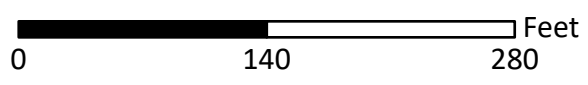
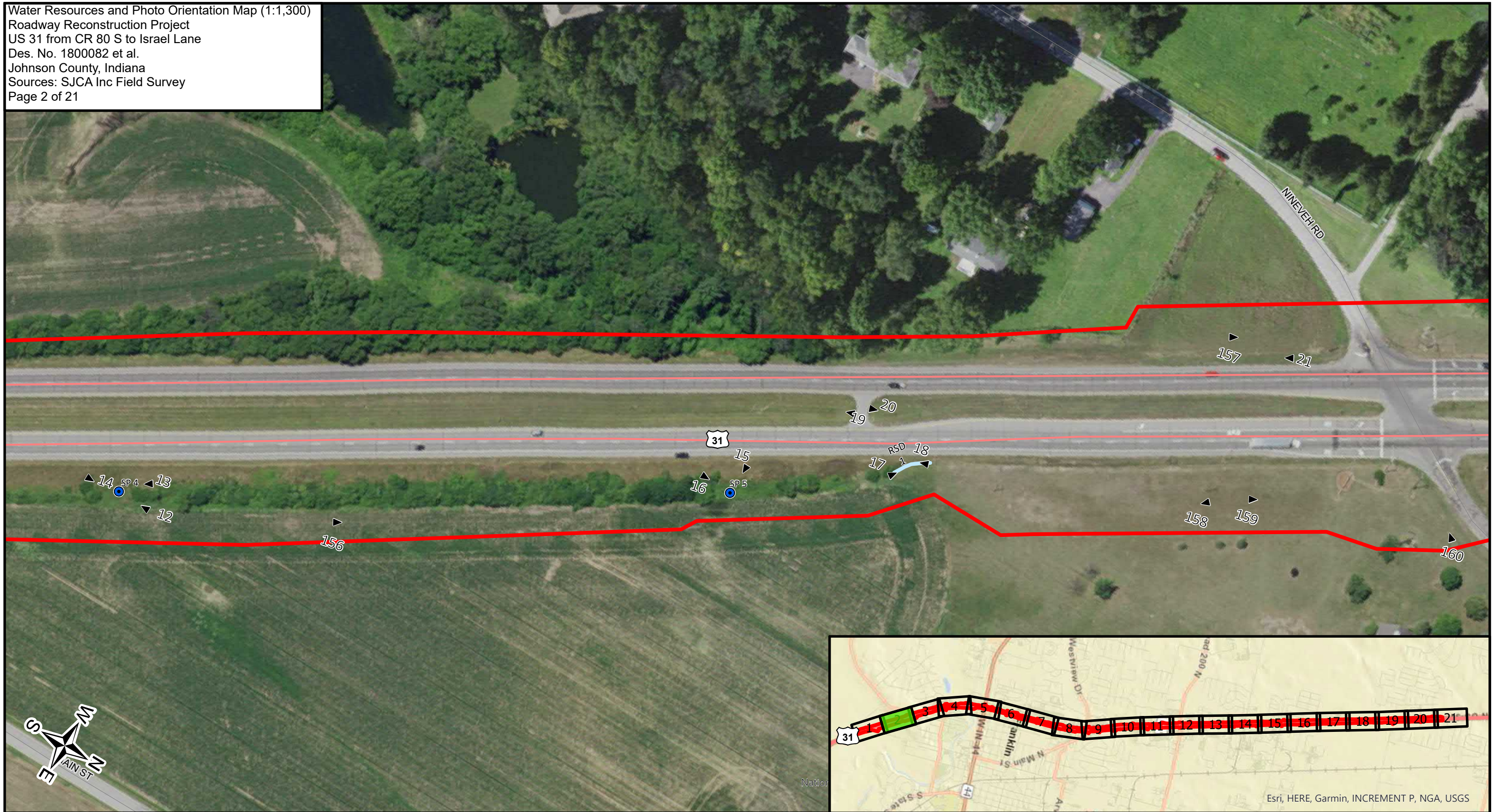
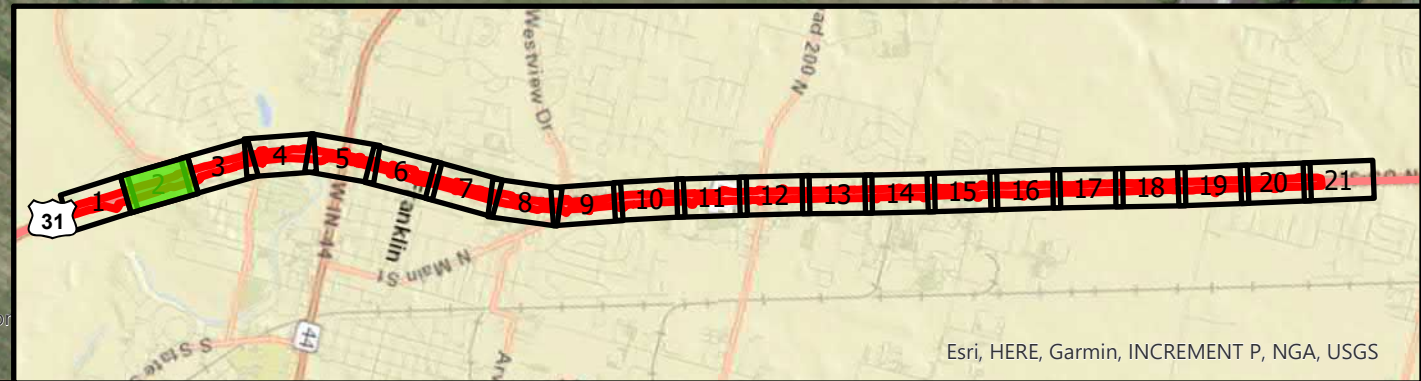


Water Resources and Photo Orientation Map (1:1,300)  
 Roadway Reconstruction Project  
 US 31 from CR 80 S to Israel Lane  
 Des. No. 1800082 et al.  
 Johnson County, Indiana  
 Sources: SJCA Inc Field Survey  
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- Investigated Area
- Emergent
- Scrub-Shrub
- Forested
- Stream
- RSD
- Photo Location
- Sample Point
- OHWM



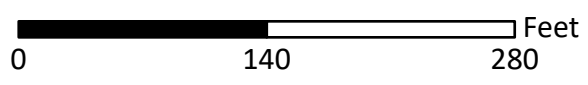
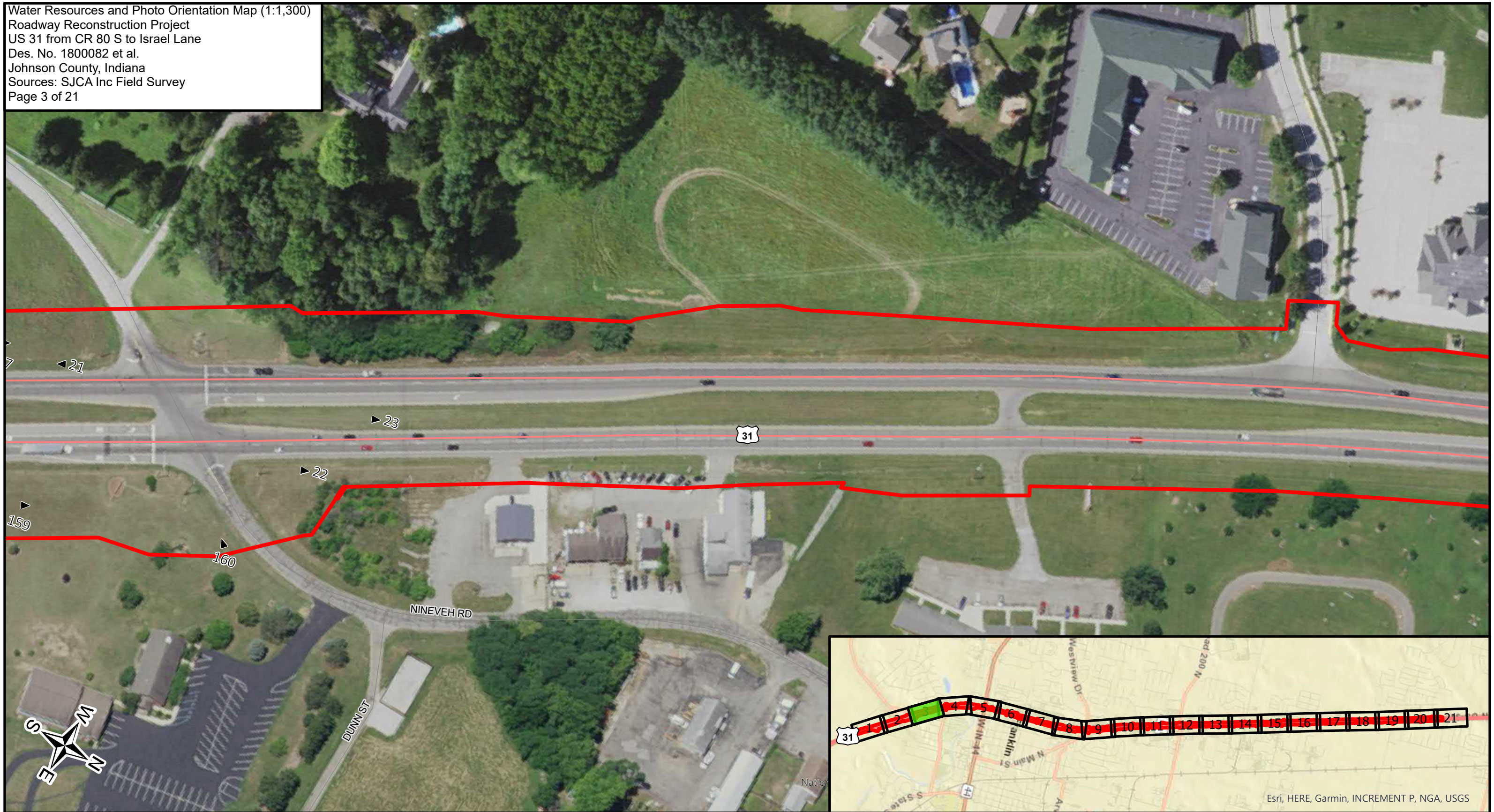
Esri, HERE, Garmin, INCREMENT P, NGA, USGS



