



APPENDIX F WATER RESOURCES

J. Leever

Waters of the US Determination Report
State Road (SR) 49 at County Road (CR) 950 North (N)/Calumet Avenue (Ave)
Porter County, Indiana
Intersection Improvement Project
Des. No. 2301097

Prepared by: Christian Radcliff, SJCA Inc.
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Report Completed on: January 2, 2026

Date of Field Investigation: October 1, 2025

Site Location:

Section 18, Township 36 North, Range 5 West
Chesterton 24K Quadrangle
Porter County, Indiana
Latitude: 41.571586,
Longitude: -87.046196
12-Digit Hydrologic Unit Code (HUC): 040400010403, Coffee Creek – East Arm Little Calumet
River Sub-Watershed

Project Description

The Indiana Department of Transportation (INDOT), with funding from the Federal Highway Administration (FHWA), intends to proceed with an intersection improvement project, Designation Number (Des. No.) 2301097, involving the intersection of SR 49 and CR 950 N/Calumet Ave. The intersection is located approximately 1.50 miles north of US Highway 6 (US 6) in Porter County, Indiana. The existing intersection provides dedicated left-turn lanes from SR 49 onto CR 950 N/Calumet Ave. CR 950 N/Calumet Ave is stop-controlled at the intersection with SR 49. This intersection experiences a high volume of crashes, including crashes with injuries and fatalities. The proposed scope of work includes constructing a reduced conflict intersection (RCI) to reduce conflict points and lower the instance of crashes at the intersection. This alternative includes providing acceleration lanes on SR 49, U-turn locations for traffic turning left onto SR 49 from the intersecting roadway, and protected left-turn lanes for traffic turning left from SR 49 onto CR 950 N/Calumet Ave. The boundaries of the investigated area for this report were chosen based on the potential limits required to complete construction and provide incidental access, which include the existing right-of-way.

Desktop Investigation

Topography: The topography within the investigated area is generally flat, with gently sloping roadsides along SR 49 and CR 950 N/Calumet Ave.

Existing Land-Use: Land use in the vicinity of the investigated area primarily includes roadside right-of-way and vegetated roadsides, as well as adjacent agriculture fields. One commercial property is present northwest of the investigated area but is not contained within the investigated area limits.

Soils: According to the Soil Survey Geographic (SSURGO) Database for Porter County, Indiana, the project area does contain soil areas with nationally listed hydric soils. Soils mapped within the investigated area are shown in Table 1 below.

Table 1. Soil Types Within the Investigated Area

Soil Unit Name	Symbol	NRCS Hydric Soils Category (Area IN127)	SSURGO Hydric Rating
Pewamo silty clay loam	Pe	Hydric	100% Hydric
Riddles silt loam, 2 to 6 percent slopes	RIb	Predominantly nonhydric	10% Hydric
Riddles loam, 6 to 12 percent slopes, eroded	RmC2	Predominantly Nonhydric	10% Hydric

National Wetland Inventory (NWI) Information: According to the NWI map, no features are mapped within the investigated area. The nearest feature, an open water feature, is mapped approximately 0.06 mile southwest of the project location and is classified as PUBHx (Palustrine, unconsolidated bottom, permanently flooded, excavated).

Table 2. Nearest Mapped NWI Features to the Investigated Area

Wetland / Water Feature Type	Location	Investigated Feature Associated with NWI Feature
PUBHx	Approximately 0.06 mile southwest of the investigated area	N/A

Hydrology: According to the attached Indiana Department of Natural Resources (IDNR) Floodplain Report, the investigated area is not located within a floodplain. According to watershed data provided by the Indiana Department of Environmental Management (IDEM), the project area is located within the Coffee Creek – East Arm Little Calumet River Sub-Watershed (see attached Topographic Maps). Based on the National Hydrography Dataset (NHD) (see attached NHD Flowlines Map), there is one canal/ditch feature within the investigated area that is associated with Wetland 3 (see below). During rain events, roadway runoff and drainage from surrounding agricultural and commercial properties travel along the roadsides of SR 49.

Field Investigation

Site Conditions: Site conditions were drier than normal for October, with temperatures in the mid-seventies (°F) during the field visit. According to the US Army Corps of Engineers (USACE) Antecedent Precipitation Tool (APT), the site was in a moderate drought during the site visit. Temperature data were obtained via the Lansing Municipal Station in Lynwood, IL according to *Weather Underground* (www.wunderground.com).

