Des No 1701394 CE-2

Appendix F

Water Resources

Waters Report
US 224 over Holthouse Ditch Bridge Project in Adams County, Indiana
Asset ID: 29120
Structure Number: 224-01-01546
Des. No. 1701394

Report Completed on: November 1, 2019
Prepared for:
SJCA PC

Prepared By:
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Field Investigation Dates: July 10, 2019

Site Location:
Sections 4 and 33, Township 27 and 28 North, Range 14 East
Decatur 1:24,000 Quadrangle
Adams County, Indiana
Latitude 40.832252, Longitude -84.955699

Project Description:
Des 1701394 includes the replacement of the bridge carrying US 224 over Holthouse Ditch in Adams County, Indiana. The existing bridge (Structure 224-01-01546) is a single span reinforced concrete arch bridge that is 45.5 feet long with a 36.7-foot clear roadway width. The structure was built in 1936 and has not been rehabilitated since initial construction. The existing bridge exhibits deterioration in the substructure and superstructure. Specifically, there is cracking and spalling throughout, with heavy deterioration in the arch ring and headwalls. Two wings of the abutments have disintegrated. The proposed work includes replacing the bridge with a three-span continuous reinforced concrete slab bridge on the existing horizontal alignment. The new structure (Structure 224-01-10306) will provide two 12-foot travel lanes, one in each direction, with 8-foot 4-inch shoulders. Traffic will be maintained through a full bridge closure and detour that will be approximately 19.5 miles in length. Signage will be placed to notify motorists of the closure and detour.

The investigated area is in northern Adams County west of the Town of Decatur. Land use in the vicinity of the investigated area is primarily forested or agricultural. Residential lots are interspersed in the vicinity of the investigated area. The major features in the investigated area are Holthouse Ditch, which flows through the project bridge (detailed below), the riparian corridor along Holthouse Ditch, and the stands of trees beyond the investigated area. The investigated area is rural and generally level, with some steep slopes leading to Holthouse Ditch. The investigated area was chosen because it encompasses an area slightly larger than the area that may be needed for construction access for this project. The investigated area is entirely within the US Army Corps of Engineers (USACE) Midwest region.

Vegetation in the investigated area includes herbaceous plants and trees that are common along roadsides and in floodplains. Hydrology in the investigated area is mostly influenced by roadway runoff and Holthouse Ditch. The geomorphology of the corridor is generally flat with some concave areas in the roadside ditch and in Holthouse Ditch. The nearest major hydrological feature is Holthouse Ditch. The attached floodplains map indicates that the investigated area is within a mapped 100-year floodplain.

Soils:
According to the Soil Survey Geographic (SSURGO) Database for Adams County, Indiana, the investigated area does contain soil areas with nationally listed hydric soils. Soils within the investigated area are characterized by somewhat poorly drained to moderately well drained soils.

Table 1. Soil Types Within the Investigated Area

Soil Name	Map Abbreviation	Hydric Range
Blount silt loam, ground moraine, 2 to 4 percent slopes	BgmB	1-32 (Hydric)
Glynwood silt loam, ground moraine, 2 to 6 percent slopes	GlsB	1-32 (Hydric)
Morley silty clay loam, 12 to 18 percent slopes, eroded	MoD2	0 (Non hydric)
Shoals silty clay loam, 0 to 1 percent slopes, frequently flooded	SgnA	1-32 (Hydric)

National Wetlands Inventory (NWI) Information:
There are four mapped wetlands within 0.25 mile of the investigated area. These include one labeled as PFO1A (palustrine, forested wetland, seasonally flooded), one labeled as PSS1/EM1C (palustrine scrub-shrub/emergent wetland, seasonally flooded), and two labeled PUBGx (palustrine, unconsolidated bottom, excavated pond). The nearest mapped feature is Holthouse Ditch (PFO1A).

Table 2. Mapped NWI Features Near the Investigated Area

Wetland/Water Feature Type	Location
PSS1/EM1C	West of investigated area
PFO1A	In investigated area
PUBGx	Northeast of investigated area

HUC:
Holthouse Ditch Watershed (HUC 12: 041000040501)

Attached Documents:
- Maps (Project Location, Topographic, Aerial Imagery, NWI Map, Floodplain Map, LiDAR Map, Soil Series Map, Watershed Map, Water Resources Map)
- Photographs and Photograph Location and Orientation Map
- Wetland Data Sheets

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

The entire investigated area was visually surveyed during the site visit for potential water features. Areas of interest that were identified during the preliminary desktop review and in the field visit were investigated to determine the potential jurisdictional status of these features. Determination of wetlands and water features was completed using the *Corps of Engineers Wetland Delineation Manual (1987)* and the *Regional Supplement to the Corps of Engineers Wetland Delineation*

Manual: Midwest Region (2010). Soils in the project area were evaluated using the *2017 Pocket Guide to Hydric Soil Field Indicators* and a Munsell soil chart. Vegetation in the investigated area was evaluated using various plant identification guides and the USACE *State of Indiana 2016 Wetland Plant List*. Sample points were collected at potential wetland features to verify the presence or absence of wetland indicators. Jurisdictional recommendations were made according to the *US Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook*. Streams in the investigated area were evaluated using the Ohio EPA guide *Methods for Assessing Habitat in Flowing Waters: Using the Qualitative Habitat Evaluation Index (QHEI).* Water features that were identified within the investigated area were documented using GPS location.

Stream Features:
Stream features include water features with concentrated flow and an Ordinary High Water Mark (OHWM). Four stream features were identified during the site visit.

Holthouse Ditch:
Holthouse Ditch is a perennial stream that conveys drainage from south to north through the project bridge. Holthouse Ditch is mapped on the attached NWI map as PFO1A (Palustrine, forested, seasonally flooded), but it more closely resembles R2UBH (Riverine, perennial, permanently flooded). A review of the US Geological Survey (USGS) *Streamstats* application indicated that Holthouse Ditch had an upstream drainage area of 29.266 square miles. It is mapped as a solid blue-line stream on the attached topographic map. Holthouse Ditch exhibited an OHWM width of 25 feet and depth of 3 feet. This measurement was taken on the upstream side of the project bridge to avoid influence from the drainage structure. This stream is considered average quality because it has a substrate of silt, provides moderate in-stream cover, exhibits low sinuosity, provides riffle and run complexes, and provides moderate habitat for aquatic fauna. This feature is likely jurisdictional under the authority of the USACE because is exhibits an OHWM, relatively permanent flow patterns, and eventual connectivity to Lake Erie. Lake Erie is a Traditionally Navigable Waterway. Holthouse Ditch is shown in photos 18 through 25 in the attached photo log.

UNT 1 to Holthouse Ditch (UNT 1):
UNT 1 is an ephemeral stream in the southwest quadrant of the bridge that conveys drainage from west to east towards Holthouse Ditch. UNT 1 is not mapped on the attached NWI map but would have a Cowardin Classification of R4UBHx (Riverine, ephemeral, unconsolidated bottom, excavated). A review of the US Geological Survey (USGS) *Streamstats* application did not show UNT 1. It is not mapped on the attached topographic map. UNT 1 exhibited an OHWM width of 8 inches and depth of 2 inches. This stream is considered poor quality because it has a substrate of silt, provides no in-stream cover, exhibits low sinuosity, and does not provide riffle and run complexes. This feature is likely jurisdictional under the authority of the USACE because is exhibits an OHWM and drains into Holthouse Ditch, which is a likely jurisdictional water feature. UNT 1 is shown in photos 12 through 17 in the attached photo log.

UNT 2 to Holthouse Ditch (UNT 2):
UNT 2 is an ephemeral concrete roadside ditch in the northeast quadrant of the bridge that conveys drainage from east to west towards Holthouse Ditch. UNT 2 is not mapped on the attached NWI map but would have a Cowardin Classification of R4UBHx (Riverine, ephemeral, unconsolidated bottom, excavated). A review of the US Geological Survey (USGS) *Streamstats* application did

not show UNT 2. It is not mapped on the attached topographic map. UNT 2 exhibited an OHWM width of 6 inches and depth of 2 inches. This stream is considered poor quality because it has an artificial substrate, provides no in-stream cover, exhibits low sinuosity, and does not provide riffle and run complexes. This feature is likely jurisdictional under the authority of the USACE because it exhibits an OHWM and drains into Holthouse Ditch, which is a likely jurisdictional water feature. UNT 2 is shown in photos 26 through 33 in the attached photo log.

UNT 3 to Holthouse Ditch (UNT 3):
UNT 3 is an ephemeral stream on the southeast quadrant of the bridge that conveys drainage from east to west towards Holthouse Ditch. UNT 3 is not mapped on the attached NWI map but would have a Cowardin Classification of R4UBHx (Riverine, ephemeral, unconsolidated bottom, excavated). A review of the US Geological Survey (USGS) *Streamstats* application did not show UNT 3. It is not mapped on the attached topographic map. UNT 3 exhibited an OHWM width of 6 inches and depth of 2 inches and is carried by a culvert under CR 100 West to outlet into Holthouse Ditch. This stream is considered poor quality because it has a substrate of silt, provides no in-stream cover, exhibits low sinuosity, and does not provide riffle/run complexes. This feature is likely jurisdictional under the authority of the USACE because is exhibits an OHWM and drains into Holthouse Ditch, which is a likely jurisdictional water feature. UNT 3 is shown in photos 34 through 39 in the attached photo log.

Table 3. Stream Summary Table

Water Feature Name	Photos	Lat/Long	OHWM Width (ft or in)	OHWM Depth (ft or in)	Riffles? Pools?	Quality	Substrate	Likely Water of the US?
Holthouse Ditch	18-25	40.832265 N -84.955667 W	25 ft	3 ft	Yes	Average	Silt	Yes
UNT 1	12-17	40.832171 N -84.955796 W	8 in	2 in	No	Poor	Silt	Yes
UNT 2	26-33	40.832333 N -84.955310 W	6 in	2 in	No	Poor	Artificial	Yes
UNT 3	34-39	40.832193 N -84.955056 W	6 in	2 in	No	Poor	Silt	Yes

Wetlands:
One suspected wetland was identified in the investigated area during the desktop review of the site. Holthouse Ditch is mapped as PFO1A and was determined to be a stream feature (detailed above).

Sample Point 1
Sample Point 1 (SP1) was taken in the northwest quadrant of the bridge. This site was not mapped as a wetland on the attached NWI map. Vegetation at this sample point was dominated by Cottonwood (*Populus deltoides*, FAC), Green Ash (*Fraxinus pennsylvanica*, FACW), and Eastern Narrow-Leaf Sedge (*Carex amphibola*, FAC). This vegetation community passed the dominance test and prevalence index for hydrophytic vegetation. Hydrology indicators at SP1 included Geomorphic Position (D2) and FAC-Neutral Test (D5). Soils at SP1 were 10 YR 4/2 (100%) from 0-11 inches with a texture of clay loam. From 11-16 inches, the soil was 10 YR 4/2 (90%) with

redox concentrations of 10 YR 5/4 (10%) with a texture of clay loam. This does not meet any criteria for hydric soils. SP1 met the criteria for hydrophytic vegetation and wetland hydrology but did not meet the criteria for hydric soils; therefore, it is not within a wetland.

Sample Point 2

Sample Point 2 (SP2) was taken in the southwest quadrant of the bridge. Vegetation at this sample point was dominated by Meadow Garlic (*Allium canadense*, FACU) and Eastern Narrow-Leaf Sedge (*Carex amphibola*, FAC). This vegetation community did not pass the rapid test, dominance test, or prevalence index for hydrophytic vegetation. Hydrology indicators present at SP2 included Geomorphic Position (D2). Wetland hydrology was not present at SP2. Soils at SP2 were 10 YR 3/2 (100%) from 0-10 inches with a texture of loam, and 10 YR 3/2 (90%) with redox concentrations of 10 YR 5/4 (10%) from 10-16 inches with a texture of loam. This does not meet any criteria for hydric soils. SP2 did not exhibit hydrophytic vegetation, hydric soils, or wetland hydrology; therefore, it was not within a wetland.

Table 4. Sample Point Summary Table

Data Point	Photos	Vegetation	Soils	Hydrology	Wetland
SP1	5-7	Yes	No	Yes	No
SP2	8-11	No	No	No	No

Open Water:

Open water features are ponds or lakes that hold water. These can be manmade or natural. No open water features were identified within the investigated area during the desktop investigation. The field visit confirmed that no open water features are within the investigated area.

Other Features:

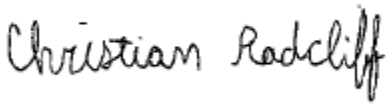
The investigated area was assessed for the presence of other water features. Other water features include roadside ditches, areas of concentrated flow, or other unusual drainage features. These features may be considered jurisdictional if they exhibit an OHWM or a Significant Nexus to a Traditionally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

Conclusions:

The site investigation identified four streams, Holthouse Ditch, UNT 1, UNT 2, and UNT 3. These features are likely Waters of the US under the Jurisdiction of the USACE. Every effort should be taken to avoid and minimize impacts to these waterways. 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 appropriate regulatory staff of the USACE. This report is our best judgment based on the guidelines set forth by the USACE.