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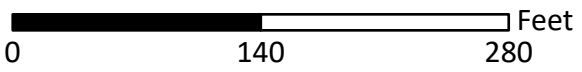
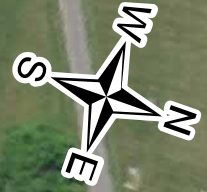
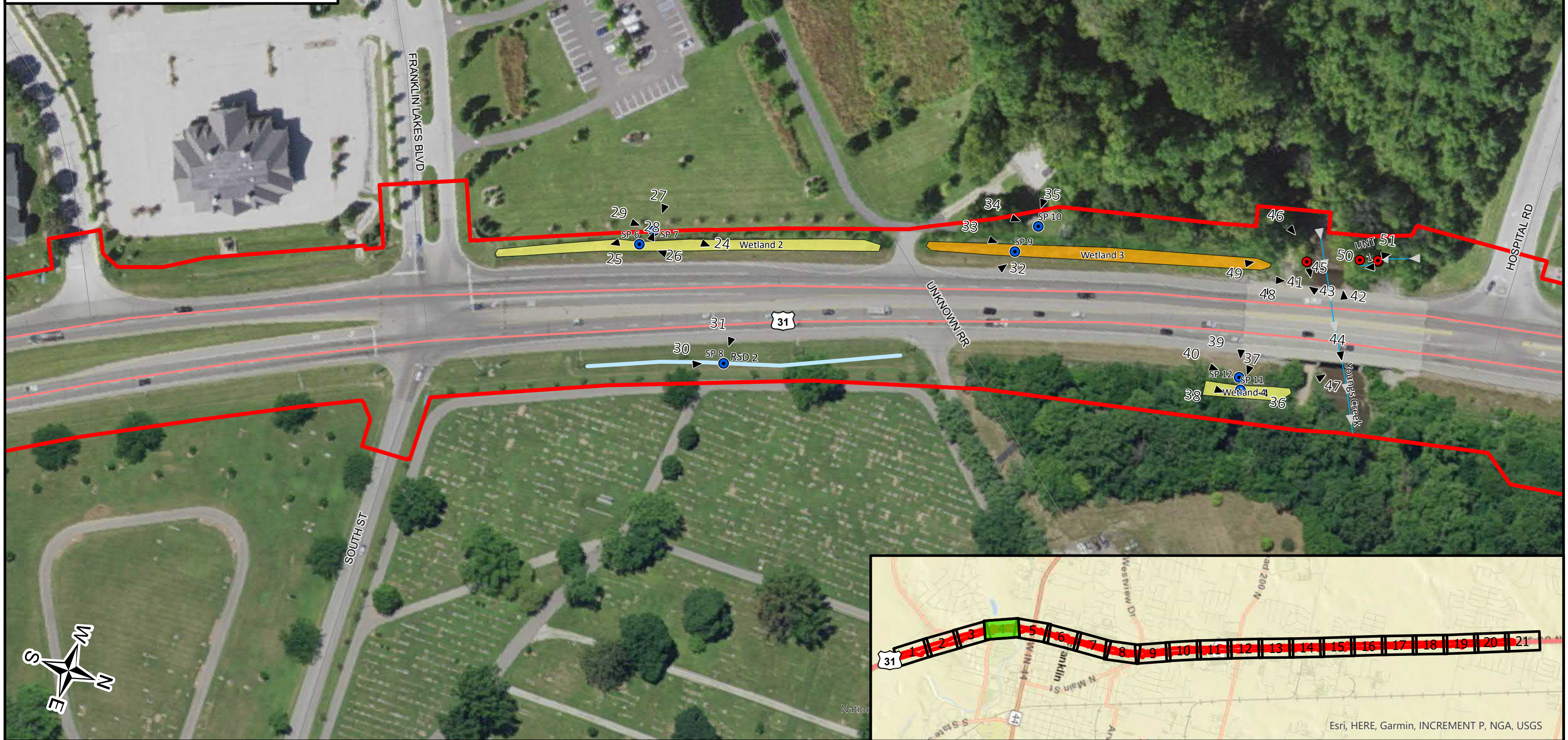


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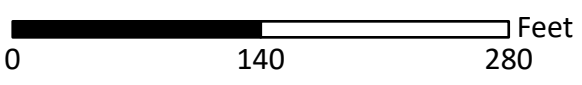
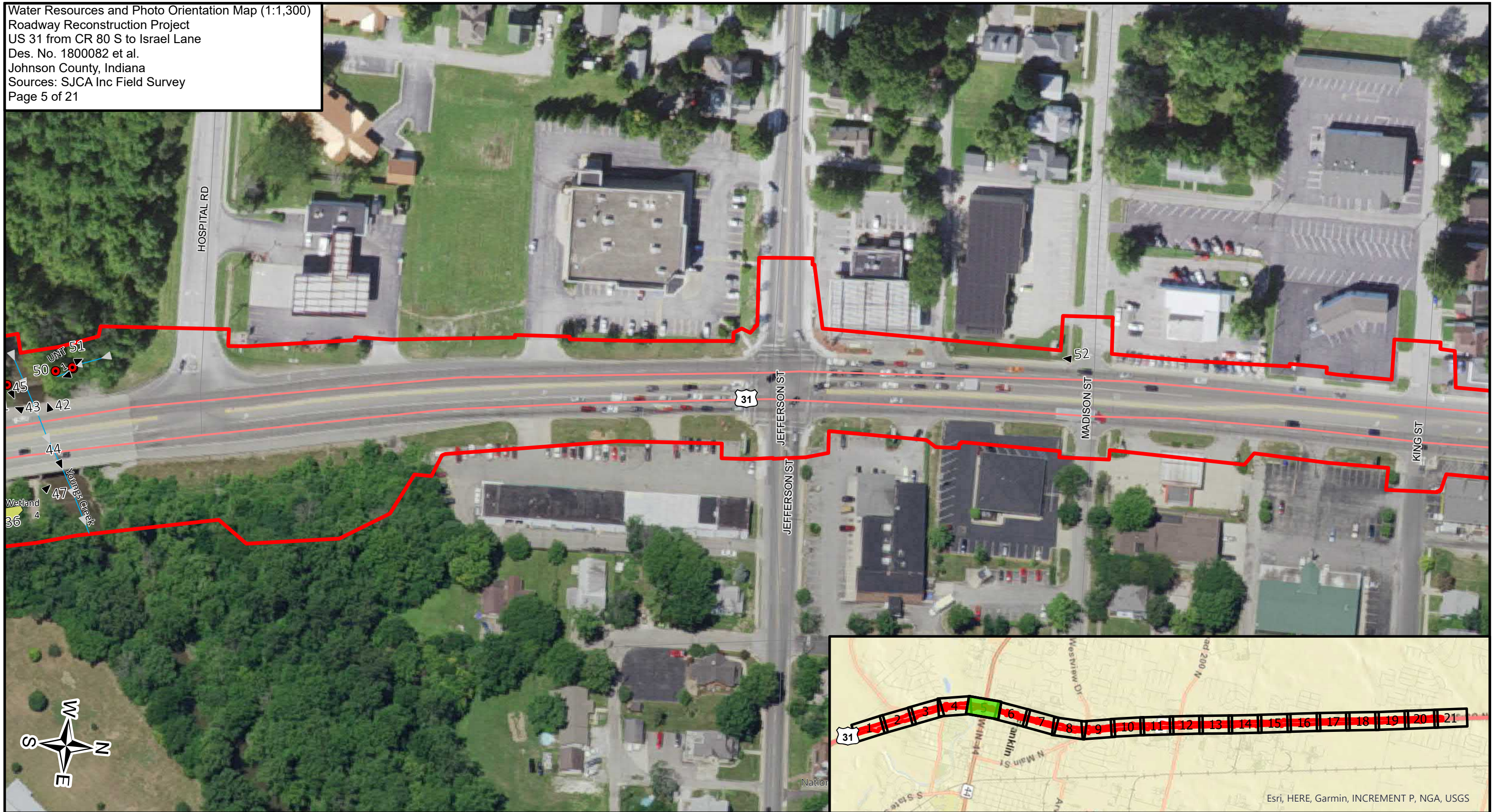


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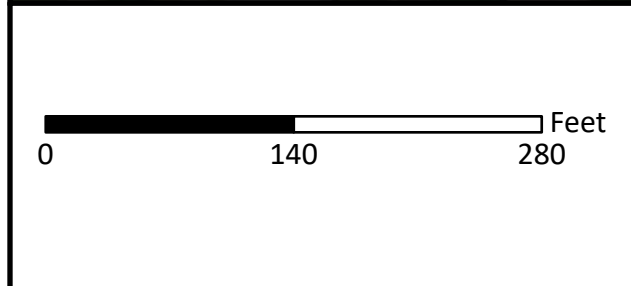
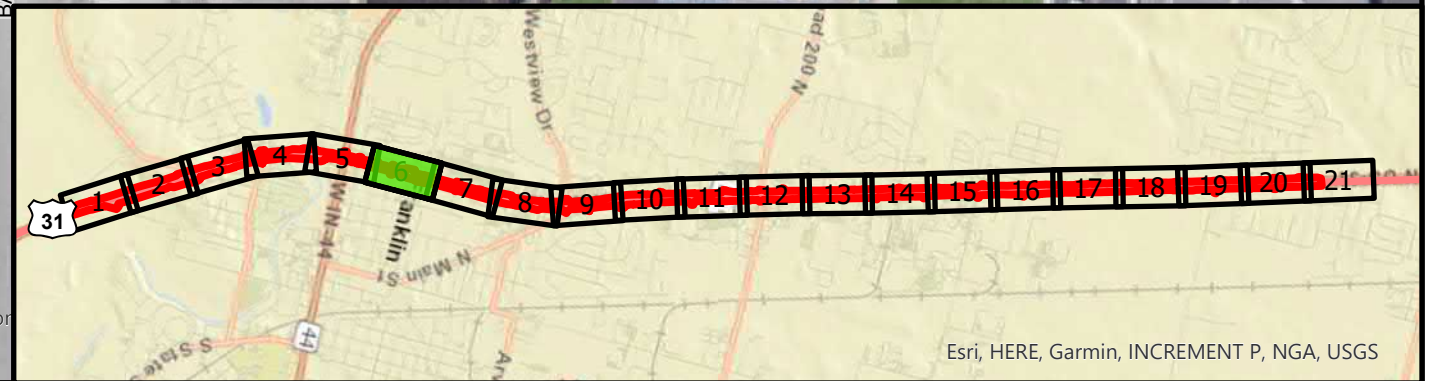
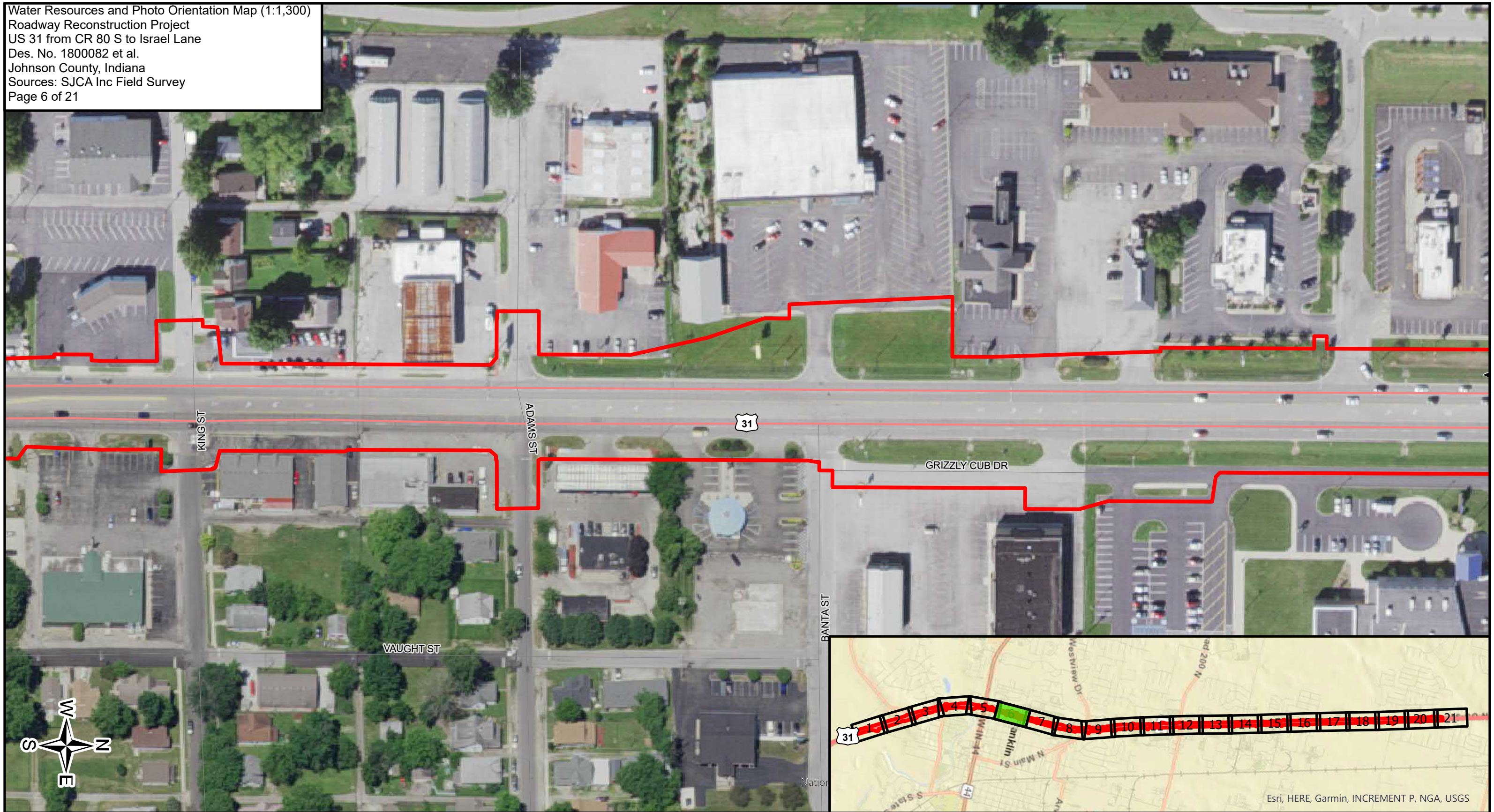