Site Analysis: The investigated area involved the right-of-way of SR 49, including the vegetated roadsides and ditches. Hydrology within the investigated area is influenced by roadway runoff and agricultural drainage from adjacent properties. According to the U.S. Geological Survey (USGS) topographic maps, there are no blue-line streams within the investigated area. No additional stream features were identified within the investigated area during desktop review on the NWI map, and no stream features were identified during the field investigation. However, five previously unmapped emergent ditch wetlands were identified within the investigated area during the site investigation.

The investigated area primarily consisted of facultative (FAC) and facultative upland (FACU) grasses and forbs along the roadsides, with facultative wetland (FACW) and obligate (OBL) forbs primarily within the ditches. Along the slopes of the adjacent properties, various pioneer species and invasive shrub and tree species were present that are common along roadsides. These species were typically FACU and upland (UPL) species. Refer to the Wetlands section and the attached Sample Point Data Sheet for details of dominant vegetation.

Stream Features

No stream features were identified within or adjacent to the investigated area during the desktop review. The site visit confirmed that no stream features are present within or adjacent to the investigated area.

Soil Sample Points and Wetland Features

During the site investigation, five emergent wetlands were delineated, and a total of 10 sample points (SPs) were used to evaluate the investigated area. Please refer to the attached table on page 6 for details of the SPs.

Wetland 1 is an emergent wetland located south of CR 950 N/Calumet Ave and west of SR 49 within the roadside ditch. The Cowardin classification for this wetland is likely PEM5A (palustrine, emergent, *Phragmites australis*, temporarily flooded). The boundaries of the wetland were determined by the slopes of the ditch and subsequent shift in vegetative communities and soil conditions; however, Wetland 1 continues south beyond the investigated area limits within the slopes of the ditch. The presence or absence of hydric soils along the wetland boundaries were determined with the use of a soil probe. Confirmation of the presence of hydric soils was used in the areas with disturbed vegetation to determine where hydrophytic vegetation would likely be present in undisturbed conditions. Approximately 0.362 acre of Wetland 1 is within the investigated area. The vegetative community within Wetland 1 is largely dominated by narrow leaf cattail (*Typha*

angustifolia, OBL) and black willow (*Salix nigra*, OBL) near the southern end of the investigated area, but the community shifts to a disturbed community on the northern portion of the wetland and is dominated by the invasive reed phragmites (*Phragmites australis*, FACW). Wetland 1 is a poor-quality wetland due to its lack of habitat for aquatic flora and fauna, its low species diversity, and presence of invasive species communities. Wetland 1 provides moderate hydrological function due to its connectivity via drainage culverts to Wetlands 2-5. There was no direct surface connection observed between Wetland 1 and a jurisdictional water resource, and it does not appear to have a direct surface connection to any jurisdictional resources beyond the investigated area limits. Therefore, Wetland 1 is likely an isolated wetland under the jurisdiction of IDEM. See photos 5 to 18 for images of Wetland 1, SP1, and SP2.

Wetland 2 is an emergent wetland located in the median of SR 49 and south of CR 950 N/Calumet Ave within the median. The Cowardin classification for this wetland is likely PEM1A (palustrine, emergent, persistent, temporarily flooded). The boundaries of the wetland were determined by the slopes of the ditch and subsequent shift in vegetative communities and soil conditions. The presence or absence of hydric soils along the wetland boundaries were determined with the use of a soil probe. Wetland 2 is contained entirely within the investigated area. Approximately 0.024 acre of Wetland 2 is within the investigated area. The vegetative community within Wetland 2 is dominated by narrow leaf cattail (*Typha angustifolia*, OBL) and the invasive reed canary grass (*Phalaris arundinacea*, FACW). Wetland 2 is a poor-quality wetland due to its lack of habitat for aquatic flora and fauna, its low species diversity, and presence of invasive species communities. Wetland 2 provides poor hydrological function but helps convey drainage via culverts to Wetlands 1 and 3-5. There was no direct surface connection observed between Wetland 2 and a jurisdictional water resource. Therefore, Wetland 2 is likely an isolated wetland under the jurisdiction of IDEM. See photos 19 to 29 for images of Wetland 2, SP3, and SP4.