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

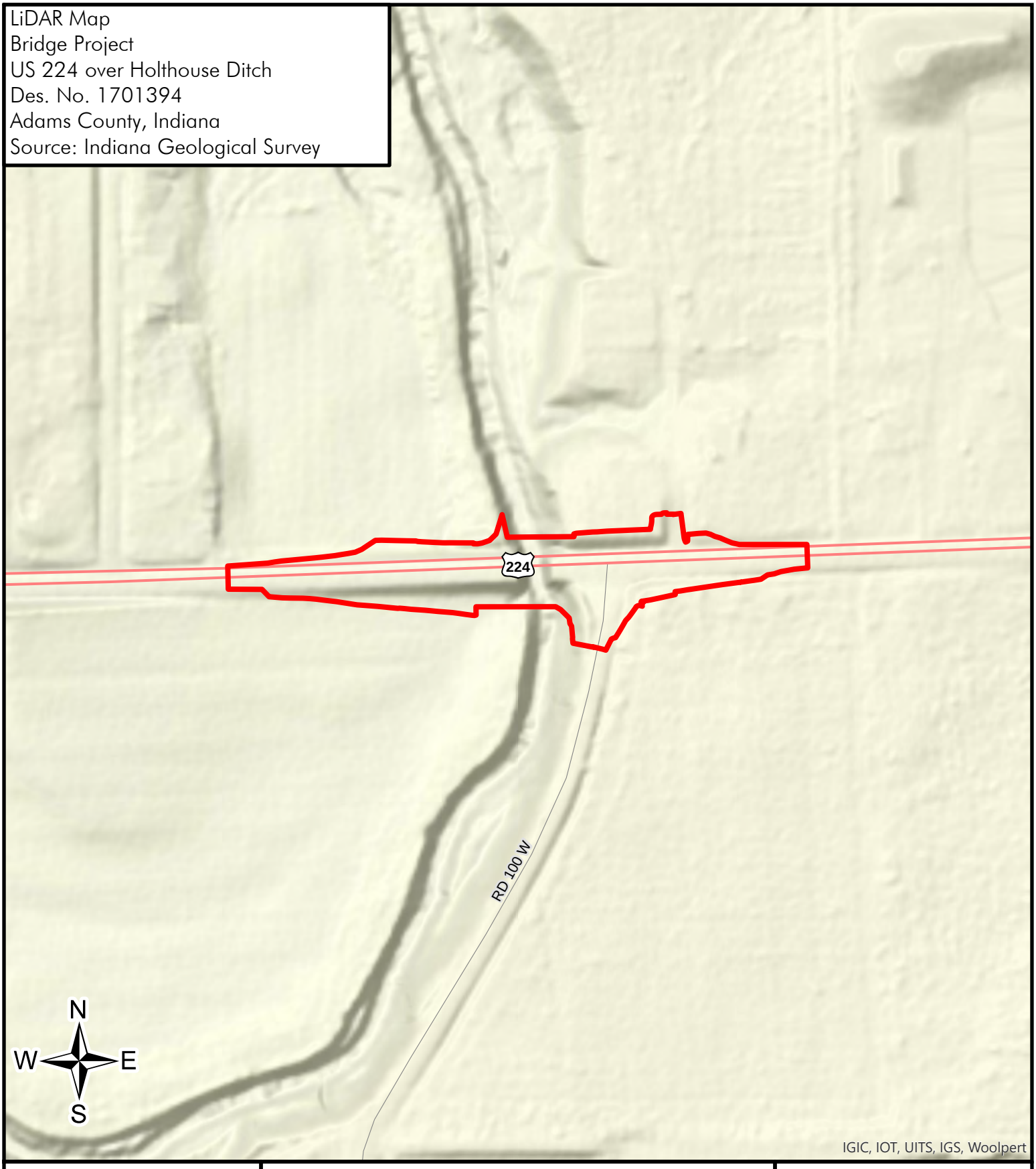
Christian Radcliff



Ecologist
Green 3, LLC
Date: November 1, 2019

Supporting Documentation:

- Maps
- Photos
- Wetland Delineation Data Sheet

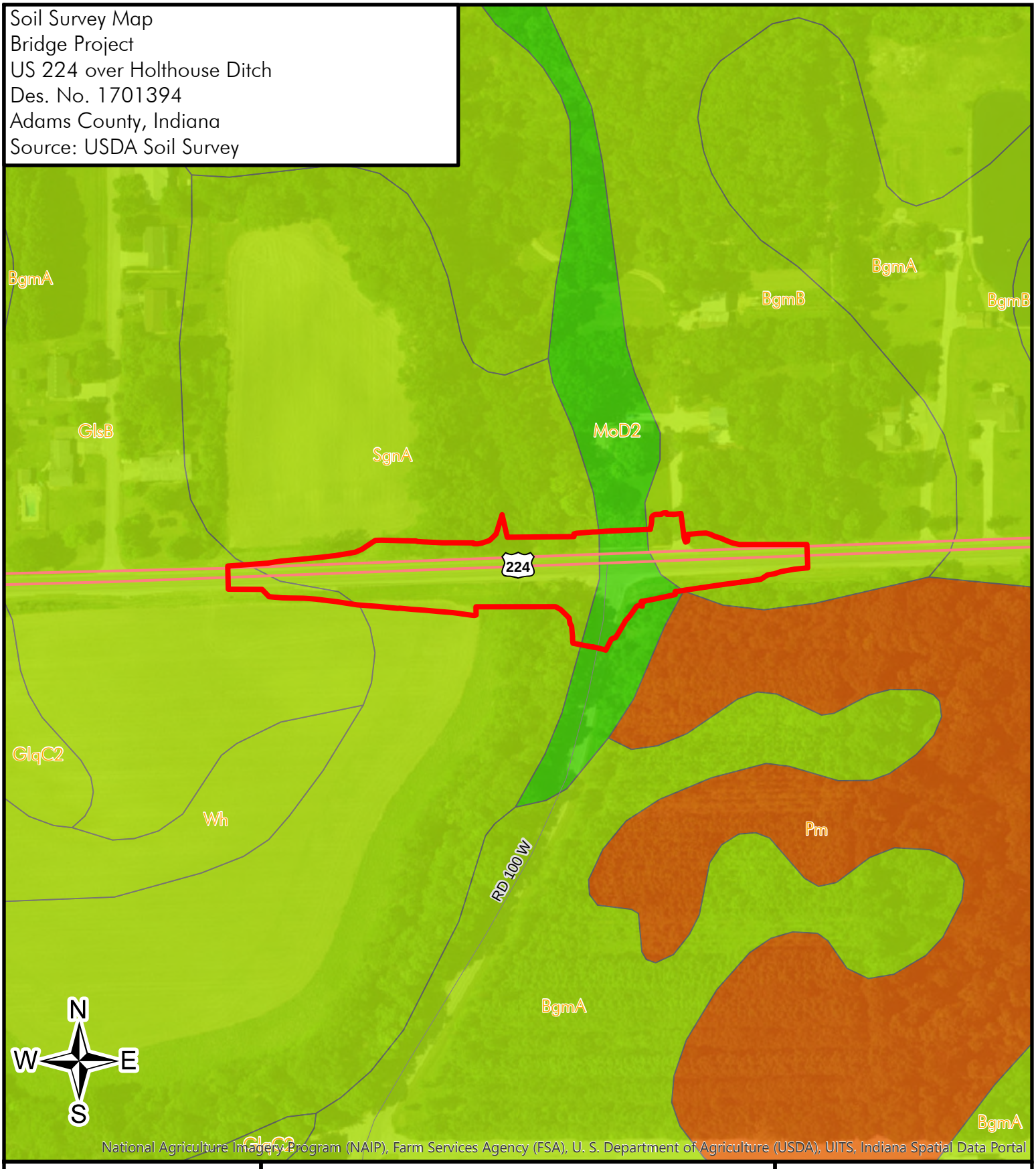


0 0.03 0.05 Miles

Investigated Area

10/10/2019

green • 3



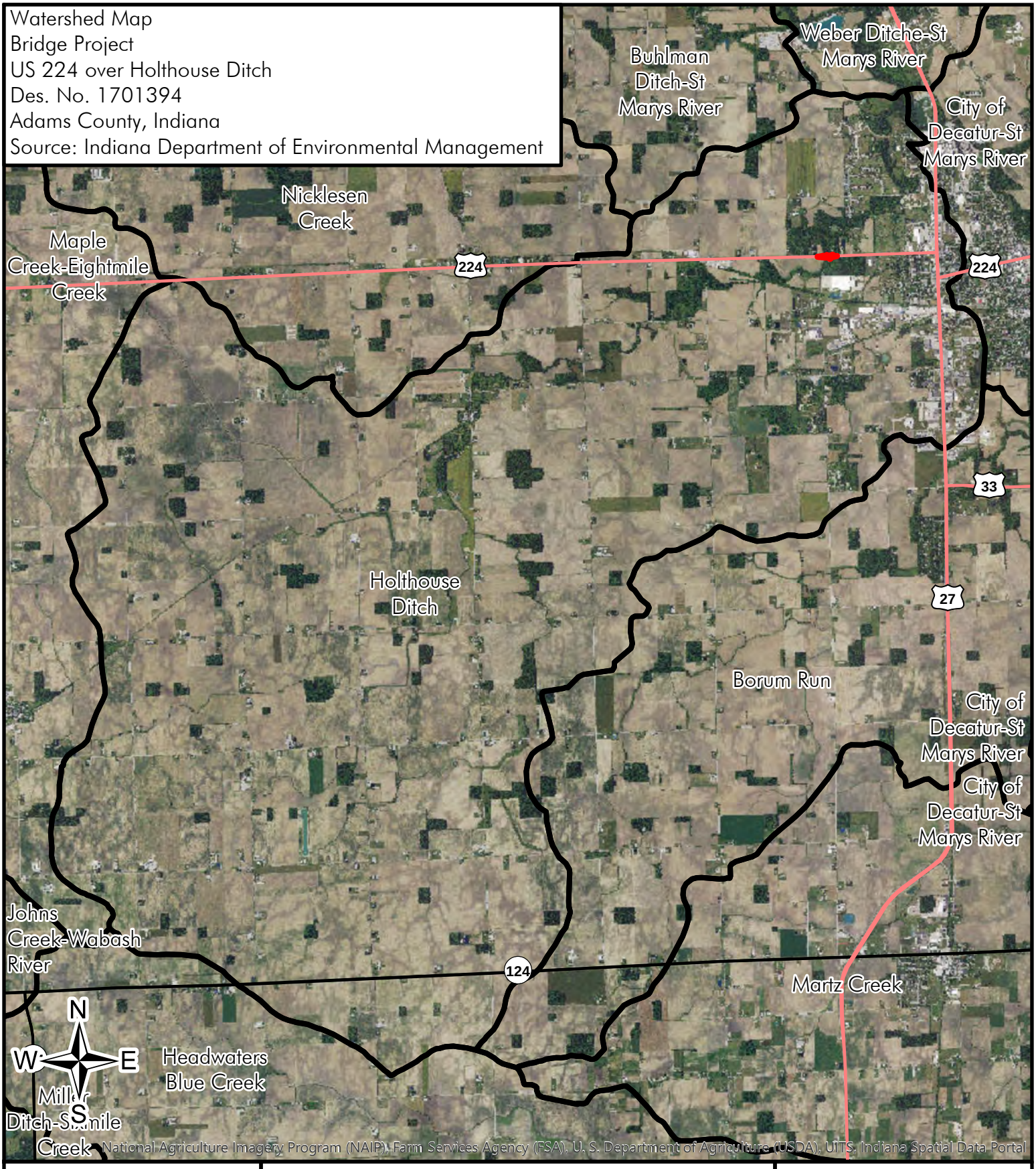
0 0.03 0.05 Miles

Investigated Area
0 (Non-hydric)
1-32 (Hydric)
66-99 (Hydric)

10/10/2019

green • 3

Watershed Map
Bridge Project
US 224 over Holthouse Ditch
Des. No. 1701394
Adams County, Indiana
Source: Indiana Department of Environmental Management