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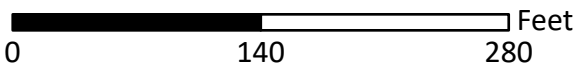
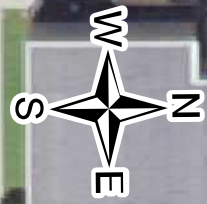
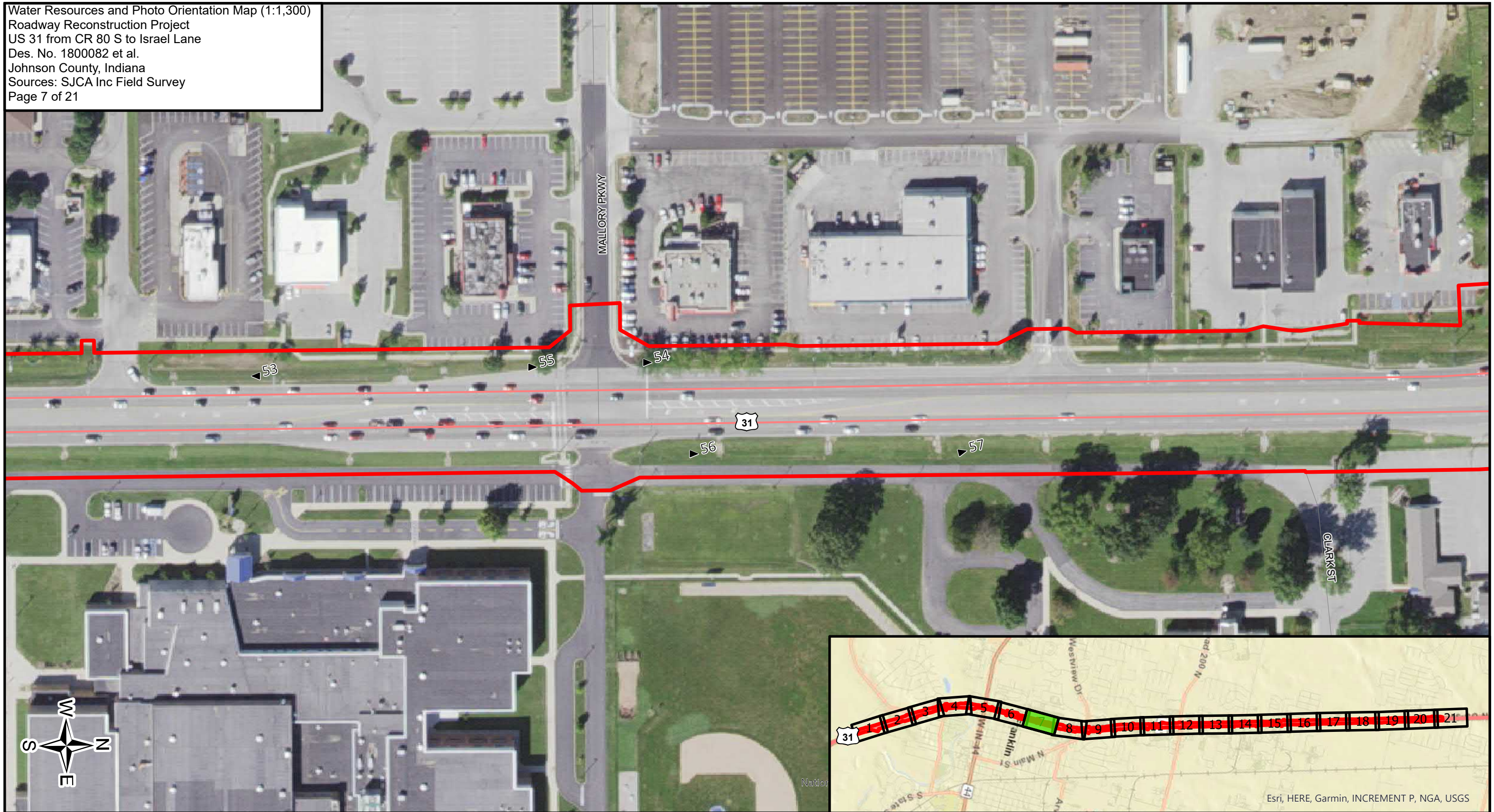


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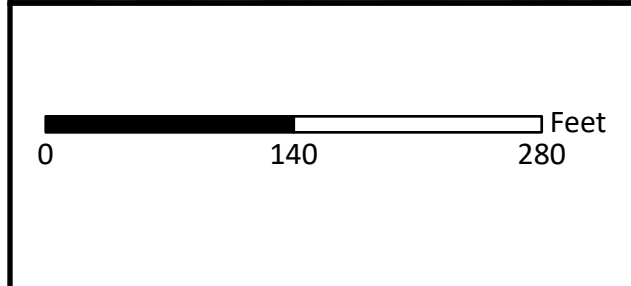
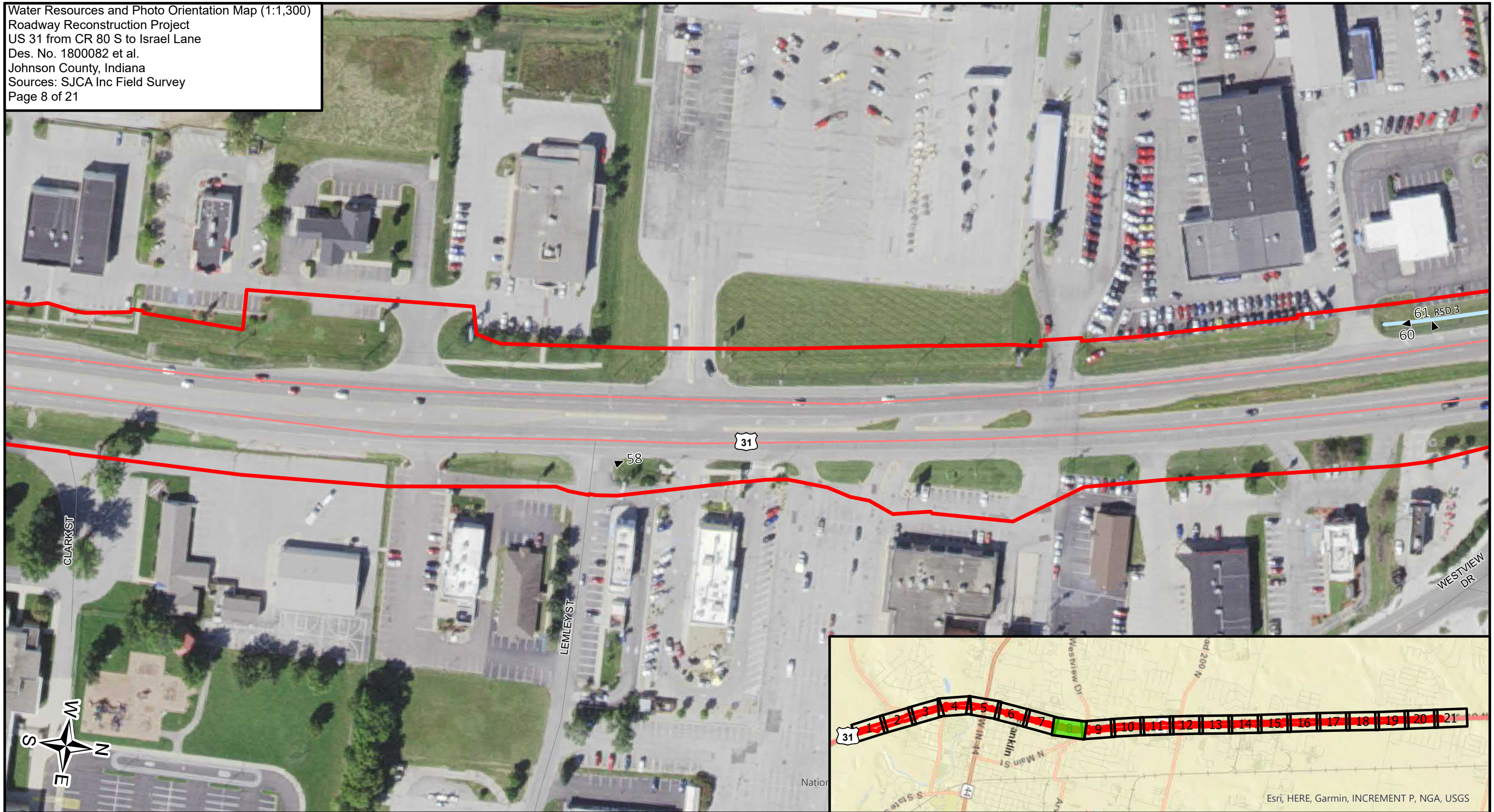


