

Categorical Exclusion

Appendix D

**Section 106 of the National Historic
Preservation Act (NHPA)**

Minor Projects PA Project Assessment Form

Date: 2/12/2021

Project Designation Number: 1901370

Route Number: State Road (SR) 244

Project Description: Slide Correction Project at N Branch Clifty Creek, S Side Roadway, 4.79 mi East SR 3

The proposed project will involve the excavation and reconstruction of the existing North Fork Clifty Creek bank to a slope of 2:1 with riprap for approximately 90 feet. The riprap embankment will extend under the eastbound lane and shoulder and extend out to the existing creek bottom. The channel will naturally realign with assistance of four stone spurs per recommendations from INDOT Hydraulics. Three spurs will be placed perpendicular to the channel and the furthest upstream will be placed at an angle.

The existing eastbound travel lane will be widened from 11 feet to 12 feet and the eastbound shoulder will be widened from 1 foot to 4 feet where guardrail is proposed. The westbound earth shoulder will be widened to accommodate a future pavement widening project and also include ditch construction. The guardrail along the eastbound lane will be reconstructed and extended to tie-into the existing bridge. A new riprap turnout will be constructed on the south side of the bridge. No work is expected on Bridge No. 244-70-05846 A or the bridge approach except for the new guardrail and riprap turnout. Within the project area, SR 244 is functionally classified as a major collector. The typical cross-section of SR 244 is two 11-foot-wide travel lanes (one in each direction) and a 1-foot paved shoulder on both sides of the roadway.

A roadside ditch will be constructed along the westbound lane from the beginning of the project to the North Fork of Clifty Creek at the bridge. In addition, one tree will be removed from the north side of the road adjacent to the existing bridge. The maintenance of traffic (MOT) plan will involve lane closures along SR 244. It is anticipated traffic will be maintained via temporary traffic signals during the lane closures. Access will be maintained for property owners during construction of the project. The MOT will be implemented per the Indiana Design Manual guidelines.

The title to the existing right-of-way (ROW) along this section of SR 244 is uncertain, making the edge of pavement the presumed apparent right-of-way. Approximately 0.5 acre of permanent ROW is anticipated to be required for the proposed project. No temporary ROW is anticipated. The project is anticipated to require approximately 0.15 acre of tree clearing.

Feature crossed (if applicable): North Fork Clifty Creek

City/Township: Milroy/Richland Township

County: Rush County

Information reviewed (please check all that apply):

- General project location map USGS map Aerial photograph Interim Report
 Written description of project area General project area photos Soil survey data
 Previously completed historic property reports Previously completed archaeology reports
 Bridge Inspection Information SHAARD SHAARD GIS Streetview Imagery

Other (please specify): Indiana State Historic Architectural and Archaeological Research Database (SHAARD); Indiana Buildings, Bridges, and Cemeteries Map website; *Rush County Interim Report*; online street-view imagery; ArcMap GIS; Rush County GIS (accessed via <https://beacon.schneidercorp.com>); MPPA Submission Form Section 1 (including maps and photographs) sent by Lochmueller Group, dated January 26th, 2021 and on file at INDOT CRO.

Minor Projects PA Project Assessment Form

Kuns, Erin, George Mankowski, Jessica White, and Melody Pope

2004 Archaeological Phase Ia Survey for Road Rehabilitation on State Route 244 from 1.40 km East of State Road 3 to US 52 in Rush and Franklin Counties, Indiana Project STP-199-6(), Des. No. 9905490. Glenn A. Black Laboratory of Archaeology, Bloomington, Indiana. Report on file, Indiana Department of Transportation, Cultural Resources Office, Indianapolis, In.

Kelley, Lisa J.

2021 A Phase Ia Archaeological Reconnaissance Survey for the Proposed SR 244 Slide Correction at North Branch of Clifty Creek Approximately 4.79 Miles East of SR 3 in Rush County, Indiana (INDOT Des No. 1901370). Report on file, Indiana Department of Transportation, Cultural Resources Office, Indianapolis, In.

Please specify all applicable categories and condition(s) (conditions that are applicable are highlighted):

B-3. Construction of added travel, turning, or auxiliary lanes (e.g., bicycle, truck climbing, acceleration and deceleration lanes) and shoulder widening under the following conditions **[BOTH Condition A, which pertains to Archaeological Resources, and Condition B, which pertains to Above-Ground Resources, must be satisfied]**:

Condition A (Archaeological Resources)

One of the two conditions listed below must be met (*EITHER Condition i or Condition ii must be satisfied*):

- i. Work occurs in previously disturbed soils; *OR*
- ii. Work occurs in undisturbed soils and an archaeological investigation conducted by the applicant and reviewed by INDOT Cultural Resources Office determines that no National Register-listed or potentially National Register-eligible archaeological resources are present within the project area. If the archaeological investigation locates National Register-listed or potentially National Register-eligible archaeological resources, then full Section 106 review will be required. Copies of any archaeological reports prepared for the project will be provided to the DHPA and any archaeological site form information will be entered directly into the SHAARD by the applicant. The archaeological reports will also be available for viewing (by Tribes only) on INSCOPE.

Condition B (Above-Ground Resources)

Work does not occur adjacent to or within a National Register-listed or National Register-eligible district or individual above-ground resource.

B-10. Slide corrections, slope repairs, and other erosion control measures, in undisturbed soils under the conditions listed below **[BOTH Condition A, which pertains to Archaeological Resources, and Condition B, which pertains to Above-Ground Resources, must be satisfied]**:

Condition A (Archaeological Resources)

An archaeological investigation conducted by the applicant and reviewed by INDOT Cultural Resources Office determines that no National Register-listed or potentially National Register-eligible archaeological resources are present within the project area. If the archaeological investigation locates National Register listed or potentially National Register eligible archaeological resources, then full Section 106 review will be required. Copies of any reports will be provided to the DHPA and any archaeological site form information will be entered directly into the SHAARD by the applicant. The archaeological reports will also be available for viewing (by Tribes only) on INSCOPE.

Condition B (Above-Ground Resources)

Work does not occur adjacent to or within a National Register-listed or National Register-eligible district or individual above-ground resource.

Are there any commitments associated with this project? If yes, please explain and include in the Additional Comments Section below. yes no

Minor Projects PA Project Assessment Form

Does the project result in a de minimis impact to a Section 4(f) protected historic resource? If yes, please explain in the Additional Comments Section below. yes no

Additional Comments:

Above-ground Resources

An INDOT Cultural Resources Office (CRO) historian, who met the Secretary of the Interior's Professional Qualification Standards as per 36 CFR Part 61 performed a desktop review, checking the Indiana Register of Historic Sites and Structures (State Register) and National Register of Historic Places (National Register) list for Rush County. No National or State Register-listed resources are located immediately adjacent to the project area, a distance that serves as an adequate potential area of effects given the project scope and terrain.

The Indiana Historic Sites and Structures Inventory (IHSSI) and National Register information for Rush County are available in the Indiana State Historic Architectural and Archaeological Research Database (SHAARD) and the Indiana Historic Buildings, Bridges, and Cemeteries Map (IHBBCM). The *Rush County Interim Report (1988; Richland Township)* of the Indiana Historic Sites and Structures Inventory (IHSSI) were also consulted. An INDOT-CRO historian reviewed the SHAARD Online Map and checked it against the Interim Report hard-copy maps. All sites were reviewed through the IHBBCM, which contains the most recently updated SHAARD information. No IHSSI documented resources are located immediately adjacent to the project area.

According to the IHSSI rating system, generally properties rated "contributing" do not possess the level of historical or architectural significance necessary to be considered individually National Register-eligible, although they would contribute to a historic district. If they retain material integrity, properties rated "notable" might possess the necessary level of significance after further research. Properties rated "outstanding" usually possess the necessary level of significance to be considered National Register eligible if they retain material integrity.

The INDOT-CRO historian reviewed structures adjacent to the project area utilizing online aerial and street-view photography, as well as the Rush County GIS website. The project area is located along a two-lane state highway in a rural agricultural setting. Agricultural fields and a late twentieth century farmhouse and farm buildings are immediately adjacent to the project area. None of the resources located immediately adjacent to the project area appear to possess the significance or integrity required to be considered National Register-eligible.

Based on the available information, as summarized above, no above-ground concerns exist.

Archaeological Resources

An INDOT Cultural Resources Office (CRO) archaeologist, who meets the Secretary of the Interior's Professional Qualification Standards as per 36 CFR Part 61, reviewed the archaeology report submitted by Lisa J. Kelley of Cultural Resource Analysts, Inc., on behalf of Lochmueller Group, Inc., January 20, 2021.

An archaeological records check and Phase Ia reconnaissance survey of the project area were conducted by CRA, Inc., (Kelley 2021). The records review revealed that one previously conducted investigation covered the entire survey area through a series of unscreened, shovel probes. The previous investigation from 2004, recorded one archaeology site (12Ru609) that is located within the current survey area. Site 12Ru609, is a historic artifact scatter that was determined to be not eligible for inclusion in the NRHP. The present survey conducted by Kelley (2021), examined a 1.79-acre survey area through the excavation of shovel probes and visual inspection of disturbed areas. The investigation documented additional historic artifacts from the site and expanded the site boundary. However, nothing was found to suggest that the site retains archaeological integrity or research potential, and it appears to remain ineligible for inclusion in the NRHP. Therefore, no further archaeological work is recommended for the proposed slide correction project and it was recommended that the project be allowed to proceed as planned. It is our opinion that the report is acceptable, and we concur with the evaluations and recommendations made by CRA, Inc., (Kelley 2021). Therefore, there are no archaeological concerns.

Minor Projects PA Project Assessment Form

Accidental Discovery: If any archaeological artifacts or human remains are uncovered during construction, demolition, or earth moving activities, construction within 100 feet of the discovery will be stopped, and the INDOT Cultural Resources Office and the Division of Historic Preservation and Archaeology will be notified immediately.

INDOT Cultural Resources staff reviewer(s): Patricia Jo Korzeniewski and Clint Kelly

****Be sure to attach this form to the National Environmental Policy Act documentation for this project. Also, the NEPA documentation shall reference and include the description of the specific stipulation in the PA that qualifies the project as exempt from further Section 106 review.*

Categorical Exclusion

Appendix E

**Red Flag Investigation
& Hazardous Materials**



INDIANA DEPARTMENT OF TRANSPORTATION

100 North Senate Avenue
Room N642
Indianapolis, Indiana 46204

PHONE: (317) 232-5113
FAX: (317) 233-4929

Eric Holcomb, Governor
Joe McGuinness,
Commissioner

Date: November 22, 2019

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

From: Samantha Beaupre
Lochmueller Group, Inc.
3502 Woodview Trace, Suite 150
Indianapolis, Indiana 46268
SBeaupre@lochgroup.com

Re: RED FLAG INVESTIGATION
Des. No. 1901370, State Project
Slide Correction Project
SR 244, 4.79 miles east of SR 3
Rush County, Indiana

PROJECT DESCRIPTION

Brief Description of Project: The Indiana Department of Transportation (INDOT), Greenfield District and the Federal Highway Administration (FHWA) plan to proceed with a slide correction project along SR 244, 4.79 miles east of SR 3. The project is anticipated to install gabion baskets or an alternative slide correction measure to stop further erosion along the banks of the North Branch of Clifty Creek and prevent further slipping of the guardrail and shoulder of SR 244. A portion of the guardrail has been weakened by embankment movement. This guardrail will be removed and replaced. To accommodate the proposed guardrail, the eastbound shoulder will be widened as a part of this project. A roadside ditch will be constructed along the eastbound and westbound lanes within the project area to facilitate drainage. Additionally, the project may involve removal of fallen trees to minimize the effect of the embankment erosion.

Bridge and/or Culvert Project: Yes No Structure # _____

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 _____ Permanent # Acres 0.5, Not Applicable

Type of excavation: The maximum depth of excavation will be 15 feet for the placement of the slide correction measures and construction of a roadside ditch.

Maintenance of traffic: The maintenance of traffic for this project will likely involve lane closures and the use of a temporary signal. Signs will be posted notifying motorists of the lane closure.

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

State Project: LPA:

Any other factors influencing recommendations: N/A

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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	2	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: Two (2) cemeteries are mapped within the 0.5 mile search radius. The two points represent the same cemetery, Richland Cemetery, which is located 0.39 mile northeast from the project area. No impact is expected.

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	5
Canal Structures – Historic	N/A	Lakes	1
NPS NRI Listed	N/A	Floodplain - DFIRM	1
NWI-Lines	12	Cave Entrance Density	N/A
IDEM 303d Listed Streams and Lakes (Impaired)	2	Sinkhole Areas	N/A
Rivers and Streams	5	Sinking-Stream Basins	N/A

Explanation:

NWI-Lines: Twelve (12) NWI-Line segments are located within the 0.5 mile search radius. Two (2) NWI-line segments are located within the project area. A Waters of the US Report will be prepared and coordination with INDOT ES Ecology and Waterway Permitting will occur.

IDEM 303d Listed Streams and Lakes (Impaired): Two (2) impaired stream segments are located within the 0.5 mile search radius. One (1) stream, North Branch Clifty Creek, is located within the project area and is impaired for *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.

Rivers and Streams: Five (5) stream segments are located within the 0.5 mile search radius. One (1) stream, North Branch Clifty Creek, is located within the project area. A Waters of the US Report will be prepared and coordination with INDOT ES Ecology and Waterway Permitting will occur.

NWI-Wetlands: Five (5) NWI-Wetland polygons are located within the 0.5 mile search radius. The nearest wetland is located 0.08 mile southwest of the project area. No impact is expected.

Lakes: One (1) lake is located within the 0.5 mile search radius. The lake is located 0.48 mile northeast from the project area. No impact is expected.

Floodplain-DFIRM: One (1) floodplain polygon is located within the 0.5 mile search radius. The project area is located within one of the floodplain polygons. Coordination with INDOT Ecology and Waterway Permitting will occur.

URBANIZED AREA BOUNDARY SUMMARY

Explanation: The project is not located 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	N/A	Mineral Resources	N/A
Mines – Surface	N/A	Mines – Underground	N/A

Explanation: No Mining/Mineral Exploration resources were identified within the 0.5 mile search radius.

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	N/A
RCRA Corrective Action Sites	N/A	Restricted Waste Sites	N/A
State Cleanup Sites	N/A	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	N/A	NPDES Facilities	N/A
Infectious/Medical Waste Sites	N/A	NPDES Pipe Locations	N/A
Leaking Underground Storage (LUST) Sites	N/A	Notice of Contamination Sites	N/A

Explanation:

No Hazardous Material Concerns resources were identified within the 0.5 mile search radius.

ECOLOGICAL INFORMATION SUMMARY

The Rush 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 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".

An inquiry using the USFWS Information for Planning and Consultation (IPaC) website did not indicate the presence of the federally endangered species, the Rusty Patched Bumble Bee, in or within 0.5 mile of the project area. No impact is expected.

RECOMMENDATIONS SECTION

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

INFRASTRUCTURE: N/A

WATER RESOURCES: The presence of the following water resources will require the preparation of a Waters of the US Report and coordination with INDOT ES Ecology and Waterway Permitting:

- Two NWI-line segments are located within the project area.
- One stream, North Branch Clifty Creek, is located within the project area.
- The project area is located within one of the floodplain polygons (coordination only).

One stream, North Branch Clifty Creek, is located within the project area and is impaired for *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.

URBANIZED AREA BOUNDARY: N/A

MINING/MINERAL EXPLORATION: N/A

HAZMAT 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: 2019.12.06 21:45:01 -05'00' (Signature)

Prepared by:



Samantha Beaupre
Environmental Biologist
Lochmueller Group, Inc.

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

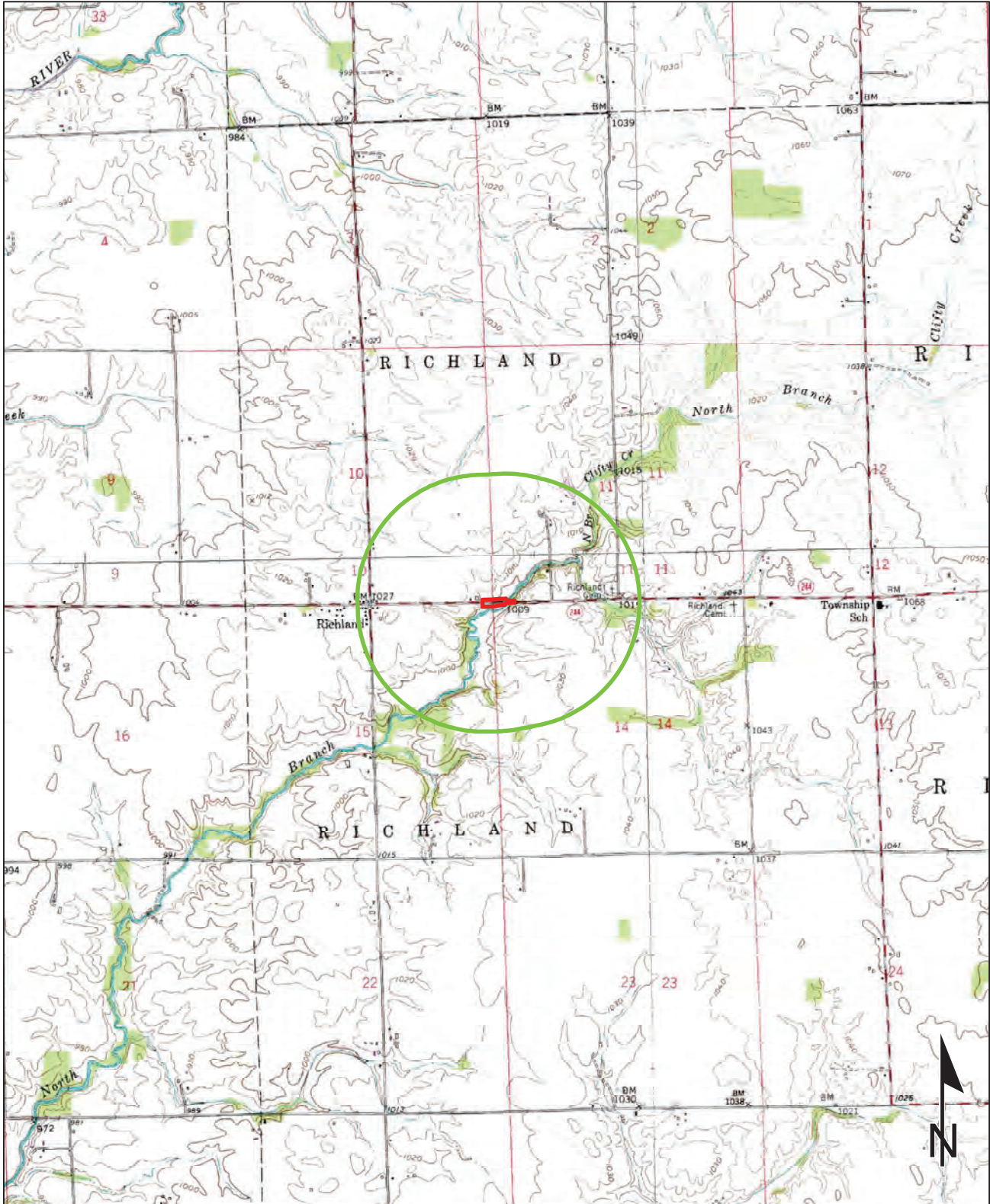
MINING/MINERAL EXPLORATION: N/A

HAZARDOUS MATERIAL CONCERNS: N/A

Supplemental Graphics:

Rush County ETR List

Red Flag Investigation - Site Location
 SR 244, 4.79 miles east of SR 3
 Des. No. 1901370, Slide Correction Project
 Rush County, Indiana



Sources: 0.5 0.25 0 0.5 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.