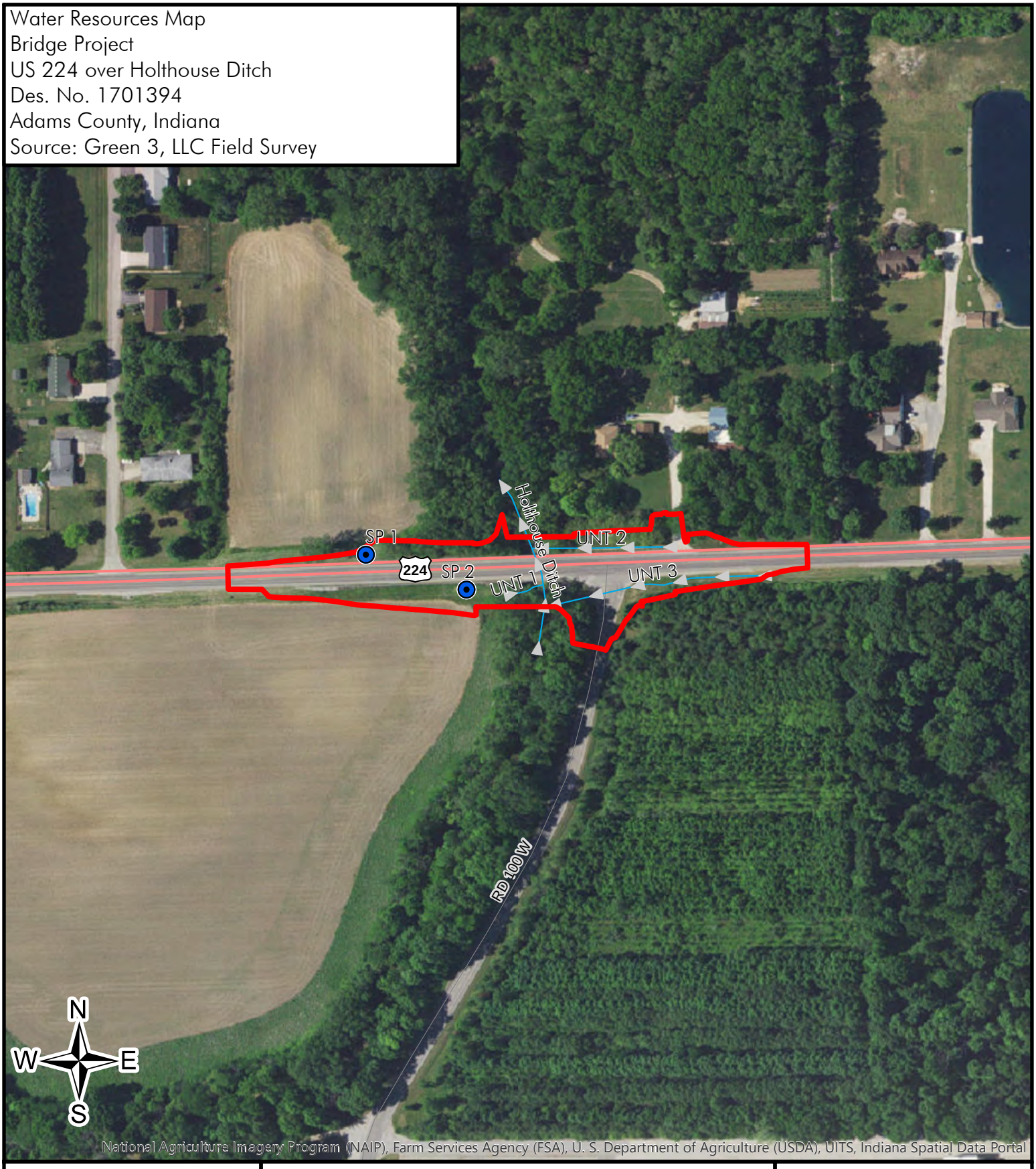
0 0.5 1 Miles

Investigated Area
HUC - 12

10/10/2019

green • 3

Water Resources Map
Bridge Project
US 224 over Holthouse Ditch
Des. No. 1701394
Adams County, Indiana
Source: Green 3, LLC Field Survey



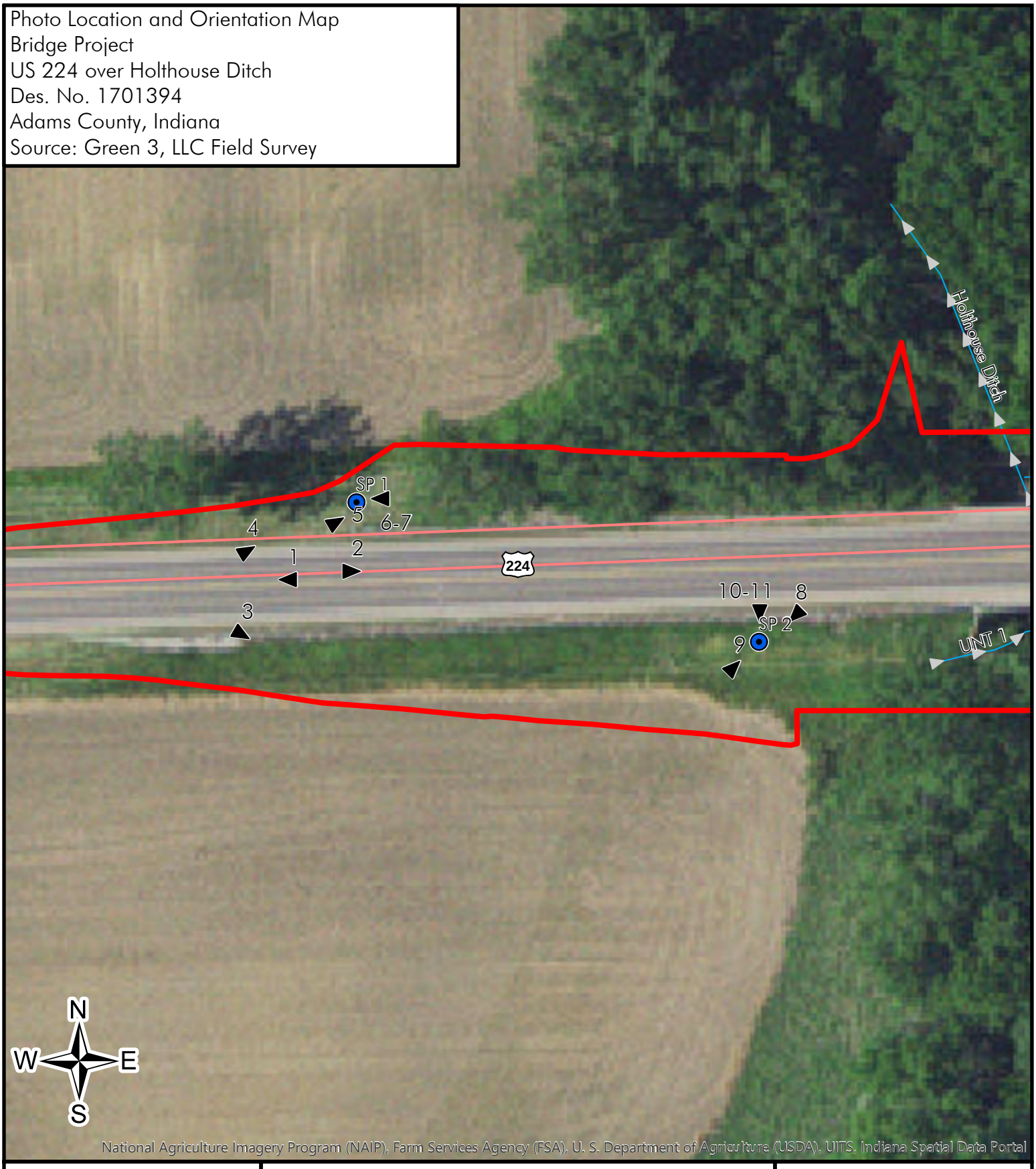
0 0.03 0.05 Miles

Investigated Area
Sample Point
Stream

10/10/2019

green • 3

Photo Location and Orientation Map
Bridge Project
US 224 over Holthouse Ditch
Des. No. 1701394
Adams County, Indiana
Source: Green 3, LLC Field Survey