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9/21/2021





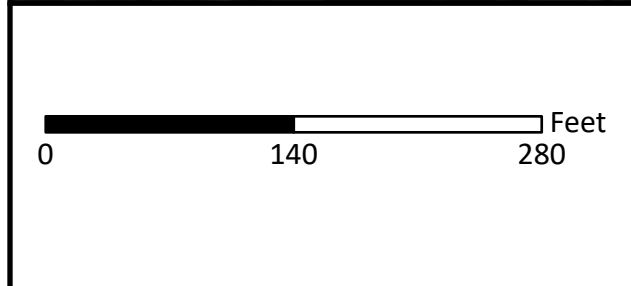
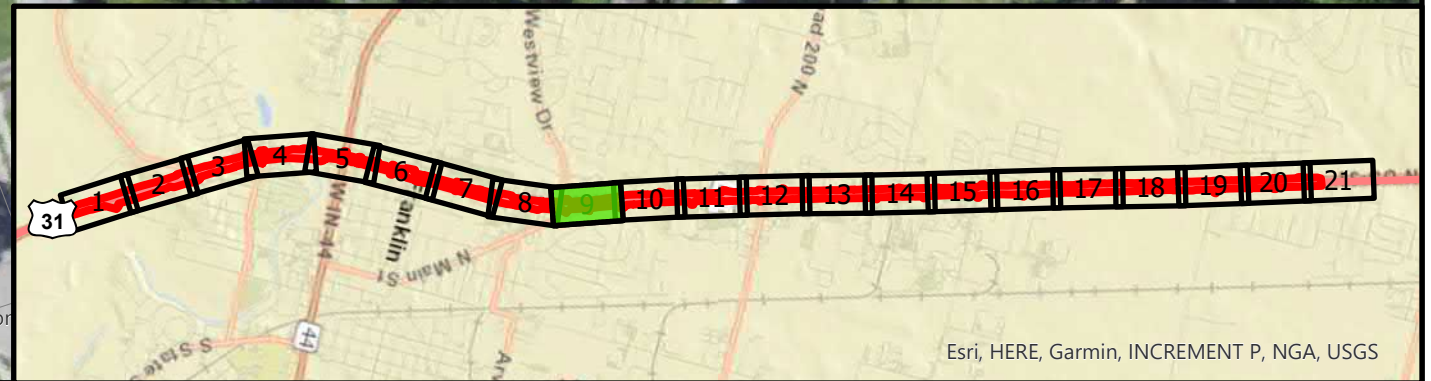
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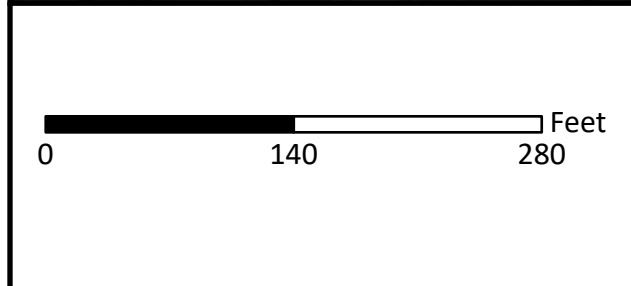
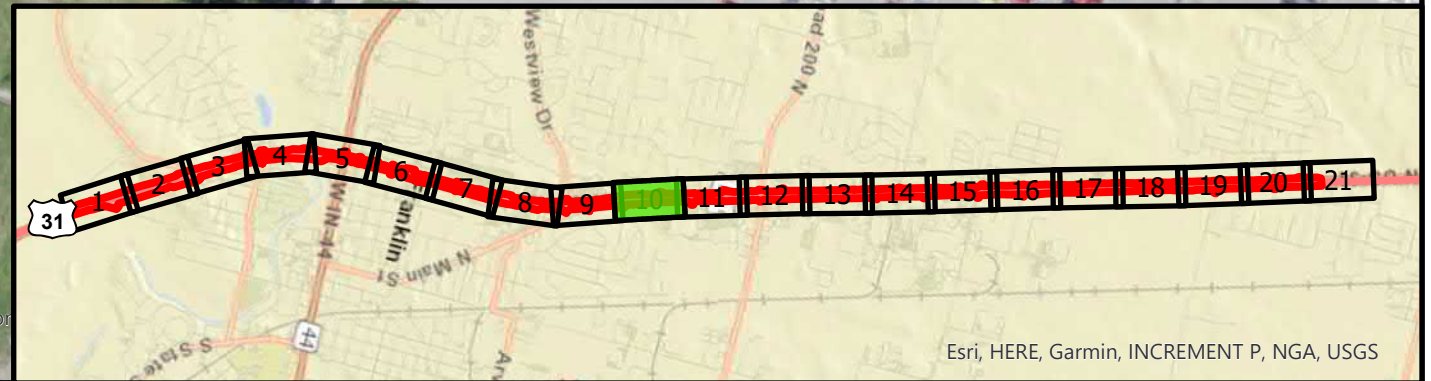
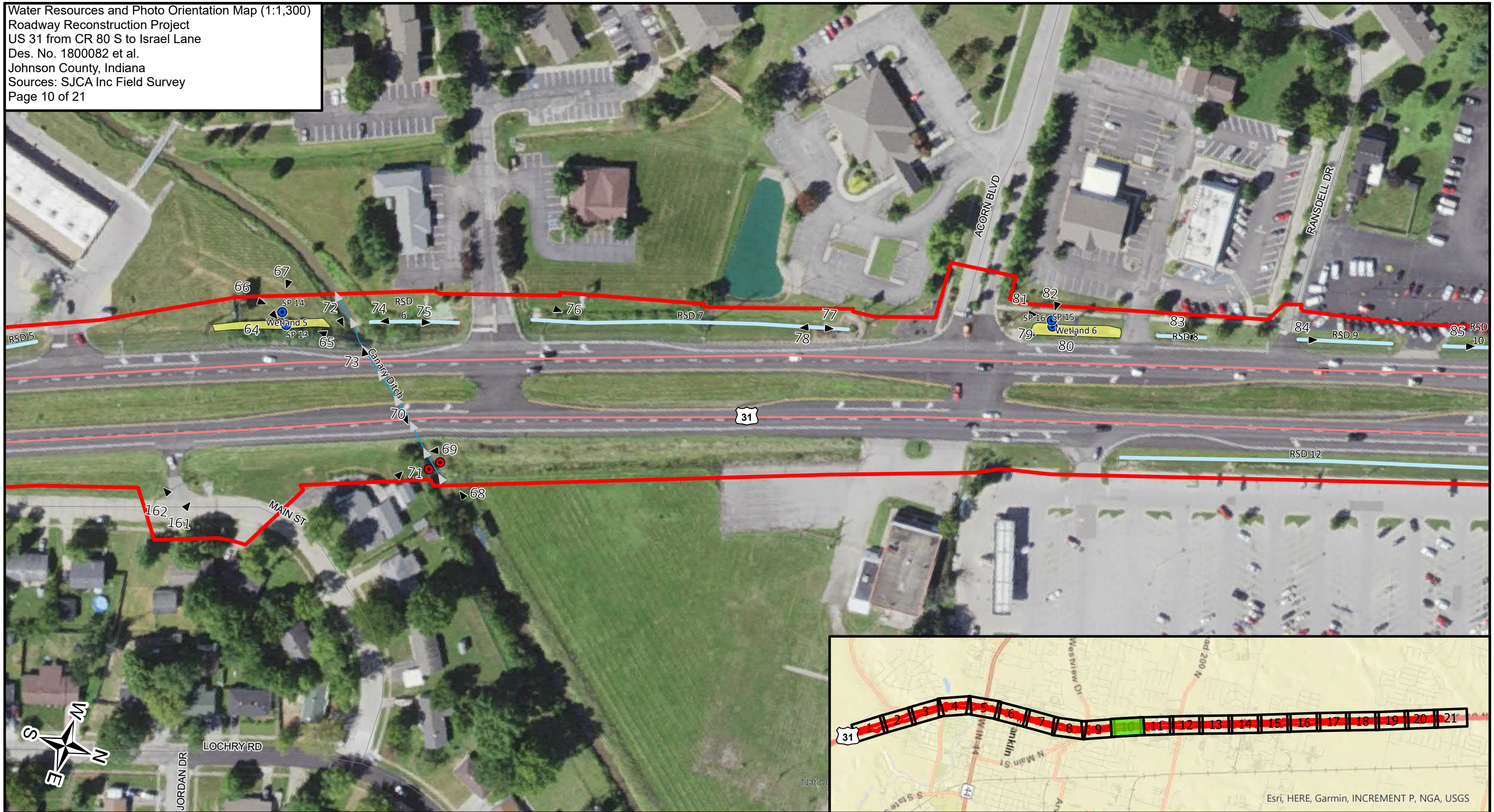
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Investigated Area	Emergent	Photo Location
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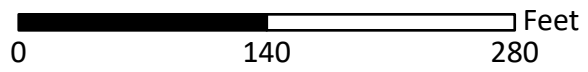
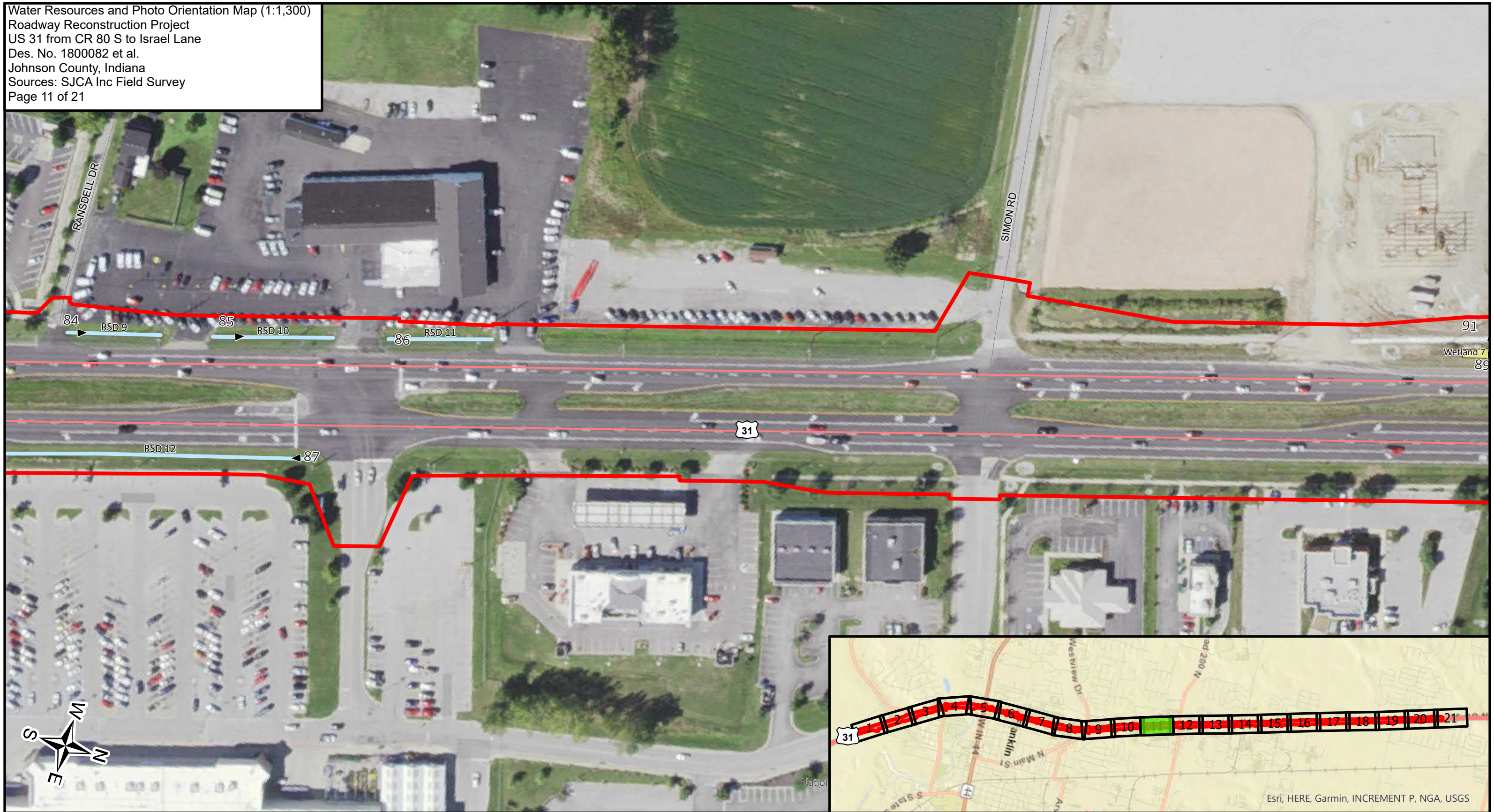