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

Red Flag Investigation - Infrastructure
 SR 244, 4.79 miles east of SR 3
 Des. No. 1901370, Slide Correction Project
 Rush County, Indiana



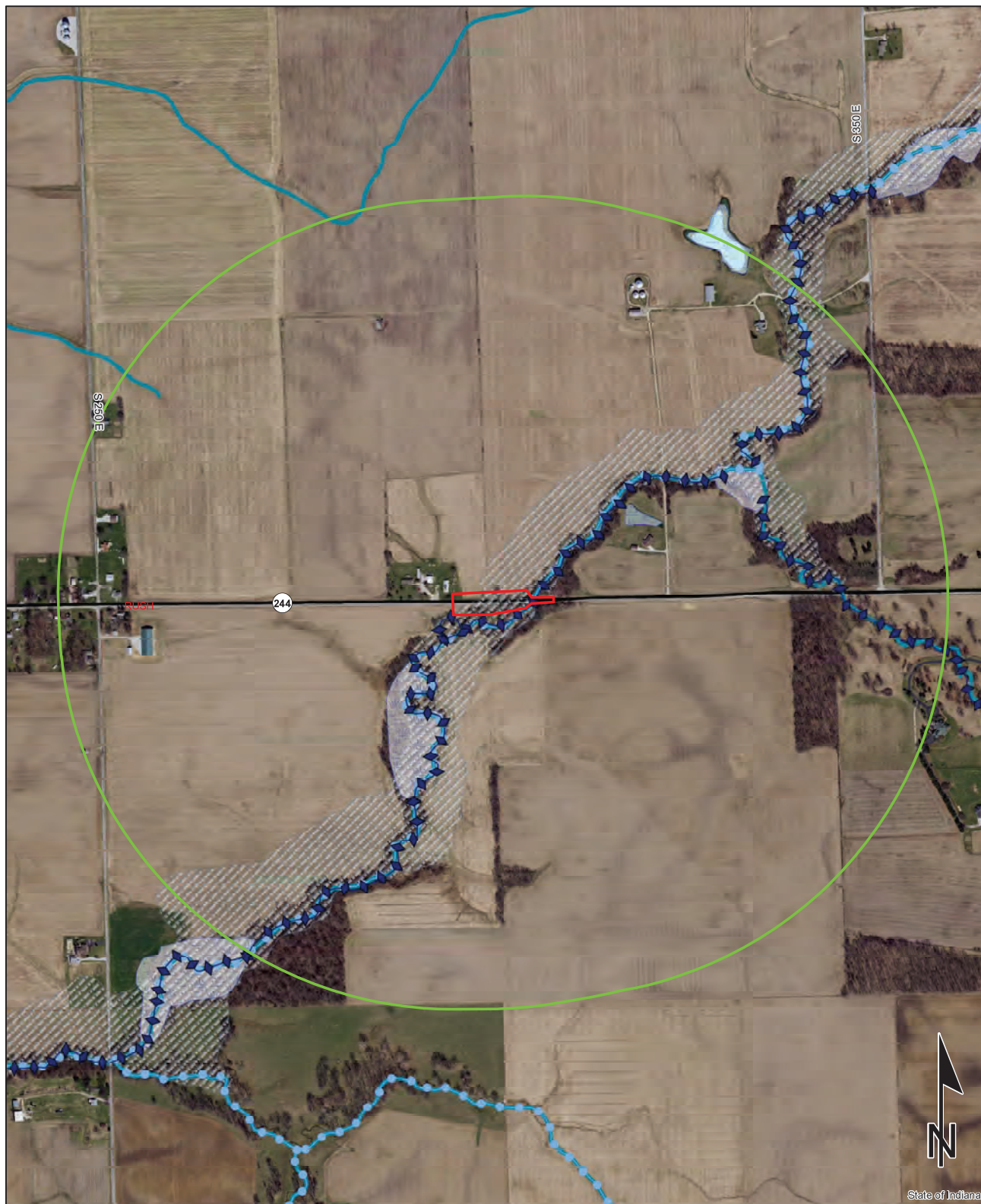
State of Indiana

Sources: 0.15 0.075 0 0.15
 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.

	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
 SR 244, 4.79 miles east of SR 3
 Des. No. 1901370, Slide Correction Project
 Rush County, Indiana



Sources: 0.15 0.075 0 0.15 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.

NWI - Point	Wetlands	Project Area
Karst Spring	Lake	Half Mile Radius
NWI- Line	Floodplain - DFIRM	Toll
Impaired_Stream_Lake	Cave Entrance Density	Interstate
NPS NRI listed	Sinkhole Area	State Route
River	Sinking-Stream Basin	US Route
Canal Structure - Historic	County Boundary	Local Road
Canal Route - Historic		

Indiana County Endangered, Threatened and Rare Species List

County: Rush

Species Name	Common Name	FED	STATE	GRANK	SRANK
Mollusk: Bivalvia (Mussels)					
Lampsilis fasciola	Wavyrayed Lampmussel		SSC	G5	S3
Pleurobema clava	Clubshell	LE	SE	G1G2	S1
Ptychobranthus fasciolaris	Kidneyshell		SSC	G4G5	S2
Toxolasma lividus	Purple Lilliput	C	SSC	G3Q	S2
Villosa lienosa	Little Spectaclecase		SSC	G5	S3
Reptile					
Clonophis kirtlandii	Kirtland's Snake		SE	G2	S2
Bird					
Haliaeetus leucocephalus	Bald Eagle		SSC	G5	S2
Lanius ludovicianus	Loggerhead Shrike		SE	G4	S3B
Tyto alba	Barn Owl		SE	G5	S2
Mammal					
Myotis sodalis	Indiana Bat	LE	SE	G2	S1
Nycticeius humeralis	Evening Bat		SE	G5	S1
Taxidea taxus	American Badger		SSC	G5	S2
Vascular Plant					
Carex cephaloidea	Thinleaf Sedge		ST	G5	S2
Crataegus coccinea var. coccinea	Scarlet Hawthorn		ST	G5	S2
High Quality Natural Community					
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: 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

Categorical Exclusion
Appendix F
Water Resources

Juliana Clayton

Approved 1.28.21

SR 244 SLIDE CORRECTION PROJECT RUSH COUNTY, IN

January 12, 2021

Waters of the U.S. Report

Prepared by:

Samantha Beaupre

**Prepared For: INDOT
Des. No. 1901370**



Lochmueller Group, Inc.

3502 Woodview Trace #150

Indianapolis, Indiana 46268

Phone: 317.222.3880

**Waters of the U.S. Determination
State Road (SR) 244 Slide Correction Project
Rush County, Indiana
Des. No. 1901370**

Date(s) of Field Reconnaissance

October 12, 2020

Location

The project is located along SR 244, approximately 4.79 miles east of SR 3 in Rush County, Indiana (pages A1 to A3).

- Sections 10, 11, 14, and 15; Township 12 North, Range 10 East
- Milroy 1:24,000 United States Geological Survey (USGS) Quadrangle
- Richland Township, Rush County, Indiana
- Latitude: 39.4972953° N Longitude: -85.3860862° W

Project Description

The Federal Highway Administration (FHWA) and the Indiana Department of Transportation (INDOT), Greenfield District propose to proceed with a slide correction project on SR 244, 4.79 miles east of SR 3 in Rush County, Indiana (Des. No. 1901370). The proposed project will involve the excavation and reconstruction of the existing North Fork Clifty Creek bank and four stone spurs will be used to minimize erosion. The existing eastbound travel lane will be widened from 11 feet to 12 feet wide and the eastbound shoulder will be widened from 1 foot to 4 feet wide. Additionally, a mill and overlay is proposed for the existing pavement of the eastbound lane within the project limits. The guardrail on the eastbound side of the roadway will be reconstructed and extended to the bridge concrete barriers. A new riprap turnout will be constructed in the southwest quadrant of the project area. No work is expected on Bridge No. 244-70-05846 A or the bridge approach except for the new guardrail and riprap turnout.

One stream, North Fork Clifty Creek, was identified within the survey area. One roadside ditch was identified within the survey area. Surrounding landscape consists of agricultural, residential, forest, maintained roadside, and riparian corridor. The project survey area is located within a mapped floodplain.

Soils

According to the Soil Survey Geographic (SSURGO) Database for Rush County, Indiana, the survey area contains soils that are mapped as hydric (pages A4 to A7).

Rush County

Soil Name	Map Abbreviation	Hydric Range
Miami clay loam	MoC3	Not Hydric (0%)
Russell silt loam	RuB	Low Hydric (1-32%)
Shoals silt loam	Sh	Low Hydric (1-32%)

National Wetlands Inventory Information

There are two National Wetland Inventory (NWI) wetlands, R2UBH and PFO1A, identified within the survey area (page A8). The nearest wetland outside the survey area is a PFO1A wetland located 400 feet



southwest from the survey area. The U.S. Fish and Wildlife NWI Mapper (<https://www.fws.gov/wetlands/data/mapper.html>) includes the following wetlands within and near the SR 244 Slide Correction Project survey area. Wetland type is based on *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin *et al.* 1979).

Wetland Type	Description	Location: Lat/Long
R2UBH	Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded	39.497°N -85.385°W
PFO1A	Palustrine, Forested, Broad-Leaved Deciduous, Temporary Flooded	39.498°N -85.385°W
PFO1A	Palustrine, Forested, Broad-Leaved Deciduous, Temporary Flooded	39.496°N -85.388°W

National Hydrography Dataset:

A review of the National Hydrography Dataset (NHD) indicated that there are two flow lines within the survey area. Both flow lines were confirmed in the field as North Fork Clifty Creek and a roadside ditch (page A11).

12-Digit HUC

The SR 244 Slide Correction Project survey area is within the 051202060101 12-Digit HUC (North Branch-Clifty Creek) watershed. The Federal Emergency Management Administration (FEMA) Flood Map Service Center (<https://msc.fema.gov/portal/advanceSearch>) indicates that the survey area is within a mapped floodplain (page A9). The survey area is not within a regulatory floodway. The base flood elevation of North Fork Clifty Creek within the survey area is 1001.4 feet.

Attached Documents

- Project Location Map
- USGS Topographic Map (1:24,000)
- USGS Topographic Map (1:12,000)
- Rush County SSURGO Hydric Soils Map
- USFWS NWI Map
- FEMA FIRMette Map
- USGS StreamStats Map
- Water Resources Map
- Photo Location Map and Project Photos
- Wetland Data Sheet
- USACE Preliminary Jurisdictional Determination Form

Field Reconnaissance

The Waters of the U.S. (WOTUS) survey area limits were established based on the scope of work expected for the SR 244 Slide Correction project. Wetland determinations were conducted in accordance with the *Corps of Engineers Wetland Delineation Manual* (U.S. Army Corps of Engineers 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region Version 2.0* (U.S. Army Corps of Engineers 2010). Wetland Data sheets from the U.S. Army Corps of Engineers Detroit District website (<https://www.lre.usace.army.mil/Missions/Regulatory-Program-and-Permits/Automated-Wetland-Determination-Data-Form/>) were used to make wetland determinations. Due to discrepancies within the data sheets for soil indicator (S7) and red parent material (F21) between the Midwest Region



Version 2.0 manual and the Detroit District, all methods remained consistent with the Midwest Region Version 2.0 manual. One stream and one roadside ditch were identified during the field reconnaissance.

Stream Feature(s)

The USGS Milroy 1:24,000 topographic quadrangle identified one perennial blue-line stream feature within the survey area for the SR 244 Slide Correction project (pages A2 and A3). The NHD GIS dataset included two flow line features within the survey area. Field investigations concluded that one of the flowlines represented North Fork Clifty Creek. North Fork Clifty Creek exhibited bed and bank and an ordinary high water mark (OHWM).

North Fork Clifty Creek

North Fork Clifty Creek is a perennial stream that flows from northeast to southwest through the survey area, under SR 244 (page A11). North Fork Clifty Creek then flows west and shifts north back toward the roadway in the southwest part of the survey area. North Fork Clifty Creek curves west along the southside of the road and then curves back to the south. According to the U.S. Fish and Wildlife NWI Mapper, North Fork Clifty Creek is classified both as Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded (R2UBH) and Palustrine, Forested, Broad-Leaved Deciduous, Temporary Flooded (PFO1A) within the survey area. Approximately 286 feet of the stream is within the survey area. The OHWM of North Fork Clifty Creek was measured at 34 feet wide and 5.2 feet deep. The upstream drainage area is 7.906 square miles. The substrate at this reach of North Fork Clifty Creek is cobble (20%), sand (30%), and silt (50%). Riffles were not identified but a large pool was present. North Fork Clifty Creek is a natural channel. North Fork Clifty Creek has narrow forested riparian area both upstream and downstream of the channel with agricultural fields surrounding the riparian zone. This stream reach is considered to exhibit average quality based on the pools, meandering channel, and availability of cover.

North Fork Clifty Creek would likely be considered a jurisdictional resource due to its designation as a perennial channel, status as a relatively permanent water (RPW), and connectivity to the East Fork of the White River, via Clifty Creek. The East Fork of the White River is a traditionally navigable water (TNW) from its junction with the White River 189 river miles to its junction with the Flatrock and Driftwood Rivers (near Columbus). Therefore, North Fork Clifty Creek is subject to USACE jurisdiction under section 404 of the Clean Water Act.

Stream Summary Table

Water Feature Name	Photos	Lat/Long	OHW Width (ft)	OHW Depth (ft)	USGS Blue-line? Type?	Riffles? Pools?	Quality	Substrate	Likely Waters of U.S.?
North Fork Clifty Creek	6-10, 21-22, 25-26, 29, 31-36	39.497286°N -85.385381°W	34	5.20	Yes Perennial	No Yes	Average	Cobble, Sand, Silt	Yes

Wetlands

No wetland features were identified within the survey area. One data point, DP 1, was taken on the south side of SR 244, in a forested area adjacent to North Fork Clifty Creek. The area had wetland hydrology



indicators and a mixture of wetland and upland vegetation. The data point did not meet hydric soils indicators, therefore was determined to be non-wetland.

DP 1:

DP 1 was taken on the south side of SR 244, in a forested area due to signs of wetland vegetation and hydrology being present. Due to the presence of the roadway embankment to the north and North Clifty Creek to the east and west, DP 1 is the best representation of the conditions along the south side of SR 244. Vegetation within the herbaceous stratum was dominated by panicled aster (*Symphotrichum lanceolatum*, FAC) and buckwheat (*Fagopyrum esculentum*, UPL). The shrub stratum was dominated by boxelder (*Acer negundo*, FAC) and hackberry (*Celtis occidentalis*, FAC). The tree stratum was dominated by boxelder (*Acer negundo*, FAC), honey locust (*Gleditsia triacanthos*, FACU), osage orange (*Maclura pomifera*, FACU), and green ash (*Fraxinus pennsylvanica*, FACW). The vegetation at this data point met the Dominance Test; therefore, hydrophytic vegetation is present. Soils were excavated to a depth of 20 inches with a profile of: 0 to 8 inches 10YR 4/1 (100%) with a loamy/clayey texture and 8 to 20 inches 10YR 4/2 (100%) with a loamy/clayey texture. This soil profile does not meet any indicators of hydric soils; therefore, hydric soil is not present. Primary indicators of wetland hydrology included Drift Deposits (B3). Secondary indicators of wetland hydrology included Crayfish Burrows (C8). Therefore, wetland hydrology is present. DP1 only met two of the three wetland indicators and therefore is not within a wetland.

Data Point Summary Table

Data Point	Vegetation	Soils	Hydrology	Wetland
DP1	Yes	No	Yes	No

Open Water

Open water features were not identified within the survey area.

Roadside Ditch

One roadside ditch was identified within the investigation area, on the north side of SR 244. This roadside ditch lacked a defined bed and bank and therefore would not be considered a jurisdictional feature. The roadside ditch appears to be a constructed feature to carry drainage to North Clifty Creek. The roadside ditch can be seen in photos 18-20 and 27-28. No other roadside ditch features were identified within the investigation area.

Conclusions

The October 12, 2020 field review for the SR 244 Slide Correction Project identified one stream, North Fork Clifty Creek, within the survey area. North Fork Clifty Creek would be subject to USACE jurisdiction under section 404 of the Clean Water Act due to its designation as a perennial channel, status as a relatively permanent water (RPW), and connectivity to the East Fork of White River, a TNW.

Every effort should be taken to avoid and minimize impacts to stream features. If impacts are necessary, then mitigation may be required. The INDOT Environmental Services Division should be contacted immediately if impacts will occur. The final determination of jurisdictional waters is ultimately made by the U.S. 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.

Samantha Beaupre

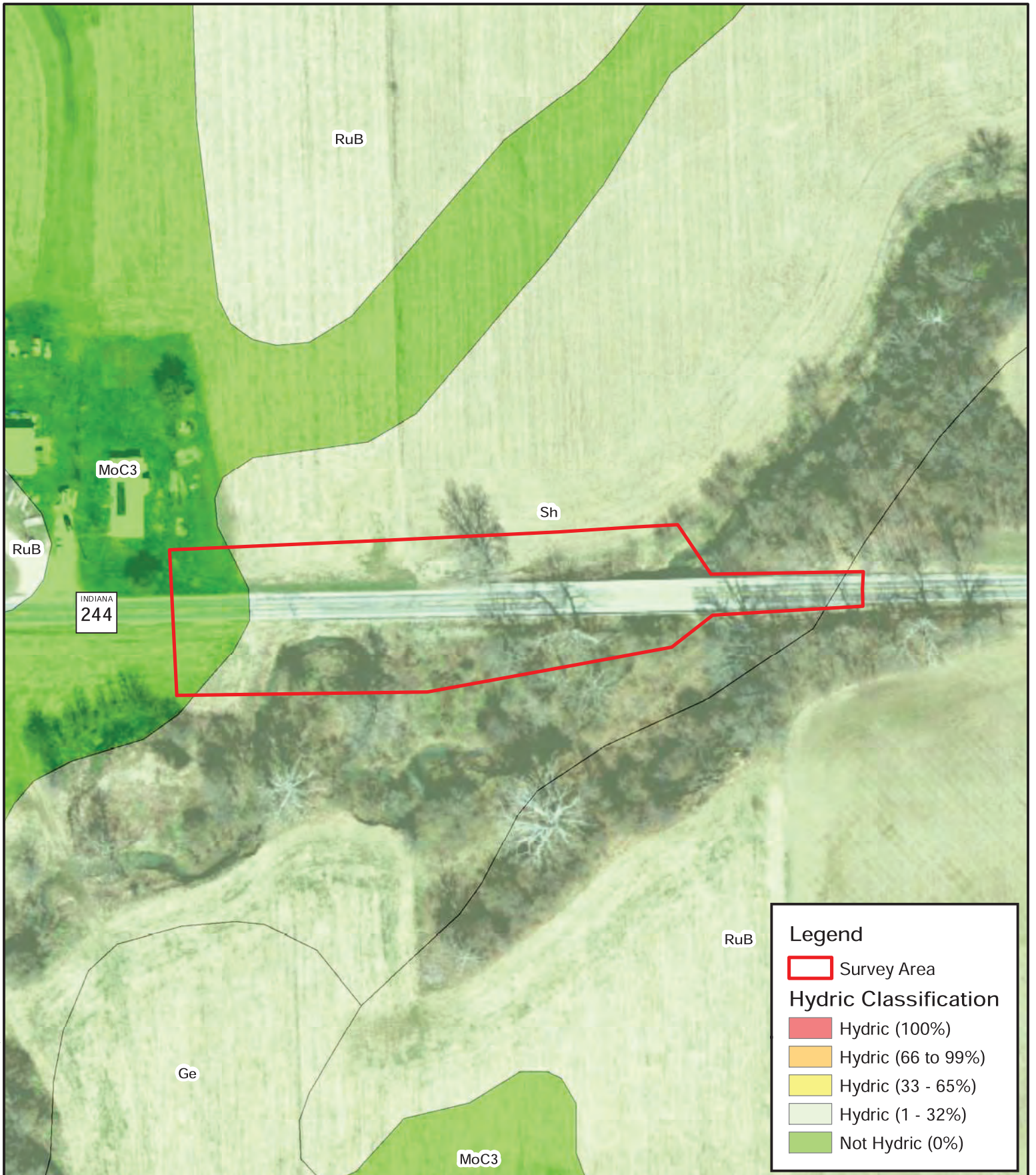


Environmental Specialist
Lochmueller Group, Inc.

