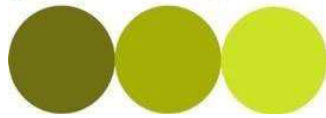


Des 1702735 CE-4

Appendix E

Red Flag Investigation

green • 3



Date: August 21, 2020

To: Site Assessment & Management
Environmental Policy Office - Environmental Services Division
Indiana Department of Transportation
100 N Senate Avenue, Room N642
Indianapolis, IN 46204

From: Christian Radcliff
Green 3, LLC
1104 Prospect Street
Indianapolis, Indiana 46203
christian@green3studio.com

Re: RED FLAG INVESTIGATION
DES #1702735, Local Project
Bridge Project
CR 100 N over Rock Creek, 0.5 Mile West of CR 400 W
Wells County, Indiana

PROJECT DESCRIPTION

Brief Description of Project: The Federal Highway Administration (FHWA) and Wells County propose to complete a bridge project carrying CR 100 N over Rock Creek. The existing bridge is a two-span reinforced concrete arch bridge that provides one vehicular travel lane and is approximately 86 feet in length. The bridge spandrel walls, arch barrels, pier, foundations, and bridge rails are all deteriorating with numerous spalls. The existing bridge rails do not meet current safety standards. The bridge currently has a posted load rating of 16 tons due to the condition of the concrete arches. The project proposes to rehabilitate the existing bridge by removing and replacing the existing asphalt overlay, concrete deck, arch fill, and the bridge rails and curbs. The arch rings, spandrel walls, and pier will be cleaned and patched as needed. A waterproofing membrane will be installed on the top of the arch ring to prevent further water damage to the arch. A new drainage system will be installed to convey drainage off of the bridge deck. Excavation of rock north and south of the existing bridge will occur. Placement of riprap is not a part of the scope of this project at this time.

Bridge and/or Culvert Project: Yes ☒ No ☐ Structure # 90-00106

If this is a bridge project, is the bridge Historical? Yes ☒ No ☐ , Select ☒ Non-Select ☐

(Note: If the project involves a historical bridge, please include the bridge information in the Recommendations Section of the report).

Proposed right of way: Temporary ☐ # Acres: N/A Permanent ☒ # Acres: Less than 0.5 acres, Not Applicable ☐

Type of excavation: Excavation of the stone substrate below the bridge and on the west channel bank approximately 160 feet north and 100 feet south of the existing bridge will occur to a depth of approximately 5 feet.

Maintenance of traffic: Traffic is anticipated to be maintained through a full bridge closure and detour route. The detour route is not known at this time.

Work in waterway: Yes ☒ No ☐ Below ordinary high water mark: Yes ☒ No ☐

State Project: ☐ LPA: ☒

Any other factors influencing recommendations: Right of way amounts and the depth of excavation are estimates and will be defined during the design process.

INFRASTRUCTURE TABLE AND SUMMARY

Infrastructure Indicate the number of items of concern found within the 0.5 mile search radius. If there are no items, please indicate N/A:			
Religious Facilities	N/A	Recreational Facilities	N/A
Airports ¹	N/A	Pipelines	N/A
Cemeteries	1	Railroads	N/A
Hospitals	N/A	Trails	N/A
Schools	N/A	Managed Lands	N/A

¹In order to complete the required airport review, a review of public airports within 3.8 miles (20,000 feet) is required.

Explanation:

Cemeteries: One (1) cemetery (SHAARD ID CR-90-27) is within the 0.5 mile search radius. This cemetery is adjacent to the eastern terminus of the project area. A Cemetery Development Plan may be required since this project is within 100 feet of the cemetery. Coordination with INDOT Cultural Resources will occur.

WATER RESOURCES TABLE AND SUMMARY

Water Resources Indicate the number of items of concern found within the 0.5 mile search radius. If there are no items, please indicate N/A:			
NWI - Points	N/A	Canal Routes - Historic	N/A
Karst Springs	N/A	NWI - Wetlands	8
Canal Structures – Historic	N/A	Lakes	1
NPS NRI Listed	N/A	Floodplain - DFIRM	1
NWI-Lines	1	Cave Entrance Density	N/A
IDEM 303d Listed Streams and Lakes (Impaired)	3	Sinkhole Areas	N/A
Rivers and Streams	3	Sinking-Stream Basins	N/A

Explanation:

NWI-Lines: One (1) NWI line segment is within the 0.5 mile search radius. The nearest line is associated with Rock Creek and is within the immediate project area. A Waters of the US Report will be prepared and coordination with the appropriate agency, if applicable, will occur.

IDEM 303d Listed Streams and Lakes: Three (3) IDEM 303d listed streams are within the 0.5 mile search radius. One (1) segment that is associated with Rock Creek is within the immediate project area. This segment is impaired for *E. coli*, impaired biotic communities (IBC), and PCBs. Regarding IBC, Best Management Practices (BMPs) will be used to avoid further degradation to the stream. Regarding *E. coli*, Workers who are working in or near water with *E. coli* should take care to wear appropriate PPE, observe proper hygiene procedures, including regular hand washing, and limit personal

exposure. Lastly, regarding PCBs, exposure to PCBs is considered low, assuming workers are not eating biota surrounding or associated with the water body. If there will be sediments and/or soils disturbed by construction, additional investigation may be necessary. Coordination with INDOT ES will occur.

Rivers and Streams: Three (3) river and stream segments are within the 0.5 mile search radius. The nearest segment, Rock Creek, is within the project area. A Waters of the US report will be prepared and coordination with the appropriate agency, if applicable, will occur.

NWI – Wetlands: Eight (8) NWI wetlands are within the 0.5 mile search radius. The nearest wetland is mapped within the immediate project area and is associated with Rock Creek. A Waters of the US Report will be prepared and coordination with the appropriate agency, if applicable, will occur.

Lakes: One (1) lake is within the 0.5 mile search radius. The nearest lake is approximately 0.14 mile north of the project area. No impact is expected.

Floodplains: One (1) floodplain polygon is within the 0.5 mile search radius. The project is within one of the polygons. Coordination with the applicable agency will occur.

URBANIZED AREA BOUNDARY SUMMARY

Explanation: The project is not mapped within an Urbanized Area Boundary.

MINING AND MINERAL EXPLORATION TABLE AND SUMMARY

Mining/Mineral Exploration			
Indicate the number of items of concern found within the 0.5 mile search radius. If there are no items, please indicate N/A:			
Petroleum Wells	1	Mineral Resources	1*
Mines – Surface	N/A	Mines – Underground	N/A

Explanation:

Petroleum Wells: One (1) petroleum well is within the 0.5 mile search radius. The nearest well is owned by Heller Stone Company and is presumed plugged and is approximately 0.3 mile north of the project area. No impact is expected.

Mineral Resources: One (1)* mineral resource is mapped outside of the 0.5 mile search radius but the property extends into the 0.5 mile search radius. Rock Creek Materials, LLC is approximately 0.18 mile southwest of the project area. No impact is expected.

HAZARDOUS MATERIAL CONCERNS TABLE AND SUMMARY

Hazardous Material Concerns Indicate the number of items of concern found within the 0.5 mile search radius. If there are no items, please indicate N/A:			
Superfund	N/A	Manufactured Gas Plant Sites	N/A
RCRA Generator/ TSD	N/A	Open Dump Waste Sites	1*
RCRA Corrective Action Sites	N/A	Restricted Waste Sites	N/A
State Cleanup Sites	1	Waste Transfer Stations	N/A
Septage Waste Sites	N/A	Tire Waste Sites	N/A
Underground Storage Tank (UST) Sites	N/A	Confined Feeding Operations (CFO)	N/A
Voluntary Remediation Program	N/A	Brownfields	N/A
Construction Demolition Waste	N/A	Institutional Controls	N/A
Solid Waste Landfill	1	NPDES Facilities	1
Infectious/Medical Waste Sites	N/A	NPDES Pipe Locations	2
Leaking Underground Storage (LUST) Sites	N/A	Notice of Contamination Sites	N/A

Explanation:

State Cleanup Sites: One (1) state cleanup site is within the 0.5 mile search radius. Rockford Wells (AI# 57413, 4796 W CR 100 N) is approximately 0.09 mile northwest of the project area. The site is where Volatile Organic Compounds (VOCs) were detected in residential wells. One property in the town had VOCs above residential limits in the well. No impact is expected.

Solid Waste Landfill: One (1) solid waste landfill is within the 0.5 mile search radius. Heller Industrial Landfill (AI# 37750, Rockford, IN) is approximately 0.37 mile north of the project area. A potential hazardous waste site preliminary assessment dated August 14, 1989 indicated that there is alleged contamination on the site from open dumping of calcium fluoride. No impact is expected.

Open Dump Waste Sites*: One (1) open dump waste site is within the 0.5 mile search radius but is not mapped. Heller Industrial Landfill (AI# 37750, Rockford, IN) is approximately 0.37 mile north of the project area and is detailed above. No impact is expected.

NPDES Facilities: One (1) NPDES facility is within the 0.5 mile search radius. The nearest facility is associated with Rock Creek Materials, LLC (Permit #ING490112, 78 N CR 500 W) and is approximately 0.38 mile southwest of the project area. No impact is expected.

NPDES Pipe Locations: Two (2) NPDES pipes are within the 0.5 mile search radius. The nearest pipe is associated with Rock Creek Materials, LLC (Permit #ING490112, 78 N CR 500 W) and is approximately 0.38 mile southwest of the project area. No impact is expected.

ECOLOGICAL INFORMATION SUMMARY

The Wells County listing of the Indiana Natural Heritage Data Center information on endangered, threatened, or rare (ETR) species and high quality natural communities is attached with ETR species highlighted. A preliminary review of the Indiana Natural Heritage Database by INDOT Environmental Services did not indicate the presence of ETR species within the 0.5 mile search radius. Coordination with USFWS and IDNR will occur.

A review of the USFWS database did not indicate the presence of endangered bat species in or within 0.5 mile of the project area. The project area is mostly rural, with interspersed residences northwest of the project area, agricultural land in the vicinity of the project bridge, and some forested plots south and northwest of the bridge. The October 22, 2019 inspection report for Bridge #90-00106 states that no evidence of bats was seen or heard under the bridge. The range-wide programmatic consultation for the Indiana Bat and Northern Long-eared Bat will be completed according to the most recent "Using the USFWS's IPaC System for Listed Bat Consultation for INDOT Projects".

RECOMMENDATIONS SECTION

Include recommendations from each section. If there are no recommendations, please indicate N/A:

HISTORIC BRIDGE: This project involves work on Wells County Bridge 106, which is listed as a Select Historic Bridge in the INDOT Historic Bridges Collection. The project will follow the Historic Bridge Programmatic Agreement (HBPA) Project Development Process (PDP) and coordination with INDOT Cultural Resources Office will occur.

INFRASTRUCTURE:

Cemeteries: One (1) cemetery (SHAARD ID CR-90-27) is adjacent to the project area. A Cemetery Development Plan may be required since this project is within 100 feet of the cemetery. Coordination with INDOT Cultural Resources will occur.

WATER RESOURCES:

The presence of the following water resources will require the preparation of a Waters of the US Report and coordination with the appropriate agency, if applicable:

- **Rivers and Streams:** Three (3) river and stream segments are within the 0.5 mile search radius. The nearest segment, Rock Creek, is within the project area.
- **NWI – Wetlands:** Eight (8) NWI wetlands are within the 0.5 mile search radius. The nearest wetland is mapped within the immediate project area and is associated with Rock Creek.
- **Floodplains:** The project is within one of the polygons (coordination only).

IDEM 303d Listed Streams and Lakes: One (1) segment that is associated with Rock Creek is within the immediate project area. This segment is impaired for *E. coli*, impaired biotic communities (IBC), and PCBs. Regarding IBC, Best Management Practices (BMPs) will be used to avoid further degradation to the stream. Regarding *E. coli*, Workers who are working in or near water with *E. coli* should take care to wear appropriate PPE, observe proper hygiene procedures, including regular hand washing, and limit personal exposure. Lastly, regarding PCBs in fish tissue, exposure to PCBs in fish tissue is considered low, assuming workers are not eating biota surrounding or associated with the water body. If there will be sediments and/or soils disturbed by construction, additional investigation may be necessary. Coordination with INDOT ES will occur.