Wetland 3 is an emergent wetland located south of CR 950 N/Calumet Ave and east of SR 49 within the roadside ditch. The Cowardin classification for this wetland is likely PEM5A (palustrine, emergent, *Phragmites australis*, temporarily flooded). The boundaries of the wetland were determined by the slopes of the ditch and subsequent shift in vegetative communities and soil conditions; however, Wetland 3 continues south beyond the investigated area limits within the slopes of the roadside ditch. The presence or absence of hydric soils along the wetland boundaries were determined with the use of a soil probe. Approximately 0.318 acre of Wetland 3 is within the investigated area. The vegetative community within Wetland 3 is dominated by narrow leaf cattail (*Typha angustifolia*, OBL) and the invasive reed phragmites (*Phragmites australis*, FACW). Wetland 3 is a poor-quality wetland due to its lack of habitat for aquatic flora and fauna, its low species diversity, and presence of invasive species communities. Wetland 3 provides moderate hydrological function due to its connectivity via drainage culverts to Wetlands 1-2 and 4-5. There was no direct surface connection observed between Wetland 3 and a jurisdictional water resource, and it does not appear to have a direct surface connection to any jurisdictional resources beyond the investigated area limits. Therefore, Wetland 3 is likely an isolated wetland under the jurisdiction of IDEM. See photos 32 to 44 for images of Wetland 3, SP5, and SP6.

Wetland 4 is an emergent wetland located north of CR 950 N/Calumet Ave and east of SR 49 within the roadside ditch. The Cowardin classification for this wetland is likely PEM5A (palustrine, emergent, *Phragmites australis*, temporarily flooded). The boundaries of the wetland were determined by the slopes of the ditch and subsequent shift in vegetative communities and soil conditions. The presence or absence of hydric soils along the wetland boundaries were determined with the use of a soil probe. Wetland 4 is contained entirely within the investigated area. Approximately 0.052 acre of Wetland 4 is within the investigated area. The vegetative community within Wetland 4 is dominated by the invasive reed phragmites (*Phragmites australis*, FACW) and non-native foxtail barley (*Hordeum jubatum*, FAC). Wetland 4 is a poor-quality wetland due to its lack of habitat for aquatic flora and fauna, its low species diversity, and presence of invasive species communities. Wetland 4 provides poor hydrological function due to its connectivity via drainage culverts to Wetlands 1-3 and 5. There was no direct surface connection observed between Wetland 4 and any jurisdictional water resource, and it does not appear to have a direct surface connection to any jurisdictional resources. Therefore, Wetland 4 is likely an isolated wetland under the jurisdiction of IDEM. See photos 45 to 54 for images of Wetland 4, SP7, and SP8.

Wetland 5 is an emergent wetland located north of CR 950 N/Calumet Ave and west of SR 49 within the roadside ditch. The Cowardin classification for this wetland is likely PEM5A (palustrine, emergent, *Phragmites australis*, temporarily flooded). The boundaries of the wetland were determined by the slopes of the ditch and subsequent shift in vegetative communities and soil conditions. The presence or absence of hydric soils along the wetland boundaries were determined with the use of a soil probe. Confirmation of the presence of hydric soils was used in the areas with disturbed vegetation to determine where hydrophytic vegetation would likely be present in undisturbed conditions. Approximately 0.028 acre of Wetland 5 is within the investigated area. The vegetative community within Wetland 5 is dominated by the invasive reed phragmites (*Phragmites australis*, FACW). Wetland 5 is a poor-quality wetland due to its lack of habitat for aquatic flora and fauna, its low species diversity, and presence of invasive species communities. Wetland 5 provides poor hydrological function due to its connectivity via drainage culverts to Wetlands 1-4. There was no direct surface connection observed between Wetland 5 and a jurisdictional water resource. Therefore, Wetland 5 is likely an isolated wetland under the jurisdiction of IDEM. See photos 58 to 70 for images of Wetland 5, SP9, and SP 10.