Preparers

Lochmueller Group, Inc. Staff	Position	Contributing Effort
Samantha Beaupre	Environmental Specialist	Field Data Collection Report Preparation
Brenten Reust	Environmental Biologist	Field Data Collection





Sources: 2017 Aerial Imagery, SSURGO Database for Rush County, Indiana

Indiana Office of Information Technology, Indiana University Spatial Data Portal, UITS, Woolpert Inc. XeB

LOCHMUELLER GROUP

3502 Woodview Trace, Suite 150
 Indianapolis, IN 46268
 Phone: (317) 222-3880
 Fax: (317) 222-3881

SSURGO Soils Map
 Des. No. 1901370
 Waters of the US Report

0 100 200
 Feet

County: Rush
 Township: Richland
 State: Indiana

Slide Correction Project
 SR 244, 4.79 miles east of SR 3
 Created: 11/23/2020, S. Beaupre

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
MoC3	Miami clay loam, 6 to 12 percent slopes, severely eroded	0.2	11.4%
RuB	Russell silt loam, 2 to 6 percent slopes	0.0	1.1%
Sh	Shoals silt loam, 0 to 2 percent slopes, frequently flooded, brief duration	1.5	87.5%
Totals for Area of Interest		1.8	100.0%

Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
MoC3	Miami clay loam, 6 to 12 percent slopes, severely eroded	0	0.2	11.4%
RuB	Russell silt loam, 2 to 6 percent slopes	3	0.0	1.1%
Sh	Shoals silt loam, 0 to 2 percent slopes, frequently flooded, brief duration	4	1.5	87.5%
Totals for Area of Interest			1.8	100.0%

Report—Hydric Soil List - All Components

Hydric Soil List - All Components--IN139-Rush County, Indiana					
Map symbol and map unit name	Component/Local Phase	Comp. pct.	Landform	Hydric status	Hydric criteria met (code)
MoC3: Miami clay loam, 6 to 12 percent slopes, severely eroded	Miami-Severely eroded	90-100	Till plains	No	—
	Crosby	0-5	Till plains	No	—
RuB: Russell silt loam, 2 to 6 percent slopes	Russell	80-100	Till plains	No	—
	Xenia	0-5	Till plains	No	—
	Fincastle	0-5	Till plains	No	—
	Cyclone-Drained	0-5	Swales, depressions	Yes	2,3
Sh: Shoals silt loam, 0 to 2 percent slopes, frequently flooded, brief duration	Williamstown	0-5	Water-lain moraines, till plains, recessional moraines	No	—
	Shoals	75-95	Flood plains	No	—
	Eel	3-5	Flood plains	No	—
	Sloan	0-15	Meander scars, backswamps, flood plains	Yes	2
	Genesee	0-5	Flood plains, flood-plain steps, natural levees	No	—

Data Source Information

Soil Survey Area: Rush County, Indiana

Survey Area Data: Version 24, Jun 11, 2020



November 9, 2020

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond

- Lake
- Other
- Riverine



This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Flood Hazard Layer FIRMMette



85°23'27"W 39°30'4"N



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS

- Without Base Flood Elevation (BFE)
Zone A, V, A99
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD

- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS

- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES

- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES

- 20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
- 17.5 Coastal Transect
- Coastal Transect Baseline
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Profile Baseline
- Hydrographic Feature

MAP PANELS

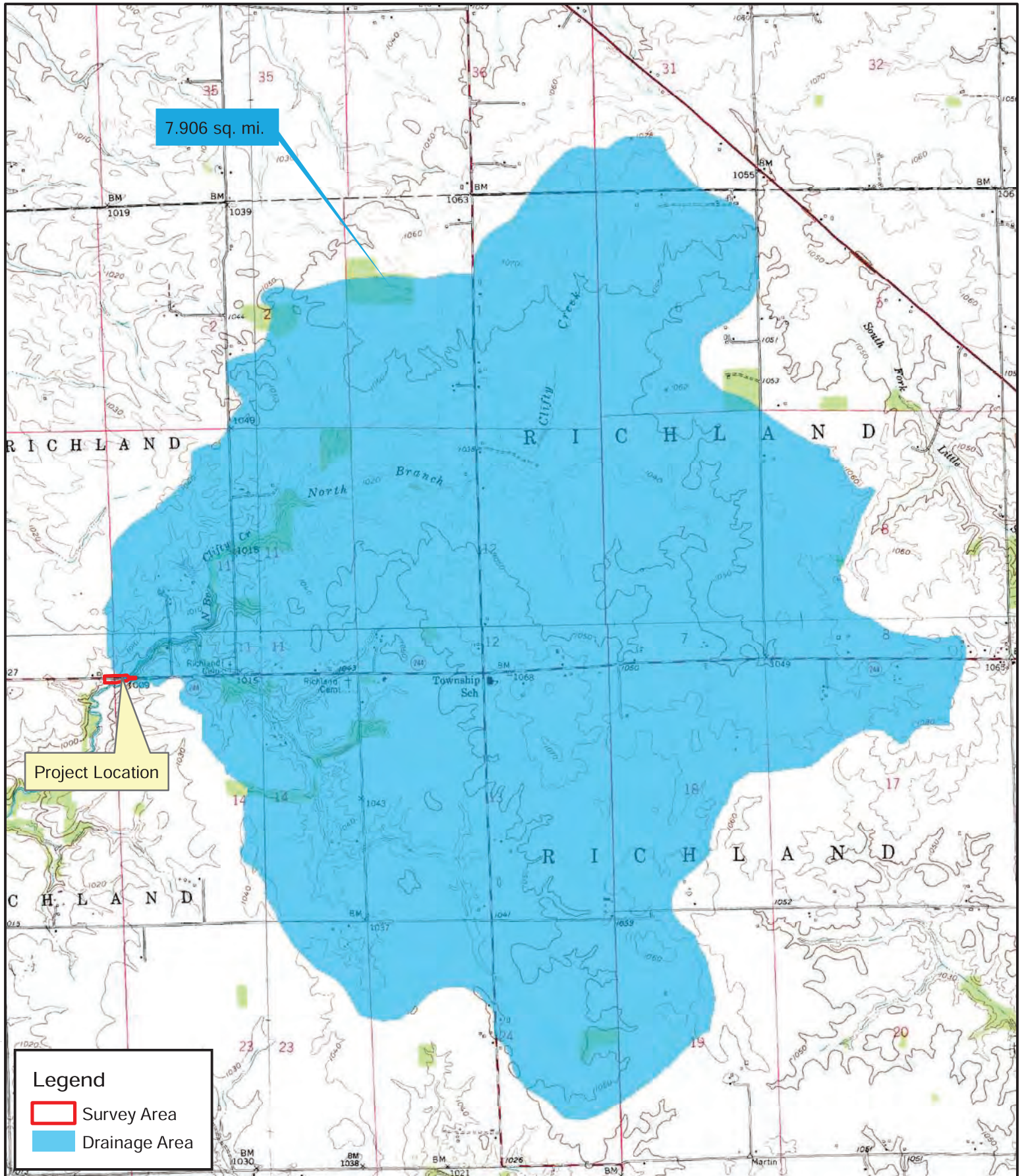
- Digital Data Available
- No Digital Data Available
- Unmapped

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **11/9/2020 at 3:59 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



7.906 sq. mi.

Project Location

Legend

- Survey Area
- Drainage Area

Source: USGS (1:24,000) Map, Milroy Quadrangle/ USGS StreamStats Website

LOCHMUELLER GROUP

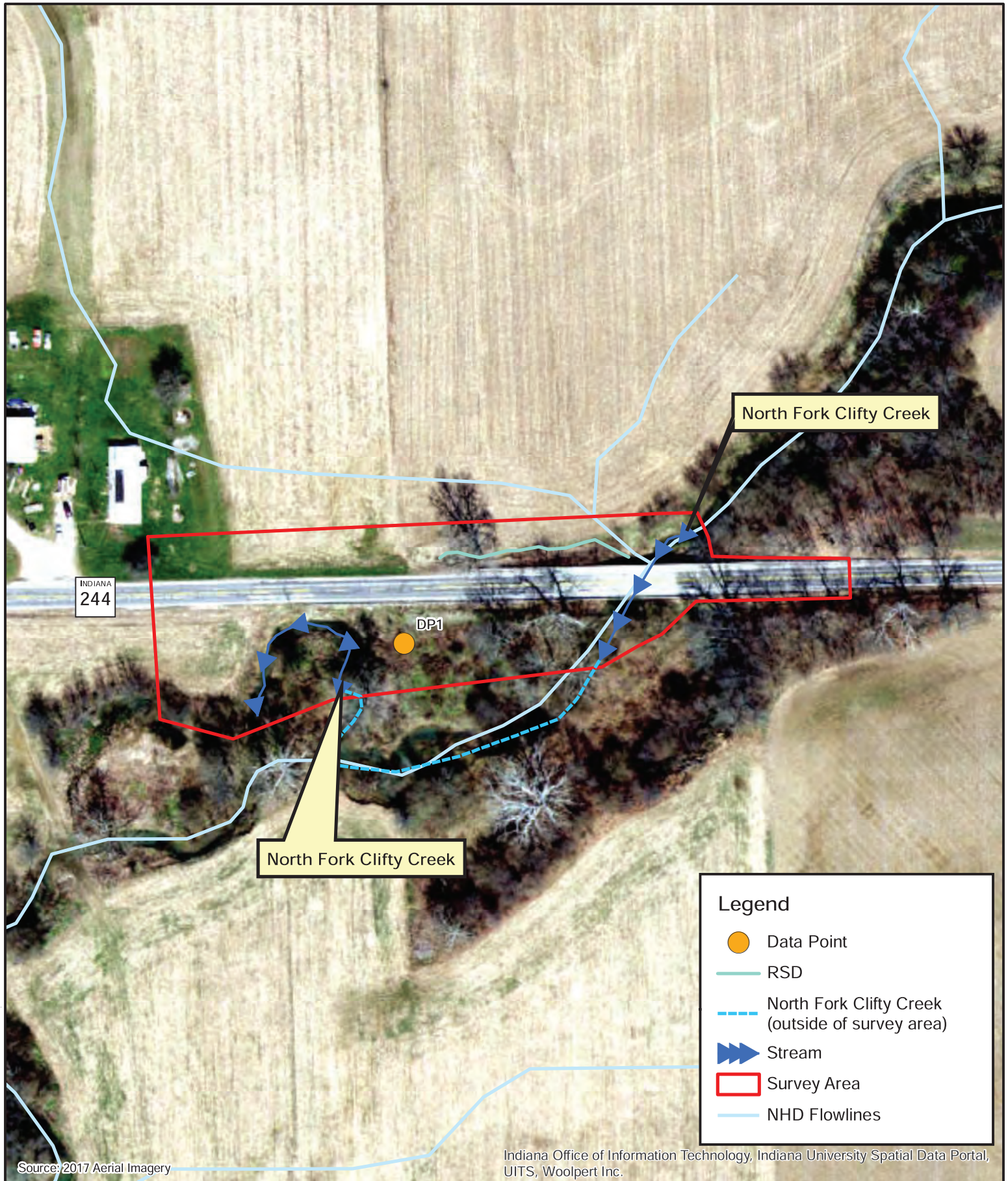
3502 Woodview Trace, Suite 150
 Indianapolis, IN 46268
 Phone: (317) 222-3888
 Fax: (317) 222-3881

StreamStats Map
 Des. No. 1901370
 Waters of the US Report

0 2,000 4,000
 Feet

County: Rush Quad: Milroy
 Township: Richland
 State: Indiana

Slide Correction Project
 SR 244, 4.79 miles east of SR 3
 Created: 11/10/2020, S. Beaupre



INDIANA
244

North Fork Clifty Creek

DP1

North Fork Clifty Creek

Legend

- Data Point
- RSD
- - - North Fork Clifty Creek (outside of survey area)
- ▶▶▶ Stream
- Survey Area
- NHD Flowlines

Source: 2017 Aerial Imagery

Indiana Office of Information Technology, Indiana University Spatial Data Portal, UITS, Woolpert Inc.

LOCHMUELLER GROUP

3502 Woodview Trace, Suite 150
Indianapolis, IN 46268
Phone: (317) 222-3880
Fax: (317) 222-3881

Water Resources Map
Des. No. 1901370
Waters of the US Report

0 100 200
Feet

N

County: Rush
Township: Richland
State: Indiana

Slide Correction Project
SR 244, 4.79 miles east of SR 3
Created: 1/26/2021, S. Beupre

Appendix 2 - PRELIMINARY JURISDICTIONAL DETERMINATION (PJD) FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PJD: November 10, 2020

B. NAME AND ADDRESS OF PERSON REQUESTING PJD: Samantha Beaupre, 3502 Woodview Trace, Suite 150, Indianapolis, IN 46268

C. DISTRICT OFFICE, FILE NAME, AND NUMBER:

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:

The Federal Highway Administration (FHWA) and the Indiana Department of Transportation (INDOT), Greenfield District propose to proceed with a slide correction project on SR 244, 4.79 miles east of SR 3 in Rush County, Indiana (Des. No. 1901370). The proposed project will involve the excavation and re-construction of the existing North Fork Clifty Creek bank to a slope of 2:1 with riprap where it crosses into the southwest quadrant of the project area. Four stone spurs will be used to minimize erosion. Three will be placed perpendicular to the channel and the furthest upstream will be placed at an angle. The riprap slope will be placed at the top of the bank approximately 8 feet away from the edge of the travel lane. Surrounding landscape consists of agricultural, residential, forest, maintained roadside, and riparian corridor.

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

State: **IN** County/parish/borough: **Rush** City: **N/A**

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

Lat.: **39.497293** Long.: **-85.386084**

Universal Transverse Mercator: **638771.83 E 4373207.39 N Z16T**

Name of nearest waterbody: **North Fork Clifty 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)
North Fork Clifty Creek	39.497286	-85.385381	286 feet (0.22 acre)	non-wetland	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: _____
- 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: _____
 - USGS NHD data.
 - USGS 8 and 12 digit HUC maps.
- U.S. Geological Survey map(s). Cite scale & quad name: _____
- Natural Resources Conservation Service Soil Survey. Citation: Rush Co. Web Soil Survey
- National wetlands inventory map(s). Cite name: USFWS NWI Webserver
- State/local wetland inventory map(s): _____
- FEMA/FIRM maps: 18139C0375C (effective 1/7/2015)
- 100-year Floodplain Elevation is: 1001.4 feet (National Geodetic Vertical Datum of 1929)
- Photographs: Aerial (Name & Date): 2017 Rush County Aerial
or Other (Name & Date): Field visit photos from 10/12/2020
- 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

Samantha Beaupre Digitally signed by Samantha Beaupre
Date: 2021.01.26 15:55:38 -05'00'

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:

2998 State Rd 244
RUSHVILLE, IN 46173

Effective Flood Zone:

X

Preliminary Flood Zone:

N/A

Best Available Flood Zone:

X

Approximate Flood Elevation:

1001.4ft NAVD88



Source:

Zone A Model Delineation












Nearest Stream:

NORTH BRANCH CLIFTY 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

Generated on Wednesday November 11th 2020 at 10:18:31am

The data shown on this map represents FEMA floodplain data enhanced with additional studies that have been reviewed and approved by the Division of Water. While this data has not yet been submitted to FEMA for inclusion in the Flood Insurance Rate

Categorical Exclusion
Appendix G
Public Involvement

Sample Notice of Survey

September 12, 2019

NOTICE OF SURVEY

RE: S.R. 244 Slide Correction Project
Approximately 4.79 miles East of S.R. 3 in Rush County, Indiana
INDOT Des. No. 1901370
Lochmueller Project No.: 218-0062-10H

Dear Property Owner:

Research of county records indicates that you own or occupy property(s) near this proposed Slide Correction Project. Our employees will be doing a survey of the project area(s) in the near future. It may be necessary for them to come onto your property to complete this work. These procedures are allowed by Indiana Code IC 8-23-7-26. If you are available, our surveyors will show identification before coming onto your property. If you have sold this property, or it is occupied by someone else, please advise us of the name and address of the current owner/occupant so that we may contact them about the survey.

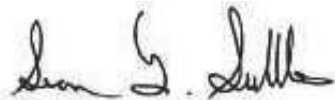
At this stage we do not know what effect, if any, our project may eventually have on your property. If we determine later that your property is involved, we will contact you with additional information.

The survey work will include mapping the location of features such as buildings, trees, fences and drives, as well as obtaining ground elevations. The survey work may include the identification and mapping of wetlands and streams, and various other environmental studies. This work is necessary for the proper planning and design of this proposed Slide Correction Project.

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 our field crew or call me at **(812-479-6200)** or write to me at the above address. Thank you in advance for your cooperation.

Sincerely yours,

LOCHMUELLER GROUP, INC.



Sean L. Suttles, P.S.
Chief of Surveying

Categorical Exclusion
Appendix H
Air Quality

Indiana Department of Transportation (INDOT)
 State Preservation and Local Initiated Projects FY 2020 - 2024

SPONSOR	CONTR ACT # / LEAD DES	STIP NAME	ROUTE	WORK TYPE	LOCATION	DISTRICT	MILES	FEDERAL CATEGORY	Estimated Cost left to Complete Project*	PROGRAM	PHASE	FEDERAL	MATCH	2020	2021	2022	2023	2024
Glenwood	41311 / 1702774	Init.	IR 1014	ADA Sidewalk Ramp Construction	Various locations on North and South Main Street and State Street (SR 44)	Greenfield	.48	STPBG		Local Funds	CN	\$0.00	\$40,831.00			\$40,831.00		
										Local Transportation Alternatives	RW	\$93,360.00	\$0.00		\$93,360.00			
										Local Transportation Alternatives	CN	\$163,325.00	\$0.00			\$163,325.00		
Glenwood	41311 / 1702774	A 01	IR 1014	ADA Sidewalk Ramp Construction	Various locations on North and South Main Street and State Street (SR 44)	Greenfield	.48	TA	\$461,819.00	Local Funds	PE	\$0.00	\$28,192.60	\$28,192.60				
										Local Transportation Alternatives	PE	\$112,770.40	\$0.00	\$112,770.40				
Comments:No MPO - Add PE FY 20 Federal 112,770.40 and Local 28,192.60.																		
Indiana Department of Transportation	41505 / 1702904	Init.	SR 3	Bridge Deck Overlay	OVER LITTLE BLUE RIVER, 4.8 1 S US 40	Greenfield	0	NHPP		Bridge Construction	CN	\$601,640.00	\$150,410.00					\$752,050.00
										Bridge ROW	RW	\$24,000.00	\$6,000.00		\$30,000.00			
Indiana Department of Transportation	41505 / 1702904	A 04	SR 3	Bridge Deck Overlay	OVER LITTLE BLUE RIVER, 4.8 1 S US 40	Greenfield	0	NHPP	\$911,490.00	Bridge Consulting	PE	\$103,552.00	\$25,888.00	\$129,440.00				
Comments:Adding PE Phase																		
Indiana Department of Transportation	41506 / 1702912	Init.	US 52	Bridge Replacement, Other Construction	OVER HODGES BRANCH, 00.7 3 miles W of SR 44	Greenfield	0	NHPP		Bridge Construction	CN	\$849,776.80	\$212,444.20					\$1,062,221.00
										Bridge Consulting	PE	\$168,000.00	\$42,000.00	\$210,000.00				
										Bridge ROW	RW	\$64,000.00	\$16,000.00		\$80,000.00			
Indiana Department of Transportation	41857 / 1802052	Init.	SR 44	Bike/Pedestrian Facilities	Curb Bump Outs SR 44 at Perkins Rd. Rushville	Greenfield	0	STPBG		Safety Construction	CN	\$132,800.00	\$33,200.00			\$166,000.00		
Indiana Department of Transportation	41857 / 1802052	A 04	SR 44	Bike/Pedestrian Facilities	Curb Bump Outs SR 44 at Perkins Rd. Rushville	Greenfield	0	Safety	\$176,000.00	Safety Consulting	PE	\$78,240.00	\$19,560.00	\$97,800.00				
Comments:Adding PE to the project																		
Indiana Department of Transportation	42031 / 1901370	A 01	SR 244	Slide Correction	At North Branch Clifty Creek, S Side Roadway, 4.79 mi East SR 3	Greenfield	0	STBG	\$215,614.00	District Other Construction	CN	\$88,491.20	\$22,122.80	\$10,000.00	\$100,614.00			
										District Other Consulting	PE	\$80,000.00	\$20,000.00	\$100,000.00				
										District Other ROW	RW	\$4,000.00	\$1,000.00	\$5,000.00				
Comments:New Project																		
Rush County	42073 / 1802929	A 01	IR 4940	Bridge Replacement	Rush County Bridge No. 1 on CR 1100 N over Six Mile Creek	Greenfield	.16	STPBG	\$2,196,360.00	Local Funds	PE	\$0.00	\$41,272.00	\$41,272.00				

*Estimated Costs left to Complete Project column is for costs that may extend beyond the four years of a STIP. This column is not fiscally constrained and is for information purposes.

Categorical Exclusion
Appendix I
Other Information

SR 244 Slide Correction Project
Des. No. 1901370
Draft EJ Analysis

April 12, 2021

The Federal Highway Administration (FHWA) and the Indiana Department of Transportation - Greenfield District propose to proceed with a slide correction project along SR 244 within Rush County, Indiana.

Project Location

The proposed project is located in southeastern Rush County along SR 244, 4.79 miles east of SR 3. Specifically, the project is located in Sections 10, 11, 14, and 15, Township 12 North, Range 10 East in Richland Township as depicted on the Milroy Quadrangle U. S. Geological Survey 7.5-minute quadrangle. Adjacent land use consists of agricultural, forested areas, and isolated rural residences.

Purpose and Need

The need for this project is due to the erosion occurring along the eastbound roadway embankment of SR 244, causing the shoulder pavement, guardrail, and embankment to deteriorate and fail. This erosion is occurring because North Fork Clifty Creek has an oxbow that occurs adjacent to SR 244.

The purpose of the project is to correct the slope failure to prevent further deterioration of the eastbound shoulder, guardrail, and embankment which will result in improved safety and mobility along SR 244.