URBANIZED AREA BOUNDARY: N/A

MINING/MINERAL EXPLORATION: N/A

HAZARDOUS MATERIAL CONCERNS: N/A

ECOLOGICAL INFORMATION: Coordination with USFWS and IDNR will occur. The range-wide programmatic consultation for the Indiana Bat and Northern Long-eared Bat will be completed according to the most recent "Using the USFWS's IPaC System for Listed Bat Consultation for INDOT Projects"

INDOT Environmental Services concurrence:

Nicole Fohey-
Breting

Digitally signed by
Nicole Fohey-Breting
Date: 2020.08.24
10:58:55 -04'00'

(Signature)

Prepared by:
Christian Radcliff
Ecologist
Green 3, LLC

Graphics:

A map for each report section with a 0.5 mile search radius buffer around all project area(s) showing all items identified as possible items of concern is attached. If there is not a section map included, please change the YES to N/A:

SITE LOCATION: YES

INFRASTRUCTURE: YES

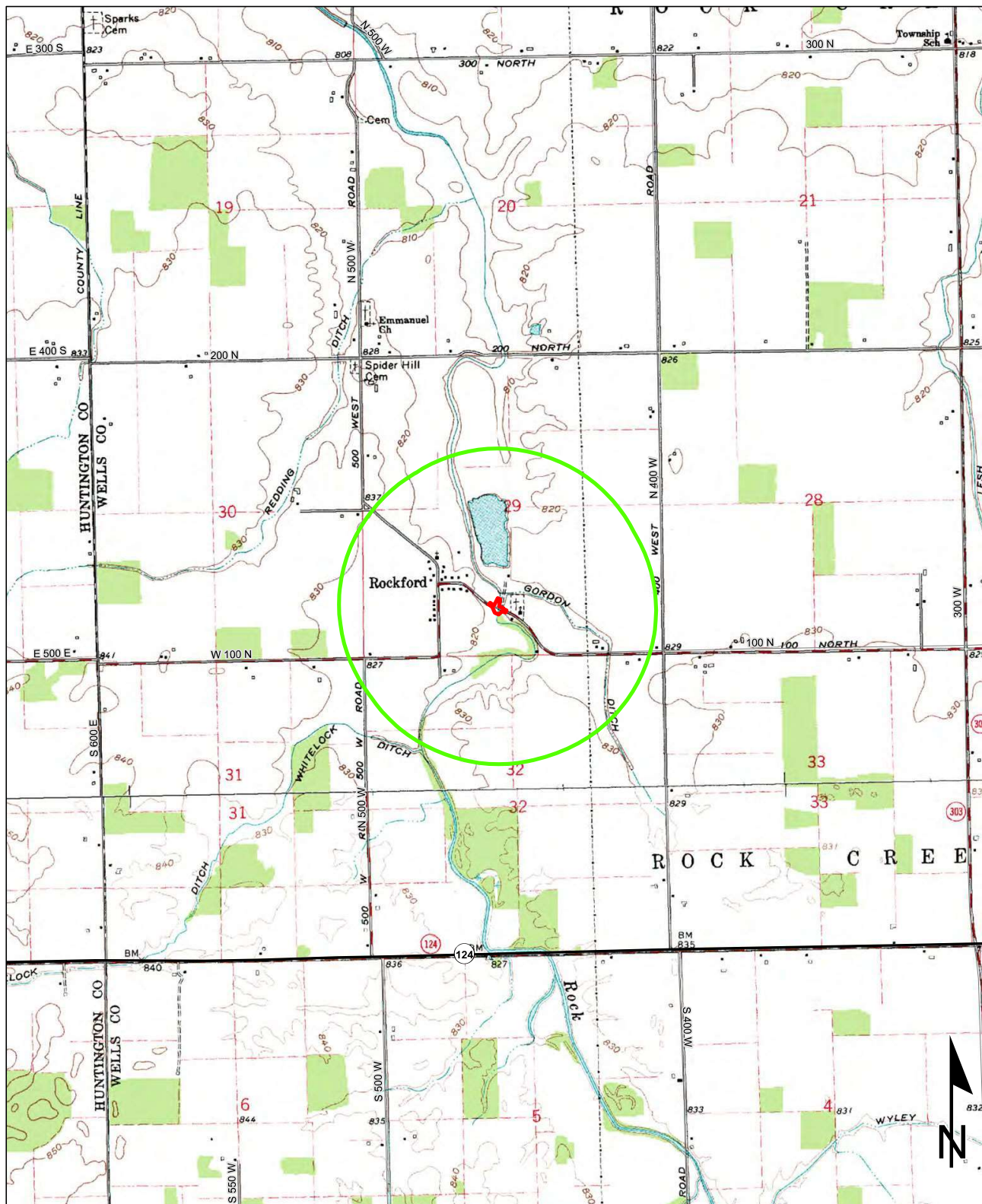
WATER RESOURCES: YES

URBANIZED AREA BOUNDARY: N/A

MINING/MINERAL EXPLORATION: YES

HAZARDOUS MATERIAL CONCERNS: YES

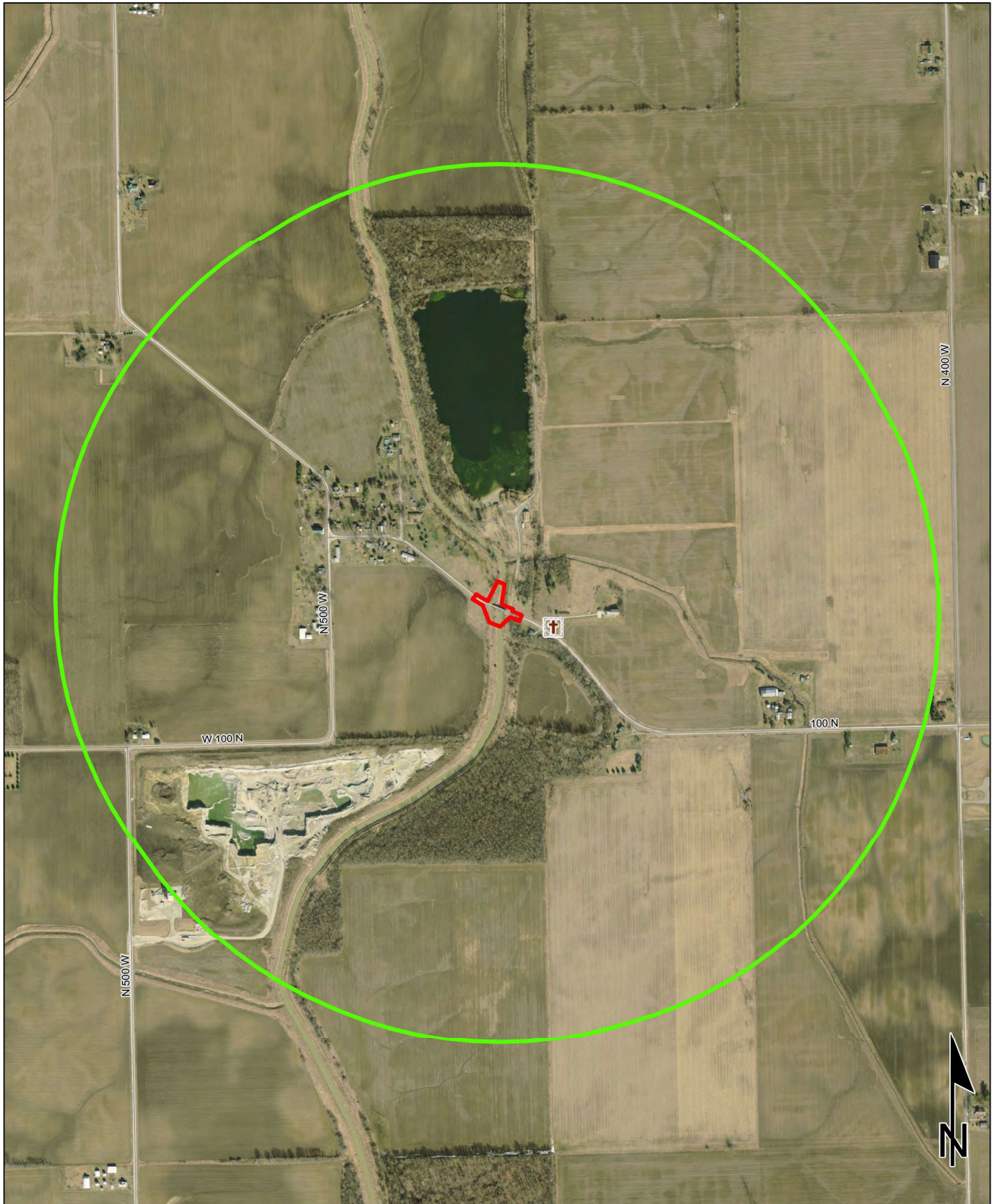
Red Flag Investigation - Site Location
CR 100 N over Rock Creek, 0.5 Mile West of CR 400 W
Des. No. 1702735, Bridge Project
Wells County, Indiana



Sources: 0.4 0.2 0 0.4 Miles
Non Orthophotography
Data - Obtained from the State of Indiana Geographical Information Office Library
Orthophotography - Obtained from Indiana Map Framework Data (www.indianamap.org)
Map Projection: UTM Zone 16 N **Map Datum:** NAD83
 This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.

**MARKLE QUADRANGLE
INDIANA
7.5 MINUTE SERIES
(TOPOGRAPHIC)**

Red Flag Investigation - Infrastructure
CR 100 N over Rock Creek, 0.5 Mile West of CR 400 W
Des. No. 1702735, Bridge Project
Wells County, Indiana

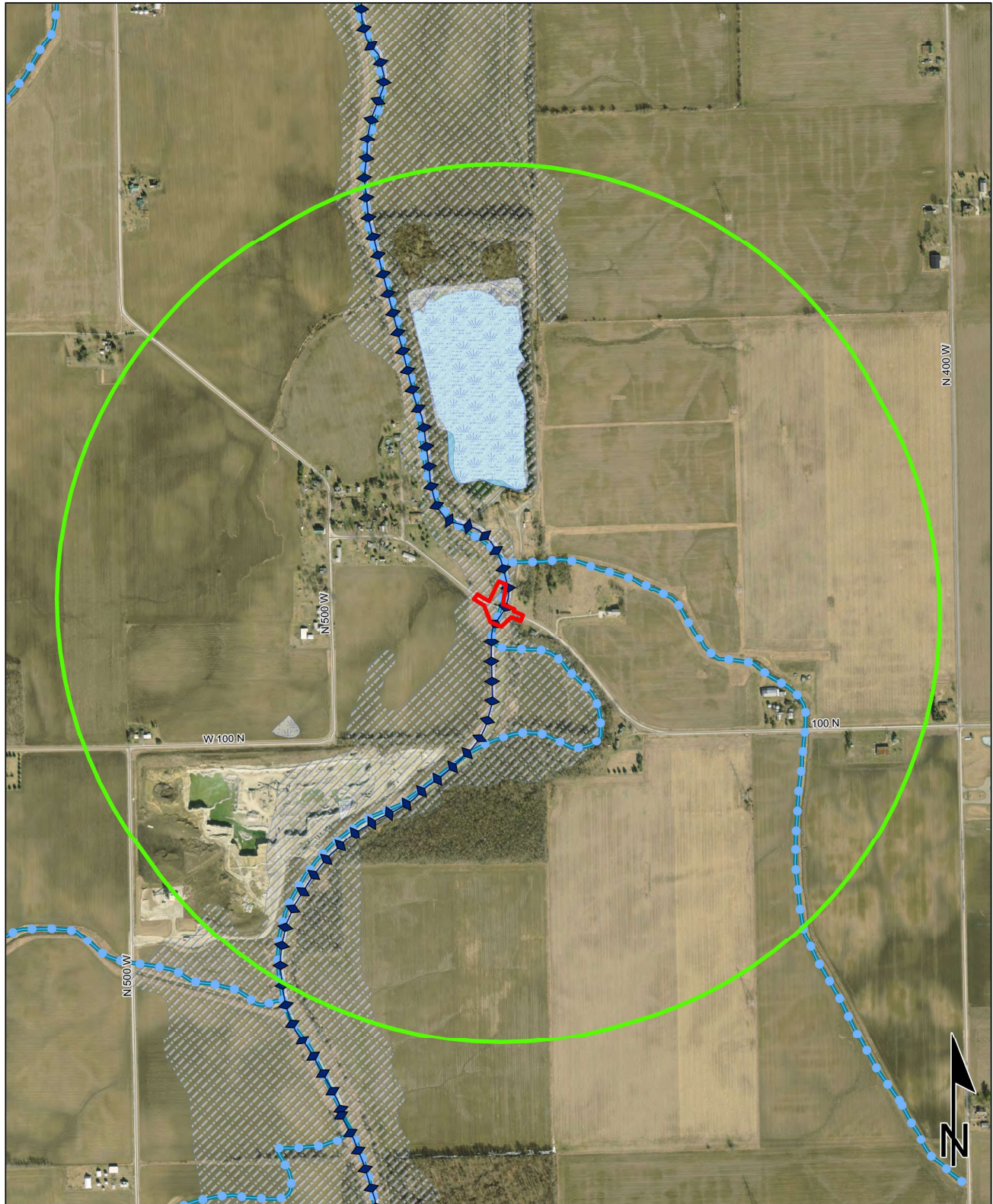


Sources:
Non Orthophotography - Obtained from the State of Indiana Geographical Information Office Library
Orthophotography - Obtained from Indiana Map Framework Data (www.indianamap.org)
Map Projection: UTM Zone 16 N **Map Datum:** NAD83

This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.

	Religious Facility		Recreation Facility		Project Area
	Airport		Pipeline		Half Mile Radius
	Cemeteries		Railroad		Toll
	Hospital		Trails		Interstate
	School		Managed Lands		State Route
			County Boundary		US Route
					Local Road

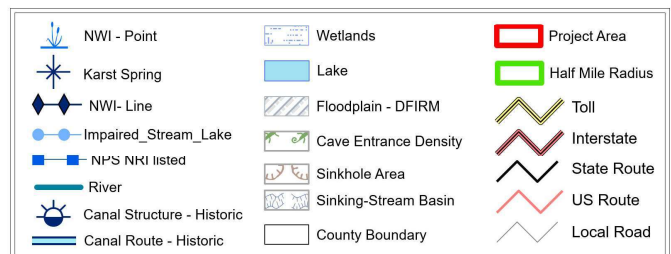
Red Flag Investigation - Water Resources
CR 100 N over Rock Creek, 0.5 Mile West of CR 400 W
Des. No. 1702735, Bridge Project
Wells County, Indiana



