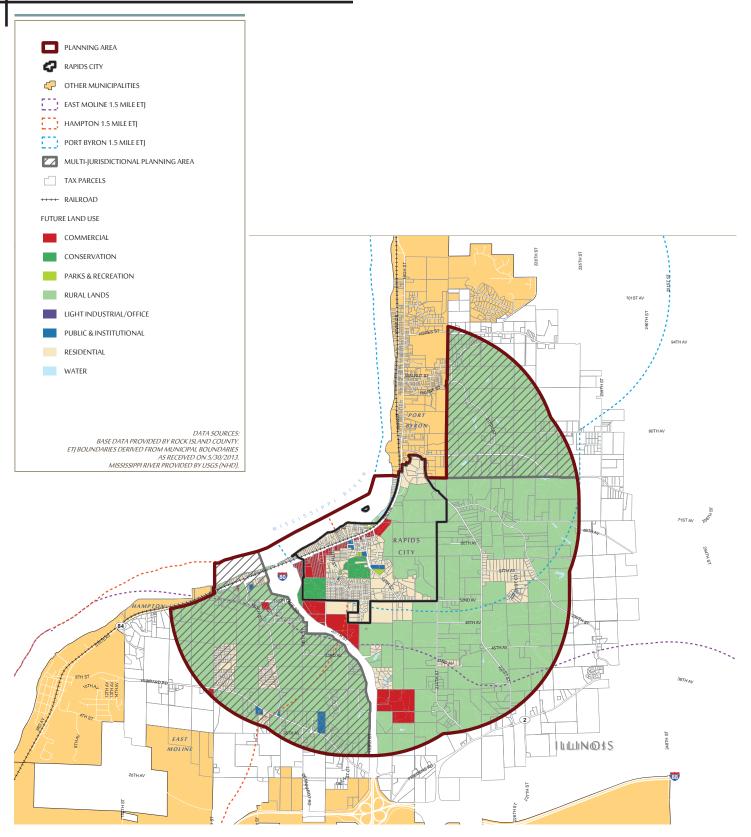
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