Project Description (Preferred Alternative)

The proposed project will involve the excavation and reconstruction of the existing North Fork Clifty Creek bank to a slope of 2:1 with riprap where it crosses into the southwest quadrant of the project area. Four stone spurs will be used to minimize erosion. Three will be placed perpendicular to the channel and the furthest upstream will be placed at an angle. The riprap slope will be placed at the top of the bank approximately 8 feet away from the edge of the travel lane.

The existing eastbound travel lane will be widened from 11 feet to 12 feet wide and the eastbound shoulder will be widened from 1 foot to 4 feet wide. Additionally, a mill and overlay is proposed for the existing pavement within the eastbound lane within the project limits. The guardrail on the eastbound side of the roadway will be reconstructed and extended to the bridge concrete barrier. A new riprap turnout will be constructed on the southwest side of the bridge. No work is expected on Bridge No. 244-70-05846 A or the bridge approach except for the new guardrail and riprap turnout.

Environmental Justice Analysis

In accordance with the *INDOT Categorical Exclusion Preparation Manual* (February 2021), an Environmental Justice (EJ) analysis is required for any project requiring two or more relocations or more than 0.5 acre of new permanent right-of-way (ROW). Because the project is expected to require more than 0.5 acre of new permanent ROW (approximately 0.87 acre), an EJ analysis was conducted.

Potential EJ impacts are detected by locating minority populations and low-income populations in and near the project area, calculating their percentage in the area relative to a reference population to determine if populations of EJ concern do exist, and determining whether there will be disproportionate adverse impacts to them. The reference population may be a county, city, or town and is called the community of comparison (COC). For this project the COC is Rush County, Indiana. The community that overlaps the project limits

is called the affected community (AC). For this project, the AC is Richland Township, Rush County, Indiana.

An AC has a population of concern for EJ if the population is more than 50% low-income or minority or if the low-income population or minority population is greater than 125% of the population in the COC.

Table 1: Minority and Low-Income Data (2015-2019 American Community Survey 5-Year Estimates)		
	COC - Rush County, Indiana	AC- Richland Township, Rush County, Indiana
Percent Minority	4.3%	0.0%
125% of COC	5.4%	AC < 125% COC
EJ Population of Concern		No
Percent Low-Income	14.5%	25.2%
125% of COC	18.1%	AC > 125% COC
EJ Population of Concern		Yes

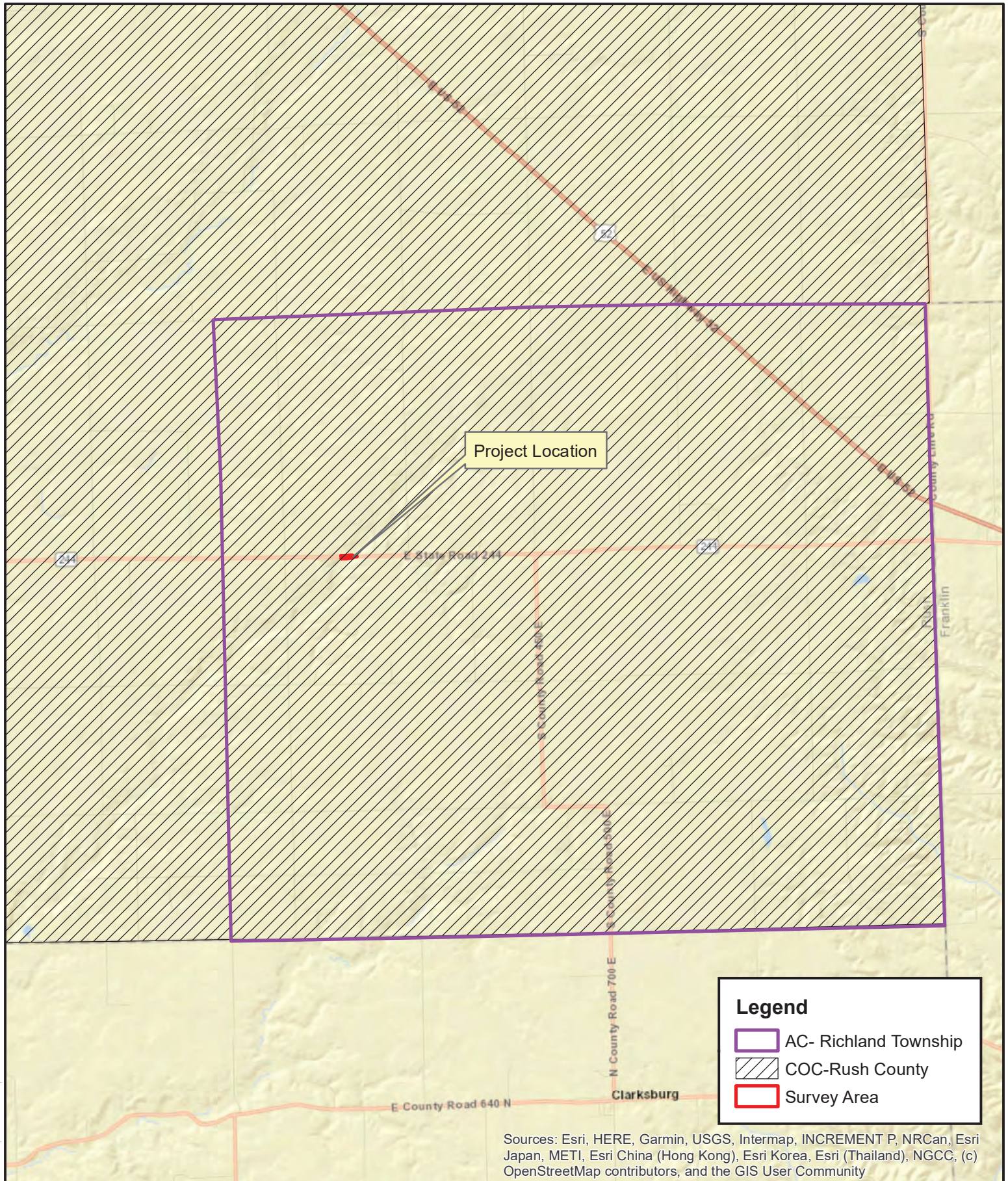
A review of American Community Survey five-year estimates data (2015-2019) was completed on April 7, 2021. The data was obtained from the U.S. Census Bureau’s webpage (<https://data.census.gov/cedsci/>).

A review of the data revealed that the AC did not contain a population greater than or equal to 50% low-income or minority population. The data for the low-income populations determined that the AC population (25.2%) was greater than 125% of the COC (18.1%). Therefore, the AC contains a low-income population of EJ concern. The data for the minority populations determined that the AC population (0.0%) was not greater than 125% of the COC (5.4%). Therefore, no minority populations of EJ concern are present within the AC.

The proposed project is expected to require the acquisition of approximately 0.87 acre of permanent ROW. Land use within the proposed permanent ROW consists of agricultural and forested areas. No relocations are anticipated.




Overall, the negative impacts to property owners within the project area will be minimal and consist primarily of short-term construction impacts and the loss of strip ROW. No relocations are anticipated. The ROW to be acquired will not substantially diminish the existing use of the affected property owners. The MOT during construction will involve temporary lane closures along SR 244. Property owners will be provided access throughout the duration of the project to reduce impacts as much as possible. No permanent impacts to community cohesion are anticipated.

Impacts from the project to any EJ community in this area will be beneficial due to the improvement to the roadway from the slide correction project. It is expected that the project will not have a disproportionately high and adverse environmental or health impact to low-income or minority populations of EJ concern when compared to non EJ populations.



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community


Legend


-  AC- Richland Township
-  COC-Rush County
-  Survey Area



3502 Woodview Trace, Suite 150
 Indianapolis, IN 46268
 Phone: (317) 222-3880
 Fax: (317) 222-3881

EJ Map
 Des. No. 1901370

0 0.75 1.5
 Miles



County: Rush
 Township: Richland
 State: Indiana

Slide Correction Project
 SR 244, 4.79 miles east of SR 3
 Created: 4/12/2021, S. Beaupre

Table: ACSDT5Y2019.B03002

	Rush County, Indiana		Richland township, Rush County, Indiana	
Label	Estimate	Margin of Error	Estimate	Margin of Error
Total:	16,641	*****	314	±144
Not Hispanic or Latino:	16,366	*****	314	±144
White alone	15,923	±12	314	±144
Black or African American alone	271	±144	0	±12
American Indian and Alaska Native alone	0	±19	0	±12
Asian alone	19	±49	0	±12
Native Hawaiian and Other Pacific Islander alone	0	±19	0	±12
Some other race alone	10	±12	0	±12
Two or more races:	143	±132	0	±12
Two races including Some other race	0	±19	0	±12
Two races excluding Some other race, and three or more races	143	±132	0	±12
Hispanic or Latino:	275	*****	0	±12
White alone	250	±28	0	±12
Black or African American alone	9	±17	0	±12
American Indian and Alaska Native alone	0	±19	0	±12
Asian alone	0	±19	0	±12
Native Hawaiian and Other Pacific Islander alone	0	±19	0	±12
Some other race alone	16	±24	0	±12
Two or more races:	0	±19	0	±12
Two races including Some other race	0	±19	0	±12

Table: ACSDT5Y2019.B03002

	Rush County, Indiana		Richland township, Rush County, Indiana	
Label	Estimate	Margin of Error	Estimate	Margin of Error
Two races excluding Some other race, and three or more races	0	±19	0	±12

Table: ACSDT5Y2019.B17001

	Rush County, Indiana		Richland township, Rush County, Indiana	
Label	Estimate	Margin of Error	Estimate	Margin of Error
Total:	16,348	±148	314	±144
Income in the past 12 months below poverty level:	2,365	±456	79	±113
Male:	953	±235	37	±54
Under 5 years	116	±76	25	±37
5 years	9	±13	0	±12
6 to 11 years	84	±54	0	±12
12 to 14 years	41	±33	0	±12
15 years	25	±39	0	±12
16 and 17 years	65	±48	0	±12
18 to 24 years	78	±44	0	±12
25 to 34 years	98	±60	0	±12
35 to 44 years	166	±96	12	±18
45 to 54 years	118	±61	0	±12
55 to 64 years	78	±44	0	±12
65 to 74 years	48	±37	0	±12
75 years and over	27	±25	0	±12
Female:	1,412	±296	42	±59
Under 5 years	70	±53	0	±12
5 years	34	±42	0	±12
6 to 11 years	181	±89	0	±12
12 to 14 years	33	±34	0	±12
15 years	46	±34	0	±12
16 and 17 years	32	±35	0	±12
18 to 24 years	114	±68	23	±34
25 to 34 years	190	±84	0	±12
35 to 44 years	119	±61	0	±12
45 to 54 years	205	±86	19	±26
55 to 64 years	156	±74	0	±12
65 to 74 years	125	±73	0	±12

Table: ACSDT5Y2019.B17001

	Rush County, Indiana		Richland township, Rush County, Indiana	
Label	Estimate	Margin of Error	Estimate	Margin of Error
75 years and over	107	±42	0	±12
Income in the past 12 months at or above poverty level:	13,983	±505	235	±113
Male:	6,991	±233	141	±69
Under 5 years	336	±76	11	±19
5 years	60	±34	0	±12
6 to 11 years	532	±123	14	±17
12 to 14 years	258	±99	0	±12
15 years	74	±41	9	±16
16 and 17 years	194	±53	0	±12
18 to 24 years	626	±54	26	±40
25 to 34 years	756	±63	7	±12
35 to 44 years	780	±69	7	±14
45 to 54 years	1,046	±69	19	±29
55 to 64 years	1,150	±53	14	±17
65 to 74 years	702	±41	25	±30
75 years and over	477	±40	9	±15
Female:	6,992	±337	94	±62
Under 5 years	378	±57	0	±12
5 years	26	±31	0	±12
6 to 11 years	381	±88	7	±11
12 to 14 years	357	±120	0	±12
15 years	172	±79	0	±12
16 and 17 years	160	±52	12	±18
18 to 24 years	539	±66	24	±36
25 to 34 years	713	±80	12	±15
35 to 44 years	825	±100	9	±17
45 to 54 years	985	±112	6	±9
55 to 64 years	1,097	±95	15	±18
65 to 74 years	727	±74	0	±12

Table: ACSDT5Y2019.B17001

	Rush County, Indiana		Richland township, Rush County, Indiana	
Label	Estimate	Margin of Error	Estimate	Margin of Error
75 years and over	632	±91	9	±14

SR 244 Slide Correction Project - EJ Analysis

2015-2019 American Community Survey 5-Year Estimates

		COC	AC
		Rush County, Indiana	Richland Township, Rush County, Indiana
	LOW INCOME		
B17001001	Population for whom poverty status is determined: Total	16,348	314
B17001002	Population for whom poverty status is determined: Income in past 12 months below poverty level	2,365	79
	Percent Low-Income	14.5%	25.2%
	125% Reference Increment (Applied to COC Only and Compared Against the AC)	18.1%	AC > 125% COC
	AC Percent Low-Income > 125% of COC?		Yes
	AC Percent Low-Income > 50%?		No
	Elevated Low-Income Population Present?		Yes

		COC	AC
	MINORITY		
B03002001	Total Population: Total	16,641	314
B03002002	Total Population: Not Hispanic or Latino	16,366	314
B03002003	Total Population: Not Hispanic or Latino; White Alone	15,923	314
B03002004	Total Population: Not Hispanic or Latino; Black or African American Alone	271	0
B03002005	Total Population: Not Hispanic or Latino; American Indian or Alaska Native Alone	0	0
B03002006	Total Population: Not Hispanic or Latino; Asian Alone	19	0
B03002007	Total Population: Not Hispanic or Latino; Native Hawaiian and Other Pacific Islander Alone	0	0
B03002008	Total Population: Not Hispanic or Latino; Some Other Race Alone	10	0
B03002009	Total Population: Not Hispanic or Latino; Two or More Races	143	0
B03002010	Total Population: Hispanic or Latino	275	0
B03002011	Total Population: Hispanic or Latino; White Alone	250	0
B03002012	Total Population: Hispanic or Latino; Black or African American Alone	9	0
B03002013	Total Population: Hispanic or Latino; American Indian or Alaska Native Alone	0	0
B03002014	Total Population: Hispanic or Latino; Asian Alone	0	0
B03002015	Total Population: Hispanic or Latino; Native Hawaiian and Other Pacific Islander Alone	0	0
B03002016	Total Population: Hispanic or Latino; Some Other Race Alone	16	0
B03002017	Total Population: Hispanic or Latino; Two or More Races	0	0
	Number Non-White / Minority (Sum B03002004 thru B03002010)	718	0
	Percent Non-White / Minority	4.3%	0.0%
	125% Reference Increment (Applied to COC Only and Compared Against the AC)	5.4%	AC <125% COC
	AC Percent Minority > 125% of COC?		No
	AC Percent Minority > 50%?		No
	Elevated Minority Population Present?		No

From: [Fair, Terri](#)
To: [Samantha Beaupre](#)
Cc: [Bales, Ronald](#); [Miller, Brandon](#)
Subject: FW: SR 244 Slide Correction (Des. No. 1901370) EJ Analysis
Date: Thursday, April 29, 2021 4:41:30 PM
Attachments: [4-29-21 SR 244 EJAnalysis DesNo1901370.pdf](#)

INDOT-Environmental Services Division (ESD) has reviewed the project information along with the Environmental Justice (EJ) Analysis for the above referenced project. With the information provided, the project may require minimal right-of-way, require no relocations, and would not disrupt community cohesion or create a physical barrier. With the information provided, INDOT-ESD would not consider the impacts associated with this project as causing a disproportionately high and adverse effect on minority and/or low income populations of EJ concern relative to non EJ populations in accordance with the provisions of Executive Order 12898 and FHWA Order 6640.23a. No further EJ Analysis is required.

From: Samantha Beaupre <SBeaupre@lochgroup.com>
Sent: Monday, April 12, 2021 11:35 AM
To: Bales, Ronald <rbales@indot.IN.gov>
Cc: Chad Costa <CCosta@lochgroup.com>; Johnson, Heather K <HJohnson1@indot.IN.gov>; Will, Nick <NWill@lochgroup.com>
Subject: SR 244 Slide Correction (Des. No. 1901370) EJ Analysis

****** This is an EXTERNAL email. Exercise caution. DO NOT open attachments or click links from unknown senders or unexpected email. ******

Good Morning Ron,

The draft EJ Analysis for the above mentioned project is attached for your review. Please let me know if you have any questions.

Also, for our planning purposes, what is your average review time on these currently?

Thank you!

Samantha Beaupre
Environmental Specialist II
Lochmueller Group

3502 Woodview Trace, Suite 150, Indianapolis, IN 46268
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SR 244 Slide Correction Project

4.79 Miles East of SR 3 @ RP 16+90

Engineering Assessment

Rush County, Indiana
Des No. 1901370

Engineering Assessment

February 27, 2020

Prepared for the
Indiana Department of Transportation – Greenfield District

32 South Broadway
Greenfield, IN 46140



SR 244 Slide Correction Project

4.79 Miles East of SR 3 @ RP 16+90

Engineering Assessment

Rush County, Indiana

Des No. 1901370

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A. PURPOSE OF THE REPORT

This report documents the engineering assessment phase, including an outlined proposal to correct erosion occurring along SR 244. The report describes the project at a preliminary level and all relevant background data is included. The conclusions and recommendations will guide the ongoing environmental and succeeding design phases. The Engineer's Report is pre-decisional, pending completion of environmental studies.

B. PROJECT LOCATION

The project is located along SR 244, approximately 4.79 miles east of SR 3 in Rush County at RP 16+90. See Appendix A for project location map. The erosion correction limits are approximately 108' in length from Station 102+61 Line "A" to Station 103+69 Line "A".

C. PROJECT PURPOSE & NEED

The need for this project is due to the erosion occurring along the eastbound roadway embankment of SR 244, causing the shoulder pavement, guardrail, and embankment to deteriorate and fail. This erosion is occurring because North Fork Clifty Creek has an oxbow that occurs adjacent to SR 244. Photos of the erosion and shoulder can be found in Appendix G.

The purpose of the project is to correct the slope failure to prevent further deterioration of the eastbound shoulder, guardrail, and embankment resulting in improved safety and mobility along SR 244.

D. EXISTING CONDITIONS

Basic Elements

This portion of SR 244 is functionally classified as a Major Collector in level terrain and is on the state's 3R Network. SR 244 is not a member of the National Highway System or National Truck Network. The posted speed limit is 55 mph.

Typical Cross Section

The existing roadway has 11' travel lanes and a 1' paved shoulder with cross slopes varying from 2% to 2.5% within the project limits.

The westbound roadside consists of a very shallow undefinable swale on the western end of the project, a wide farm field entrance near the center of the project area, and then develops a defined ditch along the east end that conveys water to the North Fork Clifty Creek. The south side of the road generally has a 3:1 slope that steepens to 1.5:1 as it approaches the oxbow in the creek where the erosion is occurring.

Horizontal Alignment

The existing horizontal alignment is within a tangent section.

Vertical Alignment

The profile of the roadway is in an approximate 450' sag vertical curve with a maximum slope of approximately 3%. The slide correction area is located within the low point of the vertical sag.

Pavement Condition

Due to erosion along the eastbound roadway embankment the existing asphalt shoulder has deteriorated. At a field review on September 26, 2019 the pavement on the travel lanes appeared to be in good condition. See Appendix G for photos.

Driveways/Approaches

An existing grass farm field entrance is located at the field divide on the north side of the roadway at approximately Station 104+00. The driveway is within the slide project limits and it is anticipated reconstruction will be required with two separate field entrances on either side of the field divide. Access shall be maintained during construction.

Public Utilities

Initial research of the project area was conducted to determine potential utilities. Duke Energy, Frontier, and Rushshelby Energy were discovered as potentially having facilities within the project limits. The survey picked up power poles (assumed to be owned by Duke Energy) along the south side of SR 244. There is potential for up to two poles to conflict with the proposed improvements and require relocation. No underground facilities were picked up during the topographical survey. Extensive utility coordination will need to take place during the design phase to determine if these companies have active facilities in the project limits and if they will need to be relocated. The Utility Ticket pulled from the 811 website can be found in Appendix B.

Land Uses

The land use along SR 244 is rural with generally cultivated/farm ground coverage along sides of the roadway and scattered rural residences.

Apparent Existing Right of Way

Preliminary research resulted in no apparent existing Right of Way being found and therefore it is assumed to follow the edge of pavement. No right of way markers were found during the topographical survey.

Existing Drainage

North Branch of Clifty Creek within the project limits has an approximate drainage area of 7.95 sq. mi with a 1% EP discharge of 2400 cfs. The creek has an oxbow adjacent to SR 244 approximately 240' west of Bridge No. 244-070-05846A. The creek cross section has eroded and currently consists of an approximate 6' bottom with 1.5:1 sideslopes.