Table 3. Sample Point and Wetland Summary Table

Wetland ID	Type	Acreage	Quality	Photo IDs	Associated Structure ID	Likely WOTUS?	Likely Class and Exemption Status	Sample Point ID (SP)	Lat/Long	Dominant Vegetation	Hydrophytic Vegetation?	Hybrie Soil Indicator(s)	Hydrology Indicator(s)	Within Wetland?	Notes
Wetland 1	PEM5A	0.362	Poor	5 to 8	N/A	No	Likely not exempt, Class 1	SP 1	41.568532, -87.046987	Narrow leaf cattail (<i>Typha angustifolia</i> , OBL), black willow (<i>Salix nigra</i> , OBL)	Yes	F3	D2, D5	Yes	Emergent ditch wetland point west of SR 49 and south of the project intersection. Wetland 1 extends south beyond the investigated area.
				9 to 12				SP2	41.568528, -87.046958	Eastern red cedar (<i>Juniperus virginiana</i> , FACU), Indian grass (<i>Sorghastrum nutans</i> , FACU), tall goldenrod (<i>Solidago altissima</i> , FACU)	No	F3	N/A	No	Associated upland point to SP1.
Wetland 2	PEM1A	0.024	Poor	19 to 21	N/A	No	Likely exempt, Class 1	SP3	41.569987, -87.046389	Reed canary grass (<i>Phalaris arundinacea</i> , FACW), narrow leaf cattail (<i>Typha angustifolia</i> , OBL)	Yes	F1, F3	D2, D5	No	Emergent ditch wetland in the median of SR 49 and south of the project intersection. Wetland 2 is contained entirely within the investigated area.
				26 to 29				SP4	41.569987, -87.046370	Tall fescue (<i>Schedonorus arundinaceus</i> , FACU), red fescue (<i>Festuca rubra</i> , FACU)	No	N/A	N/A	No	Associated upland point to SP3.
Wetland 3	PEM5A	0.318	Poor	32 to 36	N/A	No	Likely not exempt, Class 1	SP5	41.568886, -87.046129	Reed phragmites (<i>Phragmites australis</i> , FACW), narrow leaf cattail (<i>Typha angustifolia</i> , OBL)	Yes	F1, F3	B4, C7, D2, D5	Yes	Emergent ditch wetland east of SR 49 and south of project intersection. Wetland 3 extends south beyond the investigated area.
				41 to 44				SP6	41.568887, -87.046078	Tall fescue (<i>Schedonorus arundinaceus</i> , FACU), common milkweed (<i>Asclepias syriaca</i> , FACU)	No	F3	N/A	No	Associated upland point to SP 5.
Wetland 4	PEM5A	0.052	Poor	45 to 48	N/A	No	Likely exempt, Class 1	SP7	41.571922, -87.045778	Reed phragmites (<i>Phragmites australis</i> , FACW), foxtail barley (<i>Hordeum jubatum</i> , FAC)	Yes	F8	D2, D5	Yes	Emergent ditch wetland east of SR 49 and north of project intersection. Wetland 4 is contained entirely within the limits of the investigated area.
				50 to 54				SP8	41.571927, -87.045702	Indian grass (<i>Sorghastrum nutans</i> , FACU), prairie dropseed (<i>Sporobolus heterolepis</i> , FACU)	No	N/A	N/A	No	Associated upland point to SP7.
Wetland 5	PEM5A	0.028	Poor	58 to 62	N/A	No	Likely exempt, Class 1	SP9	41.572010, -87.046473	Reed phragmites (<i>Phragmites australis</i> , FACW)	Yes	A1, A10	A3, C2, D2, D5	Yes	Emergent ditch wetland west of SR 49 and north of project intersection. Wetland 5 is contained entirely within the limits of the investigated area.
				66 to 70				SP10	41.571997, -87.046507	Eastern red cedar (<i>Juniperus virginiana</i> , FACU), gallery pear (<i>Pyrus calleryana</i> , UPL)	No	N/A	N/A	No	Suspected wetland point near Curve 6 that did not meet any wetland indicators.

Other Water Features and Roadside Ditches (RSDs)

The investigated area was assessed for the presence of other water features. Other water features include RSDs, areas that do not have an OHWM but have concentrated flow, historic drainage, open water features, and other unusual drainage features. These features may be considered jurisdictional if they exhibit a continuous surface connection to a relatively permanent waterway or a traditionally navigable waterway. No open water features were identified during the desktop review or site investigation. No RSDs were identified within the investigated area during the desktop review or during the site visit.

Ecology and Wildlife Crossings

During the field investigation on October 1, 2025, the investigated area and small structures within the investigated area were inspected for bats, birds, evidence of bats or birds, and any other evidence of wildlife crossings. Wildlife crossings include level areas with natural substrate above the OHWM of streams and water features, which could include evidence (droppings, nests, tracks, etc.) of wildlife use through the structure. No bats, birds, or evidence of any wildlife use or crossing were observed on the structures or within the investigated area.

Conclusions

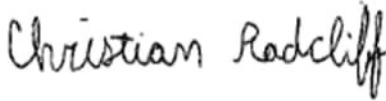
The investigated area included the vegetated roadsides of SR 49. Areas within the investigated area were typical of roadside right-of-way and disturbed ground. The site investigation identified the presence of five emergent ditch wetlands, Wetlands 1-5. No wetlands within the investigated area exhibited a continuous surface connection to other likely jurisdictional water features, and it did not appear that wetlands that extend beyond the investigated area limits connect to any likely jurisdictional features. Therefore, these features are likely isolated water features under the jurisdiction of IDEM. No open water features, streams, or other jurisdictional features were identified within the investigated area. There are no water resources under USACE jurisdiction per Section 10 of the Rivers and Harbors Act within the investigated area.