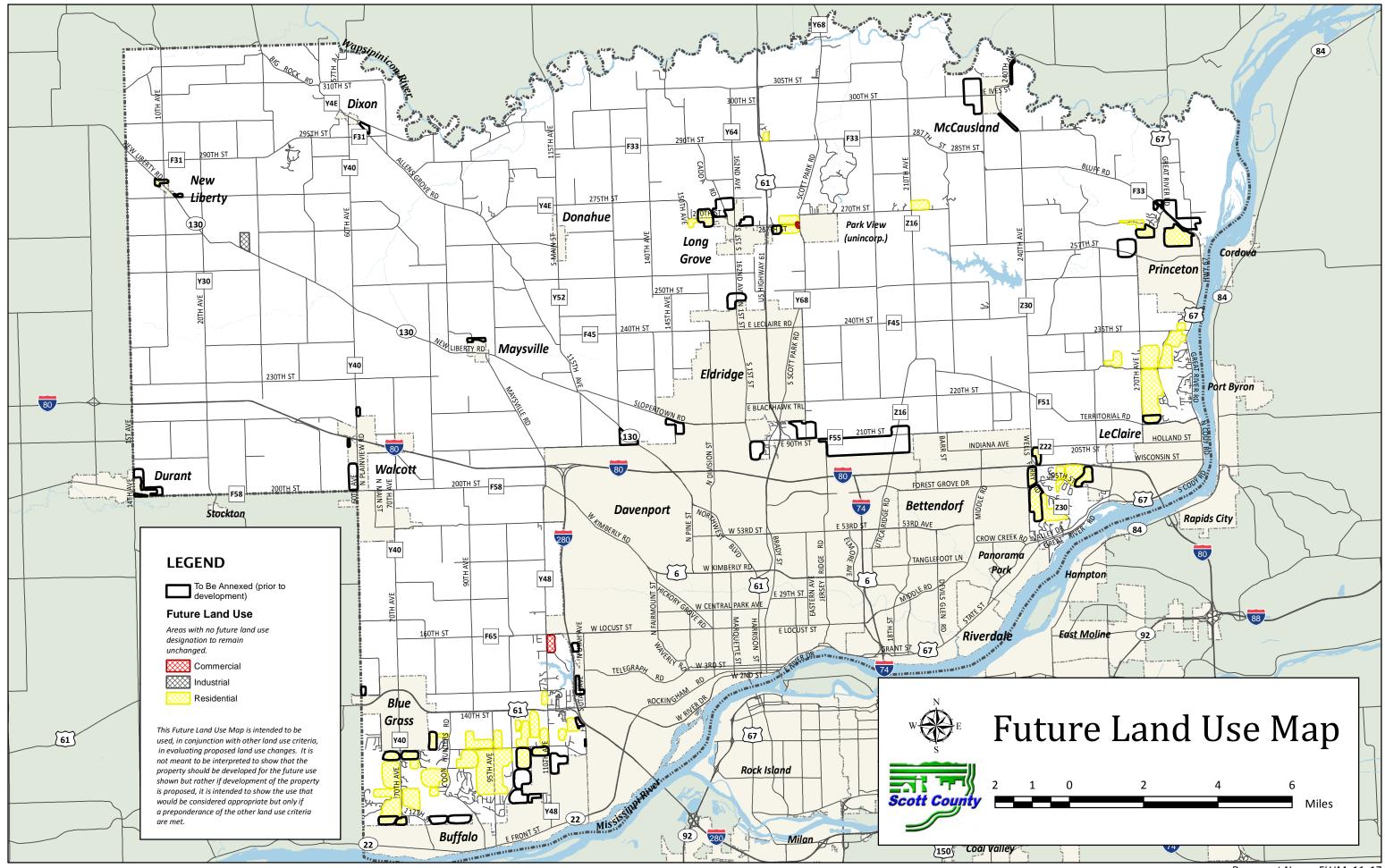
As Amended 2/15/05