SR 244 is located within a FEMA defined Flood Zone A (see flood plain map in Appendix D). The approximate flood elevation is 1000.1. The low point along SR 244 within the project limits has a roadway elevation of 998.55. Based upon field debris found along the guardrail within the project limits it is apparent SR 244 does flood. See photos in Appendix G.

Along the westbound lanes of SR 244 near the west end of the project there are no definable existing drainage conveyances. A roadside ditch begins near the outgoing end of the bridge guardrail and drains into North Branch of Clifty Creek at the bridge. The drainage area is approximately 26.9 acres and consists of farm fields and rural residences. The area generally sheet flows off the farm fields into a swale along the east side of a rural residence and saturates the existing soil along the roadway during lesser storm events. During larger storm events or

when North Branch of Clifty Creek floods, water will build up and overtop the roadway. Corn stalks can be seen in photos taken on September 26, 2019.

E. HYDRAULIC ANALYSIS

Hydraulic analysis was completed by INDOT and the approved hydraulic memo, dated April 25, 2014, was provided to Lochmueller Group as a reference. The report can be found in Appendix D. The report outlines two alternatives to correct the erosion issues along the creek. These alternatives include a gabion basket wall and a riprap embankment with spur dikes that have been detailed and approved by INDOT hydraulics. This report was used during the alternative analysis to assist in determining wall parameters and riprap quantities.

F. SAFETY ANALYSIS

Crash Data and Analysis

Recorded crash data from 2015 to 2018 in Rush County was made available for this study. The data was reviewed and pared down to those crashes located along SR 244 within approximately 1 mile of the project limits.

The crash data study resulted in 6 crashes that took place within the 1-mile each east and west of the project location, however none were located within the project limits. The closest proximity crash was caused by a collision with a deer and it was located 2300' east of the project site. The remaining 5 crashes included 2 run off road and 3 driver error. Based on the results, it is reasonable to conclude the existing alignment and vertical grades within the project limits have not been the cause of any crashes in the last 3 years. See Appendix B for a summary of the crash data record and map.

G. MOBILITY ANALYSIS

Traffic Data

See Appendix B for the official traffic forecast. For this project, 2019 has been established as the base year, 2020 is the identified construction year and 2050 is the design year. The annual growth rate used for projections was 0.46%. The 2050 design hourly volume (DHV) is 9.91%. The commercial vehicle AADT is 8.37% and the accompanying design hourly volume (DHV) is 7.75%.

	AADT		
	2019	2020	2050
SR 244	1,302	1,308	1,486

H. ALTERNATIVE ANALYSIS

Alternative 1 – Do-Nothing

The Do-Nothing Alternative involves eliminating the project and not correcting the erosion occurring along the eastbound SR 244 roadway embankment. This alternative would result in the continuation of the erosion and further deterioration of the roadway, resulting in potential guardrail and roadway embankment failure that could result in roadway closures. Therefore, this alternative is not recommended.

Alternative 2 – Gabion Baskets

Alternative 2 is the construction of a gabion basket wall parallel to the SR 244 embankment. The length of the wall is proposed to be 108' with a maximum height of 12'. The gabion baskets would be stacked four units high assuming each basket has a cross section of 3' by 3'. The wall should be located at least 2' below the existing channel bottom to accommodate potential scour.

This alternative was not chosen due to long term maintenance issues related to gabion baskets per INDOT Greenfield District and concurrence by INDOT Geotech. Email correspondence can be found in Appendix F.

Alternative 3 – Sheet Pile Wall

Alternative 3 is the construction of a sheet pile wall parallel to the SR 244 embankment. The wall is proposed to be located approximately 28 feet south of the roadway centerline and the length of the wall will be 108 feet. The wall will have a maximum height of 12 feet above the ground level, and it was assumed that the wall will extend underground twice the height of the exposed wall.

This alternative was introduced by the Greenfield District and INDOT Geotech after the Field Review in September 2019 as an alternative to the gabion basket wall.

The preliminary construction cost estimate for Alternative 3 is approximately \$411,000. See Appendix C for additional preliminary cost information.

Alternative 4 – Riprap Embankment at 2:1 Slope and Spur Dike Construction

Alternative 4 is the excavation and reconstruction of the existing creek bank to a slope of 2:1 with riprap. Additionally, to help redirect and minimize erosion stone spurs are proposed. The riprapped slope will be placed at the top of the bank approximately 8 feet away from the edge of the travel lane. Per the approved hydraulic memo, Class 1 riprap will be used for the slope stabilization as well as the stone spurs. The hydraulic memo is in Appendix D. The channel bottom will not be reconstructed and opposite channel sideslope will not be disturbed. The channel flowline will naturally re-establish itself to the south further away from the roadway embankment. Four stone spurs are proposed with the furthest upstream being angled and the other 3 being placed perpendicular to the channel. See approximate locations in Appendix D.

The preliminary construction cost estimate for Alternative 4 is \$279,000. See Appendix C for additional preliminary cost information.

Alternative 5 – Sheet Pile Wall with Spur Dike Construction

Alternative 5 is a combination of Alternative 3 and 4 which includes the construction of a sheet pile wall parallel to the SR 244 embankment along with riprap spur dikes within the existing channel. The wall is proposed to be located approximately 28 feet south of the roadway centerline and the length of the wall will be 108 feet. The wall will have a maximum height of 12 feet above the ground level, and it was assumed that the wall will extend underground twice the height of the exposed wall. Riprap spur dikes will be installed similar to Alternative 4 along with Class 1 riprap embankment at 3:1 slope along the face of the sheet pile wall.

This alternative was introduced by the Greenfield District and INDOT Geotech during a recent conference call meeting in February 2020. The Greenfield District expressed their concerns about maintenance and future repair work with the riprap embankment and spur dike alternative. The preferred alternative was a sheet pile wall to ensure that no future erosion will occur, and the installation of the riprap spur dikes to help redirect the channel and minimize impact to the sheet pile wall.

The preliminary construction cost estimate for Alternative 5 is \$440,000. See Appendix C for additional preliminary cost information.

I. CONCLUSIONS AND PROJECT RECOMMENDATIONS

Based on a comparison of cost estimates, constructability, long term maintenance, discussions with INDOT at the field review in September of 2019, and email correspondence in January 2020 it is recommended to proceed with Alternative 5, sheet pile wall with spur dikes. The field review meeting was held on 09/26/19 and included INDOT Geotech, the INDOT Project Manager, INDOT Hydraulics, and Lochmueller Group. See Appendix F for meeting minute notes and attendees as well as the email correspondence.

The project limits are based upon the sheet pile wall limits along the eastbound lane and the length of ditch construction proposed along the westbound lane. The sheet pile wall limits are proposed from approximately Station 102+62 Line "A" to Station 103+70 Line "A" along the eastbound lane. The ditch construction is proposed from approximately Station 102+25 Line "A" to Station 105+50 Line "A" along the westbound lane.

The proposed pavement construction is anticipated to consist of widening the existing shoulder from 1' to 4' to accommodate the guardrail construction and anticipated future improvements along the SR 244 corridor per INDOT PM. See Appendix F for email correspondence. The proposed typical section shall consist of 12' travel lanes with 4' paved shoulders. Additionally, it is recommended to mill and overlay the existing pavement within the project limits.

Guardrail is required due to the proposed sheet pile wall within the clear zone (Clear Zone Distance = 16') along the eastbound lane. To help minimize costs and impacts outside of the wall limits it is proposed to obtain a Level 2 Design Exception for roadside safety and begin the guardrail where the projects limits begin rather than where the guardrail length of need calculations show. The guardrail calculations can be found in Appendix B and result in a project length approximately 100' longer than currently proposed.

The eastbound guardrail will be lengthened and reconstructed up to the bridge barrier with current end treatments. At the field review in September 2019 it was decided to leave the outgoing guardrail along the westbound lane since it was not anticipated to be affected by the proposed construction. However, during the development of the engineering assessment it became apparent to construct the roadside ditch along the westbound lane and accommodate the required 4' paved shoulder the guardrail should be replaced up to the bridge barrier similar to the eastbound lane.

Two farm field entrances with unimproved surfaces are proposed to maintain access to the farm fields. See Appendix A for preliminary locations.

Drainage

A new roadside ditch is proposed along the westbound lane to collect runoff from the north and will drain to the creek instead of overtopping SR 244. The ditch will carry flow under two farm field entrances. Due to cover issues and hydraulic requirements it is anticipated the structures will be box culverts. The structures have been preliminarily sized as 5'(span) x 2'(rise) box culverts. The ditch downstream of the driveway culverts will require reconstruction to accommodate the proposed ditch elevations upstream. It is anticipated the ditch will need reconstructed to its existing outfall at the bridge.

It was noted at the field review in September that the existing bridge turnout on the approach of the eastbound lane had eroded. It is recommended to construct a new riprap turnout.

No work on the bridge or bridge approach is expected except for the new guardrail and riprap turnout.

The roadway is not being reconstructed above the 100-year flood elevation as it is out of scope for the proposed project.

Maintenance of Traffic

Due to the narrow existing pavement width and the type of construction required for the proposed alternative, temporary traffic signals are proposed. Further coordination with INDOT District Traffic will be required as the project progresses to confirm the use of temporary signals.

Geotechnical

A Geotechnical Report will be required to determine the sheet pile wall design parameters. Geotechnical field work may be required to provide pavement design parameters

Survey

No additional survey is anticipated to complete the design.

Utility Relocation

It is anticipated that up to two Duke power poles will need relocated to allow for the erosion correction methods to be constructed. There are no known underground relocations at this point. Further utility coordination will need to be completed to see if any other utilities will be impacted.

Environmental

A Red Flag Investigation (RFI) was completed by Lochmueller Group and signed by the Indiana Department of Transportation on December 6, 2019. RFI can be found in Appendix E. The project area was screened using 52 Geographic Information System (GIS) layers to identify any potential environmental concerns located within the vicinity of the proposed project. This project is located along SR 244, 4.79 miles east of SR 3 in Rush County. Results showed one mapped stream, North Branch Clifty Creek, is located within the project area. North Branch Clifty Creek is listed as impaired for *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. The project area is also located within a floodplain. The proximity of these resources necessitates a Waters of the US Report and coordination with the INDOT ES Ecology and Permitting. If impacts to the resources described in this report are

proposed, a Section 404 Permit and Section 401 Water Quality Certification (WQC) will be required from the US Army Corps of Engineers (USACE) and the Indiana Department of Environmental Management (IDEM), respectively. Wetland and/or stream mitigation may be a condition of these permits should impact total more than 0.1 acre and/or 300 ft. A preliminary review of the Indiana Natural Heritage Database by INDOT Environmental Services did not indicate the presence of endangered species within the project search area. Coordination with USFWS and IDNR must 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 range-wide programmatic consultation for the Indiana Bat and Northern Long-eared Bat must be completed according to "Using the USFWS's IPaC System for Listed Bat Consultation for INDOT Projects". The project area is not located inside the designated karst area of the state as identified in the October 13, 1993 Karst Memorandum of Understanding (MOU). The proposed project is not located within an urbanized area boundary.

The *National Register of Historic Places* (National Register) and the *Indiana Register of Historic Sites and Structures* (State Register) were reviewed using the *State Historical and Archaeological Database* (SHAARD) and SHAARD Geographic Information Systems (GIS). No historic sites were identified within a half mile radius of the slide site. It is anticipated that this project will qualify for the Minor Projects Programmatic Agreement (MPPA), under Category B-10 as long as no eligible archaeological sites are found.

There are four previously documented archaeological sites within 1000 feet of the slide correction area. One of these is adjacent to the slide correction area. The reports for these indicate they were not considered eligible for the NRHP when discovered. However, it is possible additional sites may be adjacent/nearby. Another Phase 1A archaeological reconnaissance will be required. There are no above ground historic structure concerns in this area.

R/W

Approximately 0.5 acres of permanent R/W is anticipated to be required for the proposed project.

Permitting

Based upon the project length and type of construction it is anticipated less than 1 acre will be disturbed and a Rule 5 permit will be not required. The proposed work within the North Fork Clifty Creek and the construction occurring in the Clifty Creek floodway will require a 401/404 permit and a Construction in a Floodway Permit. As the design is finalized a request will be submitted to INDOT for the official permit determination.

Design Exceptions

It is anticipated that a Level 2 design exception for roadside safety will be acquired. The guardrail length provided will not meet match the length of need calculations. The embankment of the creek is within the clear zone today, not protected by guardrail, and no accidents occurred from 2015 to 2018 at the project site. To minimize cost and impacts to the project area it is proposed to obtain the design exception.

Project Development

The project will be developed as a Design/Bid/Build Contract with an anticipated letting date in 2021.

J. CHANGES TO PROPOSAL

The Project Manager shall be consulted if deviation from the proposal is determined to be necessary during a later phase of project development. The person initiating the change shall send a memo to the Project Manager for concurrence. The memo shall include justification for the change and the estimated cost difference.

Nicholas Will

COMPLETED BY: _____ **DATE:** 2/27/20
Nicholas Will
Lochmueller Group

CONCUR: _____ **DATE:** _____
Aschalew Aberra
INDOT Greenfield Scoping Manager

_____ **DATE:** _____
Darryl Wineinger
INDOT Greenfield District Bridge Asset Engineer

K. APPENDICES

Appendix A: Maps & Drawings

- Project Location Map
 - Alternative 3
 - Typical Cross Section
 - Alternative 4
 - Typical Cross Section
 - Alternative 5 - Preferred
 - Typical Cross Section
 - Preliminary Plan Sheet
- Removed to avoid duplication; see Appendix B

Appendix B: Data

- Crash Analysis & Map
- Traffic Data
- Initial Research Utility Ticket
- Preliminary Design Computations

Appendix C: Preliminary Cost Estimates

- Alternative 3 – Sheet Pile Wall
- Alternative 4 – Riprap Embankment with Spur Dikes
- Alternative 5 – Sheet Pile Wall with Spur Dikes

Appendix D: Hydraulic Information

- INDOT Hydraulic Memo (4/25/14)
- INDOT Scour Memo (3/8/18) For Bridge No. 244-070-05846A
- FEMA Flood Plain Map

Appendix E: Red Flag Investigation

Removed to avoid duplication; see Appendix E

Appendix F: Correspondence & Meeting Minutes

- Field Review Meeting Minutes (9/26/19)
- Email Coordination with INDOT PM on Alternative Analysis

Appendix G: Project Mini Scope & Photos

SR 244 Slide Correction Project

4.79 Miles East of SR 3 @ RP 16+90

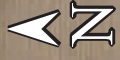
Engineering Assessment

Rush County, Indiana
Des No. 1901370

Appendix B Data

CRASH SUMMARY

DES# 1901370
CRASH SUMMARY WITHIN 1 MILE OF PROJECT
S.R. 244



Crash #1

Crash #2

Crash #3

1901370

Crash #4

Crash #5

Crash #6

4000 ft

Google Earth

CRASH SUMMARY - SR 244

Crash #	Date	Time	AM/PM	# Vehicle	#	# Injured	# Dead	# Deer	Light/Dark	Weather Conditions	Surface Condition	Manner of Collision	Road Character	Location	Project Site Nearest to Crash	Distance from Project Site	Primary Factor
					Trailer												
1	3/21/2018	11:35	PM	1	0	0	0	0	DARK (NOT LIGHTED)	BLOWING SAND/SOIL/SNOW	SNOW/SLUSH	RAN OFF ROAD	STRAIGHT/LEVEL	SR244E	DES No. 1901370	4900 FT	SPEED TOO FAST FOR WEATHER CONDITIONS
2	9/16/2017	10:40	PM	1	0	0	0	0	DARK (NOT LIGHTED)	CLEAR	DRY	OTHER - EXPLAIN IN NARRATIVE	STRAIGHT/LEVEL	SR244E	DES No. 1901370	3188 FT	VIEW OBSTRUCTED
3	11/17/2016	7:49	AM	2	0	0	0	0	DAYLIGHT	CLEAR	DRY	RAN OFF ROAD	STRAIGHT/GRADE	SR244E	DES No. 1901370	2947 FT	FAILURE TO YIELD RIGHT OF WAY
4	5/11/2017	10:14	PM	1	0	0	0	1	DARK (NOT LIGHTED)	CLEAR	DRY	COLLISION WITH DEER	STRAIGHT/GRADE	SR244E	DES No. 1901370	2310 FT	ANIMAL/OBJECT IN ROADWAY
5	11/20/2017	11:18	AM	2	0	0	0	0	DAYLIGHT	CLEAR	DRY	STRAIGHT/HILLCREST	RIGHT ANGLE	SR244E	DES No. 1901370	4925 FT	FAILURE TO YIELD RIGHT OF WAY
6	8/16/2017	8:25	AM	2	0	0	0	0	DAYLIGHT	CLEAR	LOOSE MATERIAL ON ROAD	OPPOSITE DIRECTION SIDESWIPE	STRAIGHT/LEVEL	SR244E	DES No. 1901370	5365 FT	DISREGARD SIGNAL/REG SIGN



PROJECT TRAFFIC FORECAST REPORT

DES No.: 1901370

SR-244 At North Branch Clifty Creek, S Side Roadway, 4.79
mi East SR 3

From RP 16+90 to RP 16+90

Rush County

Prepared For

Heather Johnson

On

12/16/2019

By

INDOT, Office of Traffic Statistics
Technical Planning Support & Programming Division
Gregory A. Katter, PE, Supervisor
100 N. Senate Ave, N955
Indianapolis, Indiana 46204
INDOTTrafficForecasts@indot.IN.gov



PROJECT TRAFFIC FORECAST REPORT

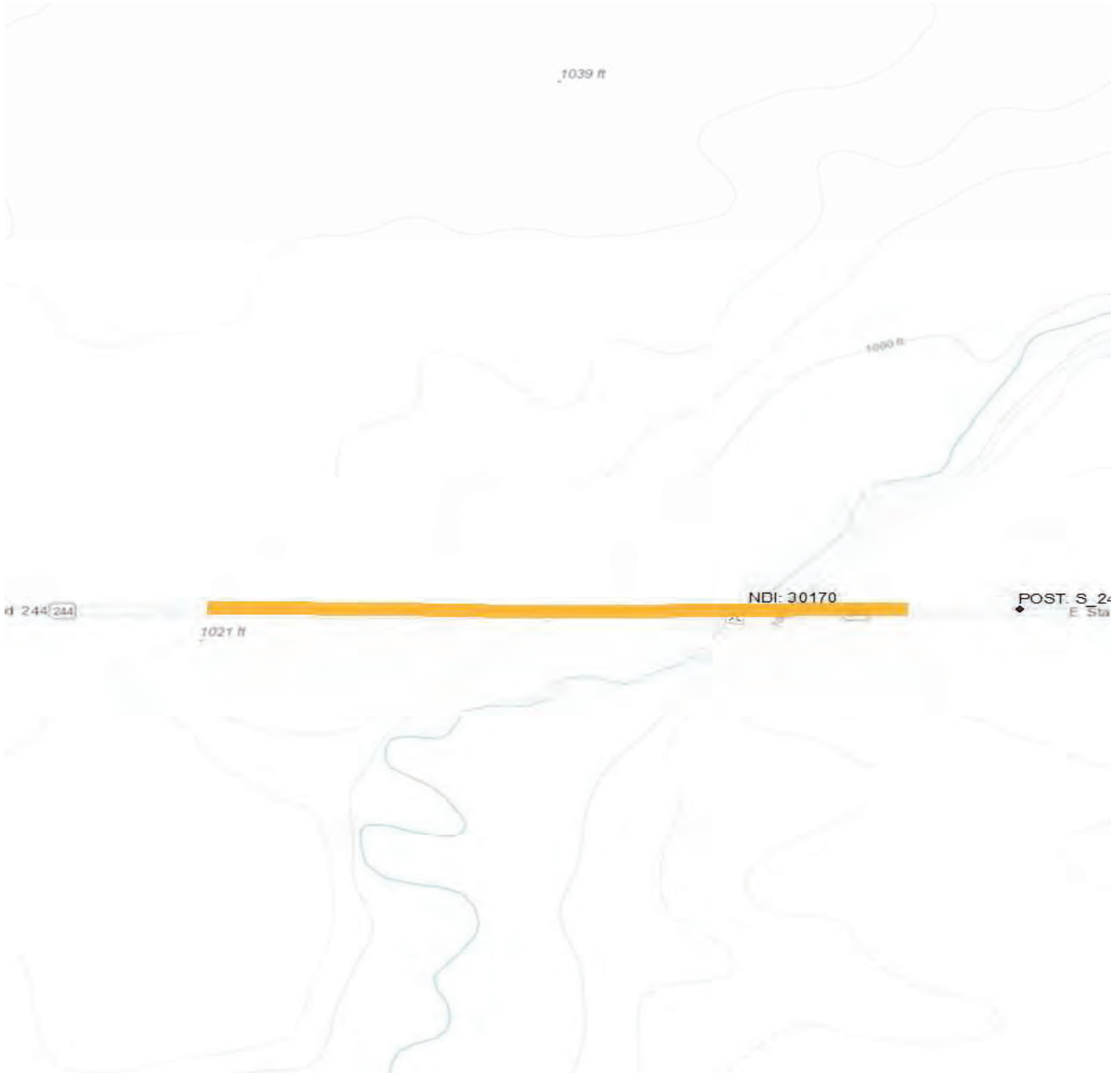
Table of Contents

Project Map

Segment 1 Forecast



PROJECT TRAFFIC FORECAST REPORT



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community



PROJECT TRAFFIC FORECAST REPORT

Segment: 1

Route Name SR 244 WB
From Measure 5.350
To Measure 5.640

Table with 4 columns: Forecast Year, Projected Annual Average Daily Traffic, Negative AADT, Positive AADT. Rows for years 2019, 2020, 2030, 2040, 2050.