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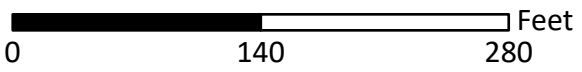
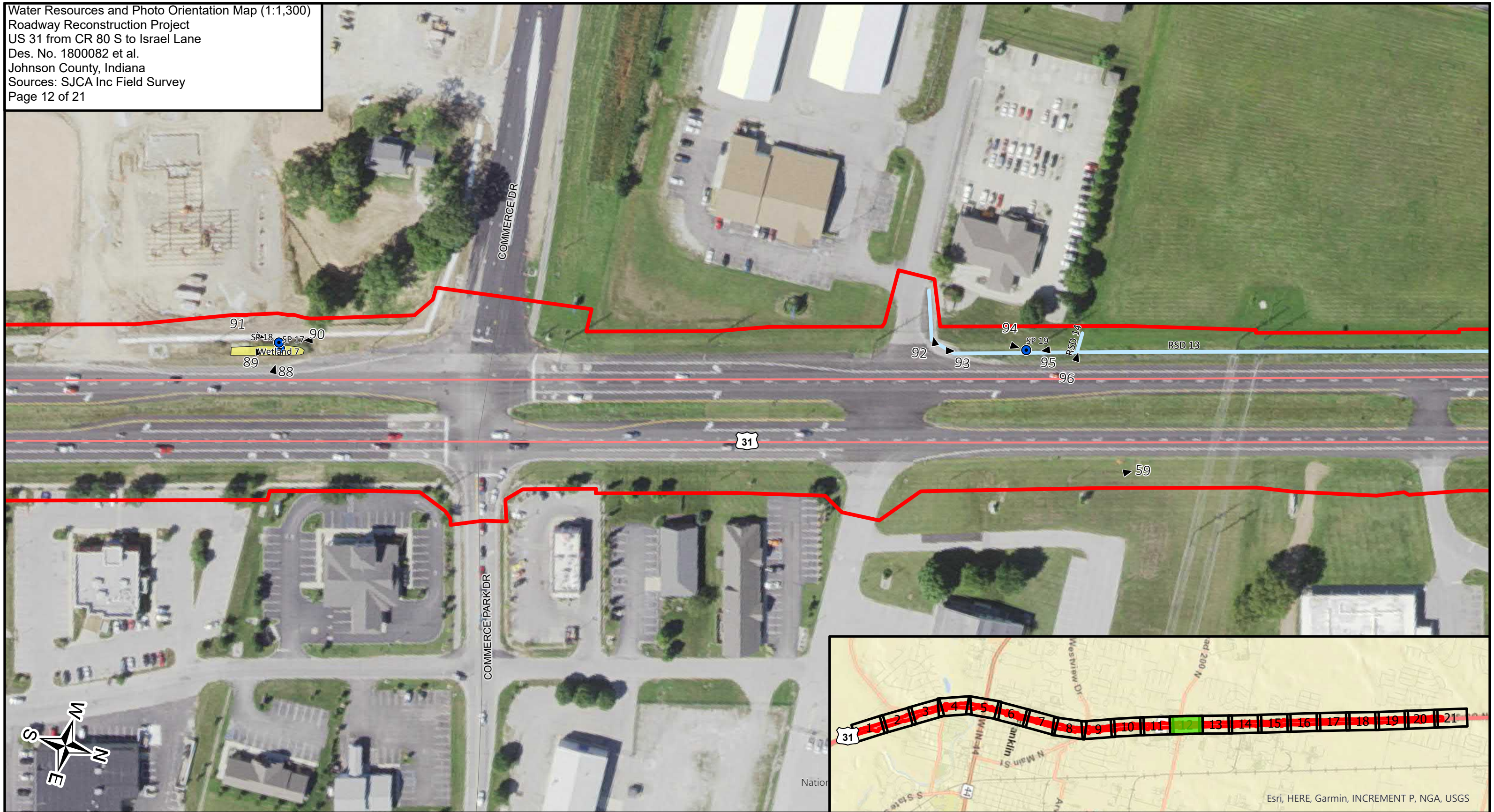
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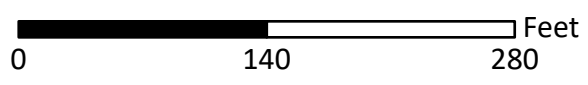
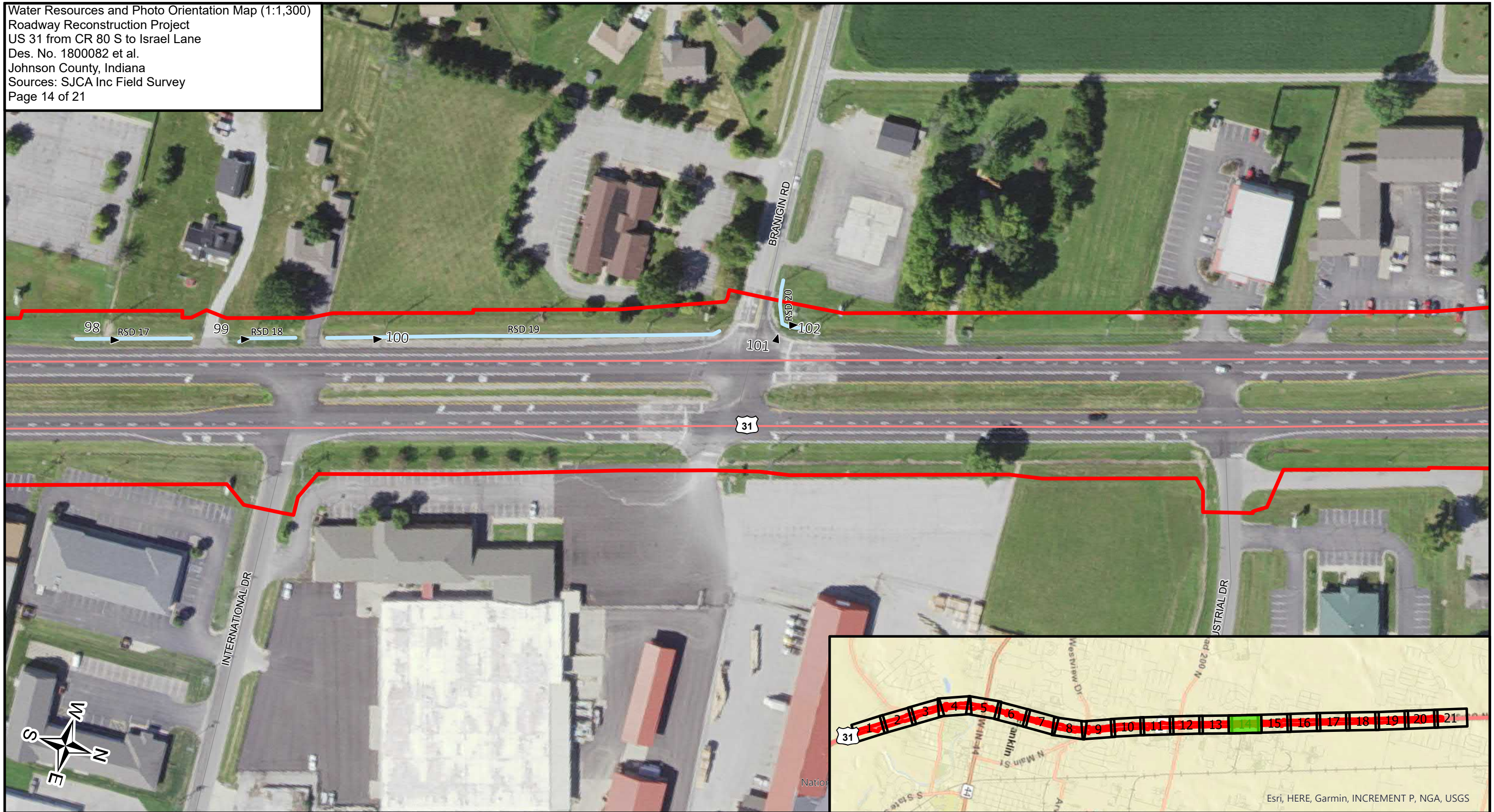


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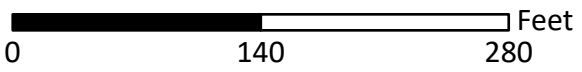
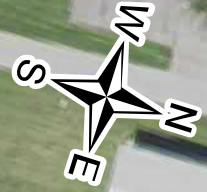
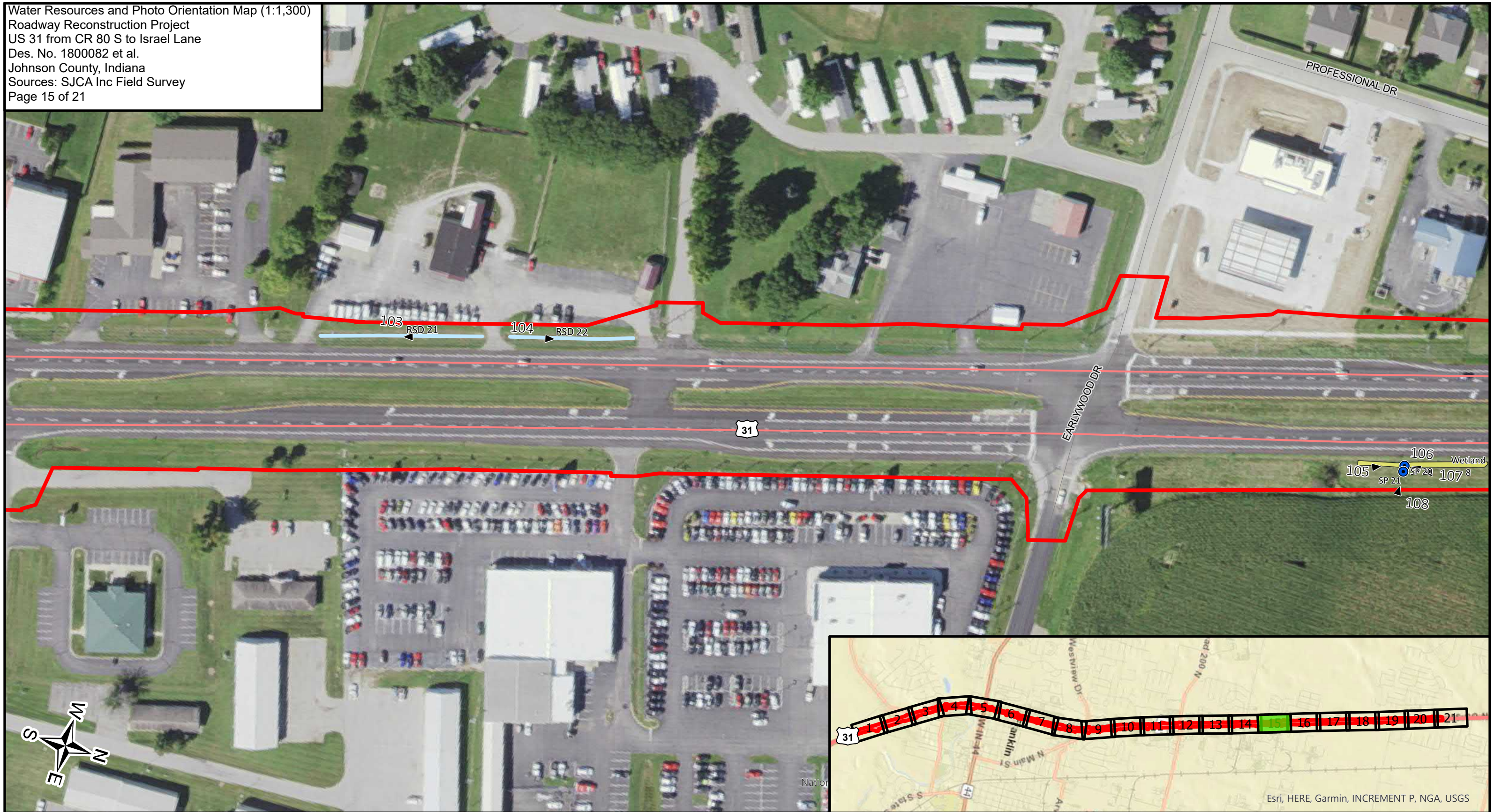
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Esri, HERE, Garmin, INCREMENT P, NGA, USGS