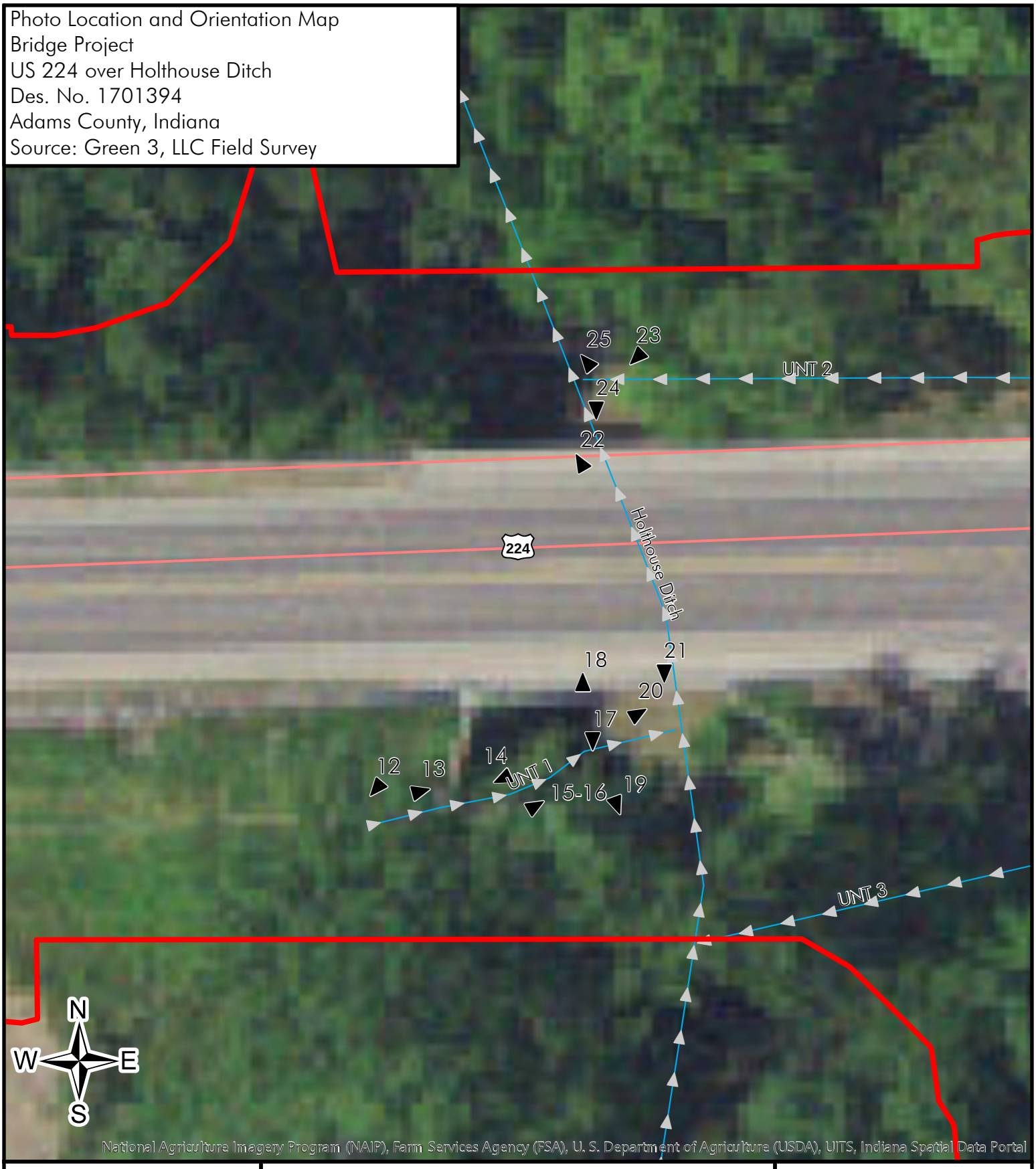


0 35 70 Feet

Investigated Area
Photo Location
Sample Point
Stream

10/10/2019

green • 3



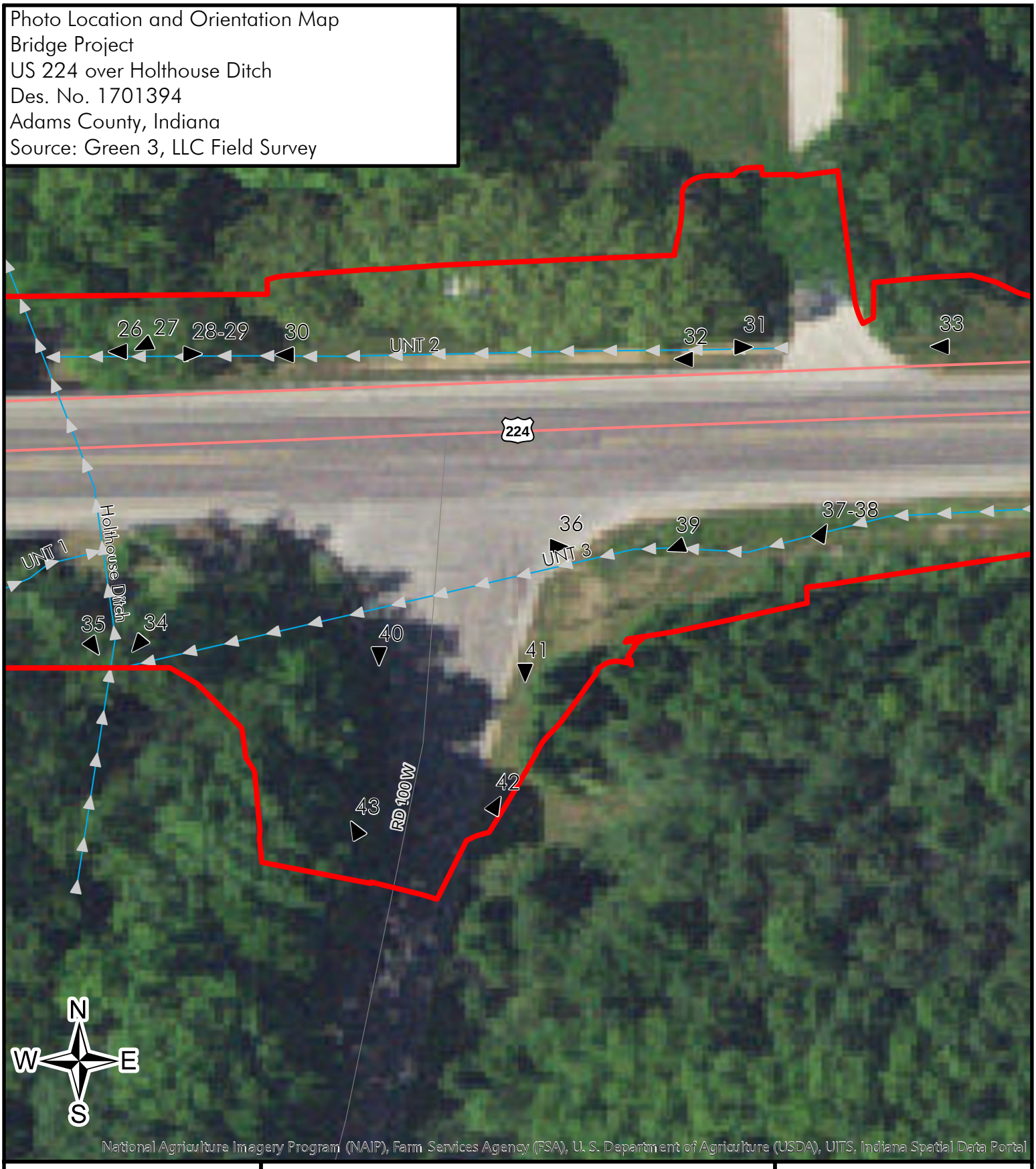
0 12.5 25 Feet

Investigated Area
Photo Location
Stream

10/10/2019

green • 3

Photo Location and Orientation Map
Bridge Project
US 224 over Holthouse Ditch
Des. No. 1701394
Adams County, Indiana
Source: Green 3, LLC Field Survey



0 25 50 Feet

Investigated Area
Photo Location
Stream

10/10/2019

green • 3

Photo 1. Western Project Terminus Facing West

Photo 2. Western Project Terminus Facing East

Photo 3. Southwest Quadrant Right of Way Facing Southeast

Photo 4. Northwest Quadrant Right of Way Facing Northeast

Photo 5. Sample Point 1 Facing Northeast

Photo 6. Sample Point 1 Soil

Photo 7. Sample Point 1 Pit

Photo 8. Sample Point 2 Facing Southwest

Photo 9. Sample Point 2 Facing Northeast

Photo 10. Sample Point 2 Soil

Photo 11. Sample Point 2 Pit

Photo 12. UNT 1 Facing Southwest

Photo 13. UNT 1 Facing Northeast

Photo 14. UNT 1 Facing Southwest (Shovel is in UNT 1)

Photo 15. UNT 1 Substrate

Photo 16. UNT 1 Bed and Bank Facing Northeast

Photo 17. Confluence of Holthouse Ditch and UNT 1

Photo 18. Holthouse Ditch South of Project Bridge Facing North

Photo 19. Holthouse Ditch South of Project Bridge Facing Southeast

Photo 20. Holthouse Ditch South Side of Bridge Facing Northeast

Photo 21. Holthouse Ditch From US 224 Facing South

Photo 22. Holthouse Ditch From US 224 Facing Northwest

Photo 23. Holthouse Ditch From North Side of Bridge Facing Southwest

Photo 24. Holthouse Ditch From North Side of Bridge Facing South

Photo 25. Debris in Holthouse Ditch North of Project Bridge Facing Northwest

Photo 26. Confluence of UNT 2 and Holthouse Ditch Facing West

Photo 27. End of Concrete Lined Ditch in UNT 2 Facing Southwest

Photo 28. UNT 2 (Under Grass Clippings) Facing East

Photo 29. UNT 2 Substrate

Photo 30. UNT 2 East of Project Bridge Facing West

Photo 31. Culvert Conveying Drainage to UNT 2 Facing East

Photo 32. UNT 2 and Northeast Quadrant Right of Way Facing West

Photo 33. Culvert Inlet That Conveys Drainage to UNT 2 Facing West

Photo 34. UNT 3 Culvert Outlet to Holthouse Ditch Facing Southwest

Photo 35. UNT 3 Culvert Outlet to Holthouse Ditch Facing Southeast

Photo 36. UNT 3 at Culvert Inlet Facing East (Shovel is in Channel)

Photo 37. Bed and Bank of UNT 3 From Culvert Inlet Facing Northeast

Photo 38. Substrate of UNT 3

Photo 39. Culvert Inlet in UNT 3 Facing Southwest

Photo 40. Right of Way on West Side of CR N 100 W Facing South

Photo 41. Right of Way on East Side of CR N 100 W Facing South

Photo 42. Right of Way on East Side of CR N 100 W Facing Northeast

Photo 43. Right of Way on West Side of CR N 100 W Facing Northwest

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Des 1701394 US 224 over Holthouse Ditch City/County: Decatur/Adams Sampling Date: 7/10/19

Applicant/Owner: INDOT State: IN Sampling Point: SP1

Investigator(s): Christian Radcliff and Victoria Veach Section, Township, Range: S 33, T 28N, R 14E

Landform (hillslope, terrace, etc.): Toe of slope Local relief (concave, convex, none): Concave

Slope (%): 0-2% Lat: 40.832349 Long: -84.956629 Datum: WGS 84

Soil Map Unit Name: Shoals silty clay loam, 0 to 1 percent slopes, frequently flooded NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [✓] No [ ] (If no, explain in Remarks.)

Are Vegetation [ ], Soil [ ], or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes [✓] No [ ]

Are Vegetation [ ], Soil [ ], or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes [✓]	No [ ]	**Is the Sampled Area within a Wetland?** Yes [ ] No [✓]
Hydric Soil Present?	Yes [ ]	No [✓]	
Wetland Hydrology Present?	Yes [✓]	No [ ]	

Remarks:

Upland point on the north side of US 224 and west of the project bridge.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus deltoides*	10	X	FAC
2.			
3.			
4.			
5.			
	10	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. *Fraxinus pennsylvanica*	10	X	FACW
2.			
3.			
4.			
5.			
	10	= Total Cover	
Herb Stratum (Plot size:)			
1. *Carex amphibola*	80	X	FAC
2. *Cirsium arvense*	10		FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	90	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	90	x 3 =	270
FACU species	10	x 4 =	40
UPL species		x 5 =	
Column Totals:	110 (A)		330 (B)

Prevalence Index = B/A = 3.0

Hydrophytic Vegetation Indicators:

- [ ] 1 - Rapid Test for Hydrophytic Vegetation
- [✓] 2 - Dominance Test is >50%
- [✓] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes [✓] No [ ]

Remarks: (Include photo numbers here or on a separate sheet.)

SP1 passed the dominance test and prevalence index. Hydrophytic vegetation is present at SP1.

SOIL

Sampling Point: SP1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-11	10 YR 4/2	100					CL	
11-16	10 YR 4/2	90	10 YR 5/4	10	C	M	CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☑

Remarks:

SP1 did not exhibit any hydric soil indicators. Hydric soil is not present at SP1.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ☑ No ☐

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

Remarks:

SP1 exhibited Geomorphic Position (D2) and FAC-Neutral Test (D5). Wetland hydrology is present at SP1.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Des 1701394 US 224 over Holthouse Ditch City/County: Decatur/Adams Sampling Date: 7/10/19

Applicant/Owner: INDOT State: IN Sampling Point: SP2

Investigator(s): Christian Radcliff and Victoria Veach Section, Township, Range: S 4, T 28N, R 14E

Landform (hillslope, terrace, etc.): Toe of slope Local relief (concave, convex, none): Concave

Slope (%): 0-2% Lat: 40.832190 Long: -84.956068 Datum: WGS 84

Soil Map Unit Name: Shoals silty clay loam, 0 to 1 percent slopes, frequently flooded NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [✓] No [ ] (If no, explain in Remarks.)

Are Vegetation [ ], Soil [ ], or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes [✓] No [ ]

Are Vegetation [ ], Soil [ ], or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes [ ]	No [✓]	**Is the Sampled Area within a Wetland?** Yes [ ] No [✓]
Hydric Soil Present?	Yes [ ]	No [✓]	
Wetland Hydrology Present?	Yes [ ]	No [✓]	

Remarks:

Upland point on the south side of US 224 and west of the project bridge.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	10	= Total Cover	
Herb Stratum (Plot size:)			
1. *Allium canadense*	60	X	FACU
2. *Carex amphibola*	30	X	FAC
3. *Ambrosia artemisiifolia*	8		FACU
4. *Asclepias syriaca*	2		FACU
5.			
6.			
7.			
8.			
9.			
10.			
	100	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	30	x 3 =	90
FACU species	70	x 4 =	280
UPL species		x 5 =	
Column Totals:	100 (A)		370 (B)

Prevalence Index = B/A = 3.7

Hydrophytic Vegetation Indicators:

- [ ] 1 - Rapid Test for Hydrophytic Vegetation
- [ ] 2 - Dominance Test is >50%
- [ ] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes [ ] No [✓]

Remarks: (Include photo numbers here or on a separate sheet.)

SP2 did not pass the rapid test, dominance test, or prevalence index. Hydrophytic vegetation is not present at SP1.

SOIL

Sampling Point: SP2

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10 YR 3/2	100					L	
10-16	10 YR 3/2	90	10 YR 5/4	10	C	M	L	

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

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☑

Remarks:

SP2 did not exhibit any hydric soil indicators. Hydric soil is not present at SP2.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ☐ No ☑

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

Remarks:

SP2 exhibited Geomorphic Position (D2). Wetland hydrology is not present at SP2.

Appendix 2 - PRELIMINARY JURISDICTIONAL DETERMINATION (PJD) FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PJD: 11/1/19

B. NAME AND ADDRESS OF PERSON REQUESTING PJD: Christian Radcliff, 1104 Prospect Street, Indianapolis, Indiana 46203

C. DISTRICT OFFICE, FILE NAME, AND NUMBER:

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:

Des 1701394 involves the replacement of the bridge carrying US 224 over Holthouse Ditch in Adams County, Indiana. The structure is a single-span concrete arch bridge that is 45.5 feet in length. The new structure will be a three-span continuous reinforced concrete slab bridge on the same alignment. Riprap will likely be placed in the channel for scour protection.

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

State: Indiana County/parish/borough: Adams City: Decatur

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

Lat.: 40.832252 Long.: -84.955699

Universal Transverse Mercator: 16T

Name of nearest waterbody: Holthouse Ditch

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)
Holthouse Ditch	40.832265	-84.955667	50 feet/0.02 acre	Non-wetland water	Section 404
UNT 1	40.832171	-84.955796	50 feet/0.0001 acre	Non-wetland water	Section 404
UNT 2	40.832333	-84.955310	215 feet/0.002 acre	Non-wetland water	Section 404
UNT 3	40.832193	-84.955056	350 feet/0.004 acre	Non-wetland water	Section 404

1) The Corps of Engineers believes that there may be jurisdictional aquatic resources in the review area, and the requestor of this PJD is hereby advised of his or her option to request and obtain an approved JD (AJD) for that review area based on an informed decision after having discussed the various types of JDs and their characteristics and circumstances when they may be appropriate.

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

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

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

- ■ Maps, plans, plots or plat submitted by or on behalf of the PJD requestor:
  Map: Project location map.
- ■ Data sheets prepared/submitted by or on behalf of the PJD requestor.
  - ☐ Office concurs with data sheets/delineation report.
  - ☐ Office does not concur with data sheets/delineation report. Rationale: _____.
- ☐ Data sheets prepared by the Corps: _____.
- ☐ Corps navigable waters' study: _____.
- ■ U.S. Geological Survey Hydrologic Atlas: NHD map and HUC 12 watershed map.
  - ■ USGS NHD data.
  - ■ USGS 8 and 12 digit HUC maps.
- ■ U.S. Geological Survey map(s). Cite scale & quad name: 1:24,000 - Decatur Quadrangle.
- ■ Natural Resources Conservation Service Soil Survey. Citation: 2019 Web Soil Survey data.
- ■ National wetlands inventory map(s). Cite name: 2014 NWI Data.
- ☐ State/local wetland inventory map(s): _____.
- ■ FEMA/FIRM maps: 2019 Floodplain Data.
- ☐ 100-year Floodplain Elevation is: _____.(National Geodetic Vertical Datum of 1929)
- ■ Photographs: ■ Aerial (Name & Date): 2016 NAIP Aerial Imagery.
  or ■ Other (Name & Date): Site photos: July 10, 2019.
- ☐ 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.

_____	Christian Radcliff _____ 11/1/19
Signature and date of Regulatory staff member completing PJD	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.