Design Hourly Volume (DHV) in Design Year as percentage of AADT

Table with 2 columns: Year, DHV. Row for 2050 showing 9.91%.

Peak Hour Forecast

AM Peak Hour 07:45
PM Peak Hour 04:00

Commercial Vehicles (FHWA Scheme F Classes 4 - 13)

8.37% of AADT
7.75% of DHV

Directional Split

49.08% of AADT Travels in Positive Travel Direction

The per year growth user for this forecast is 0.46% and is applied as a linear growth.

It should be recognized by users of this forecast that the base year AADT has an accuracy of plus or minus 10%. It should also be understood that while this report may include forecasts with up to six apparent significant figures, the accuracy should not be interpreted as being greater than two significant figures. It is the responsibility of designers to exercise professional judgement when using this data to influence decisions.

Attention: You have just completed your Design ticket, not a valid locate request. The ticket you created is for design purposes only and will not be transmitted to any utilities. If you need to have lines located you must call 811 or 800-382-5544.

State: IN Cnty: RUSH Twp: RICHLAND
 Cityname: MILROY Inside: N Near: Y
 Subdivision:

Address :
 Street : IN RT 244
 Cross 1 : S 365 E Within 1/4 mile: N
 Location: NO LOCATION GIVEN
 :
 Grids : 3929A8522A 3929A8523C 3929A8523D

Submitted date: 01/16/2020 Time: 17:36

Service Area	Contact	Phone	Address
DUKE ENERGY	Tim Umbaugh	(765) 349 - 4012	390 N MAIN STREET MARTINSVILLE, IN 46151 tim.umbaugh@duke-energy.com
FRONTIER			
RUSHSHELBY ENERGY			



Project Name: SR 244, 4.79 mi E. of SR 3 **Project Number:** 1901370 **Made By:** MTW 1/15/2020
LochGroup Project Number: 218-0062-10H **Des Number:** 1901370 **Check By:** NAW 1/17/2020

Clear Zone - To Be Used AS Reference for Guardrail Calculations Only

Design Info
 Design Speed 55 mph
 Design Year AADT 1427 vpd
 Typical Section 4:1 Foreslopes assumed

Determine Clear Zone Width For New Construction or Reconstruction

Design Speed (mph)	Design Year AADT, T	Foreslopes		Backslopes		
		6:1 or Flatter	5:1 or 4:1	3:1	4:1 or 5:1	6:1 or Flatter
55	750 ≤ T < 1500	16-18	20-24	10-12	14-16	16-18

*From IDM Figure 49-2A

Clear Zone Selected For This Project: **16 FT**

Obstruction Free Zone

Design Info
 Classification Collector with Shoulders
 Design Speed 55 mph
 Design Year AADT 1427 vpd
 Minimum Paved Shld Width 2'
 Obstruction Free Zone Min Paved Shldr + 6' From Edge of Travel Lane [IDM Ch 55-5.02 (02)]

Obstruction Free Zone = **8 FT**



Project Name:	SR 244, 4.79 mi E. of SR 3	Project Number:	1901370	ERO	1/15/2020
Loch Group Proj Number:	218-0062-10H	Des Number:	1901370	NAW	1/17/2020

Guardrail Calculations

Design Info

Design Speed	55 mph
AADT	750<T<1500
C.Z.	16 FT off edge of travel lane
Cross Section	Two Way Hwy, 12' Lanes, 4' Paved Shoulders
Hazard:	Clear Zone at Riprap Slope
Additional Info	1) If not noted dimensions are in FT

Length of Runout (L_r) = 164 ft (INDOT Figure 55-5B)

EASTBOUND GUARDRAIL

LENGTH OF NEED

Location: Eastbound SR 244

Approach: Equation, Parallel installation of guardrail not on outside of Horizontal Curve

$$L = L_R(L_H - L_2)/L_H \quad (\text{Equation 49-4.4 - INDOT Design Manual})$$

Advance of Hazard

$$\begin{aligned} L &= 164(16 - 4)/16 \\ &= 123.00 \end{aligned}$$

Opposing Hazard

$$\begin{aligned} L &= 164(16 - 16)/16 \\ &= 0.00 \end{aligned}$$

W-BEAM REQUIRED

Hazard Located Right of Sta. 102+84.34

Advance of Hazard

+	123.00	(Length of Need)
-	37.50	(GRET OS, 31")
=	85.50	
	102+84	
-	85.50	
	<u>101+98.84</u>	Beginning of W-Beam
-	50.00	
	101+48.84	Beginning of Guardrail End Treatment

Hazard Located Right of Sta. 102+84.34

Opposing Hazard

Guardrail to connect into guardrail required for bridge.

SR 244 Slide Correction Project

4.79 Miles East of SR 3 @ RP 16+90

Engineering Assessment

Rush County, Indiana
Des No. 1901370

Appendix C

Preliminary Cost Estimates

PRICING REPORT

Date: 02/26/2020
Time: 04:46:19

Project: **SR 244 Slide Correction - Riprap Alt**
 Location: **Rush County**
 County: **RUSH**
 District: **Seymour**

Project ID: **1901370**
 Bid Date: **/ /**
 Route: **244**
 State: **IN**

Pay Item	Description	Quantity	Unit	Bid Price	Extension	Alt
105-06807	additional {20%}	1.000	L.S.	46,500.00	46,500.00	
105-06845	construction engineering	1.000	L.S.	10,000.00	10,000.00	
110-01001	mobilization and demobilization	1.000	L.S.	15,000.00	15,000.00	
201-52370	clearing right of way	1.000	L.S.	10,000.00	10,000.00	
203-02000	excavation, common	300.000	C.Y.	40.00	12,000.00	
207-09935	subgrade treatment, type ic	497.000	SYS	35.00	17,395.00	
303-01180	compacted aggregate no. 53	438.000	TON	35.00	15,330.00	
304-07493	widening with hma, type b	132.000	TON	185.00	24,420.00	
306-08034	milling, asphalt, 1 1/2 in.	883.000	SYS	2.50	2,207.50	
401-07321	qc/qa-hma, 2, 64, surface, 9.5 mm	73.000	TON	140.00	10,220.00	
601-02241	guardrail, remove	350.000	L.F.	12.00	4,200.00	
601-12281	guardrail mgs w-beam, 6 ft 3 in spacing	378.000	L.F.	25.00	9,450.00	
601-94689	guardrail, end treatment, os	2.000	EACH	3,500.00	7,000.00	
616-05688	riprap, class 1	267.000	TON	80.00	21,360.00	
616-12246	geotextile for riprap type 1a	210.000	SYS	5.00	1,050.00	
714-11102	structure, reinforced concrete, box sections, 5 ft. x 2 ft.	85.000	L.F.	500.00	42,500.00	
801-06775	maintaining traffic	1.000	L.S.	30,000.00	30,000.00	

TOTALS	278,632.50
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PRICING REPORT

Date: 02/26/2020
Time: 04:44:22

Project: **SR 244 Slide Correction - Sheet Pile Wall Alt**
 Location: **Rush County**
 County: **RUSH**
 District: **Seymour**

Project ID: **1901370-2**
 Bid Date: / /
 Route: **244** State: **IN**

Pay Item	Description	Quantity	Unit	Bid Price	Extension	Alt
105-06807	additional {20%}	1.000	L.S.	68,500.00	68,500.00	
105-06845	construction engineering	1.000	L.S.	10,000.00	10,000.00	
110-01001	mobilization and demobilization	1.000	L.S.	15,000.00	15,000.00	
201-52370	clearing right of way	1.000	L.S.	10,000.00	10,000.00	
203-02000	excavation, common	300.000	C.Y.	40.00	12,000.00	
206-51817	sheet piling steel {wall}	3,888.000	S.F.	30.00	116,640.00	
207-09935	subgrade treatment, type ic	497.000	SYS	35.00	17,395.00	
301-12233	compacted aggregate no. 8	16.000	C.Y.	45.00	720.00	
301-12234	compacted aggregate no. 53	238.000	C.Y.	45.00	10,710.00	
303-01180	compacted aggregate no. 53	438.000	TON	35.00	15,330.00	
304-07493	widening with hma, type b	132.000	TON	185.00	24,420.00	
306-08034	milling, asphalt, 1 1/2 in.	883.000	SYS	2.50	2,207.50	
401-07321	qc/qa-hma, 2, 64, surface, 9.5 mm	73.000	TON	140.00	10,220.00	
601-02241	guardrail, remove	350.000	L.F.	12.00	4,200.00	
601-12281	guardrail mgs w-beam, 6 ft 3 in spacing	378.000	L.F.	25.00	9,450.00	
601-94689	guardrail, end treatment, os	2.000	EACH	3,500.00	7,000.00	
714-11102	structure, reinforced concrete, box sections, 5 ft. x 2 ft.	85.000	L.F.	500.00	42,500.00	
715-05048	pipe, type 4, circular, 6 in.	108.000	L.F.	40.00	4,320.00	
801-06775	maintaining traffic	1.000	L.S.	30,000.00	30,000.00	

TOTALS	410,612.50
---------------	-------------------

PRICING REPORT

Date: 02/26/2020
Time: 04:51:19

Project: **SR 244 Slide Correction - Sheet Pile Wall Alt w Riprap**
Location: **Rush County**
County: **RUSH**
District: **Seymour**

Project ID: **1901370-3**
Bid Date: **/ /** State: **IN**
Route: **244**

Pay Item	Description	Quantity	Unit	Bid Price	Extension	Alt
105-06807	additional {20%}	1.000	L.S.	73,500.00	73,500.00	
105-06845	construction engineering	1.000	L.S.	10,000.00	10,000.00	
110-01001	mobilization and demobilization	1.000	L.S.	15,000.00	15,000.00	
201-52370	clearing right of way	1.000	L.S.	10,000.00	10,000.00	
203-02000	excavation, common	300.000	C.Y.	40.00	12,000.00	
206-51817	sheet piling steel {wall}	3,888.000	S.F.	30.00	116,640.00	
207-09935	subgrade treatment, type ic	497.000	SYS	35.00	17,395.00	
301-12233	compacted aggregate no. 8	16.000	C.Y.	45.00	720.00	
301-12234	compacted aggregate no. 53	238.000	C.Y.	45.00	10,710.00	
303-01180	compacted aggregate no. 53	438.000	TON	35.00	15,330.00	
304-07493	widening with hma, type b	132.000	TON	185.00	24,420.00	
306-08034	milling, asphalt, 1 1/2 in.	883.000	SYS	2.50	2,207.50	
401-07321	qc/qa-hma, 2, 64, surface, 9.5 mm	73.000	TON	140.00	10,220.00	
601-02241	guardrail, remove	350.000	L.F.	12.00	4,200.00	
601-12281	guardrail mgs w-beam, 6 ft 3 in spacing	453.000	L.F.	25.00	11,325.00	
601-94689	guardrail, end treatment, os	2.000	EACH	3,500.00	7,000.00	
616-05688	riprap, class 1	267.000	TON	80.00	21,360.00	
616-12246	geotextile for riprap type 1a	210.000	SYS	5.00	1,050.00	
714-11102	structure, reinforced concrete, box sections, 5 ft. x 2 ft.	85.000	L.F.	500.00	42,500.00	
715-05048	pipe, type 4, circular, 6 in.	108.000	L.F.	40.00	4,320.00	
801-06775	maintaining traffic	1.000	L.S.	30,000.00	30,000.00	

TOTALS	439,897.50
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SR 244 Slide Correction Project

4.79 Miles East of SR 3 @ RP 16+90

Engineering Assessment

Rush County, Indiana
Des No. 1901370

Appendix D

Hydraulic Information



INDIANA DEPARTMENT OF TRANSPORTATION

Driving Indiana's Economic Growth

100 North Senate Avenue
Room N642
Indianapolis, Indiana 46204

PHONE: (317) 233-2096
FAX: (317) 233-4929

Michael R. Pence, Governor
Karl B. Browning, Commissioner

April 25, 2014

TO: Walter Evans, PE
Design Engineer , Greenfield District

THRU: William Schmidt, P.E.
Senior Hydraulic Engineer

FROM: David Finley, P.E.
Senior Hydraulic Engineer



SUBJECT: Hydraulic Review **UPDATED**
Des. #: n/a
County: Rush
Stream: North Fork Clifty Creek
Location: 0.47 miles west of Richland
Project: Channel bank stabilization

The stream at this site has a rural watershed consisting mostly of row crops. A 1% EP (100-year) flood discharge was requested from the IDNR. Hydraulic analysis was performed with HEC-RAS based on channel cross sections surveyed in the field combined with elevation data obtained from LiDAR data. The table below summarizes the hydrologic parameters for this project:

Site Parameters		
Drainage Area	7.95	mi ²
1% EP Discharge	2400	cfs
1% EP Flood Elevation (approximate)	1000.1	ft.

The purpose of the proposed project is to prevent damage to the SR 244 embankment due to a sharp meander bend on the North Fork Clifty Creek adjacent to the roadway. The project will consist of the installation of bank stabilization measures along the meander in order to reduce the possibility that it will continue to migrate towards the roadway. The two alternate designs that were investigated for this project are discussed in the following paragraphs. Attached to this memorandum are two figures which illustrate the proposed design concepts. These figures could be used as a guide for plan development once an alternate has been selected.

ALTERNATE 1

This alternate consists primarily of a gabion wall that would be placed parallel to the SR 244 embankment. It was assumed that the design of this wall would include the following features:

- Design of the gabion wall should be in accordance with Section 203-6.06(04) Part 2 of the IDM.



INDIANA DEPARTMENT OF TRANSPORTATION

Driving Indiana's Economic Growth

100 North Senate Avenue
Room N642
Indianapolis, Indiana 46204

PHONE: (317) 233-2096
FAX: (317) 233-4929

Michael R. Pence, Governor
Karl B. Browning, Commissioner

- The top of the streamward face of the wall will be located 28 feet south of the centerline of SR 244. From that point, it will slope at an angle of 6° toward the channel. It will not be necessary to excavate or clear the south side of the existing channel to mitigate for the hydraulic impact this wall.
- The length of the wall will be 108 feet.
- The wall will have a maximum height of 12 feet. This would be comprised of a stack of gabions four units high, assuming that each gabion unit will have a cross section of 3 feet by 3 feet.
- Adjacent to the channel, the bottom of the wall should be located at least 2 feet below the existing channel bottom in order to accommodate potential scour.

Any departure from these assumptions should be coordinated with the Hydraulics Unit.

As an option, erosion control blankets and live stakes could be installed on the channel banks adjacent to the wall. This measure help to minimize any additional channel bank instability that might be introduced by the construction of the wall. On the west side of the wall, it would be necessary to excavate the existing channel bank to a slope of at least 1.5:1 in order to ensure the stability of the measure. However, it appears that the existing channel bank slopes on the east side of the wall will be sufficient flat that no additional excavation would be needed.

ALTERNATE 2

This alternate utilizes stone spurs and live staking to redirect the force of the flow away from the eroding channel bank on the outside of the bend. The design for this alternate includes the following features:

- Excavation / reconstruction of the existing channel bank to a 2:1 slope. This slope is necessary to ensure the stability of the stone spurs.
- It was assumed that the construction of a 2:1 bank slope adjacent to SR 244 would place the top of bank approximately five feet away from the existing guardrail alignment. In this area, the slope should be constructed using Class 1 riprap, and the stone will extend into the existing channel. It was assumed that the opposite channel bank would not be excavated so that natural erosion would be able to reshape the channel in this area. In this way, it will be possible to avoid relocating the stream channel to the south. At most, the south stream bank could be cleared of vegetation in order to encourage the natural erosion process.
- Erosion control blankets and live staking would be used between the stone spurs to minimize the potential for erosion due to eddies around the spurs. Adjacent to the SR 244 embankment, the bank would be protected by revetment riprap.
- The spurs should be constructed using Class 1 riprap.

Based on minutes from a meeting conducted at the site, this option may be preferred by the environmental permitting agencies.



INDIANA DEPARTMENT OF TRANSPORTATION

Driving Indiana's Economic Growth

100 North Senate Avenue
Room N642
Indianapolis, Indiana 46204

PHONE: (317) 233-2096
FAX: (317) 233-4929

Michael R. Pence, Governor
Karl B. Browning, Commissioner

Four stone spurs are proposed for this site as shown on the attached drawing. The most upstream spur should be angled with respect to the flow while the other spurs should be perpendicular to the channel bank. The spurs should encroach approximately 20% into the proposed channel and be keyed into the bank a minimum distance of 5 feet. The following table provides a summary of the proposed spur design.

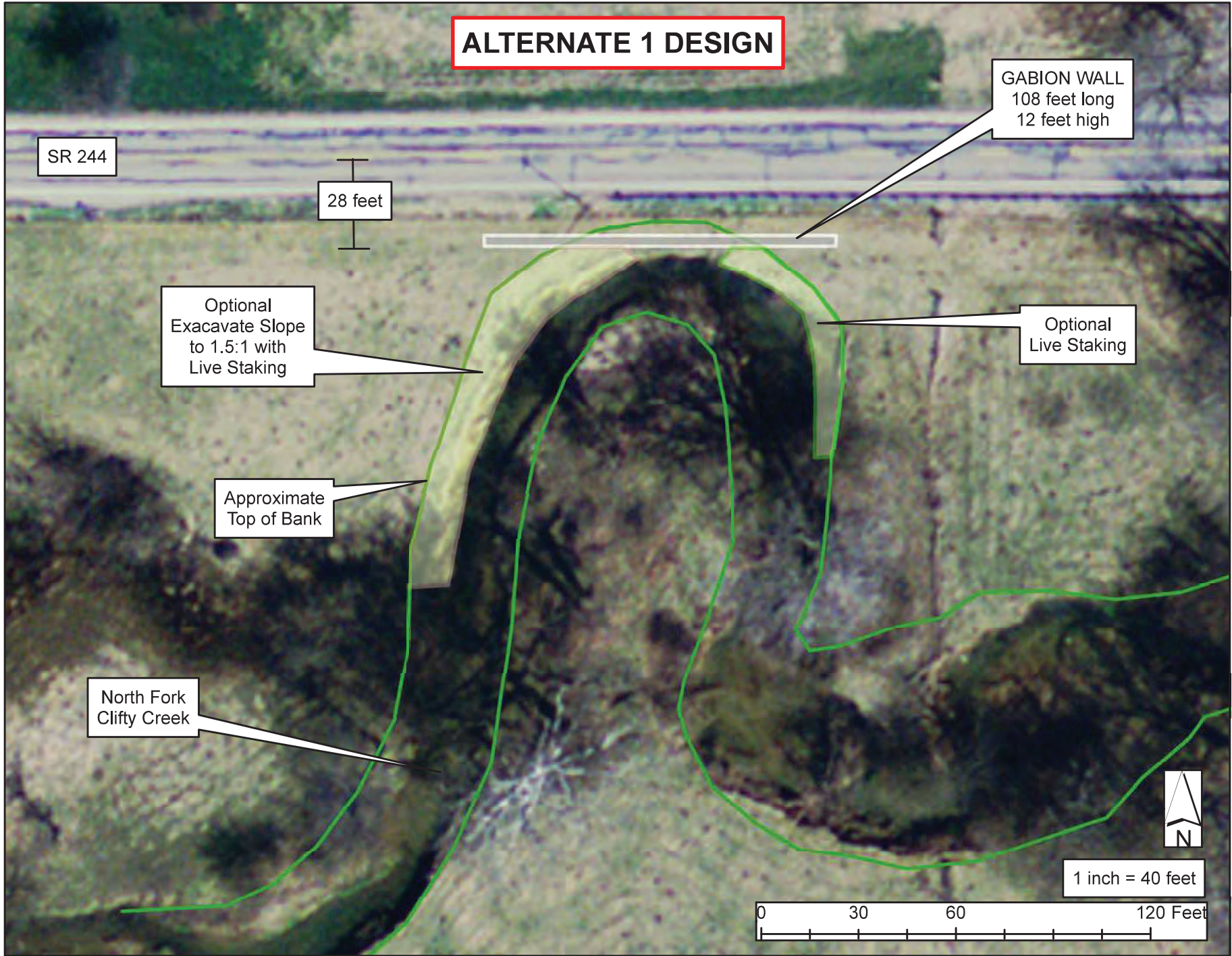
Spur Number	Overall Length (feet)	Encroachment into Channel (feet)
1	33	4
2	23	4
3	27	4
4	29	4

It is anticipated that this project will require a permit for construction in a floodway from the IDNR. The need for this permit should be coordinated with the Environmental Section.