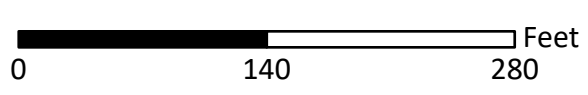
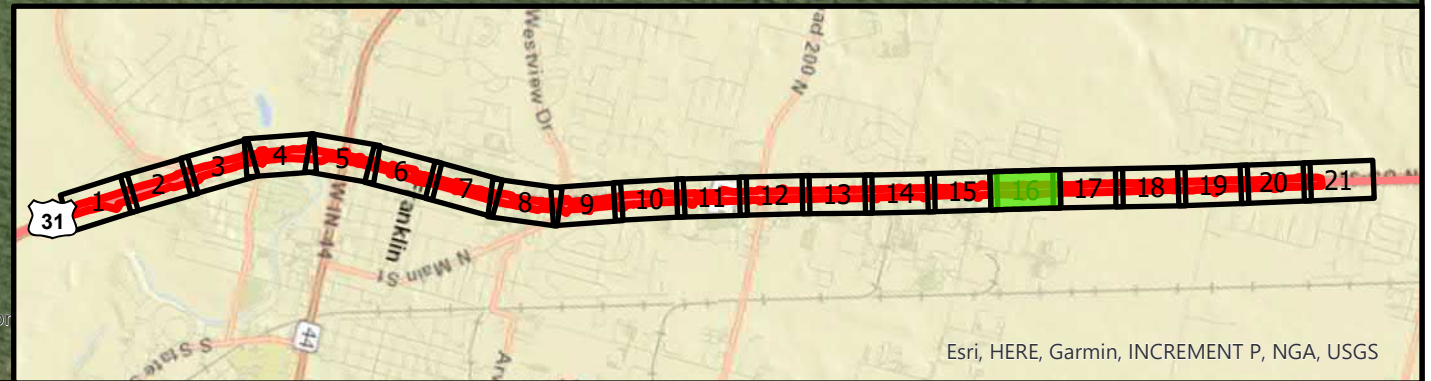
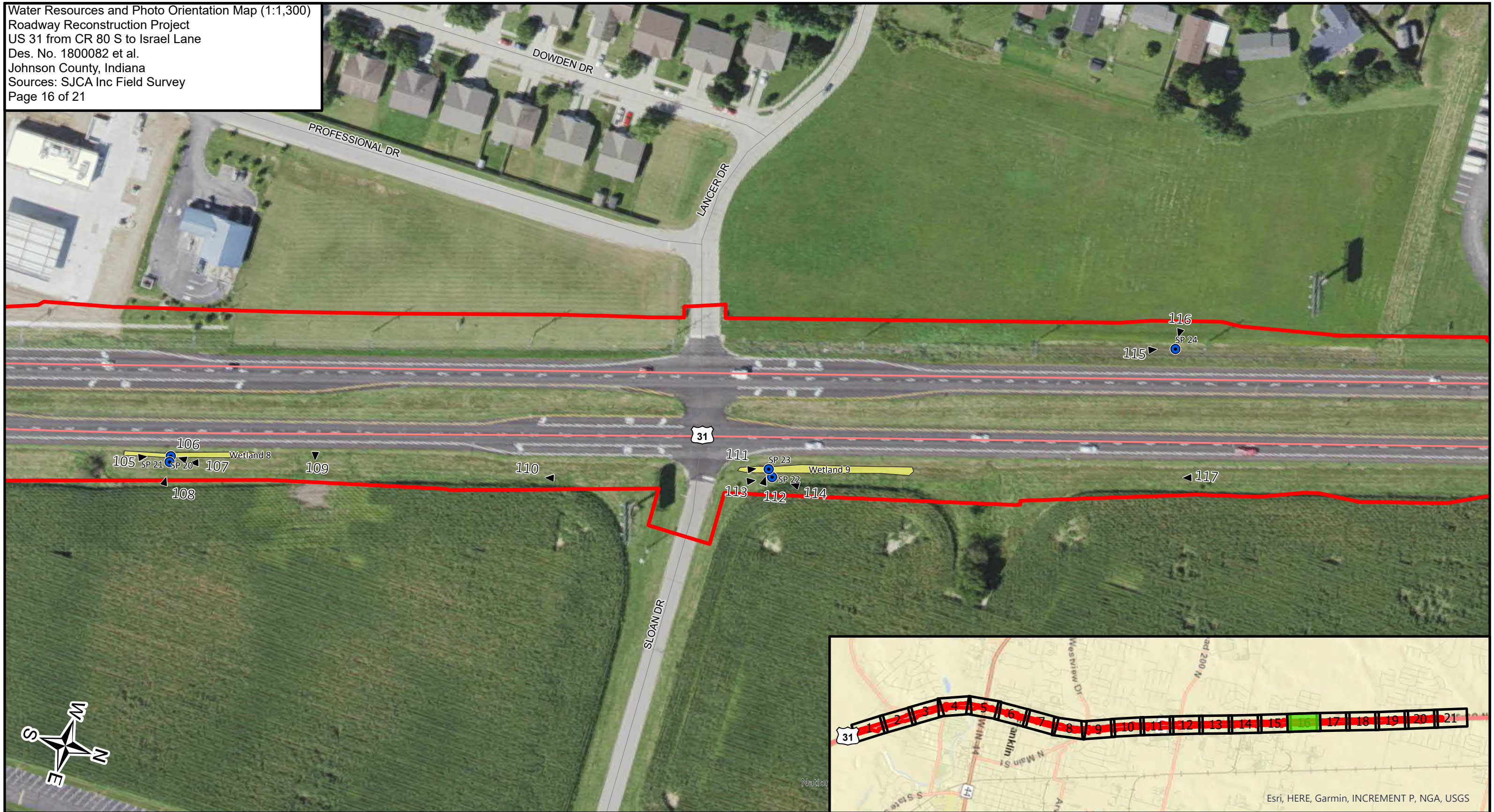
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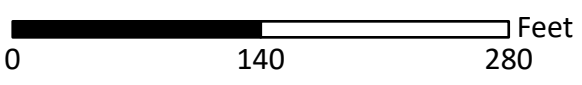
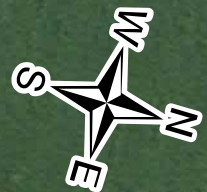
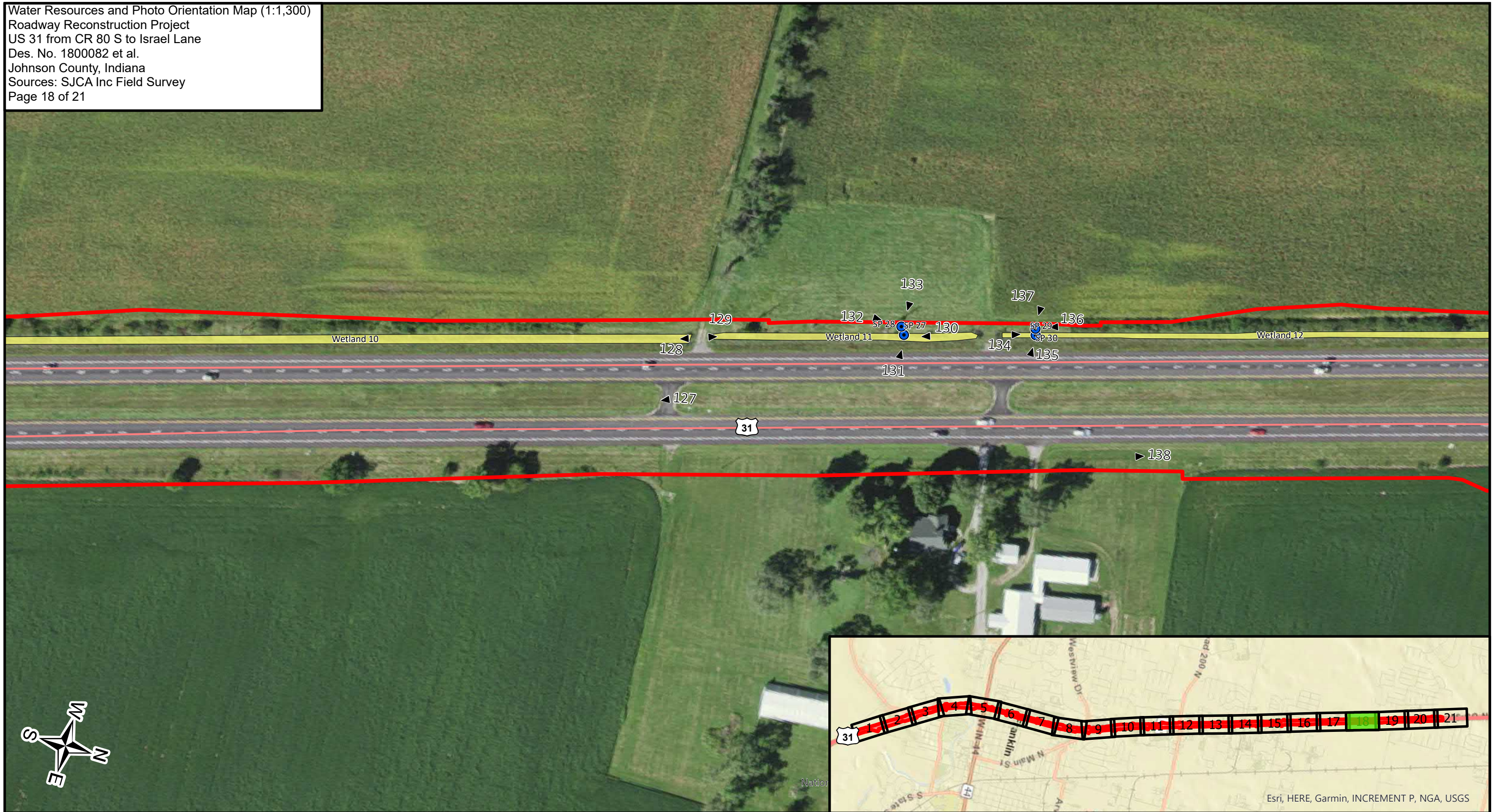
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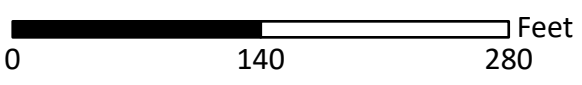
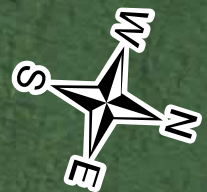
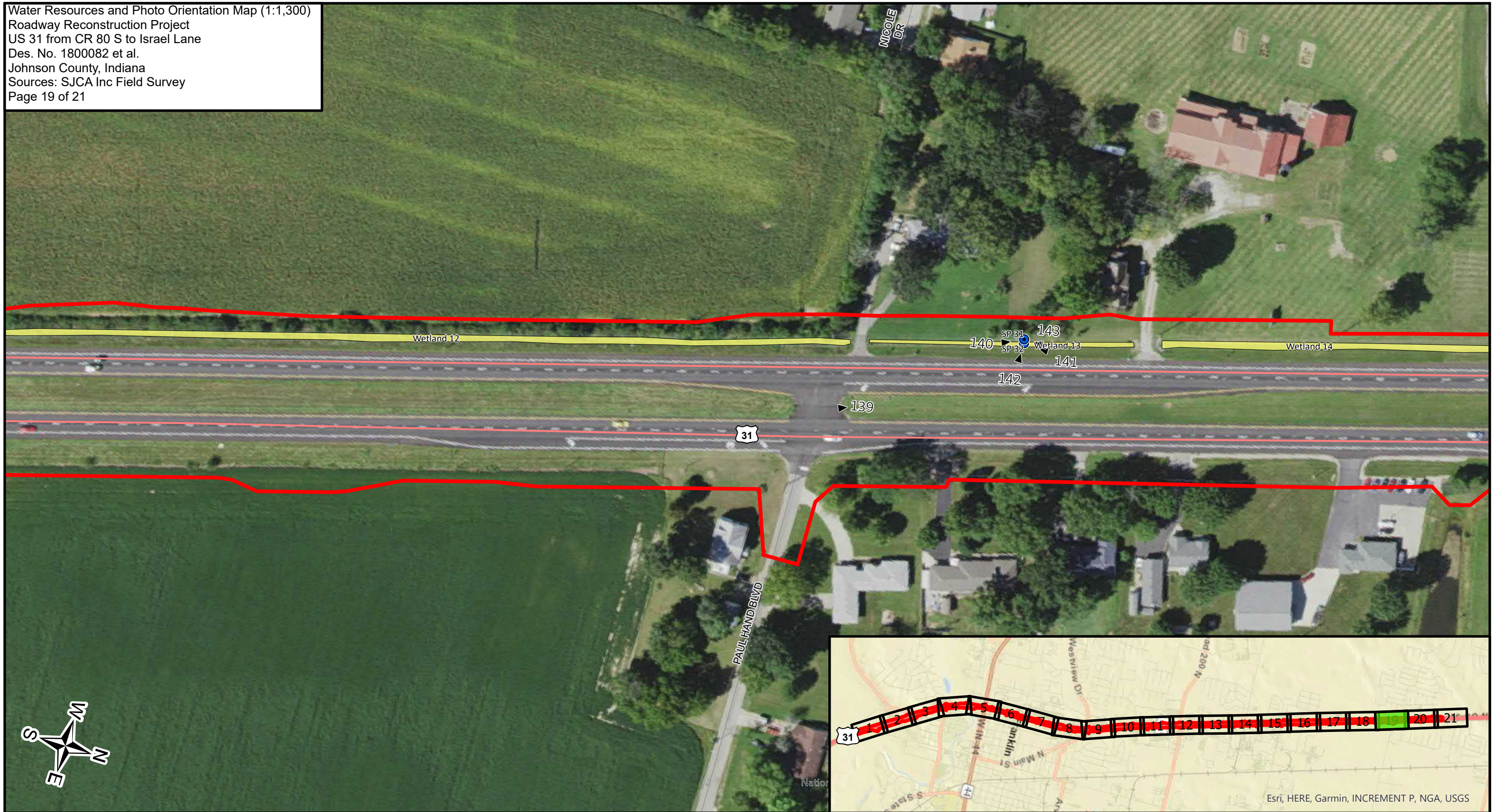