Des No 1701394 CE-2

Appendix G

Public Involvement

Appendix G will be updated after completion of public involvement.

SJCA P.C.
ENGINEERS & SURVEYORS

Certified MBE, State of Indiana; City of Indianapolis | INDOT Certified DBE

Job#18EN015

NOTICE OF SURVEY
May 17, 2018

RE: PROJECT: US 224
Small Structure Replacement
Decatur, Indiana

Dear Property Owner:

Our information indicates that you own or occupy property near this proposed Small Structure Replacement construction project. Our employees will be doing a survey of the project area in the near future. It may be necessary for them to come onto your property to complete this work. This is allowed by Indiana Code IC 8-23-7-26. They will show you their identification, if you are available, before coming onto your property. If you have sold this property, or someone else occupies it, please let us know the name and address of the new owner or current occupant so we can contact them about the survey.

At this stage we generally do not know what effect, if any, our project may eventually have on your property. If we determine later 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, and obtaining ground elevations. This work is necessary for the proper planning and design of the Small Structure Replacement construction project. Please be assured of our sincere desire to cause you as little inconvenience as possible during the survey. If any problems do occur, please contact our field crew or contact me at the phone number or address shown below.

We do appreciate your input regarding any issues that this project may encounter during the design phase. Included with this notice is a short questionnaire that you can fill out and return to us in the enclosed self-addressed stamped envelope. Thank you, in advance, for your participation in this process.

Sincerely,

SJCA P.C.

Daniel G. Kovert

Daniel G. Kovert, PE, PS
Director of Surveying
dkovert@sjca-pc.com

Job#18EN015

SURVEY QUESTIONNAIRE

RE: PROJECT: US 224
Small Structure Replacement
Decatur, Indiana

Name of person completing questionnaire: _____

Have you received the Notice of Survey letter? (yes or no): _____

If different from the letter, the correct occupant's name and address should be:

Name: _____

Address: _____

If you have any special requests (instructions to close gates, beware of dog, etc.), please list here:

_____

_____

Please describe any areas where you feel there may be stormwater problems (e.g. flooding, clogged pipes, standing water, etc.)

_____

_____

If the property utilizes water wells and/or septic systems, please describe their location: _____

_____

Please describe any facilities that are underground and not visible: _____

_____

Any other issues we should be aware of? _____

_____

Des 1701394 Notice of Survey Recipients
Thomas & Michelle Barker
Ryan Seddelmeyer
Daniel Schurger
Schurger Tree Farm Tr, Frederick A Schurger TRT
Andrea Allison
Thomas Lehrman
Michael Boyd
Mary & David Geimer
St. Joseph Cemetery
St. Marks United Methodist Church
Connie Teeple
Teresa Schurger
Mary Beth Busick
Myles Baczynski

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Job#18EN015

SURVEY QUESTIONNAIRE

RE: PROJECT: US 224
Small Structure Replacement
Decatur, Indiana

Name of person completing questionnaire: TONY ALLISON

~~Have you received the Notice of Survey letter?~~ (yes or no): YES

If different from the letter, the correct occupant's name and address should be:

Name: _____

Address: _____

If you have any special requests (instructions to close gates, beware of dog, etc.), please list here:

YOU PROVIDED NO DETAIL AS TO WHERE YOU ARE GOING ON OUR PROPERTY, THE PURPOSE OF THE SURVEY OR WHEN YOU'RE DOING THIS SO I CAN'T ANSWER YOUR QUESTIONS

Please describe any areas where you feel there may be stormwater problems (e.g. flooding, clogged pipes, standing water, etc.)

_____

_____

If the property utilizes water wells and/or septic systems, please describe their location: YES, THERE IS WELL AND SEPTIC SYSTEMS

Please describe any facilities that are underground and not visible: _____

_____

Any other issues we should be aware of? I DON'T KNOW. YOU NEED TO GIVE ME MORE DETAILS

SJCA P.C.
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Job#18EN015

SURVEY QUESTIONNAIRE

RE: PROJECT: US 224
Small Structure Replacement
Decatur, Indiana

Name of person completing questionnaire: Mary Beth Busick

Have you received the Notice of Survey letter? (yes or no): yes

If different from the letter, the correct occupant's name and address should be:

Name: _____

Address: _____

If you have any special requests (instructions to close gates, beware of dog, etc.), please list here:

No

Please describe any areas where you feel there may be stormwater problems (e.g. flooding, clogged pipes, standing water, etc.)

ditch has standing water with heavy rains - drains into neighbors wetlands

If the property utilizes water wells and/or septic systems, please describe their location: Closer to house

Please describe any facilities that are underground and not visible: Underground river but North end of property.

Any other issues we should be aware of? No

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ENGINEERS & SURVEYORS

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INDOT Certified DBE

Job#18EN015

SURVEY QUESTIONNAIRE

RE: PROJECT: US 224
Small Structure Replacement
Decatur, Indiana

Name of person completing questionnaire: Daniel Schurger

Have you received the Notice of Survey letter? (yes or no): _____

If different from the letter, the correct occupant's name and address should be:

Name: _____

Address: _____

If you have any special requests (instructions to close gates, beware of dog, etc.), please list here:

none

Please describe any areas where you feel there may be stormwater problems (e.g. flooding, clogged pipes, standing water, etc.)

none

If the property utilizes water wells and/or septic systems, please describe their location: none

Please describe any facilities that are underground and not visible: none

Any other issues we should be aware of? none

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Job#18EN015

SURVEY QUESTIONNAIRE

RE: PROJECT: US 224
Small Structure Replacement
Decatur, Indiana

Name of person completing questionnaire: Frederick A Schurger

Have you received the Notice of Survey letter? (yes or no): Both, Frederick A & Teresa R Schurger

If different from the letter, the correct occupant's name and address should be:

Name: both are correct, except address to Teresa should be changed

Address: from PO Box 269 to PO Box 190; Decatur, Indiana 46733

If you have any special requests (instructions to close gates, beware of dog, etc.), please list here:

I talked with one of your surveyors. My question is when can I start mowing as the utility stakes are everywhere, especially for a 6' mower). He said you would be done by the end of this week (June 2, 2018). Let me know if it will be later.

Please describe any areas where you feel there may be stormwater problems (e.g. flooding, clogged pipes, standing water, etc.)

None in particular, except the floods in recent years have been the worst I have observed in the 60+ years I have been watching. Suspect the St Marys bridges have cumulatively combined over the years to slow the flow.

If the property utilizes water wells and/or septic systems, please describe their location:

Adjoining the residences.

Please describe any facilities that are underground and not visible:

I remember both high and low pressure gas mains on either side of US 224; I think there is a one or more telephone lines on both sides. The electric is elevated and on the south side.

Any other issues we should be aware of? Adjoiner to north, Seddelmeyer, is moving.

We used to ice skate under the bridge in winter. Nice clear ice, but we had colder winters in the 50s and 60s. Of late, feel like they may return. We have had a lot more -20F days in last 5 years.

Des No 1701394 CE-2

Appendix H

Air Quality

Indiana Department of Transportation (INDOT)

State Preservation and Local Initiated Projects FY 2018 - 2021

SPONSOR	CONTRACT # / LEAD DES	STIP NAME	ROUTE	WORK TYPE	LOCATION	DISTRICT	MILES	FEDERAL CATEGORY	Estimated Cost left to Complete Project*	PROGRAM	PHASE	FEDERAL	MATCH	2018	2019	2020	2021
Indiana Department of Transportation	39556 / 1600563	Init.	SR 218	Debris Removal From Channel	Over Wabash River, 0.73 miles E of SR 116	Fort Wayne	0	STP		Bridge Construction	CN	$21,272.00	$5,318.00	$26,590.00			
Indiana Department of Transportation	39556 / 1600565	Init.	US 224	Debris Removal From Channel	Over St Mary's River, 0.83 miles E of US 27	Fort Wayne	0	NHPP		Bridge Construction	CN	$21,272.00	$5,318.00	$26,590.00			
Indiana Department of Transportation	39900 / 1601016	Init.	SR 124	HMA Overlay Minor Structural	From 0.98 mi E of US 27 (E Limit Monroe) to 7.97 mi E of US 27 (Ohio SL)	Fort Wayne	6.903	STP		Road Construction	CN	$1,865,490.40	$466,372.60				$2,331,863.00
										Road Consulting	PE	$60,000.00	$15,000.00	$75,000.00			
Indiana Department of Transportation	40457 / 1701296	A 01	SR 101	Repair Or Replace Joints	Bridge over the St Mary's River , 0.06 miles N of US 33	Fort Wayne	0	STP	$199,000.00	Bridge Construction	CN	$139,138.40	$34,784.60		$173,923.00		
										Bridge Consulting	PE	$20,000.00	$5,000.00	$25,000.00			
Comments:NO MPO. Adding PE to FY 2018 and CN to FY 2019 into FY 2018 - 2021 STIP.																	
Indiana Department of Transportation	40458 / 1701300	A 01	SR 218	Debris Removal From Channel	Bridge over Wabash River, 0.7 3 miles E of SR 116	Fort Wayne	0	STP	$156,231.00	Bridge Consulting	PE	$20,000.00	$5,000.00	$25,000.00			
										Bridge Construction	CN	$104,984.80	$26,246.20		$131,231.00		
Comments:NO MPO. Adding PE to FY 2018 and CN to FY 2019 into FY 2018 - 2021 STIP.																	
Indiana Department of Transportation	40458 / 1701301	A 01	US 224	Debris Removal From Channel	Bridge Over St. Marys River, 0. 85 Miles East of US 27	Fort Wayne	0	NHPP	$156,231.00	Bridge Construction	CN	$104,984.80	$26,246.20		$131,231.00		
										Bridge Consulting	PE	$20,000.00	$5,000.00	$25,000.00			
Comments:NO MPO. Adding PE to FY 2018 and CN to FY 2019 into FY 2018 - 2021 STIP.																	
Indiana Department of Transportation	40486 / 1383558	A 02	SR 124	Small Structure Replacement	Carries Smith Ditch, 6.09 miles E of SR 301	Fort Wayne	0	STP	$514,000.00	Bridge ROW	RW	$16,000.00	$4,000.00				$20,000.00
										Bridge Construction	PE	$6,000.00	$1,500.00				$7,500.00
										Bridge Consulting	PE	$120,000.00	$30,000.00	$37,500.00	$112,500.00		
Comments:NO MPO. Adding PE to FY 2018, PE to FY 2019, PE to FY 2021 and RW to FY 2021 into FY 2018 - 2021 STIP.																	
Indiana Department of Transportation	40486 / 1602123	A 01	SR 101	HMA Overlay Minor Structural	From SR 124 to US 33 East Jct.	Fort Wayne	.001	STP	$900,000.00	Road Consulting	PE	$80,000.00	$20,000.00	$100,000.00			
Comments:NO MPO. Adding PE to FY 2018 into FY 2018 - 2021 STIP.																	
Indiana Department of Transportation	40486 / 1602124	A 01	SR 101	HMA Overlay Minor Structural	From US 33 West Jct. to US 224 East Jct.	Fort Wayne	4.14	STP	$1,750,000.00	Road Consulting	PE	$120,000.00	$30,000.00	$150,000.00			
Comments:NO MPO. Adding PE to FY 2018 into FY 2018 - 2021 STIP.																	
Indiana Department of Transportation	40486 / 1701394	A 02	US 224	Bridge Replacement, Other Construction	Bridge Over Holthouse Ditch, 0. 95 Miles West of US 27	Fort Wayne	0	NHPP	$960,000.00	Bridge Consulting	PE	$140,000.00	$35,000.00	$52,500.00	$122,500.00		

*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.