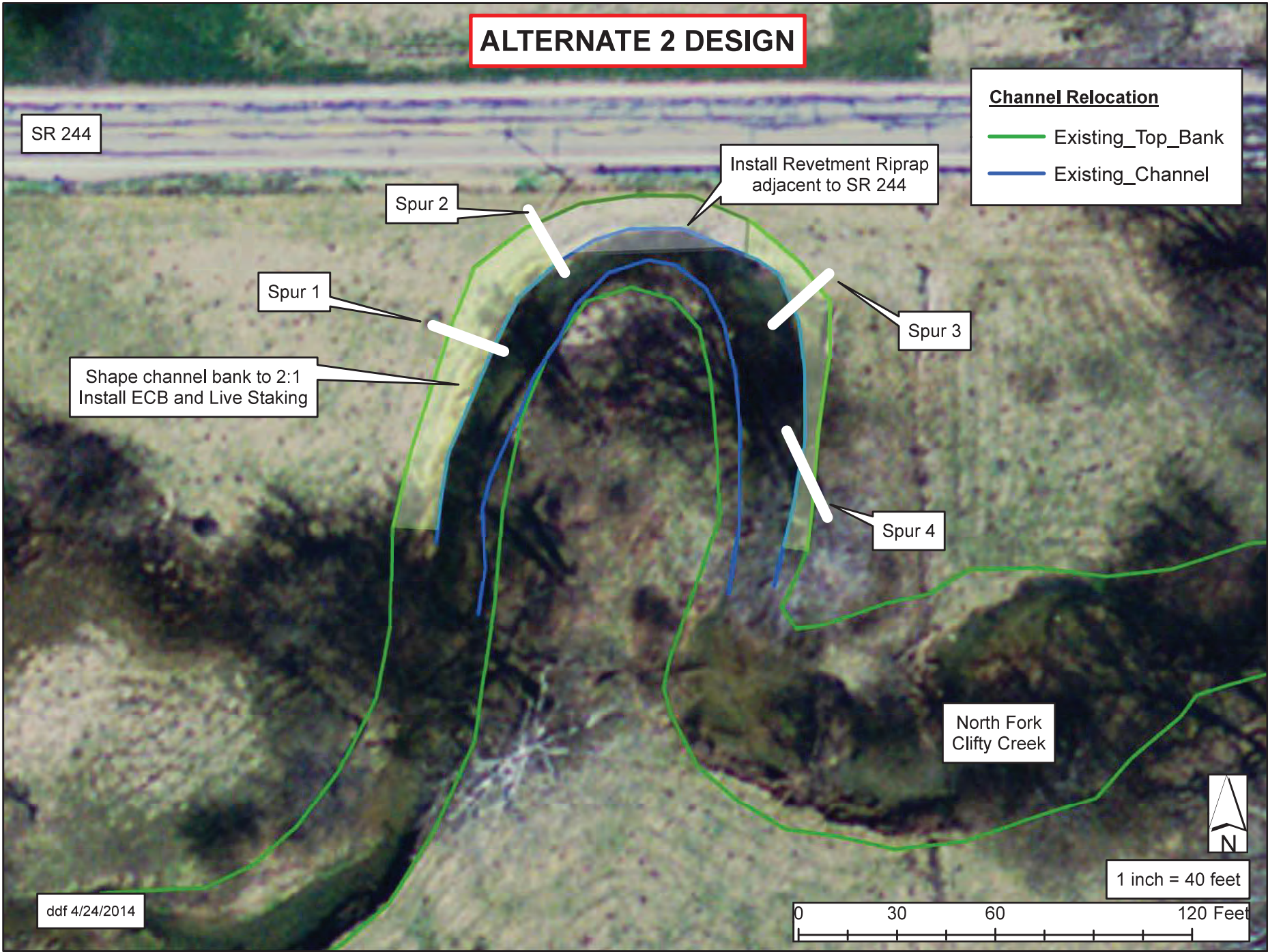
If you have any questions or comments, please contact me at (317) 232-5228.

DDF
cc: file

ALTERNATE 1 DESIGN



ALTERNATE 2 DESIGN





INDIANA DEPARTMENT OF TRANSPORTATION

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

Eric Holcomb, Governor
Joe McGuinness, Commissioner

March 8, 2018

TO: Donald McGhghy
INDOT project Manager

FROM: David Finley, P.E.
Hydraulics Engineer

REVIEWER: Anthony D. Cox, P.E.
Hydraulics Engineer



SUBJECT: HYDRAULIC SCOUR DESIGN
Route: SR 244 over NFK Clifty Creek
Location: 4.86 miles east of SR 3
Bridge #: 244-070-05846A
NBI #: 03017
Des. #: 1593221
County: Rush
CIF permit: No

A scour analysis has been completed for the above-referenced structure. Data for the analysis was collected from LiDAR elevation data as well as the 1968 plans for the existing structure. The 1% EP discharge for this site was taken from an IDNR RECFARA letter for a bank stabilization project immediately downstream from the bridge. Data for the bridge was added to the hydraulic model for that project using the HEC-RAS computer program.

After review, the following scour parameters are recommended:

Drainage Area	=	7.95	sq. mi.
1% EP Discharge	=	2400	cfs
1% EP Elevation	=	1001.16	feet
1% EP Contraction Scour	=	10.39	feet
1% EP Total Scour	=	13.57	feet
1% EP Low Scour Elevation	=	979.07	feet
Estimated Pile Tip Elevation	=	982.9	feet
1% EP Average Velocity	=	8.02	ft/sec
1% EP Max Velocity	=	10.68	ft/sec

The above data is based on erodible soil and a flow line elevation of 992.64 feet NAVD. The estimated pile tip elevation was obtained from the 1968 plans.

Because the computed low scour elevation is lower than the estimated pile tip elevations the bridge is determined to be scour critical and the following countermeasures are recommended: The countermeasures on the abutments should consist of class 1 riprap a minimum of 2 feet deep with a 2 by 2-foot key at the toe. Because no clear photographs were available for the existing abutments, it was not possible to look at the condition of any existing riprap on the abutments. If the abutments currently have revetment riprap that is in good condition, an alternate countermeasure would consist of repairing any areas that may be in bad condition and then partially grouting the revetment riprap on the abutments.





INDIANA DEPARTMENT OF TRANSPORTATION

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

Eric Holcomb, Governor
Joe McGuinness, Commissioner

Around the pile bents, class 2 riprap should be placed at a width of 6 feet from all faces of the piles and at a minimum depth of 4 feet. When placing the riprap, the areas should be excavated so that the top of the riprap will match the existing ground surface.

Because the drainage area at this site is less than 50 square miles, the scour countermeasures will not require a construction in a floodway permit from the IDNR.

If you have any questions or comments, please contact me by e-mail at dfinley@indot.in.gov.

ddf

cc: Peter White
File

National Flood Hazard Layer FIRMette



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) <i>Zone A, V, A99</i>
		With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i>
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile <i>Zone X</i>
		Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i>
		Area with Reduced Flood Risk due to Levee, See Notes, <i>Zone X</i>
		Area with Flood Risk due to Levee <i>Zone D</i>
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard <i>Zone X</i>
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard <i>Zone D</i>
		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5 Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
MAP PANELS		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
		Digital Data Available
		No Digital Data Available
		Unmapped

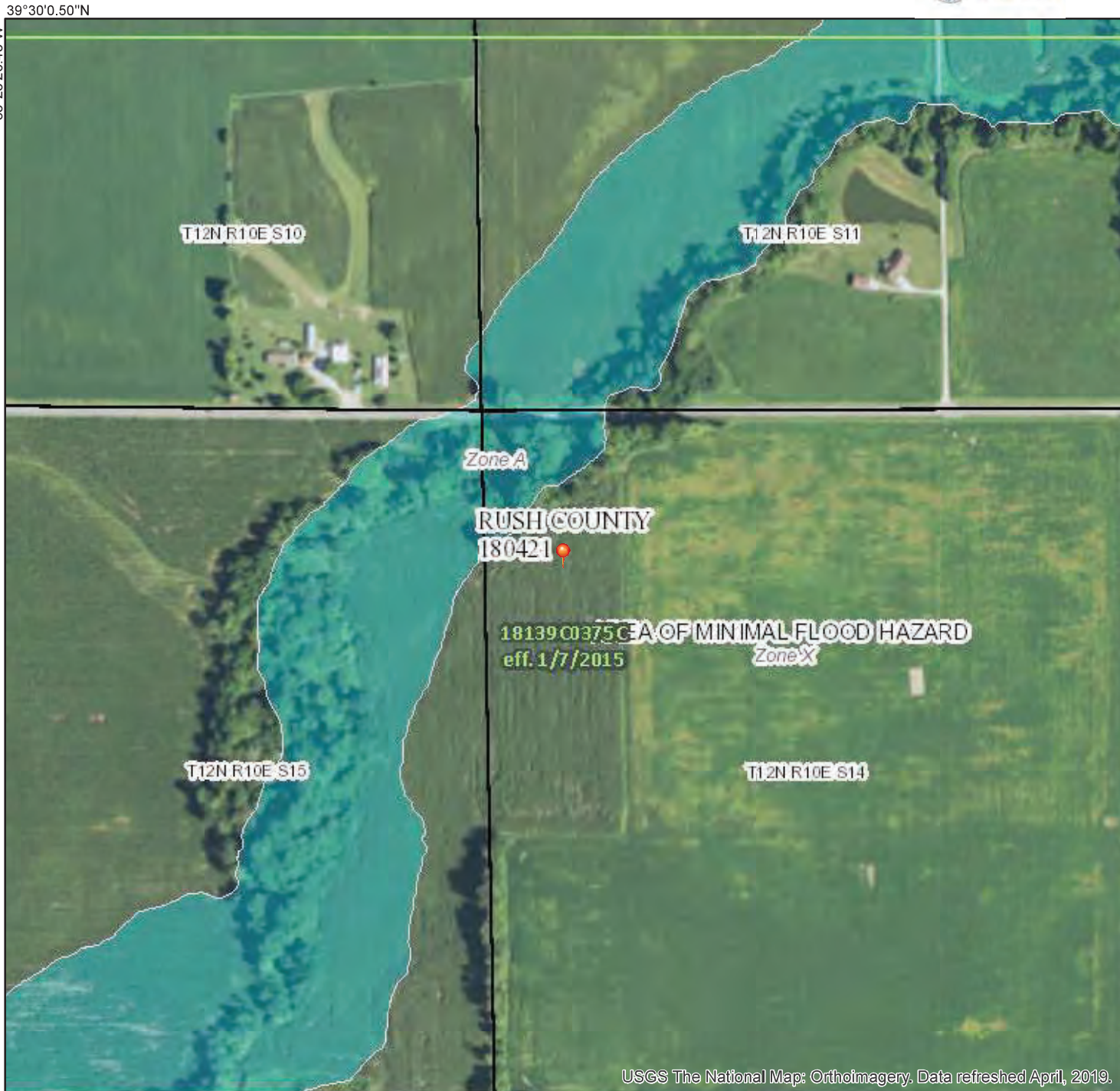


The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

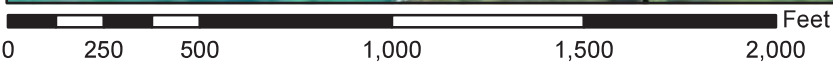
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **1/16/2020 at 6:15:07 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



39°30'0.50"N

85°23'26.45"W



1:6,000

39°29'32.74"N

85°22'48.99"W

USGS The National Map: Orthoimagery. Data refreshed April, 2019.

SR 244 Slide Correction Project

4.79 Miles East of SR 3 @ RP 16+90

Engineering Assessment

Rush County, Indiana
Des No. 1901370

Appendix F

Correspondence & Meeting Minutes

MEETING MINUTES

Date of Meeting: 09/26/2019 **Re:** Des No. 1901370
SR 244 Erosion/Slide Correction Field Review

Location: SR 244, 4.87 miles east of SR 3, Rush County **Issue Date:** 10/04/2019

Submitted By: Nick Will, P.E. (Lochmueller Group)

In Attendance: Heather Johnson, INDOT Greenfield District PM
Mark Blake, INDOT Greenfield District PM
Jon Korff, INDOT Greenfield District Drainage
Victoria Leffel, INDOT Geotechnical Services
Merril Dougherty, INDOT Hydraulics
Michael Walsh, Lochmueller Group
Nick Will, Lochmueller Group

ITEMS DISCUSSED:

- Erosion has been occurring causing instability of the embankment between the oxbow in the North Branch Clifty Creek and SR 244 approximately 4.87 miles east of SR 3. This has resulted in the edge of the eastbound pavement failing and the eastbound guardrail to lean. Potential causes of the failures are thought to be a combination of:
 - The erosion of the oxbow has caused the existing North Branch Clifty Creek to migrate north towards SR 244 creating instability in the soil.
 - Overtopping of the roadway during higher rainfall events causing the erosion/pavement failure.
 - This overtopping may be due to the lack of a roadside ditch along the westbound lane from the adjacent farm field and/or from the roadway being overtopped during flood events. The area of study is located within a FEMA Flood Zone.

6200 Vogel Road
Evansville, Indiana 47715

PHONE: 812.479.6200 • TOLL FREE: 800.423.7411

- Ms. Johnson is going to check if Maintenance has been out to the site to clean off the road or do any maintenance in the last 5 years (Riprap has been added in the last year behind the guardrail to try and stabilize the shoulder/guardrail).
- It was noted at the field review that the erosion may have slowed as there were signs of grass growth in portions of the eroded areas along the bank of the creek. However, this may be a result of the lack of rain over the past few months.
- Mr. Dougherty and Mr. Will discussed if reconstructing the existing channel bank with riprap would be an appropriate solution. It was noted that hydraulic analysis would need to be completed.
- Mr. Dougherty stated he would review the hydraulic files of the bridge located adjacent to the project.
 - Please note the bridge is Bridge No. 244-070-05846A, SR 244 over NFK Clifty Creek
 - Following the field review Mr. Dougherty located 2 hydraulic files. One is a scour memo for the bridge. The second is a memo for the drainage issue at the creek oxbow that is in question.
 - Lochmueller will coordinate with INDOT Hydraulics on the appropriate solution to the creek erosion and the proposed solution will be included in the abbreviated engineering assessment.
- The proposed correction will include the construction of a roadside ditch along the westbound lane where there is currently no ditch. It is anticipated the proposed ditch will tie-into the existing roadside ditch further east near the end of the existing outgoing guardrail of the bridge.
 - A field entrance with a culvert will likely be required to provide access to the adjacent farm field.
- The proposed correction will include the replacement of the leaning guardrail and failed pavement. The group decided to replace all of the existing incoming guardrail along eastbound lane due to its existing condition. It is noted in addition to the guardrail leaning, a portion of the guardrail had been crashed into further east near the bridge approach. The bridge itself and the other 3 corners of guardrail will not require work and the such guardrail will not be upgraded to current MASH standards.
 - The existing shoulder pavement will be sawcut to remove the existing failed pavement and then be widened as necessary to accommodate the proposed guardrail.

October 4, 2019

Page 3

- Other Items of Note:
 - A scour hole is located on the southwest corner of the bridge near the bridge approach. A standard riprap turnout will be provided to correct this as part of the proposed project.
 - Existing overhead utility poles/lines along the eastbound lane will require relocation.
 - INDOT requested Lochmueller Group complete an abbreviated Engineering Assessment due to the change in scope from the Mini-Scope.
 - It is anticipated a Geotech Waiver will be appropriate for the project. This will be verified at the Preliminary Field Check.
 - Mr. Will noted that 4 previously documented archeological sites were found within 1000' of the project site, but they were not considered eligible for the national register. However, a Phase 1A Archeological study will still be required as part of the project development.
 - Lochmueller Group is currently under contract to complete an Engineering Assessment, a Red Flag Investigation, Survey, and Geotech (Earth Exploration as Sub Consultant) as Phase 1 of the project development.
 - Since Geotech is not required Earth Exploration will not complete this part of the contract.
 - Phase 2 of the contract will include Lochmueller Group completing Design, Utility Coordination, CE Document Preparation, Permitting, and ROW Engineering.

The above constitutes our understanding of the meeting. If you believe there are omissions, additions, or corrections, please send your written comments within seven working days to Lochmueller Group.

Will, Nick

From: Johnson, Heather K <HJohnson1@indot.IN.gov>
Sent: Monday, January 6, 2020 2:24 PM
To: Will, Nick
Cc: Blake, Mark; Wineinger, Darryl
Subject: RE: Des 1901370 - SR 244 Erosion/Slide Correction Notes/Recommendation

Follow Up Flag: Follow up
Flag Status: Flagged

Nick,

Your notes are agreeable, please put them in Final Scoping/AbbEngRpt and submit as soon as possible. To help save some time, I would like to suggest emailing the report to Aschalew Aberra and copy the team. This way we don't have to fight with ERMS. We can upload the document after Aschalew comments that way it is in there, but by emailing it will save time now.

Aschalew Aberra : aaberra@indot.in.gov

Thank you,

Heather K. Johnson
Right of Way & Utility Coordinator
Greenfield CPM
32 South Broadway
Greenfield, IN 46140
Office: (317) 467-3900
Email: hjohnson1@indot.in.gov



From: Will, Nick [mailto:NWill@lochgroup.com]
Sent: Friday, January 3, 2020 6:39 PM
To: Johnson, Heather K <HJohnson1@indot.IN.gov>; Blake, Mark <MBlake@indot.IN.gov>; Wineinger, Darryl <DWineinger@indot.IN.gov>
Subject: Des 1901370 - SR 244 Erosion/Slide Correction Notes/Recommendation

****** This is an EXTERNAL email. Exercise caution. DO NOT open attachments or click links from unknown senders or unexpected email. ******

All

After discussing and receiving feedback from INDOT Geotech, INDOT Hydraulics, and our Permitting Department on the preliminary alternatives I have the following notes and preliminary recommendations:

- Alternatives – Recommend proceeding with Riprap Alternative
 - Alternative 1 - Gabion Wall
 - The District and INDOT Geotech prefer a Sheet Pile Wall over the use of gabion baskets.
 - This alternative is therefore not recommended.
 - Alternative 2 – Riprap
 - Stone spurs to redirect flow as well as excavating the existing channel bank and reconstructing it with Class 1 Riprap.
 - Anticipated to have lowest construction cost estimate
 - Will require 401/404 Permit and Construction in a Floodway Permit
 - Will not require full Geotechnical Investigation for the proposed alternative. May require pavement cores for pavement design and general instruction from INDOT Geotech.
 - Alternative 3 – Sheet Pile Wall
 - Replaces the Gabion Wall alternative
 - Anticipated to have higher construction cost estimate than riprap
 - Will require 401/404 Permit and Construction in a Floodway Permits
 - Will require full Geotechnical Investigation to be completed which could cause delays
- Additional Construction (not specific to alternatives)
 - Westbound Ditch construction is recommended to facilitate roadside drainage and help reduce flooding during higher volume storm events.
 - Pavement construction is anticipated to include shoulder widening to accommodate the current construction of guardrail and potential future projects along the SR 244 corridor. This will result in 12' travel lanes and 4' paved shoulders.
- Schedule
 - Schedule critical factors
 - Estimated Permitting Schedule
 - Complete Waters Report in April 2020 and be approved in May 2020. The waters report cannot be completed until there is vegetation occurring in the spring time.
 - Development of 401/404 Permit and Construction in a Floodway Permits can begin during the spring and anticipated to be complete and ready for submittal in June/July 2020.
 - 401/404 Permit Individual Permit may be required which will require historic, archeology, and endangered species portions of CE document to be completed prior to submitting permit. Approval of Permit can take 90 to 120 Days
 - Construction in a Floodway Permit may require hydraulics to be completed due to it having a drainage area greater than a square mile and it not being a bridge. Also, a potential for floodway mitigation due to tree removal (if required, should be able to mitigate on-site). CIF Permits have been taking up to 8 to 9 months to be reviewed/approved.
 - R/W
 - Estimated 3 Parcels
 - Current Letting Date – 05/05/21
 - Stage 3/Permitting Complete/RW Docs to District - 12/11/20
 - Based upon the current estimated permit timeframes, the permits may not be obtained until Feb/March 2021. This would coincide with a July/August 2021 Letting Date. Which would also provide more time for RW acquisition.
 - Next Submittal Date
 - Engineering Assessment – 01/17/19
 - Assuming we will not be waiting on a geotechnical investigation, Lochmueller is working towards this date.