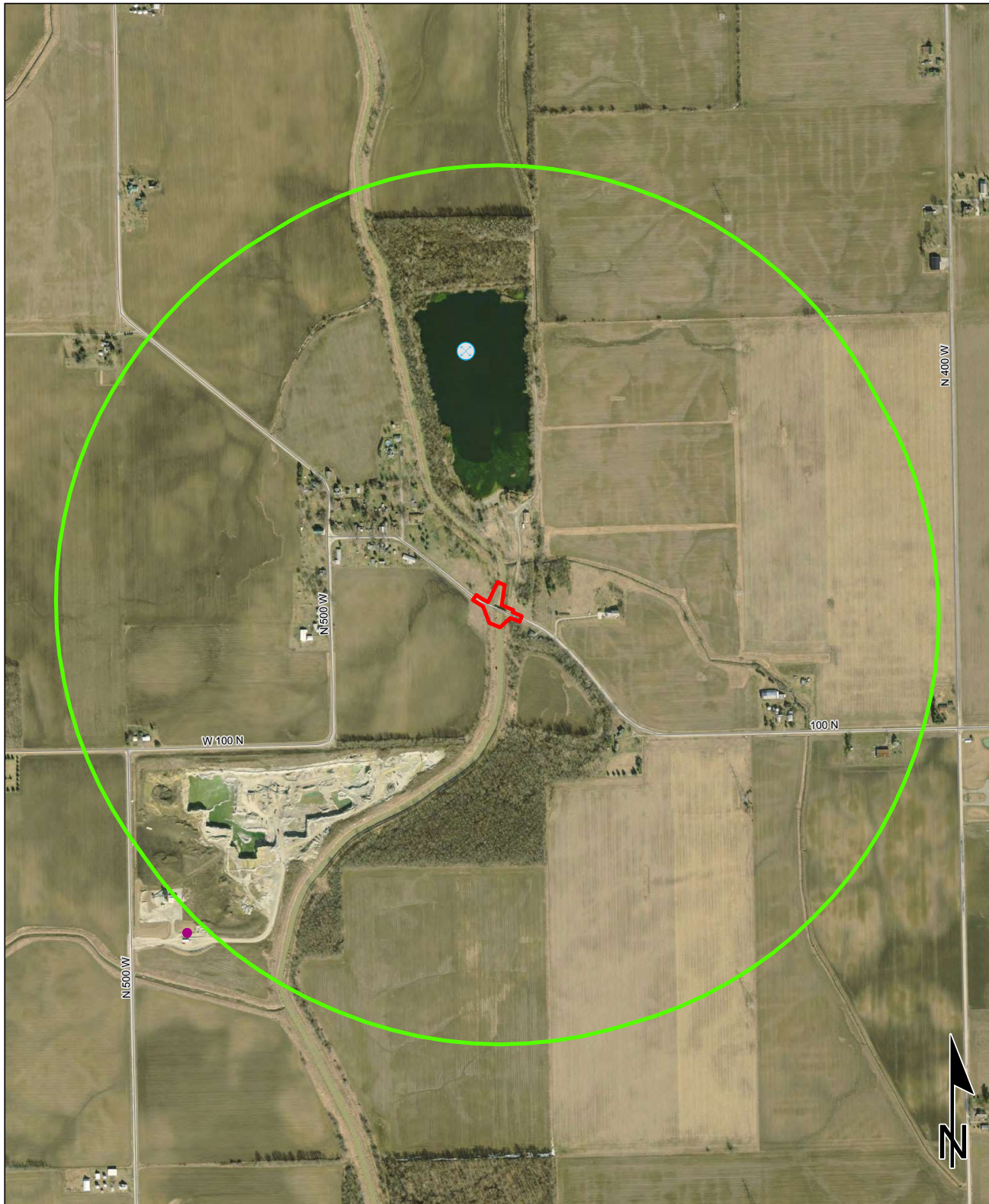
Sources:
Non Orthophotography
Data - Obtained from the State of Indiana Geographical Information Office Library
Orthophotography - Obtained from Indiana Map Framework Data (www.indianamap.org)
Map Projection: UTM Zone 16 N **Map Datum:** NAD83

This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.

0.1 0.05 0 0.1 Miles



Red Flag Investigation - Mining/Mineral Resources
 CR 100 N over Rock Creek, 0.5 Mile West of CR 400 W
 Des. No. 1702735, Bridge Project
 Wells County, Indiana



Sources: 0.1 0.05 0 0.1 Miles

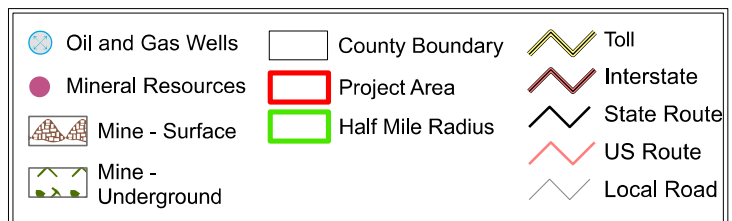
Non Orthophotography

Data - Obtained from the State of Indiana Geographical Information Office Library

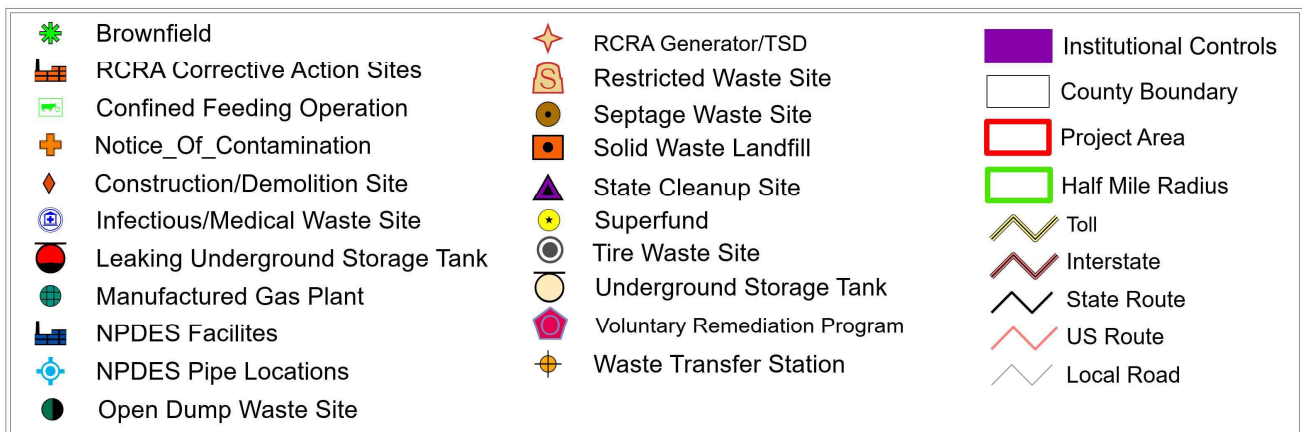
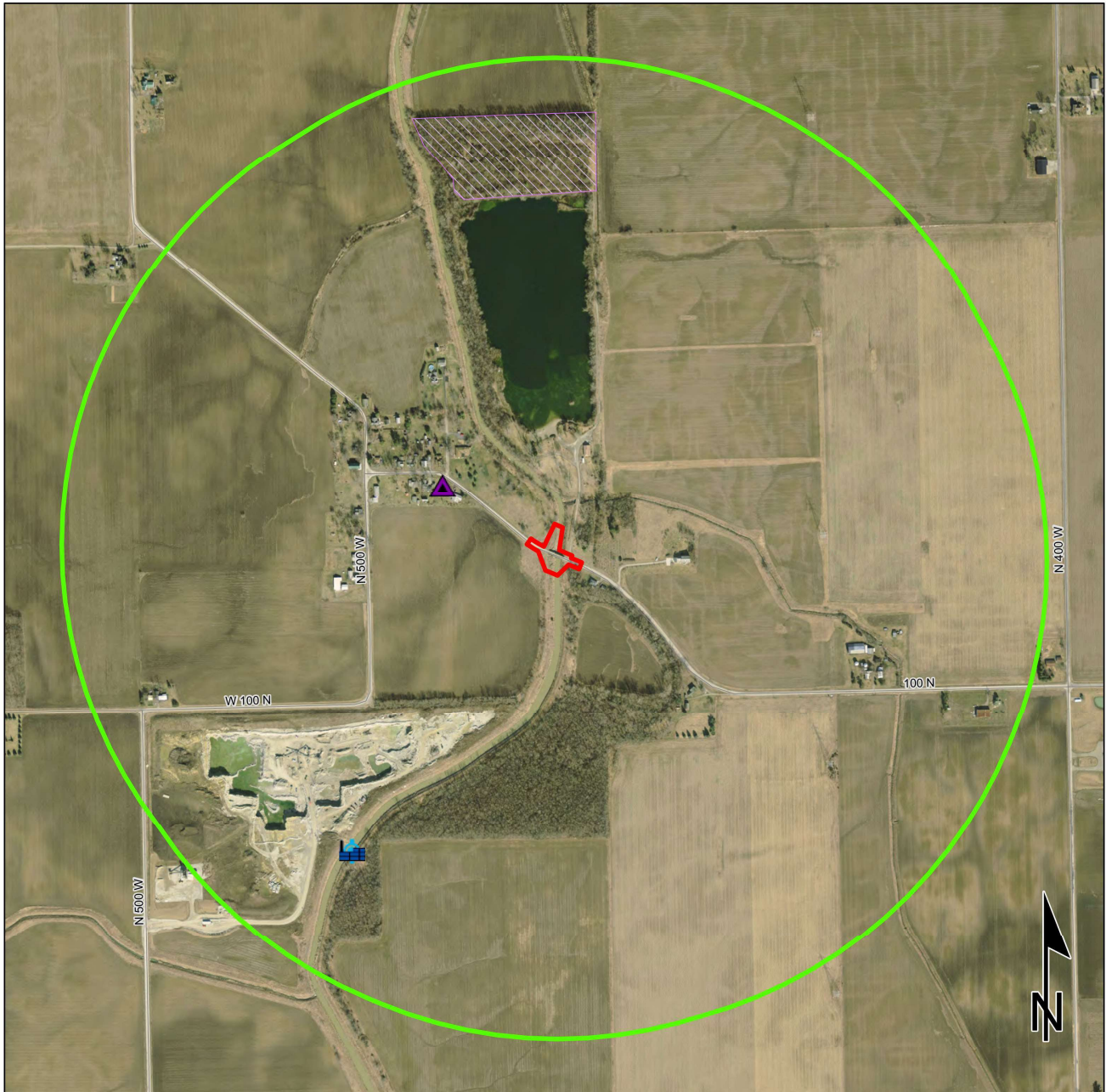
Orthophotography - Obtained from Indiana Map Framework Data (www.indianamap.org)

Map Projection: UTM Zone 16 N **Map Datum:** NAD83

This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.



Red Flag Investigation - Hazardous Material Concerns
CR 100 N over Rock Creek, 0.5 Mile West of CR 400 W
Des. No. 1702735, Bridge Project
Wells County, Indiana



0.1 0.05 0 0.1
Miles

This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.

Sources:
Non Orthophotography
Data - Obtained from the State of Indiana Geographical Information Office Library
Orthophotography - Obtained from Indiana Map Framework Data (www.indianamap.org)
Map Projection: UTM Zone 16 N Map Datum: NAD83

Indiana County Endangered, Threatened and Rare Species List

County: Wells



Species Name	Common Name	FED	STATE	GRANK	SRANK
Mollusk: Bivalvia (Mussels)					
<i>Epioblasma rangiana</i>	Northern Riffleshell	LE	SE	G1	S1
<i>Epioblasma triquetra</i>	Snuffbox	LE	SE	G3	S1
<i>Obovaria subrotunda</i>	Round Hickorynut	C	SE	G4	S1
<i>Pleurobema clava</i>	Clubshell	LE	SE	G1G2	S1
<i>Ptychobranhus fasciolaris</i>	Kidneyshell		SSC	G4G5	S2
<i>Theliderma cylindrica</i>	Rabbitsfoot	LT	SE	G3G4	S1
<i>Toxolasma lividus</i>	Purple Lilliput	C	SSC	G3Q	S2
<i>Villosa fabalis</i>	Rayed Bean	LE	SE	G2	S1
Insect: Odonata (Dragonflies & Damselflies)					
<i>Macromia wabashensis</i>	Wabash River Cruiser		SE	G1G3Q	S1
Reptile					
<i>Clonophis kirtlandii</i>	Kirtland's Snake		SE	G2	S2
<i>Nerodia erythrogaster neglecta</i>	Copperbelly Water Snake	PS:LT	SE	G5T3	S2
<i>Sistrurus catenatus</i>	Eastern Massasauga	LT	SE	G3	S2
Bird					
<i>Bartramia longicauda</i>	Upland Sandpiper		SE	G5	S3B
<i>Haliaeetus leucocephalus</i>	Bald Eagle		SSC	G5	S2
Mammal					
<i>Myotis sodalis</i>	Indiana Bat	LE	SE	G2	S1
Vascular Plant					
<i>Andromeda glaucophylla</i>	bog rosemary		ST	G5T5	S2
<i>Arethusa bulbosa</i>	swamp-pink		SX	G5	SX
<i>Carex arctata</i>	black sedge		ST	G5	S2
<i>Carex echinata</i>	little prickly sedge		SE	G5	S1
<i>Carex limosa</i>	mud sedge		SE	G5	S1
<i>Dactylorhiza viridis</i>	long-bract green orchid		SE	G5	S1
<i>Eriophorum gracile</i>	slender cotton-grass		ST	G5	S2
<i>Fragaria vesca var. americana</i>	woodland strawberry		SE	G5T5	S1
<i>Panax quinquefolius</i>	American ginseng		WL	G3G4	S3
<i>Plantago cordata</i>	heart-leaved plantain		SE	G4	S1
<i>Platanthera orbiculata</i>	large roundleaf orchid		SX	G5	SX
<i>Poa alsodes</i>	grove meadow grass		ST	G4G5	S3
<i>Rorippa aquatica</i>	lake cress		SE	G4?	S1
<i>Viburnum opulus var. americanum</i>	highbush-cranberry		SE	G5T5	S1
<i>Xyris difformis</i>	Carolina yellow-eyed grass		ST	G5	S2
High Quality Natural Community					
Forest - flatwoods central till plain	Central Till Plain Flatwoods		SG	G3	S2
Forest - floodplain wet-mesic	Wet-mesic Floodplain Forest		SG	G3?	S3

Indiana Natural Heritage Data Center
Division of Nature Preserves
Indiana Department of Natural Resources
This data is not the result of comprehensive county surveys.

Fed: LE = Endangered; LT = Threatened; C = candidate; PDL = proposed for delisting
State: SE = state endangered; ST = state threatened; SR = state rare; SSC = state species of special concern; SX = state extirpated; SG = state significant; WL = watch list
GRANK: Global Heritage Rank: G1 = critically imperiled globally; G2 = imperiled globally; G3 = rare or uncommon globally; G4 = widespread and abundant globally but with long-term concerns; G5 = widespread and abundant globally; G? = unranked; GX = extinct; Q = uncertain rank; T = taxonomic subunit rank
SRANK: State Heritage Rank: S1 = critically imperiled in state; S2 = imperiled in state; S3 = rare or uncommon in state; G4 = widespread and abundant in state but with long-term concern; SG = state significant; SH = historical in state; SX = state extirpated; B = breeding status; S? = unranked; SNR = unranked; SNA = nonbreeding status unranked

Indiana County Endangered, Threatened and Rare Species List
County: Wells



Species Name	Common Name	FED	STATE	GRANK	SRANK
Forest - upland mesic Central Till Plain	Central Till Plain Mesic Upland Forest		SG	GNR	S3

Indiana Natural Heritage Data Center
Division of Nature Preserves
Indiana Department of Natural Resources
This data is not the result of comprehensive county surveys.