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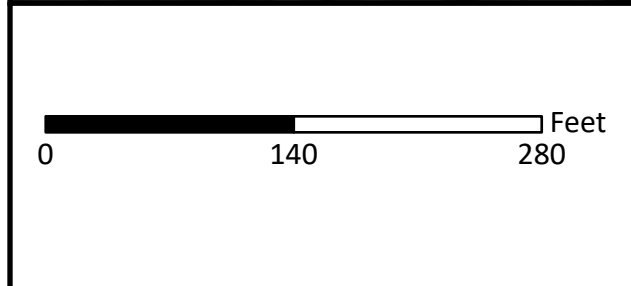
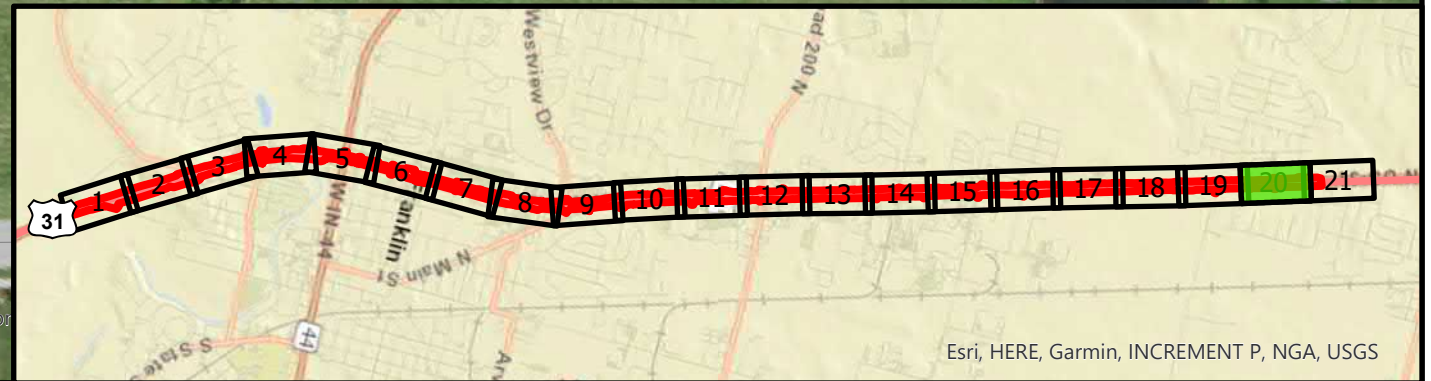
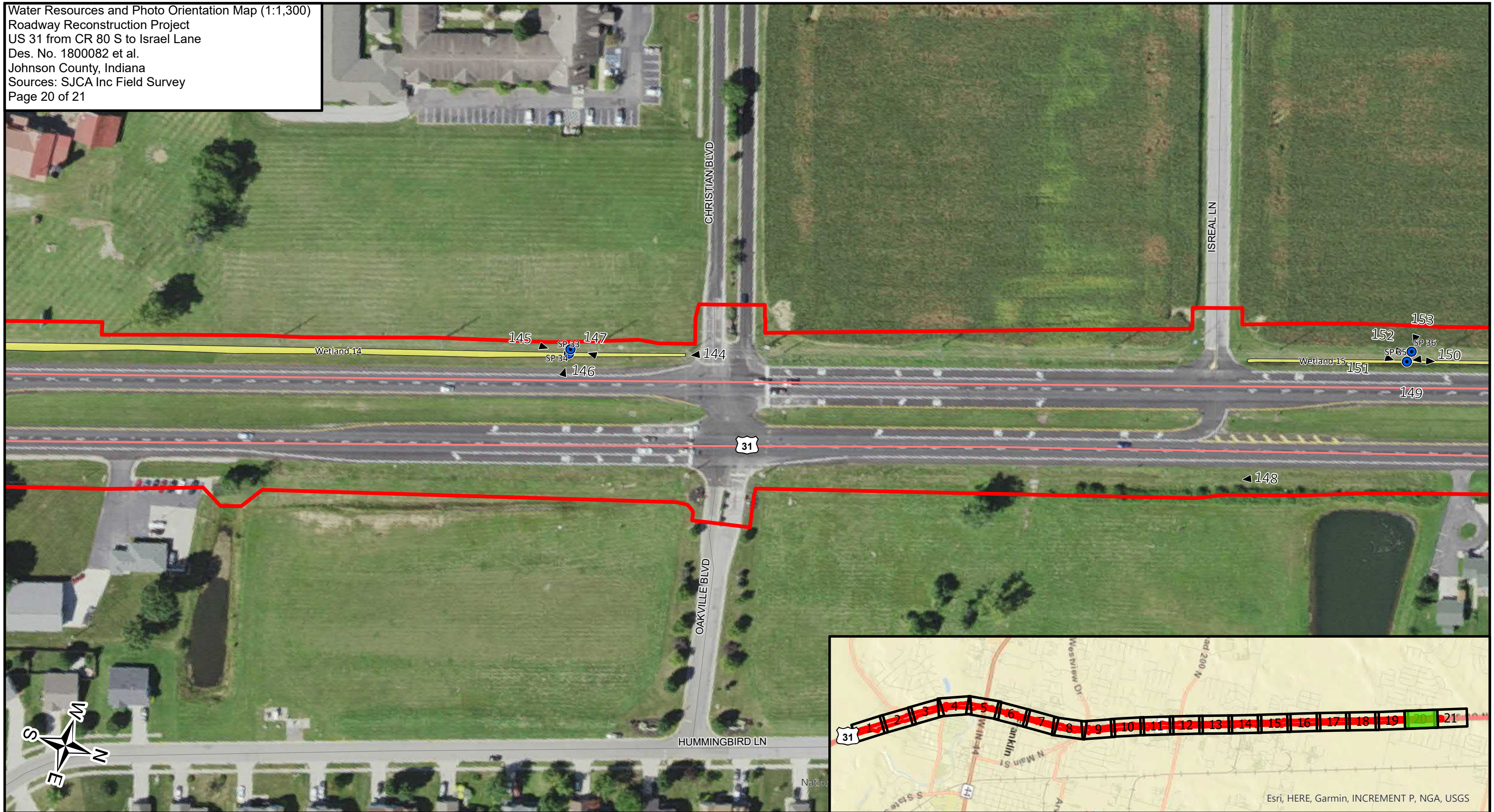
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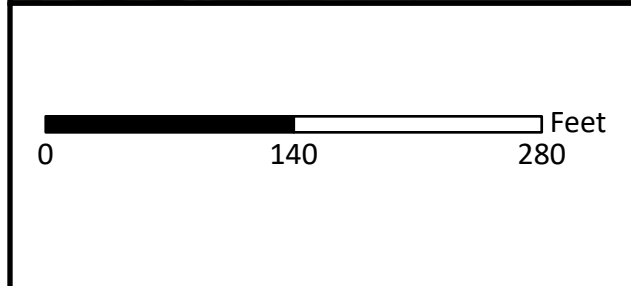
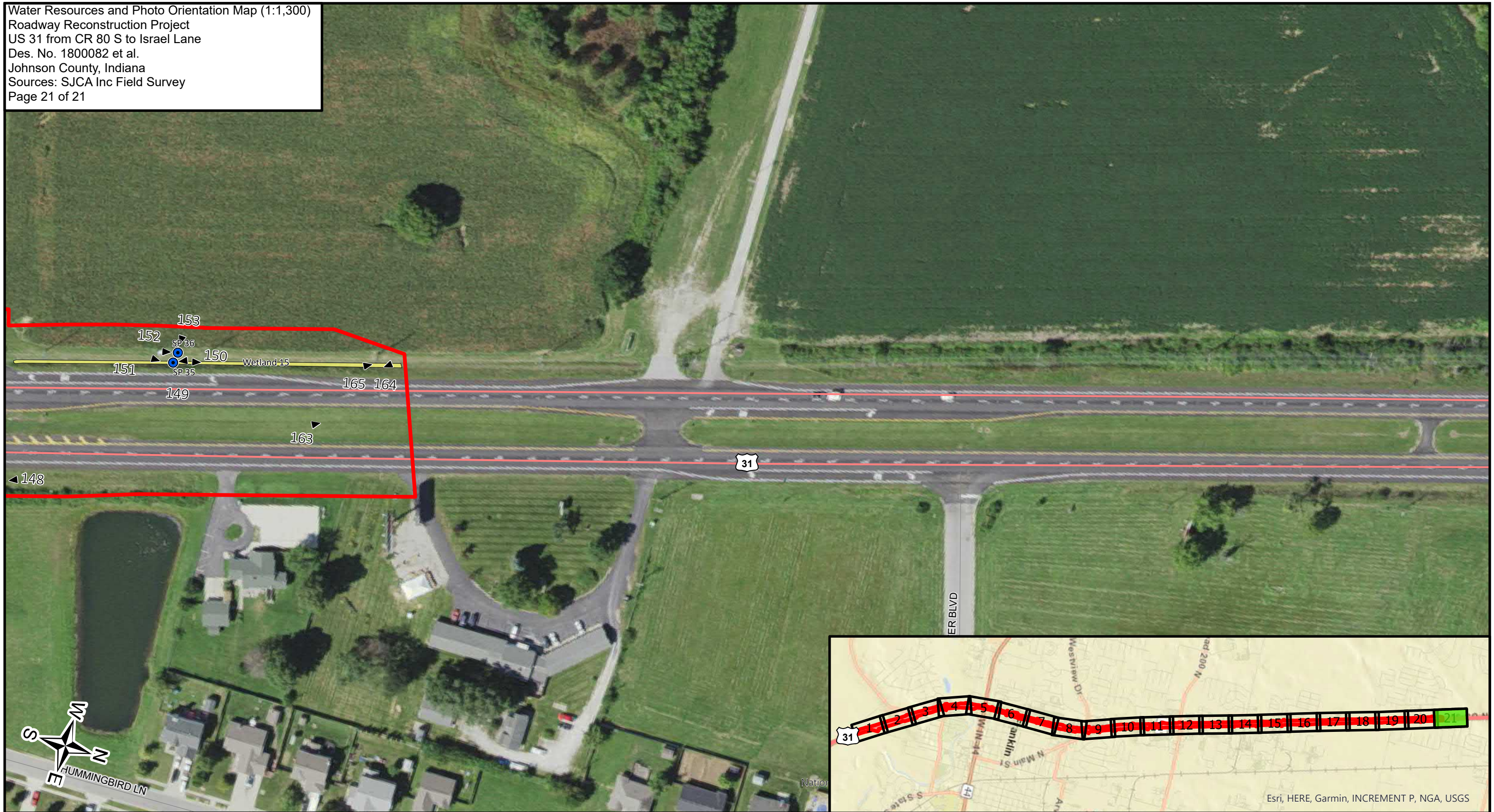
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9/21/2021