Please review and comment on my notes. I want to make sure we are all in sync with what the project entails and what is expected moving forward due to the many questions and comments, especially regarding the need for a geotechnical investigation, that were being discussed before Christmas.

I will be available if a conference call is needed to discuss.

Thanks

Nick

Nicholas Will, PE

Project Manager - Associate

Lochmueller Group

6200 Vogel Road, Evansville, IN 47715

812.759.4159 (direct) | 812.306.6272 (mobile)

NWill@lochgroup.com

<http://lochgroup.com>

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SR 244 Slide Correction Project

4.79 Miles East of SR 3 @ RP 16+90

Engineering Assessment

Rush County, Indiana
Des No. 1901370

Appendix G

Project Mini Scope & Photos

Call Application Report Project (Mini Scope)

FORM VERSION: 7/6/2015 FORM VERSION BY: Andrew Fitzgerald, PTOE, PE

Date:	6/6/2018	District:	GREENFIELD	SCORE:
DES:	TBD	Sub-District:	Greenfield	
Proposed FY:	2019	Asset Group:	BRIDGE	
Work Type:	Slide Correction	Work Category:	Slope Stability	

Project Location

Route:	SR 244	City/Town:	Richland	County 1	Rush	County 2	
RP Start:	16+90	Latitude Start:	39.49718° N	Longitude Start:	85.38646° W		
RP End:	16+90	Latitude End:	39.49718° N	Longitude End:	85.38646° W		
AA DT FY:	2017	AA DT:	1,382	% Trucks:	30.0%		
Length:	-	# Lanes:	2	Lane Mi:	-		
Func. Class:		Area:		NHS:			
Rel Key		Small Structure Detail #:		Bridge / Culvert: Length (FT) / Width (FT):		Bridge Area (SFT):	Year Built:
Location Description:	SR 244 at North Branch Clifty Creek, S side of roadway, 4.79 mi. E of SR 3						

SEE IT: WHAT IS THE CURRENT AND PROJECTED CONDITION AND WHY IS THIS A PROBLEM (FOCUS ON THE PROBLEM):

On SR 244 near the North Branch Clifty Creek, the waterway on the south side of the road has begun to erode the embankment, which has created slope stability concerns along the roadway. This embankment slipping has resulted in guardrail posts becoming unstable and, due to the proximity of the SR 244 shoulder, there are concerns of the asphalt beginning to fail as a result of further creek erosion. Reportedly, a tree fell in the creek that partially blocked the natural waterway opening and this reduction in channel area has resulted in increased creek velocities, which has apparently exasperated the embankment erosion.

With roadside slopes in jeopardy, action needs to be taken to avoid further erosion of the SR 244 embankment. Additionally, existing guardrail posts needs to be reset in solid ground to ensure any impact will result in satisfactory performance of this safety feature.

This report includes relevant background data, analyses, conclusions and recommendations at the preliminary level. This report guides the ongoing environmental and subsequent design and planning phases. The recommended alternative contained herein is intended to serve as an initial basis for design. However, detailed analysis by the designer may result in changes to certain aspects of this report. Any changes to the recommended alternative should be coordinated with the Greenfield District Scoping Engineer.



DATE AND TYPE OF LAST MAJOR TREATMENT:		DATE:			
PROJECT CONDITION RATINGS:	LOS:	Crash Rate:	Icc:		
Wearing Surface:	Deck:	Bridge/Culvert Super:	Substructure (Bridge/ Culvert):		
Type I Culverts/ pipes:	Bridge Scour:	Bridge Paint:	Culvert Sub		
AVG. IRI:	MAX. IRI	AVG. RUT	MAX RUT		FI AVG:

INTENT/ PURPOSE OF PROJECT (INITIAL STATEMENT OF ESSENTIAL PROJECT PURPOSE):

The purposes of this slope stability project is to prevent further deterioration of the SR 244 roadway embankment, restore compromised guardrail sections, and, if possible, mitigate the underlying cause of the erosion (fallen tree).

Completed FULL SCOPE:	KPI Delta:	KPI UNIT:	
-----------------------	------------	-----------	--

OWN IT: Alternatives

PRELIMINARY ALTERNATIVES THAT ARE CONTEMPLATED (ANALYSED) WITH COSTS:

ALTERNATIVE #1: Alternative 1 consists of installing gabion baskets to stop further erosion along the banks of the North Branch of Clifty Creek and prevent further slipping of the guardrail and shoulder of SR 244. However, the Office of Geotechnical Services has not confirmed the suitability of gabion baskets to mitigate this slope stability problem. If Geotechnical Services offers an alternative solution for this project, this Mini-Scope will need to be revised accordingly. Additionally, regardless of the Geotechnical recommendation, the portion of guardrail that has been weakened by embankment movement will be removed and reset once the soil has been stabilized. For this alternative, approx. 0.20 ac. of R/W will need to be purchased to ensure the work is performed on state owned property. A second Desirable Outcome of this project is to coordinate fallen tree removal with the County Surveyor or Drainage Board to help minimize the effect of erosion on the embankment. The estimated cost for this option is **\$93,000**.

ALTERNATIVE #2: Do Nothing. This alternative does nothing to the drainage system and avoids any upgrades to the existing structure. This Alternative does not require any money, but it also does not allow for upgrades to INDOT's roadway assets.

Alternative #1 is the preferred Alternative. It is recommended Alternative #1 be implemented. This option will create a stable embankment, improve the existing guardrail system, and stop further extensive soil loss near SR 244.

CONSEQUENCES IF NO ACTION IS TAKEN (DO NOTHING ALTERNATIVE IS SELECTED):

If no action is taken, the roadway embankment will continue to erode and the guardrail system will continue to deteriorate. Also, the INDOT standard of "Taking Care of What We Have" will not be recognized.

Attach extra sheets as necessary to fully describe the alternatives.

Will Further Analysis/Assessment be required beyond this form?

YES

SOLVE IT: Project Recommendations and Costs

QUANTIFIABLE PRIMARY GOAL(S) OF PROJECT (WHAT ARE WE PURCHASING SUCH AS CONDITION, SERVICE LIFE, LOS, OR CRF):

Alternative #1 has been selected as the preferred alternative. Based upon economic analysis, lifetime of the improvement, forecasted environmental and construction impacts, as well as disruption to the local community, this alternative is considered feasible and prudent.

Estimated Total Project Costs:	\$	93,000	COMMENTS
Right of Way Purchase (RW1):	COST:	\$ 5,000	Single Parcel
Right of Way Services (RW2):	COST:	\$ -	
Preliminary Engineering 1 (PE1):	COST:	-	In-House
Preliminary Engineering 2 (PE2):	COST:	\$ -	
Maintenance of Traffic:	COST:	\$ 15,000	Signage is part of this estimate
Railroad PE (RR1):	COST:	-	
Railroad PE (RR2):	COST:	-	
Environmental Study:	COST:	\$ -	
Utilities PE (UT1):	COST:	\$ -	
Utilities CN (UT2):	COST:	\$ -	
Construction (CN):	COST:	\$ 68,178	Includes 20% contingency
Construction Engineering (CE):	COST:	\$ 1,378	Assumed 2% of project cost
Relinquishment Payment (RQP):	COST:	\$ -	
Other Considerations:	COST:	\$ 3,444	Mobilization and de-mobilization

Other Projects within Limits

DES:	1593221	FY:	2019	Work Type:	Substr. Repair & Rehab.	Location:	Bridge over North Fork Clifty Creek
DES:	1500345	FY:	2017	Work Type:	HMA Overlay, Minor Str.	Location:	SR 244 around the Richland area
DES:		FY:		Work Type:		Location:	

Miscellaneous Notes

ANTICIPATED NUMBER OF CONSTRUCTION SEASONS TO COMPLETE(1, 2 or 3 seasons):	1
ANTICIPATED NUMBER OF YEARS TO COMPLETE DESIGN (1, 2 or 3 fiscal years):	1

Attachments

Pictures	YES	Asset Team Scoring Sheet:	NO	Mobility History:	NO
Spreadsheets (calcs):	NO	Engineer Assessment:	NO		
Solution Schematic:	NO	Bridge/Culvert Inspection Report:	NO		
Cost Calculations:	YES	Accident History:	NO		
Location Map:	YES	Pathway Data:	NO		

Additional Comments

Other items relevant to the project not specifically listed elsewhere:

Based on numerous R/W investigations along this portion of SR 244, State owned property extends only from edge-of-pavement to edge-of-pavement. For this proposed work, additional R/W will need to be purchased, as referenced in Attachment 2 - Parcel Information of this report.

Based on a review of the Indiana Department of Natural Resources Historic Inventory Database, Linear Wetlands run along the creek bed and there are 2 delineated wetlands within a 0.5 mile radius of this project location. See Attachment 3, Environmental - Historical Map for additional information.

The fallen tree, or other obstruction, that is reportedly contributing to the roadside slope stability problems should be discussed with the County Surveyor or Drainage Board to remove these impediments from the waterway. Construction of both gabion baskets and tree/obstruction removal should occur simultaneously to ensure further bank erosion will be minimized.

See Attachment 4 - Site Photos for additional information on the slope stabilization issues. Additionally, Attachment 5 - Cost Estimate - provides a general cost breakdown of the anticipated construction measures.

Report Prepared By and Approved By

Report Prepared By and Approved By	Title:	Signature
Prepared by:		
Prepared by: Doug Corey 6/7/2018	District Scoping Engineer	Doug Corey
Reviewed by: David Bracamontes 6/8/2018	District Scoping Engineer	David Bracamontes
Approval by: Aschalew Aberra 6/8/2018	District Scoping Manager	Aschalew Aberra Date:

NOTE: Any changes require a re-submittal of Call Application Report.

FORM VERSION: 7/6/2015

FORM VERSION BY: Andrew Fitzgerald, PTOE, PE

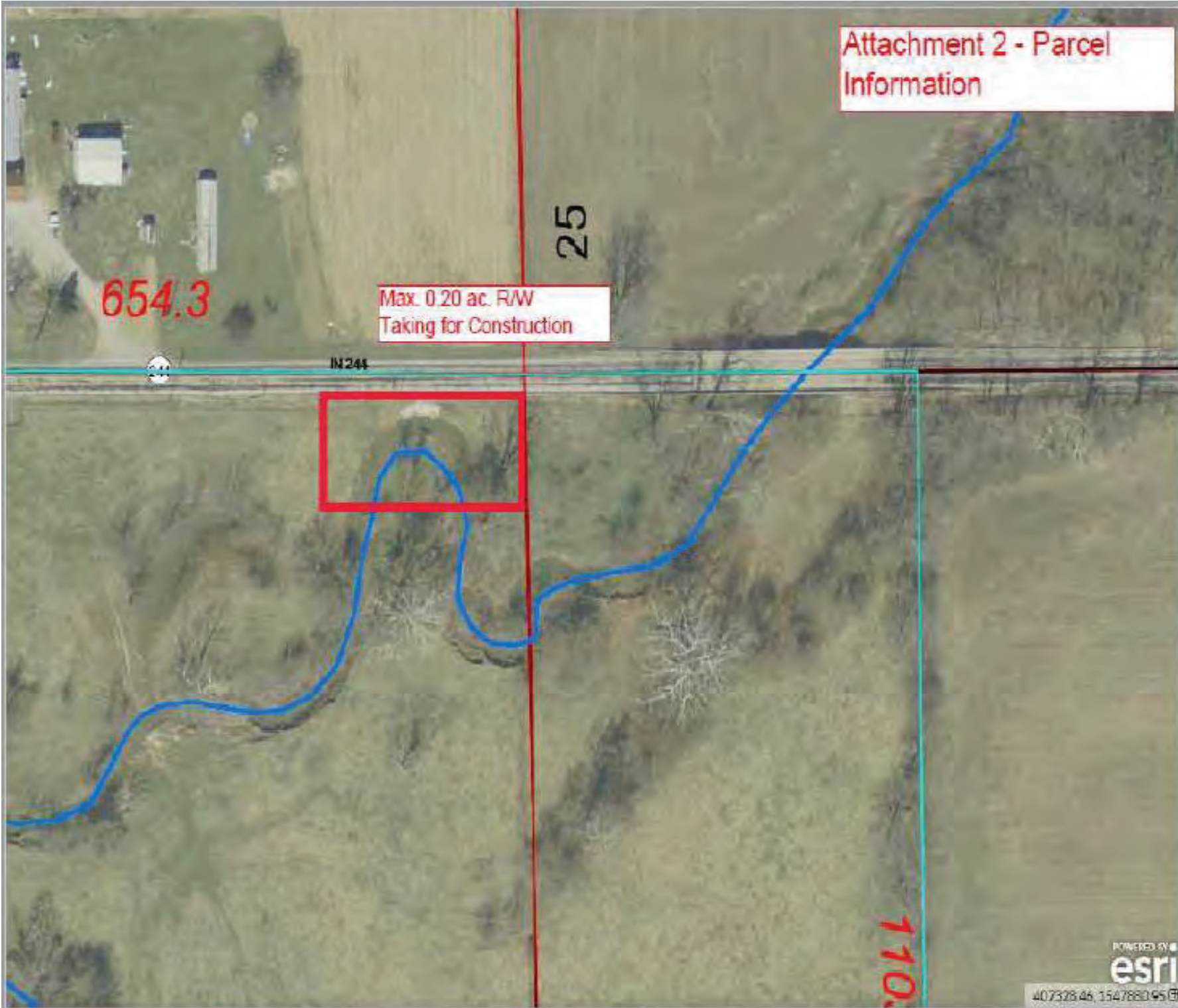
SR 244
Slope Stabilization
RUSH COUNTY

ATTACHMENT 1
LOCATION MAP
Page 1 of 1



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

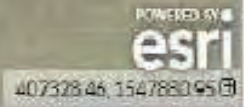




Attachment 2 - Parcel Information















Results:

ParcelID	70-15-15-226-001000-007
AltId	PG 15-12
Address	2531 ESTATE ROAD 244
Owner	DIERCKMAN, DANIEL JOSEPH
Acres	156.103
View	Parcel Report Google Maps






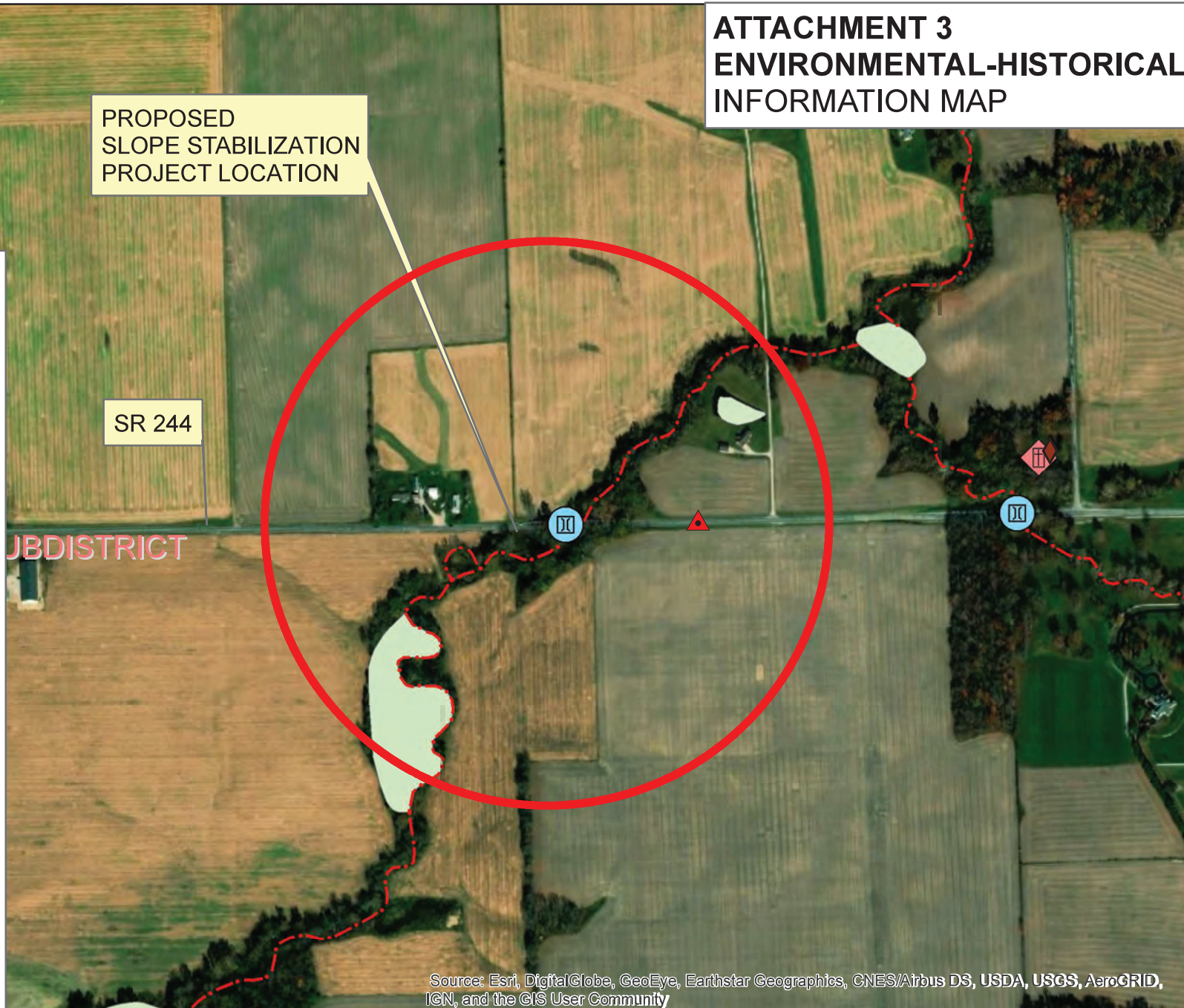
PROPOSED
SLOPE STABILIZATION
PROJECT LOCATION

Legend

-  Reference Post
-  Linear Wetland
-  Pipelines
-  Bridges
-  Hazardous Site
-  NPDES Outlet
-  NPDES Facility
-  Historic Site
-  Historic Property
-  Historic Bridge
-  Cemeteries
-  Historic National Registry District
-  NWI Wetland
-  Managed Lands

Flood Zone

-  0.2% Flood
-  0.2% Flood w/ Channel
-  1% Flood



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Source:
Non Orthophotography Data - Obtained from the State of Indiana Geographical Information Office Library
Orthophotography - Obtained from Indiana Map Services
<http://gis.in.gov/arcgis/services>
Map Projection: UTM Zone 16 N
Map Datum: NAD83

Note
 The information displayed on this map is based on data obtained from GIS layers provided by the Indiana Geographical Information Office. The data should not be relied upon for final design without field confirmation of the data



SR 244 – Slope Stabilization – RP 16+9



ATTACHMENT 4 – SITE PHOTOS



PRICING REPORT

Project: Gabion Baskets
 Location: SR 244, near RP 16+9
 County: Rush
 District: Greenfield

Project ID:
 Bid Date:
 Route: SR 244

Alternative #1 - Gabion Basket Wall Construction					
Item No.	Description	Quantity	Unit	Bid Price	Extension
1	Excavation, Common	100	CYS	\$45	\$4,500
2	Gabions Metallic Coated	115	CYS	\$250	\$28,750
3	Revetment Riprap	175	TON	\$85	\$14,875
4	Geotextile for RipRap	50	SYS	\$15	\$750
5	Guardrail, Remove & Reset	50	LF	\$100	\$5,000
6	Maintaining Traffic	1	L.S.	\$15,000	\$15,000
7	Project Estimate Adjustment (20% Contingency)	1	L.S.	\$13,775	\$13,775
				SUBTOTAL	\$82,650
8	Right of Way Budget	1	L.S.	\$5,000	\$5,000
9	Construction Engineering (2%)	1	L.S.	\$1,378	\$1,378
10	Mobilization and Demobilization (5%)	1	L.S.	\$3,444	\$3,444
				CN TOTAL	\$93,000
				TOTAL EST.	\$93,000

Looking West along the north side of the westbound lane.
Existing shallow swale with no outlet pipe or ditch.

09/26/19





Looking East along the north side of the westbound lane.
Existing turn down guardrail, tree to be removed, and
roadside ditch begins.

09/26/19

Looking West along the south side of the eastbound lane.
Existing guardrail and shoulder deterioration.

09/26/19





Looking East along the south side of the eastbound lane.
Existing guardrail and shoulder deterioration.

09/26/19

Corn Stalks from apparent flooding



Looking East along the south side of the eastbound lane.
Begin of Project.

09/26/19

Looking East along North Fork Clifty Creek. Existing erosion.

09/26/19



Looking West along North Fork Clifty Creek. Existing erosion.

09/26/19