SPONSOR	CONTRACT # / 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
Adams County																		
Adams County	1592864	Init.	VA VARI	Bridge Inspections	Countywide Bridge Inspection and Inventory Program for Cycle Years 2018-2021	Fort Wayne	0	Multiple		Local Bridge Program	PE	$80,065.60	$0.00	$75,837.60	$4,228.00			
										Local Funds	PE	$0.00	$20,016.40	$18,959.40	$1,057.00			
Adams County	35191 / 1173218	A 01	IR 1005	Bike/Pedestrian Facilities	Adams Co BP: from the Wabash River to CR 850 S	Fort Wayne	.32	STBG	$3,107,855.00	Local Transportation Alternatives	CN	$2,646,032.00	$0.00	$2,646,032.00				
										Local Funds	CN	$0.00	$461,823.00	$461,823.00				
Comments:Add CN to STIP for CN FY 2020. No MPO																		
Indiana Department of Transportation	40486 / 1602124	Init.	SR 101	HMA Overlay Minor Structural	From US 33 W Jct to US 224 E Jct	Fort Wayne	4.14	STPBG		Road Construction	CN	$2,028,571.20	$507,142.80			$2,535,714.00		
										Bridge ROW	RW	$108,000.00	$27,000.00		$65,000.00	$70,000.00		
										Bridge Construction	CN	$1,626,771.20	$406,692.80		$15,500.00	$2,017,964.00		
Indiana Department of Transportation	40486 / 1900624	A 01	US 27	Concrete Pavement Restoration (CPR)	From 0.11 Miles North of US 33 (Borum Run Bridge) to 2.53 Miles North of US 224 North Jct	Fort Wayne	4.44	NHPP	$1,848,237.00	Road Consulting	PE	$81,600.00	$20,400.00	$102,000.00				
										Road Construction	CN	$1,396,989.60	$349,247.40			$1,746,237.00		
Comments:NO MPO. DES 1900624 adding PE to FY 2020 and CN to FY 2022 into FY 2020 - 2024 STIP.																		
Decatur	40803 / 1600708	Init.	ST 1003	Intersection Improvement, Roundabout	Intersection of 2nd St., Adams St., Winchester St., and Mercer Ave	Fort Wayne	.28	STPBG		Local Funds	CN	$0.00	$524,532.00			$524,532.00		
										Local Funds	RW	$0.00	$320,000.00	$320,000.00				
										Group III Program	CN	$2,098,125.00	$0.00			$2,098,125.00		
Indiana Department of Transportation	41120 / 1800551	Init.	SR 218	HMA Overlay, Preventive Maintenance	From SR 116 to 0.75 Miles West of US 27 (West Limits Berne)	Fort Wayne	4.032	STPBG		Road Construction	CN	$855,176.00	$213,794.00		$1,068,970.00			
Indiana Department of Transportation	41547 / 1800209	Init.	SR 218	Bridge Replacement, Other Construction	Bridge Over Wabash River, 0.7 3 Miles East of SR 116.	Fort Wayne	.3	STPBG		Bridge ROW	RW	$56,000.00	$14,000.00			$70,000.00		
										Bridge Construction	CN	$3,619,450.40	$904,862.60				$4,524,313.00	
Indiana Department of Transportation	41826 / 1600186	Init.	SR 101	Bridge Deck Overlay	Bridge over Drake Ditch, 0.88 N of US 33	Fort Wayne	0	STPBG		Bridge Construction	CN	$649,872.80	$162,468.20	$812,341.00				
Indiana Department of Transportation	42474 / 1701394	A 13	US 224	Bridge Replacement, Other Construction	Bridge over Holthouse Ditch, 0. 95 miles W of US 27	Fort Wayne	0	NHPP	$817,186.00	Bridge ROW	RW	$8,000.00	$2,000.00		$10,000.00			
										Bridge Construction	CN	$645,748.80	$161,437.20			$807,186.00		

*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.

Des No 1701394 CE-2

Appendix I

Additional Information

Land and Water Conservation Fund Listings

Des 1701394 LWCF Properties - Adams County			
1800038	1800038	Adams	Bellmont Junior High School, Bellmont Senior High
1800044	1800044	Adams	Linn Grove County Park
1800125	1800125	Adams	Limberlost Park
1800140	1800140	Adams	Fields Memorial Park
1800141	1800141	Adams	Monroe Lions Park
1800147	1800147	Adams	Kekionga Park
1800440	1800440	Adams	Riverside Center
1800592	1800592	Adams	St. Mary Nature Preserve

https://www.in.gov./indot/2523.htm

Des 1701394 EJ Map

Legend:

Your Selections

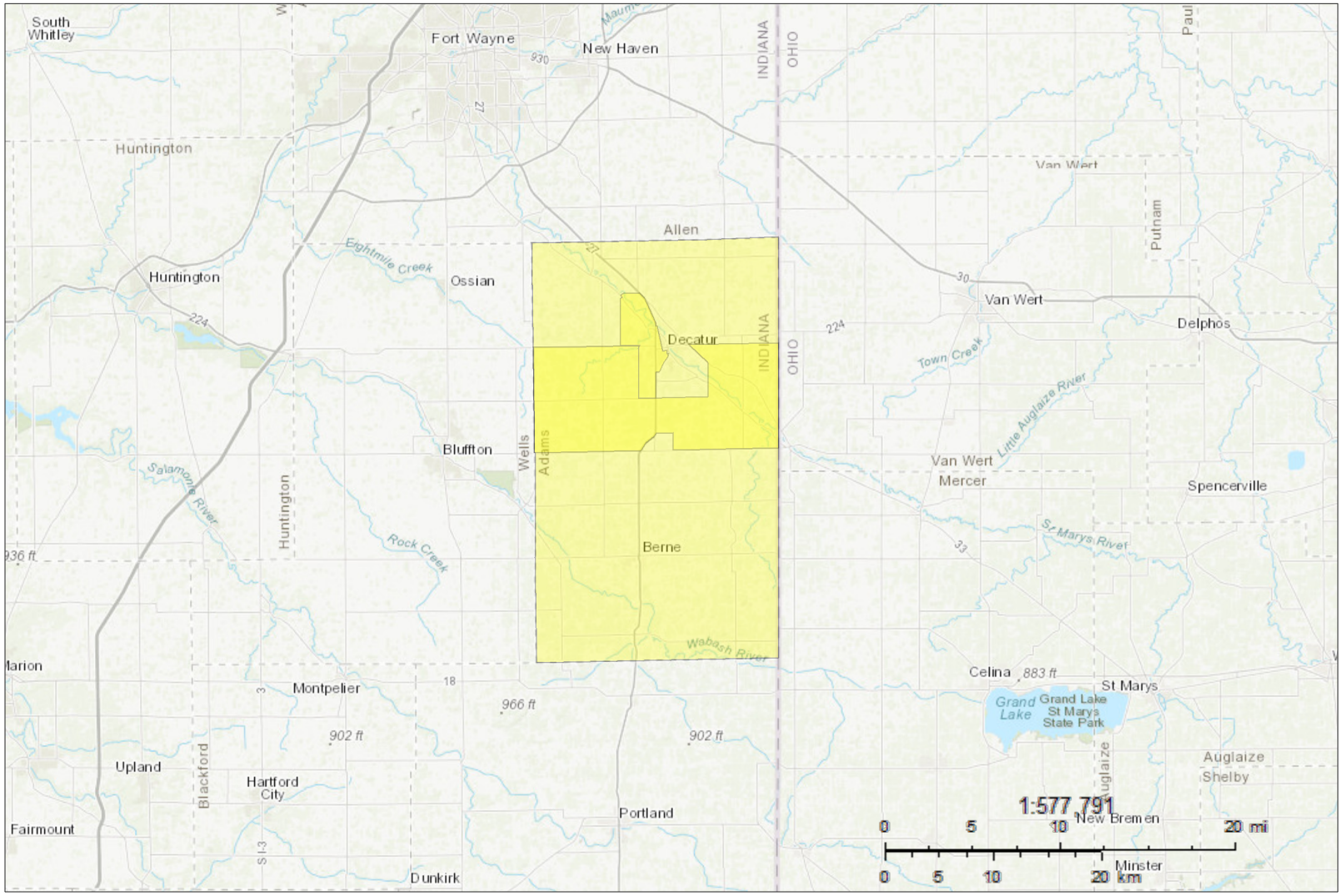
- ☐ 2017 boundaries were used to map 'Your Selections'

Selection Results

No Legend

Boundaries

No Legend



Environmental Justice Analysis for US 224 over Holthouse Ditch (Des 1701394)

		COC Adams County, Indiana	AC1 Census Tract 302, Adams County, Indiana	AC2 Census Tract 304, Adams County, Indiana
	LOW-INCOME			
B 17001001	Population for whom poverty status is determined: Total	34,085	4,816	3,295
B 17001002	Population for whom poverty status is determined:Income in past 12 months below povert	6,448	1,246	224
	Percent Low-Income	**18.9%**	**25.9%**	**14.0%**
	125 Percent of COC	**23.6%**	**AC>125% COC**	**AC<125% COC**
	Potential Low-Income EJ Impact?		**Yes**	**No**
	MINORITY			
B 03002001	Total population: Total	35,018	4,996	3,406
B 03002002	Total population: Not Hispanic or Latino	33,464	4,438	3,228
B 03002003	Total population: Not Hispanic or Latino; White alone	32,824	4,428	3,213
B 03002004	Total population: Not Hispanic or Latino; Black or African American alone	328	10	0
B 03002005	Total population: Not Hispanic or Latino; American Indian and Alaska Native alone	0	0	0
B 03002006	Total population: Not Hispanic or Latino; Asian alone	132	0	15
B 03002007	Total population: Not Hispanic or Latino; Native Hawaiian and Other Pacific Islander	0	0	0
B 03002008	Total population: Not Hispanic or Latino; Some other race alone	76	0	0
B 03002009	Total population: Not Hispanic or Latino; Two or more races	104	0	0
B 03002010	Total population: Hispanic or Latino	1,554	558	178
B 03002011	Total population: Hispanic or Latino; White alone	1,111	405	178
B 03002012	Total population: Hispanic or Latino; Black or African American alone	0	0	0
B 03002013	Total population: Hispanic or Latino; American Indian and Alaska Native alone	16	15	0
B 03002014	Total population: Hispanic or Latino; Asian alone	0	0	0
B 03002015	Total population: Hispanic or Latino; Native Hawaiian and Other Pacific Islander alone	0	0	0
B 03002016	Total population: Hispanic or Latino; Some other race alone	382	138	0
B 03002017	Total population: Hispanic or Latino; Two or more races	45	0	0
	Number Non-White/Minority (P007001-P007003)	**2,194**	**568**	**193**
	Percent Non-White/Minority	**6.3%**	**11.4%**	**5.7%**
	125 Percent of COC	**7.8%**	**AC<125% COC**	**AC<125% COC**
	Potential Minority EJ Impact?		**Yes**	**No**

B03002: HISPANIC OR LATINO ORIGIN 2013-2017 American Community Survey 5-						
	Adams County, Indiana		Census Tract 302, Adams		Census Tract 304, Adams	
	Estimate	Margin of	Estimate	Margin of	Estimate	Margin of
Total:	35,018	*****	4,996	+/-317	3,406	+/-328
Not Hispanic or Latino:	33,464	*****	4,438	+/-345	3,228	+/-322
White alone	32,824	+/-112	4,428	+/-343	3,213	+/-320
Black or African American alone	328	+/-87	10	+/-21	0	+/-11
American Indian and Alaska Native	0	+/-24	0	+/-11	0	+/-11
Asian alone	132	+/-26	0	+/-11	15	+/-26
Native Hawaiian and Other Pacific	0	+/-24	0	+/-11	0	+/-11
Some other race alone	76	+/-112	0	+/-11	0	+/-11
Two or more races:	104	+/-91	0	+/-11	0	+/-11
Two races including Some other race	0	+/-24	0	+/-11	0	+/-11
Two races excluding Some other	104	+/-91	0	+/-11	0	+/-11
Hispanic or Latino:	1,554	*****	558	+/-133	178	+/-98
White alone	1,111	+/-145	405	+/-120	178	+/-98
Black or African American alone	0	+/-24	0	+/-11	0	+/-11
American Indian and Alaska Native	16	+/-26	15	+/-26	0	+/-11
Asian alone	0	+/-24	0	+/-11	0	+/-11
Native Hawaiian and Other Pacific	0	+/-24	0	+/-11	0	+/-11
Some other race alone	382	+/-144	138	+/-107	0	+/-11
Two or more races:	45	+/-40	0	+/-11	0	+/-11
Two races including Some other race	42	+/-40	0	+/-11	0	+/-11
Two races excluding Some other	3	+/-7	0	+/-11	0	+/-11