Fed:

State:

GRANK:

SRANK:

LE = Endangered; LT = Threatened; C = candidate; PDL = proposed for delisting

SE = state endangered; ST = state threatened; SR = state rare; SSC = state species of special concern; SX = state extirpated; SG = state significant; WL = watch list

Global Heritage Rank: G1 = critically imperiled globally; G2 = imperiled globally; G3 = rare or uncommon globally; G4 = widespread and abundant globally but with long-term concerns; G5 = widespread and abundant globally; G? = unranked; GX = extinct; Q = uncertain rank; T = taxonomic subunit rank

State Heritage Rank: S1 = critically imperiled in state; S2 = imperiled in state; S3 = rare or uncommon in state; G4 = widespread and abundant in state but with long-term concern; SG = state significant; SH = historical in state; SX = state extirpated; B = breeding status; S? = unranked; SNR = unranked; SNA = nonbreeding status unranked

Des 1702735 CE-4

Appendix F

Water Resources

Note - repeat maps have been removed. The full report can be made available upon request.



Waters Report
CR 100 North over Rock Creek Bridge Project
Bridge Number 90-00106 (NBI 9000080)
Wells County, Indiana
Des. No. 1702735

Report Completed on: February 3, 2021

Prepared for:
USI Consultants

Prepared By:
Christian Radcliff
SJCA Inc.
9102 N Meridian Street, Suite 200
Indianapolis, IN 46260

p. 317.566.0629

e. cradcliff@sjcainc.com



Field Investigation Date: August 7, 2020

Site Location:

Section 29, Township 27 North, Range 11 East
Markle 1:24,000 Quadrangle
Wells County, Indiana
Latitude: 40.758722, Longitude: -85.309558

Project Description:

Des 1702735 involves the rehabilitation of the bridge carrying CR 100 North over Rock Creek, approximately 0.5 miles west of CR 400 West in Wells County, Indiana. The existing bridge (Bridge Number 90-00106 (NBI 9000080)) is a two-span reinforced concrete arch bridge that is approximately 87.5 feet in length and is 17.9 feet in clear roadway width. The bridge provides a one-lane cross section and concrete bridge rails. This project proposes to rehabilitate the existing bridge. Improvements to the bridge will include removing the asphalt overlay and arch fill and replacing the existing fill with clean fill and installing a new reinforced concrete deck. The attached bridge rail and curb will be removed and replaced. The existing arch ring, spandrel walls, pier, and abutments will be repaired, reconstructed, or removed and replaced as needed. A waterproofing membrane will be installed on the top of the arch ring to minimize the infiltration of water and salts onto the arch. Embedded galvanic anodes will be installed in conjunction with arch, spandrel wall, and pier patching to protect and slow the rate of corrosion of the existing steel reinforcement. A new drainage system will be developed to provide positive drainage of the bridge deck and earth fill. Excavation of the rock substrate of Rock Creek is anticipated to be required to complete the project.

The investigated area is in west-central Wells County, within of the Town of Rockford. Land use in the vicinity of the project is primarily rural with residential property in the vicinity of the bridge and a cemetery to the east. The major features in the investigated area are CR 100 North and Rock Creek. The investigated area is generally rural and level, with some slopes along the banks of Rock Creek. The investigated area was chosen because it encompasses the proposed right of way limits, which will contain within them the construction area. The investigated area occurs entirely within the US Army Corps of Engineers (USACE) Midwest region.

Vegetation in the project area is primarily early successional and invasive vegetation that is common along floodplains and roadways. Some trees and shrubs are adjacent to the bridge on the east side. Hydrology in the project area is influenced by Rock Creek and the project bridge. The nearest major hydrological feature is Rock Creek, which is in the immediate project area. The attached floodplains map indicates that there is a mapped floodplain within the investigated area.

Soils:

According to the Soil Survey Geographic (SSURGO) Database for Wells County, Indiana, the investigated area does contain soil areas with nationally listed hydric soils. Soils within and near the investigated area are characterized by well drained non-hydric soils to poorly drained hydric soils. Impervious layers of rock were encountered at various locations within the investigated area at the surface of the soil.

Table 1. Soil Types Within the Investigated Area

Soil Name	Map Abbreviation	Hydric Range
Glynwood silt loam, ground moraine, 1 to 4 percent slopes, eroded	GlgB2	1-32 (Hydric)
Millsdale silty clay loam	Mo	100 (Hydric)
Udorthents, loam	Ud	0 (Non-hydric)

National Wetlands Inventory (NWI) Information:

There are four mapped wetlands and linear water features within 0.25 mile of the investigated area. These include one labeled PUBGx (freshwater pond, excavated), one labeled as R2UBH (freshwater riverine, perennial), one labeled R2UBHx (freshwater riverine, perennial, excavated), and one labeled R4SBC (freshwater riverine, intermittent, seasonally flooded).

Table 2. Mapped NWI Features Near the Investigated Area

Wetland/Water Feature Type	Location
PUBGx	North of investigated area
R2UBH	Southeast of investigated area
R2UBHx	Within investigated area
R4SBC	Northeast of investigated area

HUC 12:

Elkenberry Ditch – Rock Creek (051201010704)

Attached Documents:

- Maps (Project Location, Topographic, Aerial Imagery, NWI, Floodplain, LiDAR, Soil Series, Watershed, Water Resources)
- Photographs and Photograph Location and Orientation Map
- Wetland Data Sheets
- Preliminary Jurisdictional Determination Form

Field Reconnaissance:

Prior to the field investigation, the US Geological Survey (USGS) topographic map, aerial imagery, the USGS National Hydrography Dataset (NHD), U.S. Fish and Wildlife Service (USFWS) NWI map, the Natural Resources Conservation Service (NRCS) Web Soil Survey for Wells County, and the Indiana Geological Survey (IGS) LiDAR data were reviewed to identify potential water resources on the site.

The entire investigated area, as shown on the attached project graphics, was visually surveyed during the site visit for potential water features. Areas that were identified during the preliminary desktop review and in the field visit were investigated to determine the potential jurisdictional status of these features. Delineation of wetlands and water features was completed using the *Corps of Engineers Wetland Delineation Manual (1987)* and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (2010)*. Soils in the project area were evaluated using the *2017 Pocket Guide to Hydric Soil Field Indicators* and a Munsell soil chart. Vegetation in the investigated area was evaluated using various plant identification guides and the *USACE State of Indiana 2018 Wetland Plant List*. Sample points were collected at potential wetland features and associated upland areas to verify the presence or

absence of wetland indicators. Jurisdictional recommendations were made according to the *US Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook*. Water features that were identified within the investigated area were documented using GPS location.

Streams:

Rock Creek

Rock Creek is classified as a perennial stream that conveys drainage from south to north under the project bridge. Rock Creek is mapped correctly on the attached NWI map as R2UBHx, on the topographic map as a solid blue-line stream, and the USGS *Streamstats* application. According to the *Streamstats* application, Rock Creek has an upstream drainage area of 81.019 square miles. Rock Creek exhibited an Ordinary High Water Mark (OHWM) width of 21 feet and depth of 12 inches. This stream is considered poor quality because it has a substrate of rock, provides low in-stream cover, exhibits low sinuosity and low erosion, and provides some riffle/run complexes. The adjacent floodplain of Rock Creek is narrow and low quality. This feature is likely jurisdictional under the authority of the USACE because it exhibits an OHWM, exhibits perennial flow conditions, and eventual connectivity to The Wabash River approximately 4.85 miles northwest of the investigated area. The Wabash River is a jurisdictional waterway because it is considered navigable. Approximately 265 linear feet of Rock Creek is within the investigated area. Rock Creek is shown in photos 3 through 8 in the attached photo log.

Table 3. Stream Summary Table

Stream Name	Photos	Lat/Long	OHWM Width (ft)	OHWM Depth (in)	USGS Blue-line?	Riffles? Pools?	Substrate	Quality	Likely Water of U.S.?
Rock Creek	3-8	Latitude: 40.758722, Longitude: -85.309558	21	12	Yes	Yes	Rock	Poor	Yes

Wetlands:

No suspected wetlands were identified in the investigated area during the desktop review of the site. No wetlands were identified during the August 7, 2020 site visit.

Sample Point 1

Sample Point 1 (SP1) was an upland point in the northwest quadrant of the bridge on a floodplain terrace. Vegetation at this sample point was dominated by Reed Canary Grass (*Phalaris arundinacea*, FACW). This vegetation community passed the rapid test, dominance test, and prevalence index for hydrophytic vegetation. Hydrology indicators observed at SP1 include FAC-Neutral Test (D5). This does not meet wetland hydrology criteria. Soils at SP1 were 10 YR 4/3 (100%) with a texture of silt loam from 0-16 inches. This does not meet any hydric soil criteria. This sample point met the criteria for hydrophytic vegetation but did not meet the criteria for wetland hydrology or hydric soils; therefore, it was not within a wetland. Hydrophytic vegetation is present because Reed Canary Grass (*Phalaris arundinacea*) is an aggressive invasive species that often takes over floodplains and roadsides. Water draining into Rock Creek likely does not stay on the floodplain terrace long enough to develop hydric soils. The impervious rock substrate also allows water to quickly drain into Rock Creek throughout most of the investigated area.

Sample Point 2

Sample Point 2 (SP2) was an upland point in the southeast quadrant of the bridge on a floodplain terrace. Vegetation at this sample point was dominated by Honey Locust (*Gleditsia triacanthos*, FACU), Field Brome (*Bromus arvensis*, FACU), and Reed Canary Grass (*Phalaris arundinacea*, FACW). This vegetation community did not pass the rapid test, dominance test, or prevalence index for hydrophytic vegetation. Hydrology indicators were not observed at SP2. Soils at SP2 were very shallow and had an impervious

layer of rock at the surface of the soil. This does not meet any hydric soil criteria. This sample point did not meet the criteria for hydrophytic vegetation, wetland hydrology or hydric soils; therefore, it was not within a wetland.

Table 4. Sample Point Summary Table

Data Point	Photos	Vegetation	Soils	Hydrology	Wetland
SP1	9-10	Yes	No	No	No
SP2	11-12	No	No	No	No

Open Water:

No open water bodies were identified within or immediately adjacent to the investigated area in the desktop review. The field visit confirmed that no open water features are within the investigated area.

Other Features:

The investigated area was assessed for the presence of other water features. Other water features include roadside ditches, areas of concentrated flow, or other unusual drainage features. These features may be considered jurisdictional if they exhibit a Significant Nexus to a Traditionally Navigable Waterway. No other water features were identified within the investigated area.

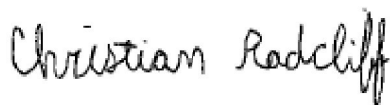
Conclusions:

The site investigation identified one stream, Rock Creek. Rock Creek is a likely Water of the US due to its connectivity with the Wabash River, presence of an OWHM, and perennial flow conditions. Every effort should be taken to avoid and minimize impacts to this waterway. If impacts are necessary, then mitigation may be required. The USACE should be contacted immediately if impacts will occur. The final determination of jurisdictional waters is ultimately made by the appropriate regulatory staff of the US Army Corps of Engineers. This report is our best judgment based on the guidelines set forth by the Corps.

Acknowledgement:

This waters determination has been prepared based on the best available information, interpreted in the light of the investigator's training, experience and professional judgement in conformance with the *1987 Corps of Engineers Wetlands Delineation Manual*, the appropriate regional supplement, the USACE *Jurisdictional Determination Form Instructional Guidebook*, and other appropriate agency guidelines.

Christian Radcliff



Ecologist

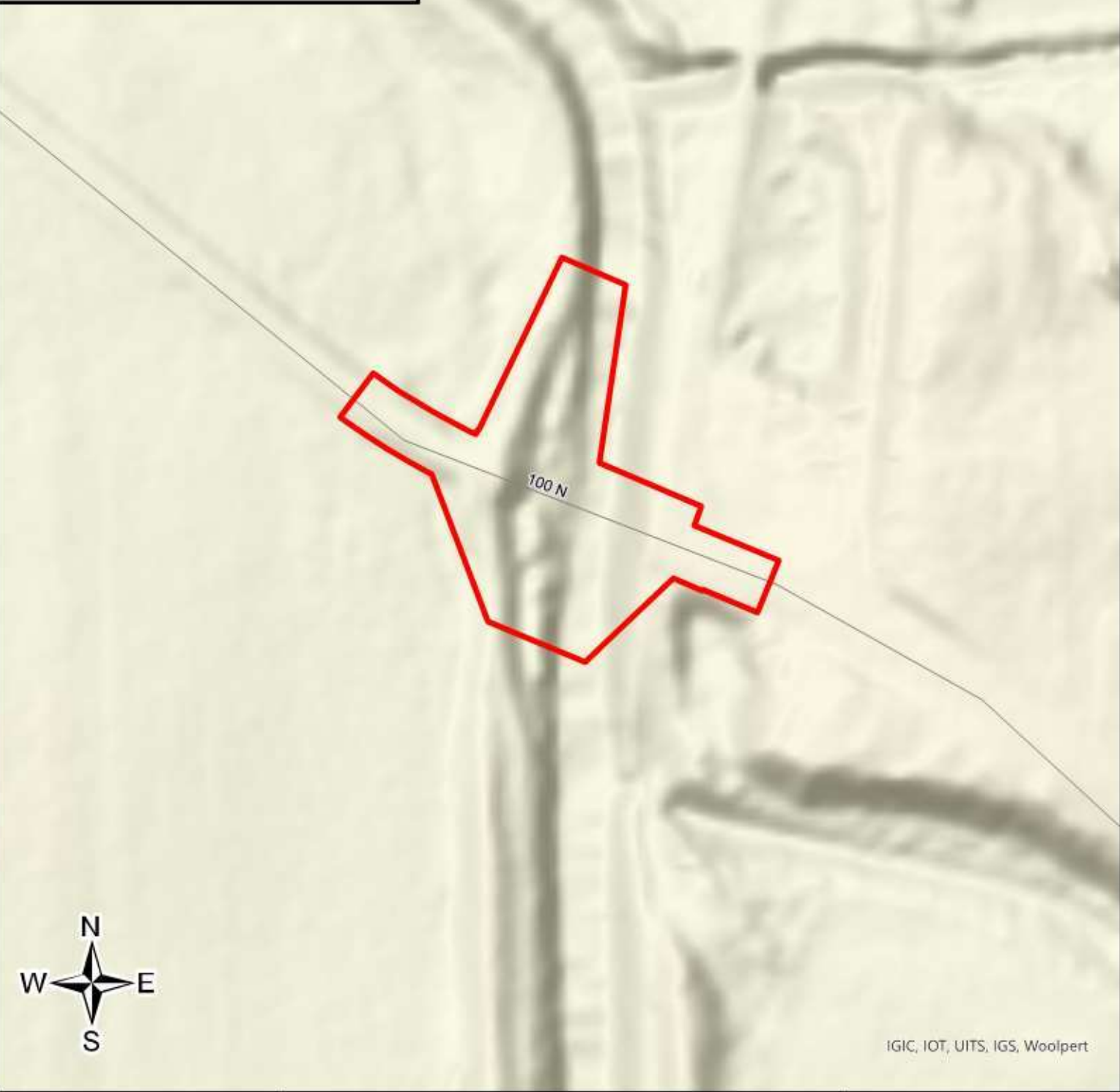
SJCA Inc.