	Townships
$\overline{\langle }$	Highways
×	<b>Municipal Boundaries</b>
$\overline{\langle}$	Streets
and	Use Key
	High Density
	Medium Density
	Low Density
1	Preservation
	Industrial

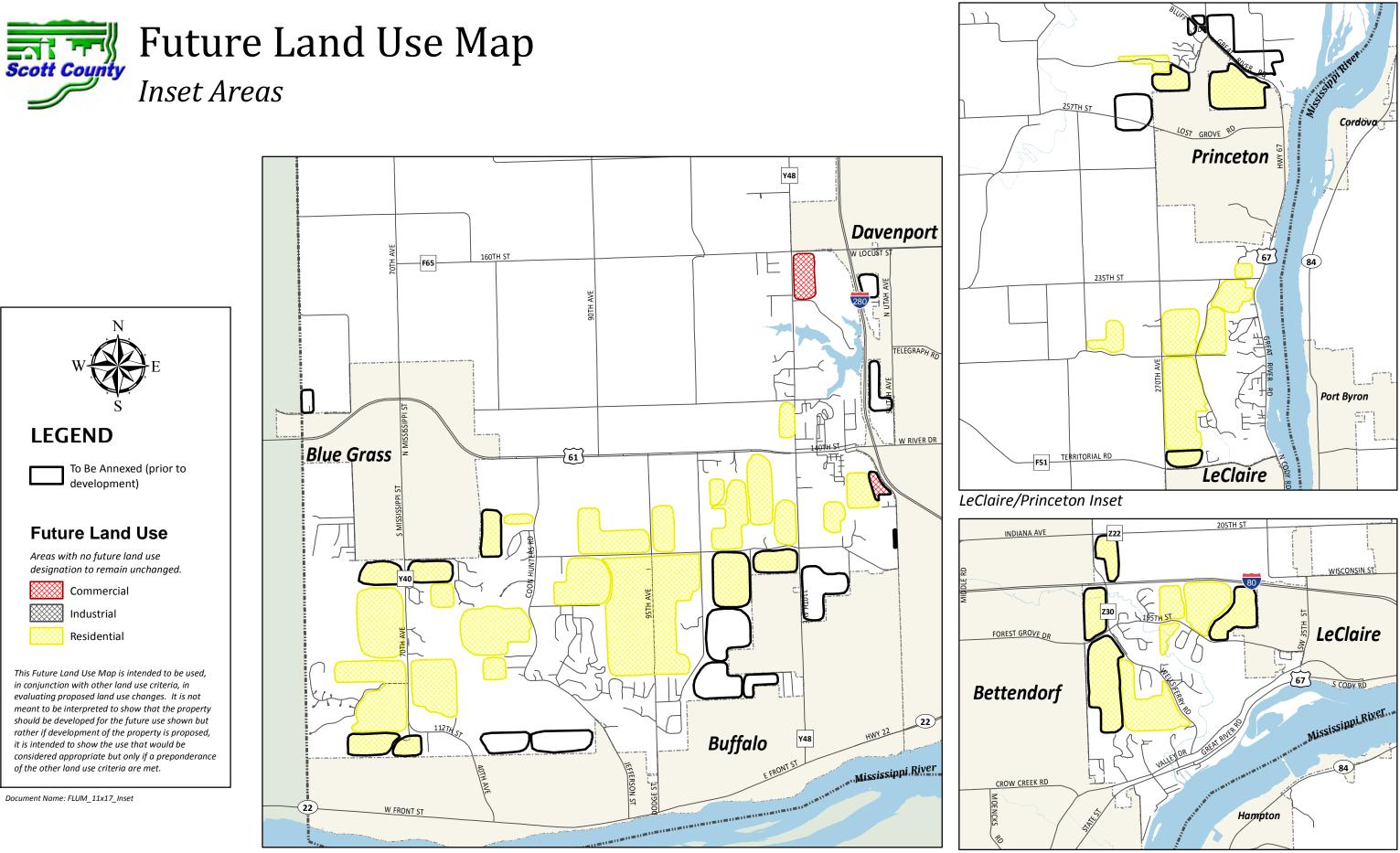








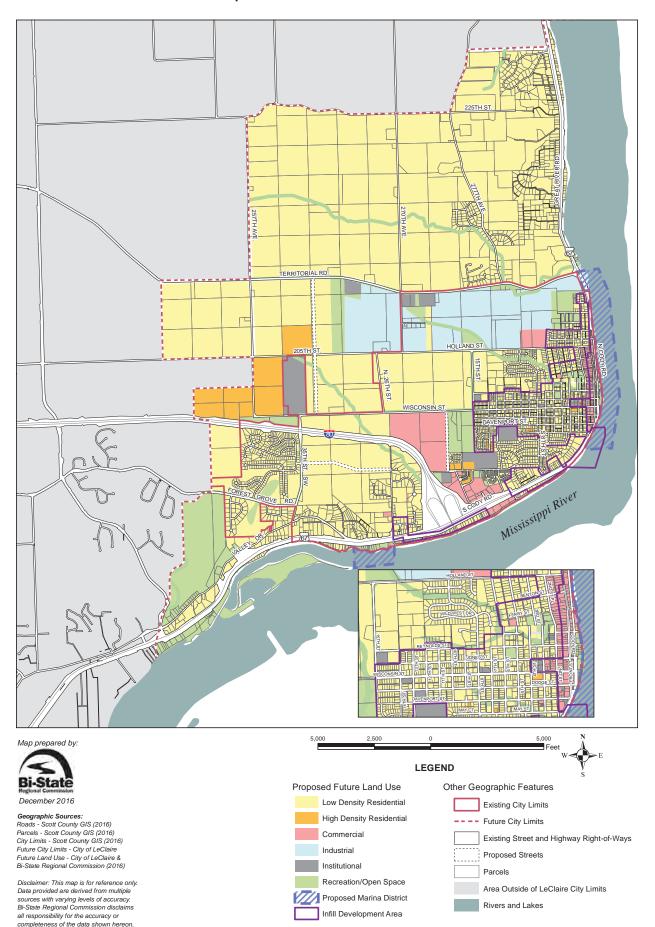
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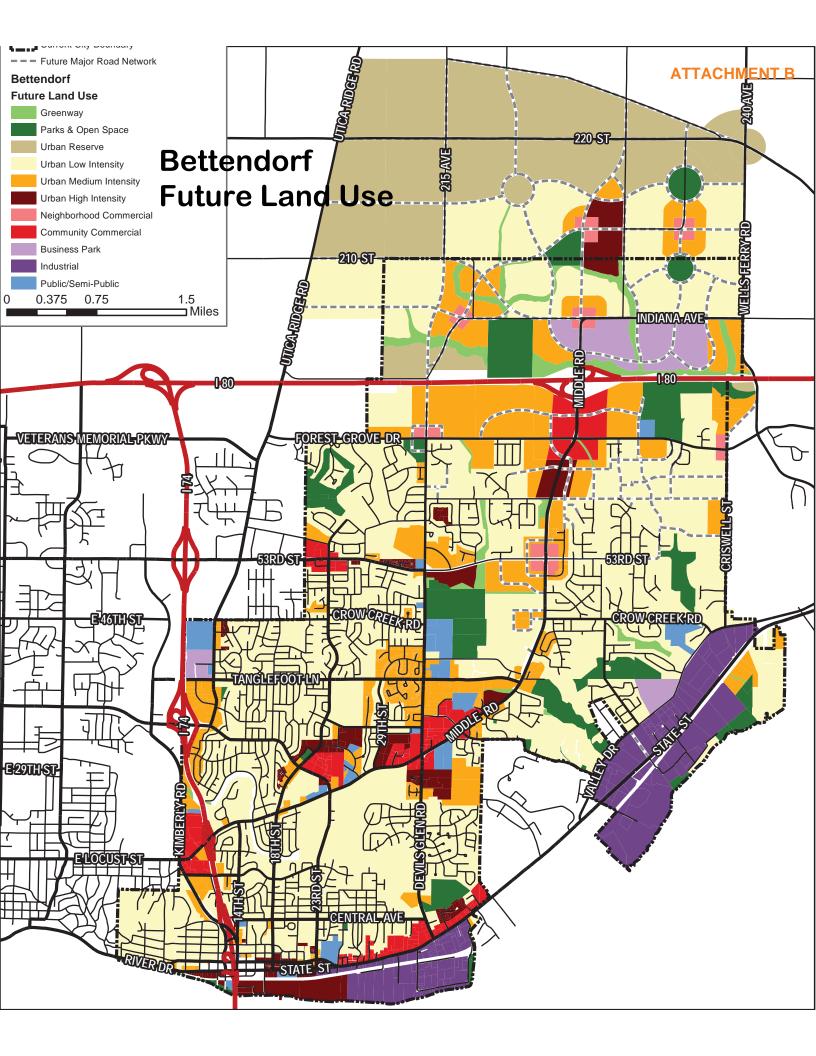