B17001: POVERTY STATUS IN THE 2013-2017 American Community Survey 5-						
	Adams County, Indiana		Census Tract 302, Adams		Census Tract 304, Adams	
	Estimate	Margin of	Estimate	Margin of	Estimate	Margin of
Total:	34,085	+/-300	4,816	+/-283	3,295	+/-321
Income in the past 12 months below	6,448	+/-941	1,246	+/-421	224	+/-167
Male:	2,845	+/-458	449	+/-182	61	+/-51
Under 5 years	610	+/-153	16	+/-27	0	+/-11
5 years	121	+/-60	0	+/-11	0	+/-11
6 to 11 years	544	+/-145	63	+/-64	19	+/-19
12 to 14 years	187	+/-94	54	+/-69	0	+/-11
15 years	46	+/-34	0	+/-11	0	+/-11
16 and 17 years	53	+/-38	0	+/-11	0	+/-11
18 to 24 years	161	+/-87	31	+/-36	0	+/-11
25 to 34 years	375	+/-115	20	+/-29	32	+/-38
35 to 44 years	188	+/-77	0	+/-11	10	+/-16
45 to 54 years	325	+/-128	168	+/-113	0	+/-11
55 to 64 years	189	+/-96	87	+/-93	0	+/-11
65 to 74 years	19	+/-19	0	+/-11	0	+/-11
75 years and over	27	+/-29	10	+/-17	0	+/-11
Female:	3,603	+/-564	797	+/-282	163	+/-138
Under 5 years	638	+/-163	53	+/-69	43	+/-39
5 years	76	+/-44	0	+/-11	0	+/-11
6 to 11 years	487	+/-179	81	+/-87	28	+/-45
12 to 14 years	198	+/-115	18	+/-29	17	+/-24
15 years	77	+/-67	0	+/-11	0	+/-11
16 and 17 years	70	+/-47	17	+/-32	7	+/-11
18 to 24 years	469	+/-131	181	+/-112	17	+/-24
25 to 34 years	547	+/-144	101	+/-83	17	+/-20
35 to 44 years	253	+/-114	0	+/-11	17	+/-25
45 to 54 years	307	+/-132	141	+/-112	0	+/-11
55 to 64 years	272	+/-96	147	+/-82	0	+/-11
65 to 74 years	122	+/-59	46	+/-44	17	+/-26
75 years and over	87	+/-62	12	+/-20	0	+/-11
Income in the past 12 months at or	27,637	+/-1,028	3,570	+/-475	3,071	+/-312
Male:	13,981	+/-560	1,740	+/-304	1,571	+/-207
Under 5 years	967	+/-227	138	+/-88	119	+/-75
5 years	124	+/-54	0	+/-11	7	+/-11
6 to 11 years	1,388	+/-220	212	+/-166	194	+/-71
12 to 14 years	500	+/-113	52	+/-43	63	+/-46
15 years	181	+/-64	23	+/-25	0	+/-11
16 and 17 years	528	+/-60	16	+/-26	32	+/-26
18 to 24 years	1,426	+/-79	129	+/-68	78	+/-39
25 to 34 years	1,678	+/-132	250	+/-128	124	+/-68
35 to 44 years	1,656	+/-96	131	+/-78	216	+/-60
45 to 54 years	1,679	+/-136	207	+/-107	244	+/-70
55 to 64 years	1,757	+/-97	216	+/-84	221	+/-67
65 to 74 years	1,232	+/-35	184	+/-80	146	+/-55
75 years and over	865	+/-62	182	+/-70	127	+/-51
Female:	13,656	+/-565	1,830	+/-232	1,500	+/-169
Under 5 years	825	+/-156	79	+/-85	78	+/-47
5 years	119	+/-67	0	+/-11	0	+/-11
6 to 11 years	1,305	+/-191	159	+/-81	139	+/-53
12 to 14 years	731	+/-146	23	+/-25	98	+/-62
15 years	248	+/-65	0	+/-11	12	+/-17
16 and 17 years	406	+/-88	50	+/-52	51	+/-36
18 to 24 years	956	+/-136	70	+/-58	59	+/-46
25 to 34 years	1,451	+/-131	235	+/-100	180	+/-72
35 to 44 years	1,634	+/-115	206	+/-81	179	+/-57
45 to 54 years	1,703	+/-146	179	+/-89	215	+/-74
55 to 64 years	1,781	+/-109	255	+/-82	215	+/-55
65 to 74 years	1,337	+/-81	335	+/-95	121	+/-51
75 years and over	1,160	+/-87	239	+/-72	153	+/-57

Christian Radcliff

From: Bales, Ronald <rbales@indot.IN.gov>
Sent: Thursday, December 5, 2019 8:58 AM
To: Christian Radcliff
Cc: Miller, Brandon; Malone, Barbara
Subject: RE: Des 1701394 US 224 over Holthouse Ditch EJ Analysis
Attachments: STG2 PlansXsect 1701394 For Bridge Services.pdf; Des 1701394 EJ Analysis (002).pdf

INDOT-Environmental Services Division (ESD) has reviewed the project information along with the Environmental Justice (EJ) Analysis for the above referenced project. The project would require right-of-way, require no relocations, would not disrupt community cohesion or create a physical barrier. The maintenance of traffic for the project would provide minor inconvenience during construction for both EJ and non EJ populations. 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 incomes 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.

Ron Bales
INDOT-Environmental Services Division
Office: (317) 234-4916
Email: rbales@indot.in.gov

From: Christian Radcliff [mailto:christian@green3studio.com]
Sent: Wednesday, December 04, 2019 7:16 PM
To: Bales, Ronald <rbales@indot.IN.gov>
Subject: Des 1701394 US 224 over Holthouse Ditch EJ Analysis

Hi Ron,

I have completed a draft of the EJ analysis for the referenced project for your review – see attached. The proposed project includes a bridge replacement of the bridge carrying US 224 over Holthouse Ditch in Adams County, Indiana. I have attached project plans as well. It is anticipated that right of way acquisition will be approximately 2 acres.

If you have any questions please let me know!

Christian Radcliff
Ecologist

christian@green3studio.com

Some pages have been removed to conserve space. The full Engineer's Assessment can be made available upon request.

ABBREVIATED ENGINEER'S ASSESSMENT

Date: November 7, 2018
Route: US 224
Des. No.: 1701394
Type of Work: Bridge Replacement
Location: Over Holthouse Ditch, 0.95 miles west of US 27 (RP 31+09)
Str.: 224-01-01546; 029120 (NBI)
County: Adams
Federal Oversight: None

Location and Project Description
This bridge replacement project is located on US 224 between US 27 and SR 1 near the City of Decatur in Adams County, Indiana. The structure is located at Holthouse Ditch, approximately 0.95 miles west of US 27 (RP 31+09). A project location map can be found in Attachment A.

The existing bridge (Structure 224-01-01546) is a 45.5-ft long, single span reinforced concrete (closed spandrel) arch with a clear roadway width of 36.7-ft. The structure is currently skewed left 10 degrees. The existing structure was originally constructed in 1936 and has not been rehabilitated to date.

US 224 is classified as an Urban Minor Arterial and is tangent and at a slight slope in the vicinity of the structure. The structure is located on a 1.90% grade with an 800-ft length sag curve located just west with an opposing grade of 0.199%. The existing US 224 approach roadway consists of two 12-ft through lanes with 3-ft shoulders (3-ft paved) in each direction with 3:1 or flatter slopes. Beyond the approach guardrail limits, the typical section consists of two 12-ft through lanes with 3-ft shoulders (3-ft paved) in each direction with 3:1 or flatter slopes. There is no apparent right-of-way along US 224 at the structure. Along both approaches there is no apparent right-of-way. Holthouse Ditch is an Adams County Legal Drain and flows from south to north.

The purpose of this project is evidenced by the deteriorated condition of the existing superstructure and substructure. The proposed improvement is the replacement of the existing bridge and to widen the typical section by increasing the shoulder to 6-ft paved through the approaches and 8-ft paved through the structure to meet minimum design criteria.

Need for Improvement
The subject structure was last inspected in 6/22/2018. The inspection report, shown in Attachment D, indicates an existing superstructure condition rating of fair (5) due to the age and heavy deterioration in top of arch ring and both head walls. The decorative caps on both walls are disintegrating. Cracking and spalling is present. The existing substructure condition rating is fair (5) due to age and disintegration of two wings of the abutments. No hard deck exists as HMA is carried over the structure over shallow fill. The wearing surface condition rating is good (7). The roadway consists of chip & seal over HMA pavement and is in good condition. Additionally, there is erosion occurring at the SW corner of the bridge where a drop off of pavement is occurring. Lastly, there is debris in the waterway, so clearing of debris will also be required as part of the project.

Existing US 224
Functional Classification: Urban Minor Arterial
Terrain: Level
Posted Speed: 55 mph
Access Control: None
Number of Lanes and Width: 2 @ 12-ft
Shoulder Width and Type: 3-ft (3-ft paved asphalt)
Maximum Apparent Right-of-Way Width: 0-ft
Alignment: Tangent; Structure located on 1.90% grade

Prior Studies and Considerations
In addition to the bi-annual inspection report referenced above, no other studies on the subject structure have been completed.

Traffic Data
Traffic data provided by INDOT
Bridge over Holthouse Ditch, 0.95 miles W of US 27
AADT (2016): 4080 VPD
AADT (2042): 5140 VPD

For supporting information, please see Attachment F.

Land Use / Description of Right-of-Way
This project is located just outside of the City of Decatur to the west. US 224 traverses through this section over generally level terrain. Land use is dominated by mostly single-family residential and agricultural uses. The existing apparent right-of-way is edge-of-pavement to edge-of-pavement.

Safety
With crash data information provided by INDOT for Adams County, it was determined that one crash with injury occurred between 4/1/2015 and 4/1/2018. The incident involved a single vehicle that ran off the roadway due to taking his/her eyes off the road and reaching for something in the passenger seat. This incident appears to be isolated and not caused by factors associated with the roadway itself. See the table below and Attachment G.

Roadway Number	Crash Type	Total
US 224 just west of Holthouse Ditch	Ran Off Road	1

US 224 Design Criteria
Project Design Criteria: 3R (Non-Freeway) – See Attachment H for details
Functional Classification: Urban Minor Arterial
Terrain: Level
Design Speed: 55 mph
Access Control: None
Number of Lanes and Width: 2 @ 12-ft
Shoulder Width and Type: 6-ft paved on approach; 8-ft paved through structure
Proposed Right-of-Way Width: 145-ft

Preliminary Hydraulics
Holthouse Ditch is a legal drain and is comprised of a 29.3 square mile drainage area. In order to satisfy the backwater requirements as specified in the Indiana Design Manual, the proposed structure must accommodate a 1% Exceedance Probability (EP) Discharge of 2190 cubic feet per second (cfs). Please see Attachment I for more details.

Proposed Alternatives
As part of the Engineering Assessment, SJCA has analyzed several various structure sizes and types. Based on the preliminary hydraulic requirements, four preliminary structure configurations were considered and mentioned below:

Alternate 1: Three span Reinforced Concrete Slab Bridge.

The proposed structure is a three span reinforced concrete slab, 100 ft long at a skew of 10 degrees with spans, 31'-0, 38'-0 and 31'-0. The out to out bridge width is 43'-6" and clear roadway width of 40'-8". This alternate has the lowest grade raise among the alternates. The bridge approach slab at the east side is at the start of the public road approach. FC Rail will be used on the structure, which will be connected to MGS guardrail transition, MGS guardrail and 31" OS end treatment. Due to the close proximity to the public road intersection on the south east corner, TGB guardrail transition will be used instead of MGS guardrail transition and will be placed along the curve.

Alternate 2: Precast Three sided Reinforced Concrete Arch Structure.

The proposed structure is a precast reinforced concrete three sided arch structure with a clear span of 42 ft (perpendicular to stream alignment), 13'-2" rise and 62.0 ft long at a skew of 10 degrees. The structure will be attached to 7'-8" tall concrete pedestals poured above the footing. Wing walls, 24 ft long, poured cast in place will be needed at all four corners. The existing profile grade will need to be raised by a maximum of 6 inches. Due to the close proximity to the public road intersection, nested guardrail will be used on the structure with posts driven above the structure on the south side. MGS assembly, long span system will be used on the north side.

Alternate 3: Precast Three sided Reinforced Concrete Flat Top Structure.

The proposed structure is a precast reinforced concrete three sided flat top structure with a clear span of 40 ft (perpendicular to stream alignment), 10'-2" rise and 62.0 ft long at a skew of 10 degrees. The structure will be attached to 10'-8" tall concrete pedestals poured above the footing. Wing walls, 24 ft long, poured cast in place, will be needed at all four corners. Due to the close proximity to the public road intersection, nested guardrail will be used on the structure with posts driven above the structure on the south side. MGS assembly, long span system will be used on the north side.

Alternate 4: Three span Box Beam Structure.

The proposed structure is a three span pre-stressed concrete box beam, 98 ft long at a skew of 10 degrees with spans, 30'-0, 38'-0 and 30'-0. The profile grade will require an additional 4" grade raise in comparison to a three span slab bridge. The out to out bridge width is 43'-6" and clear roadway width of 40'-8". The bridge approach slab at the east side is at the start of the public road approach. FC Rail will be used on the structure, which will be connected to MGS guardrail transition, MGS guardrail and 31" OS end treatment. Due to the close

proximity to the public road intersection on the south east corner, TGB guardrail transition will be used instead of MGS guardrail transition and will be placed along the curve.

Recommended Alternative
Alternate 2 is the cheaper option. Merits of the three sided arch structure are the reduced impacts to the intersection, reduced impacts in the channel due to the proposed span close to existing structure and shorter construction period. A three span slab bridge has the lowest grade raise and has better long term performance compared to a precast three sided structure.

INDOT Fort Wayne District prefers the three span slab bridge over the three sided arch structure. Alternate 1 is the recommended alternative.

This project will require approximately 1.67 acres of right-of-way acquisition and will impact six property owners.

Estimated Costs

	Alternate 1 (Recommended) 2018	Alternate 2 2018	Alternate 3 2018	Alternate 4 2018
Right-of-Way	$16,700	$16,700	$16,700	$16,700
Construction	$1,343,845	$1,283,210	$1,284,450	$1,428,300
Project Total	$1,360,545	$1,299,910	$1,301,150	$1,445,000

Please see Attachment L for a cost comparison of the structures, Attachment M for a quantity level preliminary cost estimate, and Attachment N for preliminary quantities for the selected alternate.

Maintenance of Traffic during Construction
Upon discussing MOT options with INDOT, it was determined that an official detour route in conjunction with a full closure of the bridge would be the most prudent option. The route will utilize US 27, SR 124, and SR 301 and will be 19.5 miles in length. This will add an additional 11.5 miles to traveler's trips. Coordination with INDOT Fort Wayne District Traffic Engineer indicated that a detour is the preferred option. See Attachment O for e-mail correspondence.