Date: February 3, 2021

Supporting Documentation:

- Maps
- Photos
- Wetland Delineation Data Sheets
- Preliminary Jurisdictional Determination Form

LiDAR Map (1:1,200)
Bridge Project
CR 100 N over Rock Creek
Des. No. 1702735
Wells County, Indiana
Source: Indiana Geological Survey



IGIC, IOT, UITS, IGS, Woolpert

0 65 130 Feet

 Investigated Area



National Wetlands Inventory Map (1:1,200)
Bridge Project
CR 100 N over Rock Creek
Des. No. 1702735
Wells County, Indiana
Source: USFWS National Wetlands Inventory



National Agriculture Imagery Program (NAIP), Farm Service Agency (FSA) U.S. Department of Agriculture (USDA), ITC5 Indiana Spatial Data Portal

0 65 130
Feet

 Investigated Area
 NWI Wetlands



2/1/2021

Floodplains Map (1:1,200)
Bridge Project
CR 100 N over Rock Creek
Des. No. 1702735
Wells County, Indiana
Source: FEMA FIRM



0 65 130 Feet

 Investigated Area
 1% Annual Chance Flood Hazard



Hydric Rating by Map Unit—Wells County, Indiana (Des 1702735 CR 100 N Over Rock Creek)



Hydric Rating by Map Unit—Wells County, Indiana
(Des 1702735 CR 100 N Over Rock Creek)

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

-  Hydric (100%)
-  Hydric (66 to 99%)
-  Hydric (33 to 65%)
-  Hydric (1 to 32%)
-  Not Hydric (0%)
-  Not rated or not available

Soil Rating Lines

-  Hydric (100%)
-  Hydric (66 to 99%)
-  Hydric (33 to 65%)
-  Hydric (1 to 32%)
-  Not Hydric (0%)
-  Not rated or not available

Soil Rating Points

-  Hydric (100%)
-  Hydric (66 to 99%)
-  Hydric (33 to 65%)
-  Hydric (1 to 32%)
-  Not Hydric (0%)
-  Not rated or not available

Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Wells County, Indiana

Survey Area Data: Version 24, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

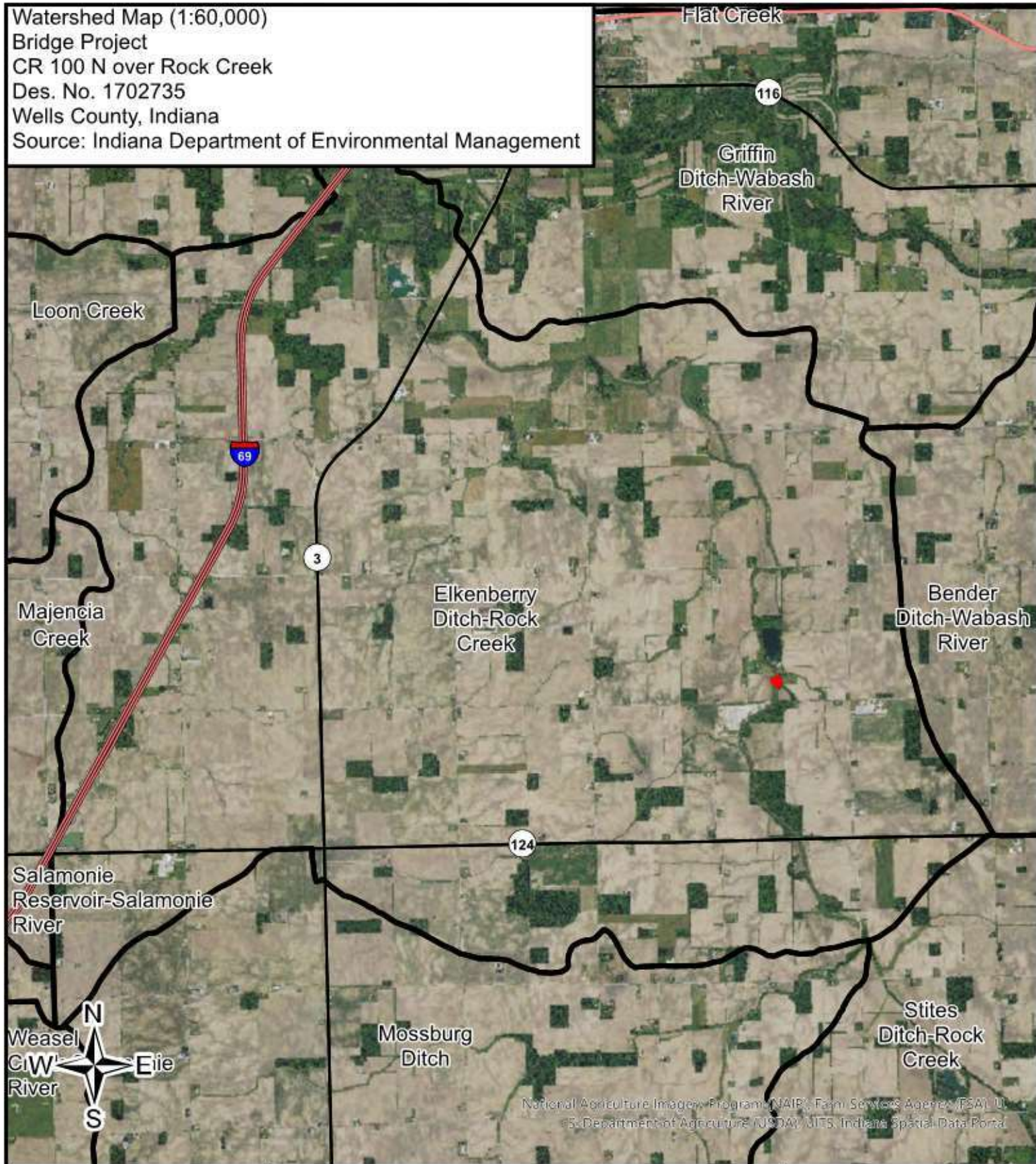
Date(s) aerial images were photographed: Feb 14, 2012—Apr 1, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

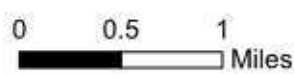
Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
GlgB2	Glynwood silt loam, ground moraine, 1 to 4 percent slopes, eroded	3	0.0	6.0%
Mo	Millsdale silty clay loam	100	0.5	62.5%
Ud	Udorthents, loamy	0	0.2	31.5%
Totals for Area of Interest			0.8	100.0%

Watershed Map (1:60,000)
 Bridge Project
 CR 100 N over Rock Creek
 Des. No. 1702735
 Wells County, Indiana
 Source: Indiana Department of Environmental Management



National Agriculture Imagery Program (NAIP), Farm Service Agency (FSA), U.S. Department of Agriculture (USDA), IITS, Indiana Spatial Data Portal

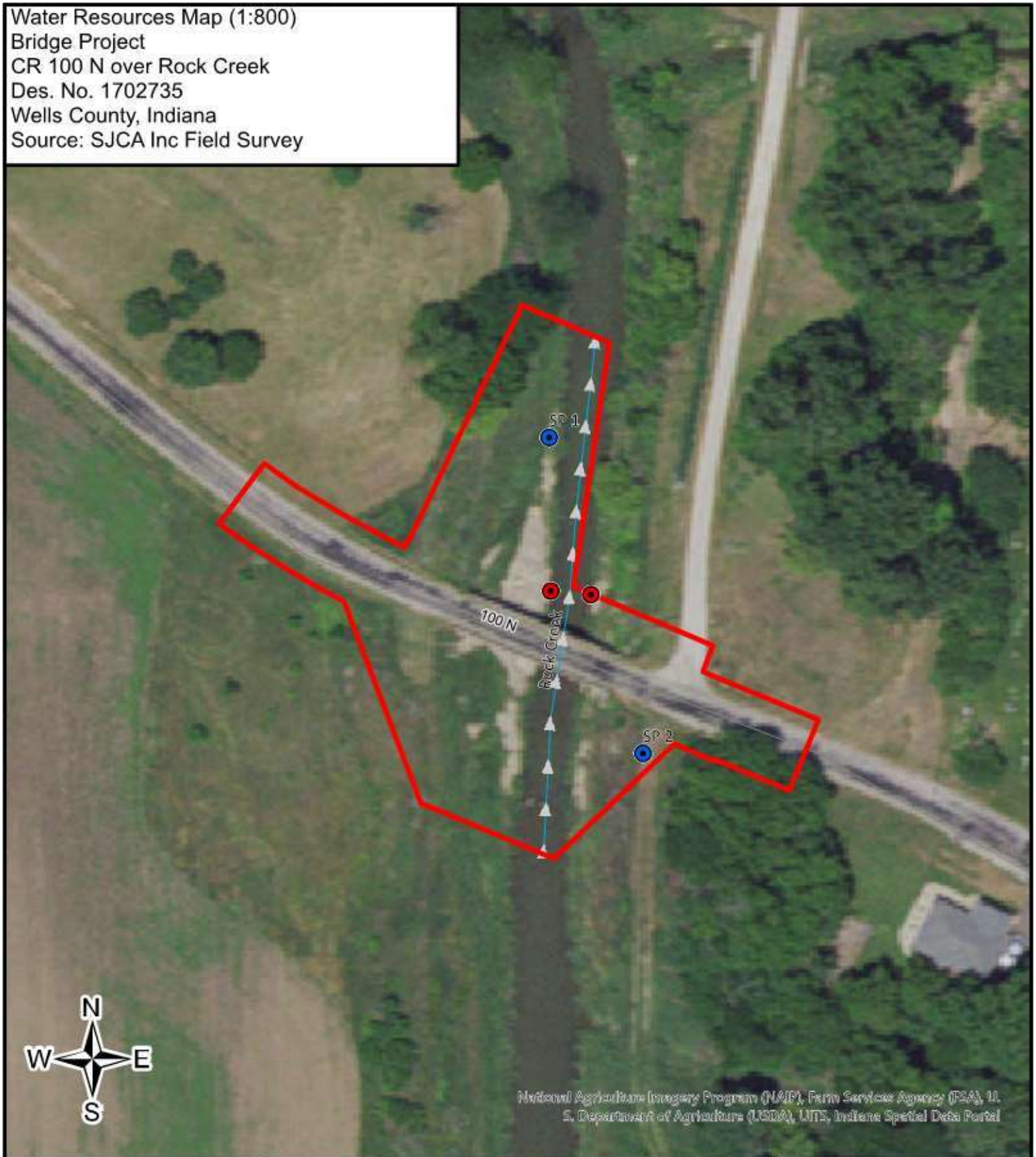


Investigated Area
 HUC - 12



2/1/2021

Water Resources Map (1:800)
Bridge Project
CR 100 N over Rock Creek
Des. No. 1702735
Wells County, Indiana
Source: SJCA Inc Field Survey



National Agriculture Imagery Program (NAIP), Farm Service Agency (FSA), U.S. Department of Agriculture (USDA), LITE, Indiana Spatial Data Portal

0 45 90
Feet

- Investigated Area
- Sample Point
- OHWM
- Stream



2/1/2021

Photo Location and Orientation Map (1:600)
 Bridge Project
 CR 100 N over Rock Creek
 Des. No. 1702735
 Wells County, Indiana
 Source: SJCA Inc Field Survey



- Investigated Area
- Sample Point
- Stream
- OHWM
- ▶ Photo Location



2/1/2021



Photo 1: West side project bridge facing southeast



Photo 2: East side project bridge facing northwest



Photo 3: Rock Creek from project bridge facing north



Photo 4: Rock Creek from project bridge facing south



Photo 5: Project bridge and Rock Creek facing south



Photo 6: Project bridge and Rock Creek facing north



Photo 7: Rock Creek from north of project bridge facing northeast



Photo 8: Rock Creek from south of project bridge facing southeast



Photo 9: Sample Point 1 soil



Photo 10: Sample Point 1 facing south towards project bridge



Photo 11: Sample Point 2 location facing southwest



Photo 12: Sample Point 2 location soil

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Des 1702735 Wells County Bridge 106 City/County: Wells County Sampling Date: 8/6/2020
 Applicant/Owner: Wells County State: IN Sampling Point: 1
 Investigator(s): Christian Radcliff, Laney Walstra Section, Township, Range: S 29, T 27 N, R 11 E
 Landform (hillslope, terrace, etc.): Floodplain terrace Local relief (concave, convex, none): None
 Slope (%): 0-2% Lat: 40.759041 Long: -85.309566 Datum: WGS 84
 Soil Map Unit Name: Udorthents, loamy NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No ☐	Is the Sampled Area within a Wetland? Yes ☐ No ☒
Hydric Soil Present?	Yes ☐ No ☒	
Wetland Hydrology Present?	Yes ☐ No ☒	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 feet</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
0 = Total Cover			
Sapling/Shrub Stratum (Plot size: <u>15 feet</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
0 = Total Cover			
Herb Stratum (Plot size: <u>5 feet</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Phalaris arundinacea</i>	95	X	FACW
2. <i>Asclepias syriaca</i>	5		FACU
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
100 = Total Cover			
Woody Vine Stratum (Plot size: <u>30 feet</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
0 = Total Cover			
Remarks: (Include photo numbers here or on a separate sheet.)			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>95</u>	x 2 = <u>190</u>
FAC species <u>0</u>	x 3 = <u>0</u>
FACU species <u>5</u>	x 4 = <u>20</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>100</u> (A)	<u>210</u> (B)
Prevalence Index = B/A = <u>2.1</u>	

Hydrophytic Vegetation Indicators:

☒ 1 - Rapid Test for Hydrophytic Vegetation

☒ 2 - Dominance Test is >50%

☒ 3 - Prevalence Index is ≤3.0¹

☐ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☒ No ☐

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10 YR 4/3	100					Silt loam	Gravel/grit in soil

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)

- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron-Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____

Water Table Present? Yes ☐ No ☒ Depth (inches): _____

Saturation Present? Yes ☐ No ☒ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Des 1702735 Wells County Bridge 106 City/County: Wells County Sampling Date: 8/6/2020
 Applicant/Owner: Wells County State: IN Sampling Point: 2
 Investigator(s): Christian Radcliff, Laney Walstra Section, Township, Range: S 29, T 27 N, R 11 E
 Landform (hillslope, terrace, etc.): Floodplain terrace Local relief (concave, convex, none): Convex
 Slope (%): 2-5% Lat: 40.758588 Long: -85.309493 Datum: WGS 84
 Soil Map Unit Name: Millsdale silty clay loam NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	Is the Sampled Area within a Wetland?	Yes ☐	No ☒
Hydric Soil Present?	Yes ☐	No ☒			
Wetland Hydrology Present?	Yes ☐	No ☒			
Remarks:					

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 feet</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Gleditsia triacanthos</u>	<u>25</u>	<u>X</u>	<u>FACU</u>	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>3</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33%</u> (A/B)
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
<u>25</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15 feet</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	OBL species <u>0</u> x 1 = <u>0</u>
3. _____	_____	_____	_____	FACW species <u>15</u> x 2 = <u>30</u>
4. _____	_____	_____	_____	FAC species <u>0</u> x 3 = <u>0</u>
5. _____	_____	_____	_____	FACU species <u>80</u> x 4 = <u>320</u>
<u>0</u> = Total Cover				UPL species <u>0</u> x 5 = <u>0</u>
				Column Totals: <u>95</u> (A) <u>350</u> (B)
				Prevalence Index = B/A = <u>3.68</u>
Herb Stratum (Plot size: <u>5 feet</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Bromus arvensis</u>	<u>50</u>	<u>X</u>	<u>FACU</u>	
2. <u>Phalaris arundinacea</u>	<u>15</u>	<u>X</u>	<u>FACW</u>	☐ 2 - Dominance Test is >50%
3. <u>Setaria faberi</u>	<u>5</u>	_____	<u>FACU</u>	☐ 3 - Prevalence Index is ≤3.0 ¹
4. _____	_____	_____	_____	☐ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5. _____	_____	_____	_____	☐ Problematic Hydrophytic Vegetation ¹ (Explain)
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
<u>70</u> = Total Cover				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Woody Vine Stratum (Plot size: <u>30 feet</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present?
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
<u>0</u> = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0	N/A	N/A					Rock	Rock with thin layer of topsoil

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- | | |
|--|---|
| ☐ Histosol (A1) | ☐ Sandy Gleyed Matrix (S4) |
| ☐ Histic Epipedon (A2) | ☐ Sandy Redox (S5) |
| ☐ Black Histic (A3) | ☐ Stripped Matrix (S6) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Stratified Layers (A5) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ 2 cm Muck (A10) | ☐ Depleted Matrix (F3) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Redox Dark Surface (F6) |
| ☐ Thick Dark Surface (A12) | ☐ Depleted Dark Surface (F7) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Redox Depressions (F8) |
| ☐ 5 cm Mucky Peat or Peat (S3) | |

Indicators for Problematic Hydric Soils³:

- ☐ Coast Prairie Redox (A16)
☐ Dark Surface (S7)
☐ Iron-Manganese Masses (F12)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rock
 Depth (inches): At surface

Hydric Soil Present? Yes ☐ No ☒

Remarks:

This area is mostly rock with think layers of topsoil above to support vegetation.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- | | |
|--|---|
| ☐ Surface Water (A1) | ☐ Water-Stained Leaves (B9) |
| ☐ High Water Table (A2) | ☐ Aquatic Fauna (B13) |
| ☐ Saturation (A3) | ☐ True Aquatic Plants (B14) |
| ☐ Water Marks (B1) | ☐ Hydrogen Sulfide Odor (C1) |
| ☐ Sediment Deposits (B2) | ☐ Oxidized Rhizospheres on Living Roots (C3) |
| ☐ Drift Deposits (B3) | ☐ Presence of Reduced Iron (C4) |
| ☐ Algal Mat or Crust (B4) | ☐ Recent Iron Reduction in Tilled Soils (C6) |
| ☐ Iron Deposits (B5) | ☐ Thin Muck Surface (C7) |
| ☐ Inundation Visible on Aerial Imagery (B7) | ☐ Gauge or Well Data (D9) |
| ☐ Sparsely Vegetated Concave Surface (B8) | ☐ Other (Explain in Remarks) |

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Stunted or Stressed Plants (D1)
☐ Geomorphic Position (D2)
☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____
 Water Table Present? Yes ☐ No ☒ Depth (inches): _____
 Saturation Present? Yes ☐ No ☒ Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix 2 - PRELIMINARY JURISDICTIONAL DETERMINATION (PJD) FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PJD: 2/2/2021

B. NAME AND ADDRESS OF PERSON REQUESTING PJD: Christian Radcliff, 9102 N Meridian Street, Suite 200, Indianapolis, Indiana 46260

C. DISTRICT OFFICE, FILE NAME, AND NUMBER:

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:

Des 1702735 involves the rehabilitation of the bridge carrying CR 100 N over Rock Creek in Wells County, Indiana. Improvements to the bridge will include installing a new reinforced concrete deck. The attached bridge rail and curb will be removed and replaced. The existing arch ring, spandrel walls, pier, and abutments will be repaired, reconstructed, or removed and replaced as needed. A waterproofing membrane will be installed on the top of the arch ring to minimize the infiltration of water and salts onto the arch. Embedded galvanic anodes will be installed in conjunction with arch, spandrel wall, and pier patching. A new drainage system will be developed to provide positive drainage of the bridge deck and earth fill. Excavation of the rock substrate of Rock Creek is anticipated to be required to complete the project.

(USE THE TABLE BELOW TO DOCUMENT MULTIPLE AQUATIC RESOURCES AND/OR AQUATIC RESOURCES AT DIFFERENT SITES)

State: Indiana County/parish/borough: Wells City: Rockford

Center coordinates of site (lat/long in degree decimal format):

Lat.: 40.758722 Long.: -85.309558

Universal Transverse Mercator: 16T

Name of nearest waterbody: Rock Creek

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:

☐ Field Determination. Date(s):

TABLE OF AQUATIC RESOURCES IN REVIEW AREA WHICH “MAY BE” SUBJECT TO REGULATORY JURISDICTION.

Site number	Latitude (decimal degrees)	Longitude (decimal degrees)	Estimated amount of aquatic resource in review area (acreage and linear feet, if applicable)	Type of aquatic resource (i.e., wetland vs. non-wetland waters)	Geographic authority to which the aquatic resource “may be” subject (i.e., Section 404 or Section 10/404)
Rock Creek	40.758722	-85.309558	265 feet/0.127 acre	Non-wetland waters	Section 404

- 1) The Corps of Engineers believes that there may be jurisdictional aquatic resources in the review area, and the requestor of this PJD is hereby advised of his or her option to request and obtain an approved JD (AJD) for that review area based on an informed decision after having discussed the various types of JDs and their characteristics and circumstances when they may be appropriate.
- 2) In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an AJD for the activity, the permit applicant is hereby made aware that: (1) the permit applicant has elected to seek a permit authorization based on a PJD, which does not make an official determination of jurisdictional aquatic resources; (2) the applicant has the option to request an AJD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an AJD could possibly result in less compensatory mitigation being required or different special conditions; (3) the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) undertaking any activity in reliance upon the subject permit authorization without requesting an AJD constitutes the applicant's acceptance of the use of the PJD; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a PJD constitutes agreement that all aquatic resources in the review area affected in any way by that activity will be treated as jurisdictional, and waives any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an AJD or a PJD, the JD will be processed as soon as practicable. Further, an AJD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331. If, during an administrative appeal, it becomes appropriate to make an official determination whether geographic jurisdiction exists over aquatic resources in the review area, or to provide an official delineation of jurisdictional aquatic resources in the review area, the Corps will provide an AJD to accomplish that result, as soon as is practicable. This PJD finds that there "*may be*" waters of the U.S. and/or that there "*may be*" navigable waters of the U.S. on the subject review area, and identifies all aquatic features in the review area that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for PJD (check all that apply)

Checked items should be included in subject file. Appropriately reference sources below where indicated for all checked items:

- ☒ Maps, plans, plots or plat submitted by or on behalf of the PJD requestor:
Map: Project location map.
- ☒ Data sheets prepared/submitted by or on behalf of the PJD requestor.
☐ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report. Rationale: _____.
- ☐ Data sheets prepared by the Corps: _____.
- ☐ Corps navigable waters' study: _____.
- ☒ U.S. Geological Survey Hydrologic Atlas: NHD map and HUC 12 watershed map.
☒ USGS NHD data.
☒ USGS 8 and 12 digit HUC maps.
- ☒ U.S. Geological Survey map(s). Cite scale & quad name: 1:24,000 - Markle Quadrangle.
- ☒ Natural Resources Conservation Service Soil Survey. Citation: 2020 Web Soil Survey data.
- ☒ National wetlands inventory map(s). Cite name: 2014 NWI Data.
- ☐ State/local wetland inventory map(s): _____.
- ☒ FEMA/FIRM maps: 2019 Floodplain Data.
- ☐ 100-year Floodplain Elevation is: _____.(National Geodetic Vertical Datum of 1929)
- ☒ Photographs: ☒ Aerial (Name & Date): 2016 NAIP Aerial Imagery.
or ☒ Other (Name & Date): Site photos: August 7, 2020.
- ☐ Previous determination(s). File no. and date of response letter: _____.
- ☐ Other information (please specify): _____.

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Signature and date of
Regulatory staff member
completing PJD

Christian Rodcliff 2/2/2021

Signature and date of
person requesting PJD
(REQUIRED, unless obtaining
the signature is impracticable)¹

¹ Districts may establish timeframes for requestor to return signed PJD forms. If the requestor does not respond within the established time frame, the district may presume concurrence and no additional follow up is necessary prior to finalizing an action.



Indiana Floodplain Information Portal Report

Point of Interest

Approximate Address:

4572 West 100 North
BLUFFTON, IN 46714

Effective Flood Zone:

A

Preliminary Flood Zone:

N/A

Best Available Flood Zone:

Approximate Flood Elevation:

821.5ft NAVD88

Source:

Zone A Model Delineation

Nearest Stream:

ROCK CREEK

Map Legend



Point of Interest



Nearest Point on Stream

Best Available Flood Zone



FEMA Zone AE Floodway



DNR Detailed Floodway



DNR Approximate Floodway



FEMA Zone A



FEMA Zone AE



DNR Detailed Fringe



DNR Approximate Fringe



Additional Floodplain Area



FEMA Protected by Levee

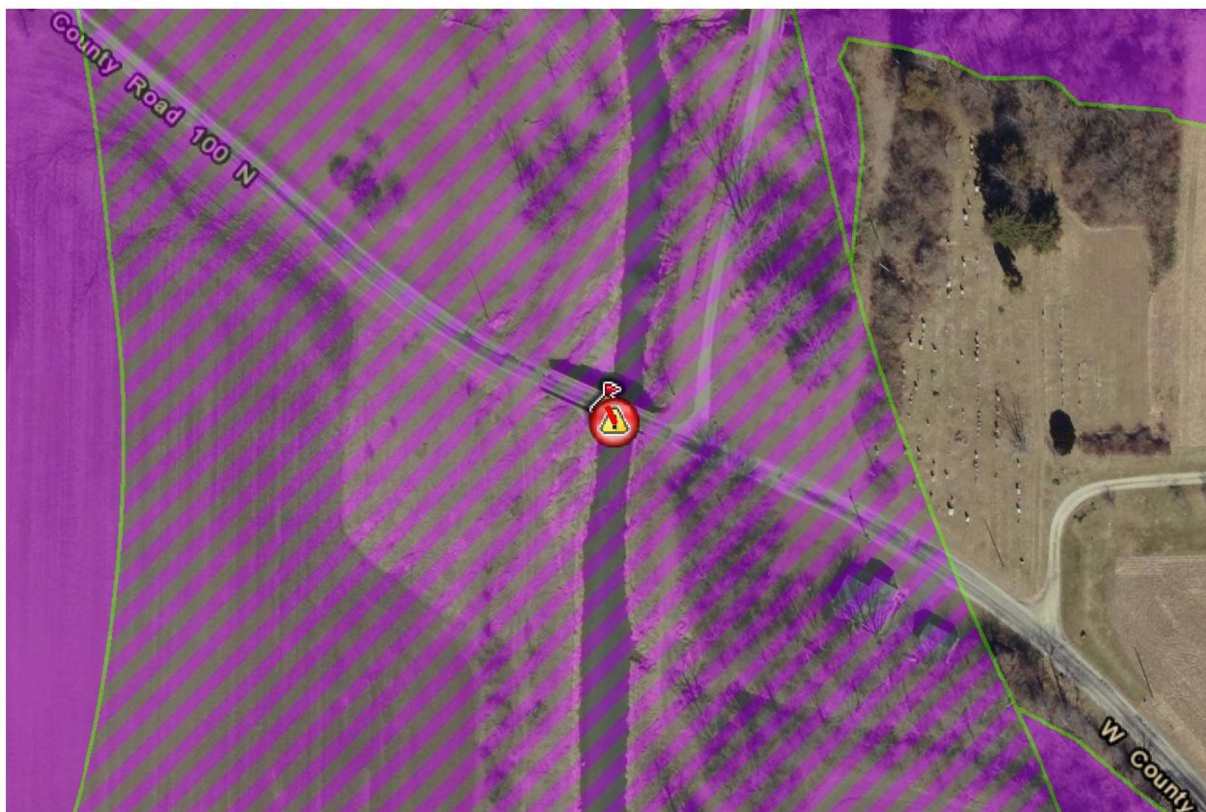


FEMA Floodplain - Ponding (Depth)



FEMA Floodplain - Sheet Flow (Depth)

Site Map with Best Available Flood Zone



Approximate scale 1:2,400

Disclaimer

Des 1702735 CE-4

Appendix G

Public Involvement

This appendix will be updated after completion of Public Involvement.