Esri, HERE, Garmin, INCREMENT P, NGA, USGS



## Victoria Veach

---

**From:** Sperry, Steve <SSPERRY@indot.IN.gov>  
**Sent:** Wednesday, January 19, 2022 12:18 PM  
**To:** Mark Beck; Christian Radcliff  
**Cc:** Curry, Jennifer; Summers, Terry; Victoria Veach; Erin Mulryan; Wanda Gaines, CFM  
**Subject:** Preliminary Permit Determination: 1800082 I US 31, City of Franklin, Johnson Co. 1/19/2022  
**Attachments:** 1800082 CIF Determination\_Aerial Documentation 1.19.2022.pdf  
**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

Mark, Christian,

I just got off the phone with Markita Shepherdson (DNR, Div. of Water) regarding the questions posed in my Tuesday, January 18, 2022 12:13 PM e-mail to her shown below. She indicated that we will need to submit three CIF applications. Refer to the aerial attached to this email.

- #1 One CIF app. will be needed for the Canary Cr. Bridge. The scope of the application will need to cover not only the bridge but other bridge related work in the floodway. In this instance bridge related work would include any work within the Canary creek regulated floodway.
- #2 One will be needed for any lateral encroachments associated with the Youngs Cr. floodway. This application will be limited to the floodway immediately adjacent to Youngs Crk. and extending out to the north and south floodway limits. It will extend east and west to the construction limits within the floodway. Refer to the aerial for additional information
- #3 One CIF app will be need for any lateral encroachments associated with the Youngs Cr. Floodway where it intersects US 31 at the south end of the project. Refer to the aerial for additional information.

A USACE RGP will be required. It is expected that a 401 IP will be required. A 401 IP/State Isolated wetland application will be required. The consultant will need to complete and submit the form 5 months in advance in advance of RFC. A USACE AJD is currently being pursued (1/19/2022). It is expected that non-exempt isolated wetlands will be found. Forms will need to be completed before the USACE 404 and 401/Isolated wetland applications can be submitted. Should an isolated permit be required additional time will be required to process and obtain the USACE and IDEM permits.

A Rule 5 permit will be required

*We are providing this preliminary permit determination based on the information available at the time of the review. If the project scope, plans and/or impacts change the designer should contact EWPO for an updated permit determination. A final permit determination will be undertaken when the applications listed above have been received by this Office.*

If you have any questions or comments, please contact me and cc others as appropriate.

Thanks

**Steve Sperry,**  
**Ecology and Permits Coordinator,** Multi-district East Team  
INDOT, Office of Ecology and Waterway Permitting  
100 N. Senate Ave., N758-ES  
Indianapolis, IN 46204





# INDIANA DEPARTMENT OF TRANSPORTATION

100 North Senate Avenue  
Room N642-BR  
Indianapolis, Indiana 46204

**Eric Holcomb, Governor**  
**Joe McGuinness, Commissioner**

March 18, 2022

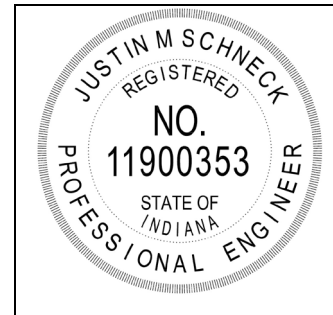
TO: Terry Summers  
INDOT Project Manager, Seymour District

FROM: Justin Schneck, PE  
Consultant Hydraulics Engineer

SUBJECT: HYDRAULIC LETTER FOR BRIDGES  
New Structure Number: 031-41-10392  
Old Structure Number: 031-41-03534  
Location: 1.30 miles N. of SR 44  
Des. #: 1800272  
Crossing: Canary Ditch  
Consultant: CrossRoad Engineers, PC  
SPMS Type of Work: Bridge Replacement

ANALYSIS: Justin Schneck, P.E.  
Consultant Hydraulics Engineer

REVIEWER: Bill P Schmidt, P.E.  
INDOT Hydraulics Engineer



Drainage Area	= 5.39	sq. mi.
Q <sub>100</sub>	= 2400	cfs
Q <sub>500</sub>	= 3240	cfs
Elevation @ Q <sub>100</sub> (Natural Condition)	= 748.45	ft.
IDNR CIF Permit Needed (Y/N):	Y	
Legal Drain (Y/N):	Y	

### Existing Conditions:

23' Span Reinforced Concrete Arch		
Q <sub>100</sub> Headwater Elevation	= 749.74	ft.
Backwater	= 1.28	ft.
Velocity @ Q <sub>100</sub>	= 10.32	ft./s.
Waterway Opening Below Q <sub>100</sub> Elevation (Str.)	= 238	sq. ft.
Road Overflow Waterway Area	= 0.00	sq. ft.
Low Structure Elevation	= 749.89	ft.
Flowline Elevation	= 736.85	ft.
Sump	= 0.00	ft.
Skew	= 27	deg.





# INDIANA DEPARTMENT OF TRANSPORTATION

100 North Senate Avenue  
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 Indianapolis, Indiana 46204

**Eric Holcomb, Governor**  
**Joe McGuinness, Commissioner**

### Proposed Conditions – Flat Top Option:

24' Span Reinforced Concrete Three-Sided Flat Top Structure		
Q <sub>100</sub> Headwater Elevation	= 748.84	ft.
Backwater	= 0.88	ft.
Velocity @ Q <sub>100</sub>	= 8.48	ft./s.
Waterway Opening Below Q <sub>100</sub> Elev. (Str.)	= 291	sq. ft.
Road Overflow Waterway Area	= 0.00	sq. ft.
Low Structure Elevation	= 750.59	ft.
Flowline Elevation	= 736.34	ft.
Sump*	= 2.00*	ft.
Skew	= 27	deg.

### Proposed Conditions – Arch Top Option:

24' Span Reinforced Concrete Three-Sided Arch Top Structure		
Q <sub>100</sub> Headwater Elevation	= 748.88	ft.
Backwater	= 0.90	ft.
Velocity @ Q <sub>100</sub>	= 8.53	ft./s.
Waterway Opening Below Q <sub>100</sub> Elev. (Str.)	= 288	sq. ft.
Road Overflow Waterway Area	= 0.00	sq. ft.
Low Structure Elevation	= 750.59	ft.
Flowline Elevation	= 736.34	ft.
Sump*	= 2.00*	ft.
Skew	= 27	deg.

\*Only if required by Johnson County Surveyor as Canary Ditch is a Legal Drain

The existing 120 foot-long 23' x 13' reinforced concrete arch on US31 over Canary Ditch is in need of replacement due to deterioration. The existing structure was modeled in HEC-RAS using an existing Construction in a Floodway model used to create a Flood Insurance Study for Canary Ditch that contains a Q<sub>100</sub> DNR coordinated discharge of 2400 cfs. Analysis of the structure resulted in values represented in the preceding tables. A preliminary hydraulic analysis of this structure was performed by INDOT in August 2017 due to a drainage complaint by the County Surveyor. In that analysis, a proposed structure consisting of a 26' x 13' Reinforced Concrete Flat Top Structure was chosen as the suggested structure type for replacement. Through recent correspondence with INDOT, this structure is not to be utilized as it is desired to minimally maintain the existing span in order to create minimal hydraulic change in this area due to residences being located within the floodplain. A 23' span three-sided flat top structure, with an effective height of 14', is the recommended structure type for replacement. As an alternative, a 24' span three-sided arch top structure, with an effective height of 14', was analyzed as an alternative in accordance with IDM 203-205(03). Both structures are 164' in length and have a skew of 63.02° to the centerline of the roadway.

### Riprap Design Recommendations

Riprap Properties				
Parameter	Proposal 1		Proposal 2	
Outlet Velocity @ Q <sub>100</sub> /Q <sub>500</sub>	8.48/11.05	ft/s	8.53/11.16	ft/s
Outlet Riprap Size	Class 2		Class 2	
Inlet Riprap Needed (Y/N)	Yes		Yes	





# INDIANA DEPARTMENT OF TRANSPORTATION

100 North Senate Avenue  
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**Eric Holcomb, Governor**  
**Joe McGuinness, Commissioner**

Natural Channel Velocity $Q_{100}/Q_{500}$	7.28/9.35	ft/s	7.28/9.35	ft/s
Minimal Inlet Riprap Size	Class 2		Class 2	

Based on a flowline elevation of 736.34 feet.

The application of Class 2 riprap at the inlet, outlet and through the structure should be used per E723-CCSP for 3-sided structures.

As pertains to this memo, the minimal required waterway opening and structure span are based on hydraulics geometry that is perpendicular to the flow.

If you have any questions or comments, please contact Bill Schmidt at [wpschmidt@indot.in.gov](mailto:wpschmidt@indot.in.gov) or 317-232-5148.

WPS  
cc: file