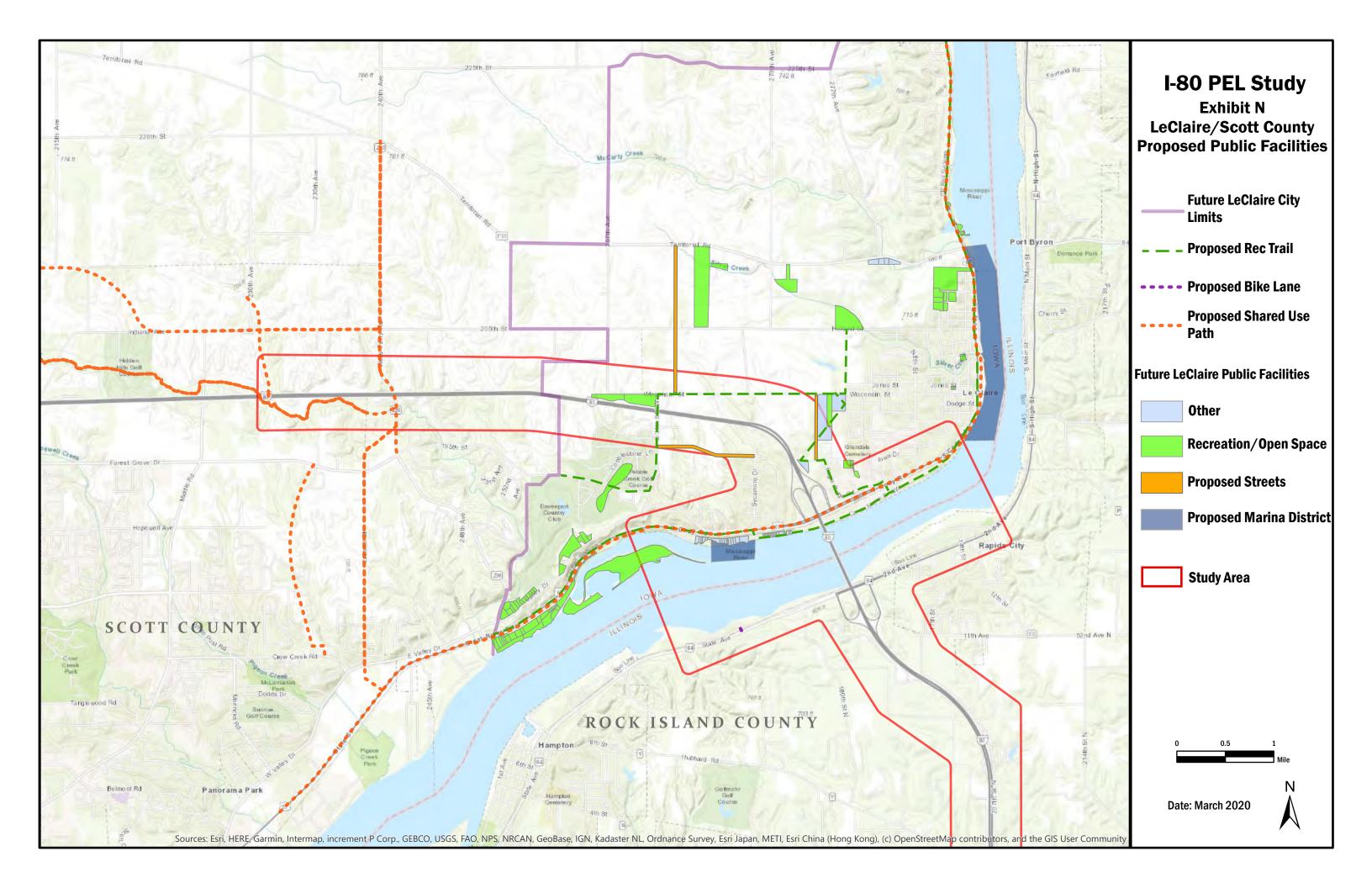
Buffalo/Blue Grass Inset

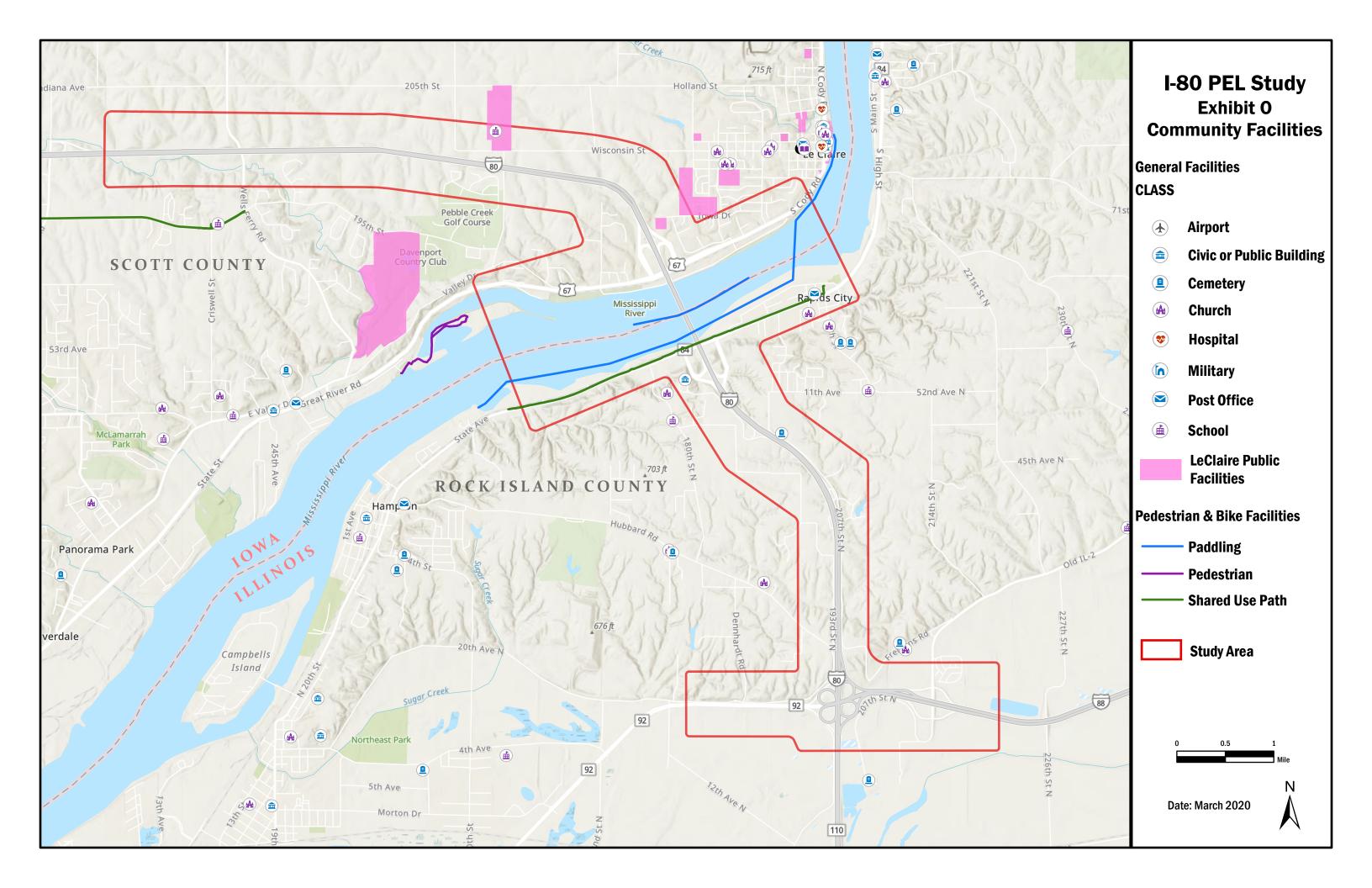
Pleasant Valley Inset

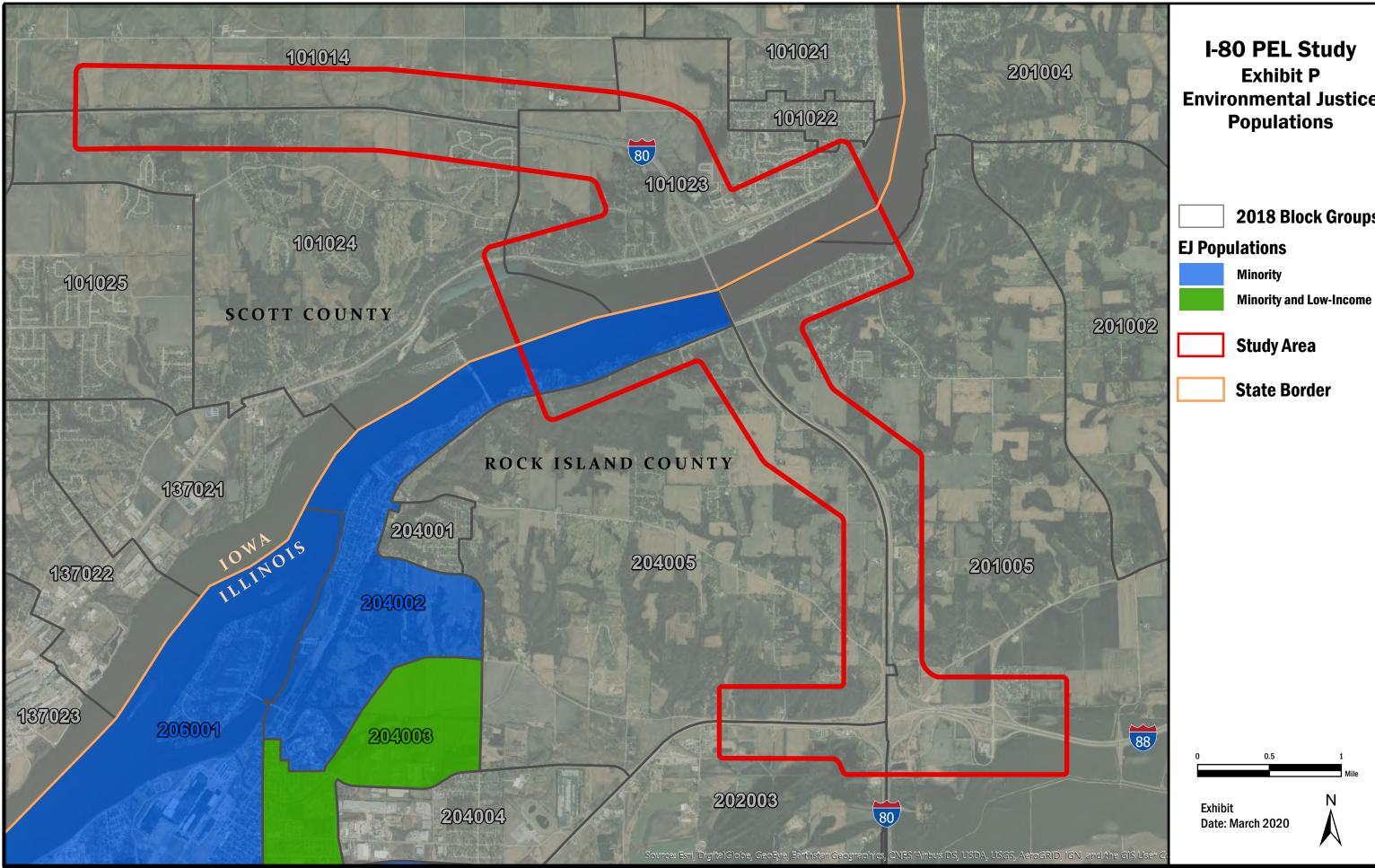
City of LeClaire Proposed Future Land Use











# **Environmental Justice**

2018 Block Groups

# EXHIBIT Q

**GIS Sources** 



### List of Environmental Review GIS Sources

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Federal Emergency Management Agency. Flood Hazard Zones [Map Service]. <u>https://hazards.fema.gov/gis/nfhl/rest/services/public/NFHL/MapServer/28</u> (February 27, 2020)

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The Nature Conservancy, TNC Land [Data Portal, TNC\_Lands\_lowa].

http://www.tnclands.tnc.org/# (January 30, 2020).

United States Census Bureau, Poverty Status of Individuals in the Past 12 Months by Living Arrangement (Table B17021). https://data.census.gov/cedsci/table?g=0500000US17161.150000,19163.150000&text=B17021&tid=ACS DT5Y2018.B17021&hidePreview=true (February 21, 2020).

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United States Census Bureau. Tiger Block Group File Geodatabase. <u>https://www2.census.gov/geo/tiger/TGRGDB18/</u> (February 21, 2020).

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End GIS Sources

## **EXISTING CONDITIONS TECHNICAL REPORT**

### Knight E/A

631 E Boughton Road Bolingbrook, Illinois 60440

### Hg Consult Inc.

3405 Inverness Road Waterloo, Iowa 50701

### Images Inc.

1250 E Diehl Road, Suite 401 Naperville, Illinois 60563

### American Survey & Engineering 841 North Galena Avenue Dixon, Illinois 61021



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