August 29, 2018

RE: Bridge Replacement
Wells County Bridge #106

TO: [REDACTED]
[REDACTED]
[REDACTED]

Dear Property Owner:

Our firm was recently selected by the Wells County Board of Commissioners to complete a route survey for the above referenced project. We would like to inform you, through this letter, that field crews will be in your area, to conduct survey work as part of this project.

Our information shows that you own or occupy property near this proposed project. It may be necessary for the survey crews to come onto your property to complete this work, which is allowed by law by Indiana Code IC 25-21.5-9-7 and IC 25-21.5-9-8. After work is completed, any equipment will be removed from your property and the land restored to its previous condition. The survey crews will show you their identification, if you request, before coming onto your property. If you have sold this property, or someone else occupies it, please let us know the name and address of the new owner or current occupant so we can contact them about this survey. The survey work will include mapping the location of features such as buildings, trees, fences, driveways, and obtaining ground elevations. This work is necessary for the proper planning and design of this project.

At this stage, we generally do not know what effect, if any, our project may eventually have on your property. If we determine later that your property is involved, we will contact you with additional information.

Please be assured of our sincere desire to cause you as little inconvenience as possible during this survey. If any problems do occur, please contact me at my direct line at 317-522-2485, or you can email or write to me at the address below. Thank you, in advance, for your cooperation.

Sincerely,

USI Consultants, Inc.

A handwritten signature in blue ink, appearing to read 'M. Burdett'.

Martin Burdett, PS

Assistant Survey Manager

mburdett@usiconsultants.com

Des 1702735 CE-4

Appendix H

Air Quality

SPONSOR	CONTR ACT # / LEAD DES	STP NAME	ROUTE	WORK TYPE	LOCATION	DISTRICT	MILES	FEDERAL CATEGORY	Estimated Cost left to Complete Project*	PROGRAM	PHASE	FEDERAL	MATCH	2020	2021	2022	2023	2024
Indiana Department of Transportation	39900 / 1383677	Init.	SR 124	Small Structure Replacement	Over Whitelock Ditch, 2.19 miles East of SR 3.	Fort Wayne	.101	STBG		Bridge ROW	RW	\$78,400.00	\$19,600.00	\$98,000.00				
Performance Measure Impacted: Bridge Condition																		
Indiana Department of Transportation	40743 / 1702129	Init.	SP PARK	Institution & Park Road Maintenance	Ouabache State Park, at S end of SR 201, 1.23 miles S of SR 124	Fort Wayne		0	STBG	DNR/INST Construction	CN	\$332,800.00	\$83,200.00		\$416,000.00			
Performance Measure Impacted: Pavement Condition																		
Indiana Department of Transportation	41084 / 1601020	Init.	SR 301	HMA Overlay Minor Structural	From SR 116 to US 224	Fort Wayne	8.358	STBG		Road Construction	CN	\$7,249,192.00	\$1,812,298.00		\$9,061,490.00			
Performance Measure Impacted: Pavement Condition																		
Indiana Department of Transportation	41084 / 1601020	M 07	SR 301	HMA Overlay Minor Structural	From SR 116 to SR 124.	Fort Wayne	3.53	STBG	\$7,576,798.00	Road Construction	CN	-\$1,190,953.00	-\$297,738.40		(\$1,488,692.00)			
Performance Measure Impacted: Pavement Condition																		
Comments No MPO. Reducing the CN for FY 2021 by ~\$1,488,692 for a total remaining of \$7,576,798.																		
Wells County	41155 / 1702735	Init.	IR 1015	Bridge Maintenance And Repair	Bridge 106 on CR 100N over Rock Creek	Fort Wayne	.2	STBG		Local Funds	CN	\$0.00	\$313,200.00				\$313,200.00	
Performance Measure Impacted: Bridge Condition																		
Wells County	41155 / 1702735	A 04	IR 1015	Bridge Maintenance And Repair	Bridge 106 on CR 100N over Rock Creek	Fort Wayne	.2	STBG	\$1,566,000.00	Local Funds	RW	\$0.00	\$36,000.00		\$36,000.00			
Performance Measure Impacted: Bridge Condition																		
										Local Bridge Program	RW	\$144,000.00	\$0.00		\$144,000.00			
Performance Measure Impacted: Bridge Condition																		
Comments Add ROW to STIP. No MPO																		
Wells County	41155 / 1702735	M 10	IR 1015	Bridge Maintenance And Repair	Bridge 106 on CR 100N over Rock Creek	Fort Wayne	.2	STBG	\$1,746,000.00	Local Funds	RW	\$0.00	\$0.00		(\$36,000.00)	\$36,000.00		
Performance Measure Impacted: Bridge Condition																		
Comments Move ROW from FY 722 to 723. NO MPO																		
Indiana Department of Transportation	41203 / 1800222	Init.	SR 110	Shore Correction	From 14.06 miles East of SR 1 to 4.46 Miles East of SR 1	Fort Wayne	.350	STBG		Road Construction	CN	\$250,100.00	\$82,000.00					\$312,651.00
Performance Measure Impacted: Safety																		
Indiana Department of Transportation	41561 / 1800051	Init.	SR 3	Bridge Replacement, Other Construction	Bridge Over Prairie Creek, 2.46 Miles North of SR 18.	Fort Wayne	.1	STBG		Bridge Construction	CN	\$781,998.40	\$195,499.60				\$977,498.00	
Performance Measure Impacted: Bridge Condition																		
										Bridge ROW	RW	\$16,000.00	\$4,000.00			\$20,000.00		

Des 1702735 CE-4

Appendix I

Additional Studies

Land and Water Conservation Fund (LWCF) County Property List for Indiana (Last Updated July 2020)

ProjectNumber	SubProjectCode	County	Property
1800008	1800008	Wells	Ouabache State Park
1800095	1800095	Wells	Wells County Community Swimming Pool
1800159	1800159	Wells	Roush Park
1800164	1800164	Wells	Ouabache State Park
1800171	1800171I	Wells	Oubache State Park
1800182	1800182	Wells	Ouabache State Park
1800300	1800300	Wells	Ouabache State Park
1800312	1800312J	Wells	Ouabache State Park
1800363	1800363U	Wells	Ouabache State Park
1800579	1800579	Wells	Archbold Wilson Memorial Park
1800588	1800588	Wells	Roush Park
1800594	1800594C	Wells	Ouabache State Park

*Park names may have changed. If acquisition of publically owned land or impacts to publically owned land is anticipated, coordination with IDNR, Division of Outdoor Recreation, should occur.

Bridge Inspection Report

90-00106
CR 100 NORTH
over
ROCK CREEK



Inspection Date: 10/08/2020

Inspected By: Bonnie L. Money

Inspection Type(s): Routine

Inspector: Bonnie L. Money
Inspection Date: 10/08/2020

Asset Name: 90-00106
Facility Carried: CR 100 NORTH

Bridge Inspection Report

IDENTIFICATION

(1) STATE CODE:	185 - Indiana	(12) BASE HIGHWAY NETWORK:	0
(8) STRUCTURE:	9000080	(13A) INVENTORY ROUTE:	
(5 A-B-C-D-E) INV. ROUTE:	1 - 4 - 1 - 00058 - 0	(13B) SUBROUTE NUMBER:	
(2) HIGHWAY AGENCY DISTRICT:	02 - Fort Wayne	(16) LATITUDE:	40.75873
(3) COUNTY CODE:	090 - WELLS	(17) LONGITUDE:	-85.30953
(4) PLACE CODE:	00000 - N/A	(98) BORDER	
(6) FEATURES INTERSECTED:	ROCK CREEK	A) STATE NAME:	
(7) FACILITY CARRIED:	CR 100 NORTH	B) PERCENT	%
(9) LOCATION:	00.50 W OF CR 400 W	(99) BORDER BRIDGE STRUCT. NO:	
(11) MILEPOINT:	0000.000		

STRUCTURE TYPE AND MATERIAL

(43) STRUCTURE TYPE, MAIN:		(45) NUMBER OF SPANS IN MAIN	002
A) KIND OF MATERIAL/DESIGN:	1 - Concrete	UNIT:	
B) TYPE OF DESIGN/CONSTR:	19 - Culvert (includes frame culverts)	(46) NUMBER OF APPROACH SPANS:	0000
(44) STRUCTURE TYPE, APPROACH SPANS:		(107) DECK STRUCTURE TYPE:	N - Not Applicable
A) KIND OF MATERIAL/DESIGN:	0 - Other	(108) WEARING SURFACE/PROT SYS:	
B) TYPE OF DESIGN/CONSTR:	00 - Other	A) WEARING SURFACE:	6 - Bituminous
		B) DECK MEMBRANE:	N - NA
		C) DECK PROTECTION:	N - NA

AGE OF SERVICE

(27) YEAR BUILT:	1920	(28) LANES:	
(106) YEAR RECONSTRUCTED:	1983	A) ON BRIDGE:	02
(42) TYPE OF SERVICE:		B) UNDER BRIDGE:	00
A) ON BRIDGE:	1 - Highway	(29) AVERAGE DAILY TRAFFIC:	000250
B) UNDER BRIDGE:	5 - Waterway	(30) YEAR OF AVERAGE DAILY TRAFFIC:	2019
		(109) AVERAGE DAILY TRUCK TRAFFIC:	03 %
		(19) BYPASS DETOUR LENGTH:	002 MI

Inspector: Bonnie L. Money
Inspection Date: 10/08/2020

Asset Name: 90-00106
Facility Carried: CR 100 NORTH

Bridge Inspection Report

GEOMETRIC DATA

(48) LENGTH OF MAX SPAN:	0043.4	FT	(35) STRUCTURE FLARED:	0 - No flare
(49) STRUCTURE LENGTH:	00087.5	FT	(10) INV RTE, MIN VERT CLEARANCE:	99.99 FT
(50) CURB/SIDEWALK WIDTHS:			(47) TOT HORIZ CLEARANCE:	017.8 FT
A) LEFT	00.0	FT	(53) VERT CLEAR OVER BR RDWY:	99.99 FT
B) RIGHT:	00.0	FT	(54) MIN VERTICAL UNDERCLEARANCE:	
(51) BRDG RDWY WIDTH CURB-TO-CURB:	017.8	FT	A) REFERENCE FEATURE:	N
(52) DECK WIDTH, OUT-TO-OUT:	020.5	FT	B) MIN VERT UNDERCLEAR:	0 FT
(32) APPROACH ROADWAY	015.0	FT	(55) LATERAL UNDERCLEARANCE RIGHT:	
(33) BRIDGE MEDIAN:	0 - No median		A) REFERENCE FEATURE:	N
(34) SKEW:	00	DEG	B) MIN LATERAL UNDERCLEAR:	000.0 FT
			(56) MIN LATERAL UNDERCLEAR ON LEFT:	000.0 FT

INSPECTIONS

(90) INSPECTION DATE:	10/08/2020	(91) DESIGNATED INSPECTION FREQUENCY:	12 MONTHS
(92) CRITICAL FEATURE INSPECTION:		(93) CRITICAL FEATURE INSPECTION DATE:	
A) FRACTURE CRITICAL REQUIRED/FREQUENCY:	N	A) FRACTURE CRITICAL DATE:	
B) UNDERWATER INSPECTION REQUIRED/FREQUENCY:	N	B) UNDERWATER INSP DATE:	
C) OTHER SPECIAL INSPECTION REQUIRED/FREQUENCY:	N	C) OTHER SPECIAL INSP DATE:	

CONDITION

(58) DECK:	N - Not Applicable	(60) SUBSTRUCTURE:	N - Not Applicable
(58.01) WEARING SURFACE:	5 - Fair Condition	(61) CHANNEL/CHANNEL PROTECTION:	7 - Bank protection needs minor repairs
(59) SUPERSTRUCTURE:	N - Not Applicable	(62) CULVERTS:	4 - Large spalls, heavy scaling, wide cracks

CONDITION COMMENTS

(58) DECK: N - Not Applicable

Comments:
N/A-UNDER FILL

(58.01) WEARING SURFACE: 5 - Fair Condition

Comments:
FAIR-SETTLED-CRACKS
Material: BITUMINOUS

(59) SUPERSTRUCTURE: N - Not Applicable

Comments:
N/A-UNDER FILL

Inspector: Bonnie L. Money
Inspection Date: 10/08/2020

Asset Name: 90-00106
Facility Carried: CR 100 NORTH

Bridge Inspection Report

(60) SUBSTRUCTURE: N - Not Applicable

Comments:
N/A-UNDER FILL

(61) CHANNEL/CHANNEL PROTECTION 7 - Bank protection needs minor repairs

Comments:
GOOD-BEDROCK-NO SCOUR
Material: NATURAL-CONCRETE TOEWALL

(62) CULVERTS: 4 - Large spalls, heavy scaling, wide cracks

Comments:
POOR -SPALLS-EXPOSED REBAR W/ OVER 50% SECTION LOSS-BROKEN REBAR-CRACKS-DETERIORATION-LEACHING
Material: REINFORCED CONCRETE ARCH UNDER FILL

LOAD RATING AND POSTING

(31) DESIGN LOAD:	0 - Unknown	(66) INVENTORY RATING:	27
(70) BRIDGE POSTING	5 - Equal to or above legal loads	(65) INVENTORY RATING METHOD:	0 - Field evaluation and documented engineering judgment
(41) STRUCTURE OPEN/POSTED/CLOSED:	A - Open	(66B) INVENTORY RATING (H):	16
(64) OPERATING RATING:	36	(66C) TONS POSTED :	
(63) OPERATING RATING METHOD:	0 - Field evaluation and documented engineering judgment	(66D) DATE POSTED/CLOSED:	

APPRAISAL

SUFFICIENCY RATING:	42.7	(36) TRAFFIC SAFETY FEATURE:	
STATUS:	1	36A) BRIDGE RAILINGS:	0
(67) STRUCTURAL EVALUATION:	4	36B) TRANSITIONS:	0
(68) DECK GEOMETRY:	2	36C) APPROACH GUARDRAIL:	0
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL:	N	36D) APPROACH GUARDRAIL ENDS:	0
(71) WATERWAY ADEQUACY:	7 - Slight Chance of Overtopping Bridge		
Comments:			
APPEARS ADEQUATE			
(72) APPROACH ROADWAY ALIGNMENT:	3 - Basically intolerable requiring high priority of corrective action		
Comments:			
FAIR-SETTLED-RAVELED Material: CHIP & SEAL			
(72): SERIOUS-IN SHARP REVERSE CURVE			
(113) SCOUR CRITICAL BRIDGES:	5 - Scour within limits of footing or piles		
Comments:			
STABLE - WITHIN LIMITS PER SCOUR ASSESSMENT FORM			