This option is recommended based upon its reduced construction cost, project site safety of the work zone, and the high percentage of local traffic use of the corridor which will utilize the local detour. In addition, the CR 100 W intersection at the SE quadrant of the project will need to remain open during construction.

Existing roadway signs within the project limits shall be reset on new posts.

Environmental Impacts
Potential wetlands exist approximately 1000-ft west of the structure along the north side of US 224, but is anticipated to be well outside of the proposed right-of-way. Therefore, no environmental impacts are anticipated on this project. A preliminary wetland investigation using Indiana MAP is shown in Attachment J.

The drainage area for Holthouse Ditch is 29.3 sq. mi.; therefore, an IDNR Construction in a Floodway permit will be required. IDEM and USACE 401/404 permits will also be required and an IDEM Rule 5 permit may be required, if disturbance exceeds 1 acre. Lastly, Holthouse Ditch is a legal drain, so coordination with Adams County will be required.

Utility Impacts

AEP has overhead electric along the north side of the roadway, which will likely require relocation. NIPSCO Gas has a 6" high pressure gas main on the north side of the roadway and a 4" medium pressure gas main on the south side of the roadway, both of which will likely require relocation. In addition, there is a buried communications line on the north side of the roadway, which may require relocation. There is also steel conduit attached to the north side coping of the existing structure. Tree clearing will likely be required, if utility relocation is necessary. Determining the construction limits and coordination with utilities will be important aspects early on in the design process, in order to determine if the project letting date needs to be adjusted for tree clearing and utility relocation.

Changes to this Engineer's Report

The Fort Wayne District Technical Services and Capital Program Management shall be consulted if deviation from the proposal is determined to be necessary during a later phase of project development. The person initiating changes shall route a memo detailing the changes including justification for the change and the estimated cost difference to the Fort Wayne District System Asset Manager, Scoping Manager, and Project Manager for concurrence.

Benjamin Deichmann, PE
Project Manager — 11/7/2018 Date

Concur:

Damien Perry
Project Manager — 11/14/2018 Date

Susan Doell, PE
Technical Services Scoping Manager — 11/14/18 Date

Randall Post, PE
Systems Asset Manager — Date

SJCA ENGINEERS & SURVEYORS

ATTACHMENT D

Bridge Inspection Report

224-01-01546
US 224
over
HOLTHOUSE DITCH

Inspection Date: 06/22/2018

Inspected By: Kirk Smith

Inspection Type(s): Routine

Inspector: Kirk Smith | **Asset Name:** 224-01-01546

Inspection Date: 06/22/2018 | **Facility Carried:** US 224

Bridge Inspection Report

IDENTIFICATION

(1) STATE CODE:	**185 - Indiana**
(8) STRUCTURE:	**029120**
(5 A-B-C-D-E) INV. ROUTE:	**1 - 2 - 1 - 00224 - 0**
(2) HIGHWAY AGENCY DISTRICT:	**02 - Fort Wayne**
(3) COUNTY CODE:	**001 - ADAMS**
(4) PLACE CODE:	**17074 - DECATUR**
(6) FEATURES INTERSECTED:	**HOLTHOUSE DITCH**
(7) FACILITY CARRIED:	**US 224**
(9) LOCATION:	**00.95 W US 27**
(11) MILEPOINT:	**0006.120**

(12) BASE HIGHWAY NETWORK:	**0**
(13A) INVENTORY ROUTE:	
(13B) SUBROUTE NUMBER:	
(16) LATITUDE:	**40.83226**
(17) LONGITUDE:	**-84.955688**
(98) BORDER	
A) STATE NAME:	
B) PERCENT	**%**
(99) BORDER BRIDGE STRUCT. NO:	

STRUCTURE TYPE AND MATERIAL

(43) STRUCTURE TYPE, MAIN:	
A) KIND OF MATERIAL/DESIGN:	**1 - Concrete**
B) TYPE OF DESIGN/CONSTR:	**11 - Arch - Deck**
(44) STRUCTURE TYPE, APPROACH SPANS:	
A) KIND OF MATERIAL/DESIGN:	**0 - Other**
B) TYPE OF DESIGN/CONSTR:	**00 - Other**

(45) NUMBER OF SPANS IN MAIN UNIT:	**001**
(46) NUMBER OF APPROACH SPANS:	**0000**
(107) DECK STRUCTURE TYPE:	**N - Not Applicable**
(108) WEARING SURFACE/PROT SYS:	
A) WEARING SURFACE:	**6 - Bituminous**
B) DECK MEMBRANE:	**0 - None**
C) DECK PROTECTION:	**0 - None**

AGE OF SERVICE

(27) YEAR BUILT:	**1936**
(106) YEAR RECONSTRUCTED:	**0000**
(42) TYPE OF SERVICE:	
A) ON BRIDGE:	**1 - Highway**
B) UNDER BRIDGE:	**5 - Waterway**

(28) LANES:	
A) ON BRIDGE:	**02**
B) UNDER BRIDGE:	**00**
(29) AVERAGE DAILY TRAFFIC:	**004113**
(30) YEAR OF AVERAGE DAILY TRAFFIC:	**2017**
(109) AVERAGE DAILY TRUCK TRAFFIC:	**18 %**
(19) BYPASS DETOUR LENGTH:	**003 MI**

GEOMETRIC DATA

(48) LENGTH OF MAX SPAN:	**0040.0**	**FT**
(49) STRUCTURE LENGTH:	**00045.5**	**FT**
(50) CURB/SIDEWALK WIDTHS:		
A) LEFT	**00.0**	**FT**
B) RIGHT:	**00.0**	**FT**
(51) BRDG RDWY WIDTH CURB-TO-CURB:	**036.7**	**FT**
(52) DECK WIDTH, OUT-TO-OUT:	**040.0**	**FT**
(32) APPROACH ROADWAY	**028.0**	**FT**
(33) BRIDGE MEDIAN:	**0 - No median**	
(34) SKEW:	**10**	**DEG**

(35) STRUCTURE FLARED:	**0 - No flare**	
(10) INV RTE, MIN VERT CLEARANCE:	**99.99**	**FT**
(47) TOT HORIZ CLEARANCE:	**036.7**	**FT**
(53) VERT CLEAR OVER BR RDWY:	**99.99**	**FT**
(54) MIN VERTICAL UNDERCLEARANCE:		
A) REFERENCE FEATURE:	**N**	
B) MIN VERT UNDERCLEAR:	**0**	**FT**
(55) LATERAL UNDERCLEARANCE RIGHT:		
A) REFERENCE FEATURE:	**N**	
B) MIN LATERAL UNDERCLEAR:	**000.0**	**FT**
(56) MIN LATERAL UNDERCLEAR ON LEFT:	**00.0**	**FT**

INSPECTIONS

(90) INSPECTION DATE:	**06/22/2018**
(92) CRITICAL FEATURE INSPECTION:	
A) FRACTURE CRITICAL REQUIRED/FREQUENCY:	**N**
B) UNDERWATER INSPECTION REQUIRED/FREQUENCY:	**N**
C) OTHER SPECIAL INSPECTION REQUIRED/FREQUENCY:	**N**

(91) DESIGNATED INSPECTION FREQUENCY:	**24 MONTHS**
(93) CRITICAL FEATURE INSPECTION DATE:	
A) FRACTURE CRITICAL DATE:	
B) UNDERWATER INSP DATE:	
C) OTHER SPECIAL INSP DATE:	

CONDITION

(58) DECK:	**N - Not Applicable**
(58.01) WEARING SURFACE:	**7 - Good Condition**
(59) SUPERSTRUCTURE:	**5 - Fair Condition (minor section loss)**

(60) SUBSTRUCTURE:	**5 - Fair Condition (minor section loss)**
(61) CHANNEL/CHANNEL PROTECTION:	**7 - Bank protection needs minor repairs**
(62) CULVERTS:	**N - Not Applicable**

CONDITION COMMENTS

(58) DECK: **N - Not Applicable**

Comments:
No "hard" deck. HMA roadway carried over structure on shallow fill. Very soft HMA shoulders next to parapets. Parapets are short in height, original to structure; north wall has tightly spaced map cracking & large area of spalling to lower section. South wall in similar condition with additional spalling to cap.

(58.01) WEARING SURFACE: **7 - Good Condition**

Comments:
Chip and seal over HMA; few sealed cracks. Good Condition.

(59) SUPERSTRUCTURE: **5 - Fair Condition (minor section loss)**

Comments:
Arch Ring: south edge has heavy deterioration (spalling with exposed rebar 12' (L) x 1' (W) in top of arch ring with associated map cracking to either end of spalling, all with severe alkali-silica reaction {ASR}); heavy deterioration to center portion of head wall. North edge is similar to south edge, with greater deterioration in head wall; a few hairline parallel (to traffic) cracks; a few hairline, irregular parallel cracks;

Spandrels: decorative caps (below parapets) on both walls are disintegrating; areas of heavy efflorescence from caps; a few cracks with efflorescence;

(60) SUBSTRUCTURE: **5 - Fair Condition (minor section loss)**

Comments:
West Abutment: NW Wing is disintegrating at corner next to spandrel wall (2'); each end of thrust block has heavy efflorescence and ASR; SW Wing in Good Condition; some honeycomb around a couple drains;

East Abutment: SE Wing is disintegrating at corner next to spandrel wall (2'); east thrust block has heavy scaling (below spring line); each end of thrust block has heavy efflorescence and ASR; NE Wing in Good Condition;

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

Comments:
Channel flows south to north under bridge. No riprap protection. East footing is partially exposed. Heavily tree-lined banks (upstream and downstream). Sand and gravel line bottom. Bend in channel upstream of bridge.

(62) CULVERTS: **N - Not Applicable**

Comments:

LOAD RATING AND POSTING

(31) DESIGN LOAD:	**4 - H 20**	(66) INVENTORY RATING:	**37**
(70) BRIDGE POSTING	**5 - Equal to or above legal loads**	(65) INVENTORY RATING METHOD:	**1 - Load Factor (LF)**
		(66B) INVENTORY RATING (H):	**20**
(41) STRUCTURE OPEN/POSTED/CLOSED:	**A - Open**	(66C) TONS POSTED :	
		(66D) DATE POSTED/CLOSED:	
(64) OPERATING RATING:			
(63) OPERATING RATING METHOD:	**1 - Load Factor (LF)**		

APPRAISAL

SUFFICIENCY RATING:	**83.9**	(36) TRAFFIC SAFETY FEATURE:	
STATUS:	**0**	36A) BRIDGE RAILINGS:	**0**
(67) STRUCTURAL EVALUATION:	**5**	36B) TRANSITIONS:	**0**
(68) DECK GEOMETRY:	**5**	36C) APPROACH GUARDRAIL:	**0**
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL:	**N**	36D) APPROACH GUARDRAIL ENDS:	**0**

(71) WATERWAY ADEQUACY: **8 - Bridge Above Approaches**
Comments:

(72) APPROACH ROADWAY ALIGNMENT: **8 - Equal to present desirable criteria**
Comments:

(113) SCOUR CRITICAL BRIDGES: **5 - Scour within limits of footing or piles**

Comments:
Spread footings on clay, with no piling. No riprap protects the foundations or wing walls. West thrust block (and footing) has a small sand bar in front. East thrust block is completely exposed, along with the top portion of the footing.

CLASSIFICATION

(20) TOLL:	**3 - On Free Road**	(21) MAINT. RESPONSIBILITY:	**01 - State Highway Agency**
(22) OWNER:	**01 - State Highway Agency**	(26) FUNCTIONAL CLASS OF INVENTORY RTE:	**16 - Urban - Minor Arterial**
(37) HISTORICAL SIGNIFICANCE:	**5 - Not eligible**	(100) STRAHNET HIGHWAY:	**Not a STRAHNET route**
(101) PARALLEL STRUCTURE:	**N - No parallel structure**	(102) DIRECTION OF TRAFFIC:	**2-way traffic**
(103) TEMPORARY STRUCTURE:		(104) HIGHWAY SYSTEM OF INVENTORY ROUTE:	**0 - Structure/Route is NOT on NHS**
(105) FEDERAL LANDS HIGHWAYS:	**0-Not Applicable**	(110) DESIGNATED NATIONAL NETWORK:	**Inventory route on National Truck Network**
(112) NBIS BRIDGE LENGTH:	**Yes**		

NAVIGATION DATA

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

PROPOSED IMPROVEMENTS

(75A) TYPE OF WORK:		(95) ROADWAY IMPROVEMENT COST:	**$ 000000**
(75B) WORK DONE BY:		(96) TOTAL PROJECT COST:	**$ 000000**
(76) LENGTH OF IMPROVEMENT:	**00000.0 FT**	(97) YR OF IMPROVEMENT COST EST:	
(94) BRIDGE IMPROVEMENT COST:	**$ 000000**	(114) FUTURE AVG DAILY TRAFFIC:	**008258**
		(115) YR OF FUTURE ADT:	**2034**