Inspector: Bonnie L. Money
Inspection Date: 10/08/2020

Asset Name: 90-00106
Facility Carried: CR 100 NORTH

Bridge Inspection Report

CLASSIFICATION

(20) TOLL:	3 - On Free Road	(21) MAINT. RESPONSIBILITY:	02 - County Highway Agency
(22) OWNER:	02 - County Highway Agency	(26) FUNCTIONAL CLASS OF INVENTORY RTE:	09 - Rural - Local
(37) HISTORICAL SIGNIFICANCE:	2 - Eligible for National Register	(100) STRAHNET HIGHWAY:	Not a STRAHNET route
(101) PARALLEL STRUCTURE:	N - No parallel structure	(102) DIRECTION OF TRAFFIC:	2-way traffic
(103) TEMPORARY STRUCTURE:		(104) HIGHWAY SYSTEM OF INVENTORY ROUTE:	0 - Structure/Route is NOT on NHS
(105) FEDERAL LANDS HIGHWAYS:	0-Not Applicable	(110) DESIGNATED NATIONAL NETWORK:	Inventory route not on network
(112) NBIS BRIDGE LENGTH:	Yes		

NAVIGATION DATA

(38) NAVIGATION CONTROL:	0 - No navigation control on waterway (bridge permit not required)	(39) NAVIGATION VERTICAL CLEAR:	000.0 FT
(111) PIER OR ABUTMENT PROTECTION:		(116) MINIMUM NAVIGATION VERT. CLEARANCE, VERT. LIFT BRIDGE:	FT
		(40) NAV HORIZONTAL CLEARANCE:	0000.0 FT

PROPOSED IMPROVEMENTS

(75A) TYPE OF WORK:	32 - Replacement - Relocation	(95) ROADWAY IMPROVEMENT COST:	\$ 000175
(75B) WORK DONE BY:	1 - Work to be done by contract	(96) TOTAL PROJECT COST:	\$ 000600
(76) LENGTH OF IMPROVEMENT:	000100. FT	(97) YR OF IMPROVEMENT COST EST:	2020
	0	(114) FUTURE AVG DAILY TRAFFIC:	000375
(94) BRIDGE IMPROVEMENT COST:	\$ 000425	(115) YR OF FUTURE ADT:	2039

no further comments

REVIEWED

By Mary Kennedy at 1:58 pm, Nov 13, 2019

HISTORIC BRIDGE ALTERNATIVES ANALYSIS



COUNTY: Wells County, Indiana

BRIDGE NUMBER: 90-00106

NBI NUMBER: 9000080

DESIGNATION NUMBER: 1702735

ROUTE IDENTIFICATION AND FEATURE CROSSED:

County Road 100 North over Rock Creek

PROJECT LOCATION: 00.50 miles West of CR 400W

40°45'31.44"N, 85°18'34.39"W

PREPARED BY:



DATE: October 31, 2019

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IV.	PROJECT'S PURPOSE AND NEED:	5
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APPENDICES

APPENDIX A – MAPS

APPENDIX B - PHOTOGRAPHS

APPENDIX C – DRAWINGS

APPENDIX D – ESTIMATE AND QUANTITIES

APPENDIX E – 2017 STRUCTURE INVENTORY AND APPRAISAL

II. EXISTING STRUCTURE DATA

This section provides a summary of the structural and geometric features of the existing County Road 100 N over Rock Creek

A. Identification/History

Bridge No.:	90-00106
NBI Number:	9000080
Project Location:	00.50 miles West of CR 400W
Des. No.:	1702735
Project No.:	1702735
Year Built:	1920
Years Repaired:	1983
Most Recent Field Inspection:	2018
Average Daily Traffic (ADT)/Year:	250 / 2017
Design Year ADT /Year:	320 / 2042
Percentage of Commercial Vehicles:	3%
Low Volume Road:	Yes
Functional Classification:	Rural Local
Detour Length:	2 miles
Load Rating:	H 16 (Inventory) = 16 tons HS 15 (Inventory) = 28 tons HS 20 (Operating) = 36 tons
Sufficiency Rating:	56.9
National Register of Historic Status:	Eligible
Historic Bridge Prioritization Status:	Select

Historic Character Features:	The character-defining features are the unsymmetrical concrete arches, pier pilasters and scored concrete railing.
------------------------------	--

B. Structure Dimensions

Surface Type:	Bituminous/Asphalt
Out-to-Out Copings	20'-6"
Out-to-Out of Bridge Floor	17'-9"
Clear Roadway Width:	17'-9"
Number of Lanes on Structure:	2 (FHWA Coding Guide Items 58 and 102)
Skew:	0°
Superstructure Type:	Reinforced Concrete Arch – Earth Filled
Span Lengths:	Two Span @ 43'-0", 43'-0"

	Type of Substructure/Foundation:	Reinforced concrete piers and abutments on spread footings
	Seismic Zone:	Zone 1
C.	<u>Appurtenances</u>	
	Bridge Railing:	Reinforced concrete bridge rail – stylized with cutout pattern
	Curbs:	N/A
	Median:	N/A
	Sidewalks:	N/a
	Utilities:	American Electric Power Citizens Telephone Company
	Railroad:	Not within the project limits
D.	<u>Approaches</u>	
	Clear Roadway:	15'-0"
	Surface Type:	Bituminous
	Guardrail Type:	None within the project area
	Guardrail Transition Type:	None
	Guardrail End Treatment Type:	None
E.	<u>Additional Information</u>	
	Posted Speed Limit:	30 mph

III. EXISTING CONDITIONS

See the Photographs in Appendix B for existing conditions in the project area. See Appendix “E” for the 2017 Structural Inventory and Appraisal Report for additional condition information.

- A. Bridge Deck** – The bridge deck is a bituminous surface overlaying unknown fill material. The wearing surface is in fair condition with cracks and settlement. The bridge railing is severely deteriorated with large areas of section loss and exposed reinforcement.
- B. Superstructure** – Because the structure is considered a reinforced concrete arch under fill, i.e. classified as a “culvert”, no rating for the Superstructure is noted in the Structural Inventory and Appraisal Report (SI&A). Conditions observed during the routine inspection noted spalls, exposed reinforcement, section loss of the reinforcement and extensive deterioration near the springline and arch barrel. Extensive section loss of the barrel has resulted in several voids behind the arch barrel.
- C. Substructure/Foundation:** Because the structure is considered a reinforced concrete arch under fill, i.e. classified as a “culvert”, no rating for the Substructure is noted in the Structural Inventory and Appraisal Report (SI&A). Conditions observed during the routine inspection noted spalls, exposed reinforcement, section loss of the reinforcement and extensive deterioration below the springline and at the pier faces. A toe wall was constructed around Pier 2 in 1983 due to the advanced deterioration of the pier and foundation.

D. **Approaches:** The narrow chip and seal approach roadway is settled and raveled. The alignment is considered poor since the bridge is located in a reverse curve.

E. **Slopedwalls:** No slopedwalls are present.

IV. PROJECT'S PURPOSE AND NEED:

Wells County Bridge 106, built in 1920, carries County Road 100 North over Rock Creek near Rockford, Indiana at the western edge of Wells County. The bridge, an 86' long two span reinforced concrete arch, is classified as a "Select" Historic Bridge for which the defining outstanding feature is the concrete arch. The bridge is currently rated for 16 tons (H Inventory Rating) and not posted for load.

Bridge 106 has a clear roadway width of 17'-9", and consists of a 12'-0" paved roadway with 2'-10.5" grass shoulders on each side. The existing concrete bridge rail does not meet Federal Highway Administration (FHWA) or INDOT current safety standards. (See IDM 49-6D(55).)

The primary need for this project is based on the deteriorated condition of the existing structure.

- **Condition:** The reinforced concrete arch is classified as a structure under fill and is classified under the general category of "culvert". Per the 2017 SI&A report Item 62, the bridge is rated 5 (fair condition) due to the poor condition of the existing bridge main components. Although not rated in the SI&A due to the type of structure (reinforced concrete arch under fill), individual components of the structure such as the spandrel walls, arch barrels, pier, foundations and bridge rail are deteriorated with leaching, numerous spalls, exposed reinforcement and voids behind the arch barrels. These, if rated, would be 5 (fair condition) to 4 (poor condition). In 1983, toe walls were added to the badly deteriorated Pier 2.
- **Capacity:** The bridge is currently rated for 16 tons (H Inventory) due to the poor condition of the concrete arches.
- **Safety:** The existing concrete bridge rail does not meet Federal Highway Administration (FHWA) or INDOT current safety standards. There is no existing approach rail.

The purpose of this project is to improve the condition of the historic arch bridge, provide a safe bridge railing, raise the condition rating of the bridge (and all individual components such as spandrel walls, arch barrels, pier, foundations and bridge rail) to good (7), and to extend the life of the bridge for at least another 25 years.

V. ALTERNATIVES:

Alternative A: No Build / Do Nothing

This alternative means no funds would be expended and no work would be done, including rehabilitation, to the bridge. This alternative would result in no environmental impacts and no impacts to the historic bridge. The bridge arch, spandrel walls, piers and foundation are in poor condition. Without rehabilitation, the bridge may last another 5-10 years before its condition will require posting for weight restrictions and extensive repairs. This alternative does not maintain a functional bridge crossing which meets current design standards for vehicular traffic. This alternative would lead to continued deterioration of the structure which will lead to posting for reduced capacity or closure of the bridge and impacts to local traffic patterns. The bypass detour length for this structure is 2 miles. This alternative does not meet the project purpose and need. Therefore, the Do Nothing Alternative is not considered prudent.

Alternative B: Rehabilitation of Existing Structure for Continued Vehicular Use (one-lane option*)

This alternative would consist of rehabilitating the existing structure in accordance with the Secretary of Interior's Standards for Rehabilitation or as close to the Secretary's Standards as is practicable.

The structure would continue to serve as a one-lane bridge. The existing bridge surface, spandrel walls, arch barrel, bridge rail and foundation would be repaired or replaced as necessary.

The proposed bridge rehabilitation work would include the following:

- Remove the asphalt overlay, existing concrete deck, and arch fill; Replace existing fill with clean fill and install new reinforced concrete deck.
- Replace attached bridge rail and curb.
- Clean and patch the arch rings, spandrel walls, and pier.
- Install a waterproofing membrane to the top of the arch ring to minimize the infiltration of water and salts onto the arch
- Install embedded galvanic anodes in conjunction with arch, spandrel wall and pier patching to protect and slow the rate of corrosion of the existing steel reinforcement.
- Develop a new drainage system to provide positive drainage of the bridge deck and earth fill.

The proposed work would raise the condition ratings to good and extend the life of the bridge by at least 25 years.

FIGURE B: SUMMARY OF BRIDGE'S EXISTING DESIGN ELEMENTS AND APPLICABLE DESIGN CRITERIA:

Design Element	Design Manual Section	Minimum Design Criteria	Existing Condition	Proposed Condition	Design Exception Required
Travel Lane	412-5.03	10 ft	12 ft	12 ft	No
Shoulder	55-4.05	2 ft	2'-10.5"	2'-10.5"	No
Structural Capacity	412-5.03	HS-15	HS-15	HS-15	No
Clear Roadway Width	412-5.03	16 ft	17.8 ft	17.8 ft	No
Vertical Clearance	55-6.0	N/A	N/A	N/A	N/A
Bridge Railing	412-5.03	TL-2	Not Tested	TL-2	No
Vertical Alignment Stopping Sight Distance	42-1.02	200'	200'	200'	No
Maximum Grade	55-4.04	12%	2.73%	2.73%	No

The bridge has a design year ADT of 320 VPD (2042) and a detour length of approximately 2 miles. The minimum clear roadway width for a one-lane bridge with a design year ADT between 100 and 400 vehicles per day is 16 ft (see Indiana Design Manual Figure 412-2B.) The existing bridge roadway is 17.8 ft.

According to the Northeastern Indiana Regional Coordinating Council, there were only three crashes near this location from 2009-2017. None of the accidents occurred on the bridge or were due to the existing bridge. The existing bridge railing is damaged with spalls and exposed reinforcement and extensive scaling along the surfaces. Subsequently, per IDM 412-5.03 Design Criteria, the bridge rail would be replaced in kind to the extent possible with reinforcement modifications necessary to meet TL-2 crash test criteria.

No additional right of way would be required for this alternative. With a drainage area of over 80 square miles, this project will require an IDNR Construction in a Floodway Permit. An IDEM Section 401 Water Quality Permit and a USACE Section 404 Permit will also be required if any work is to be performed below the Ordinary High Water Mark. An IDEM Rule 5 Permit is not anticipated since the disturbed area would likely be less than one acre.

The estimated cost to rehabilitate the bridge in accordance with the Secretary of Interior's Standards for Rehabilitation is \$292,600.

This alternative meets the purpose and need of the project and is feasible and prudent. Deteriorated components of the bridge, such as the arch ring, spandrel walls, piers, abutments and bridge rail, would be returned to near original condition, enhancing the overall appearance of the bridge, structural capacity and importance to the community. Therefore, this is the preferred alternative and no additional options will be analyzed at this time.

VI. MINIMIZATION AND MITIGATION

Per the terms of the "Programmatic Agreement Regarding Management and Preservation of Indiana's Historic Bridges" (Historic Bridges PA), the plans for work on this bridge will follow the Secretary of Interior's Standards for Rehabilitation as outlined in Attachment B (Standard Treatment Approach for Historic Bridges).

- A. The following measures have been considered in order to minimize harm to the existing, historic bridge for any alternative involving rehabilitation:
 - Alterations to the superstructure will not significantly change the character defining features of the existing bridge.
 - The new bridge rail will match the details of the existing bridge rail as closely as possible, while providing a crash test level of TL-2.
- B. The bridge owner will consult with the Indiana SHPO to determine if photo documentation of the bridge is needed.
- C. Per Attachment B, rehabilitation plans will be provided to the Indiana SHPO when the design is approximately 30% complete, 60% complete, and when final design plans are complete.