Every effort should be taken to avoid and minimize impacts to these features. If impacts are necessary, then mitigation may be required. The USACE should be contacted immediately if impacts 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 Corps.

Acknowledgement

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

Christian Radcliff



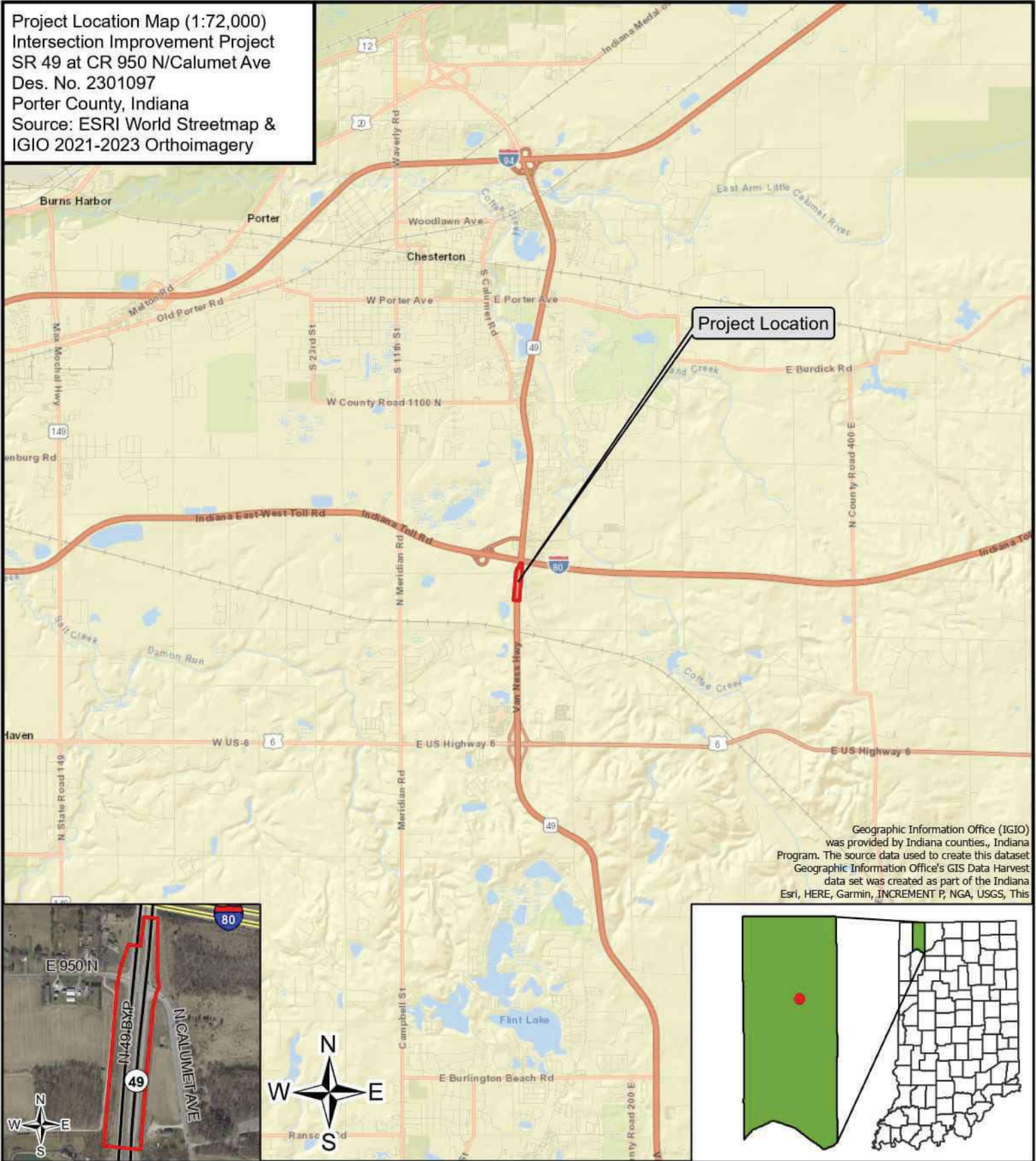
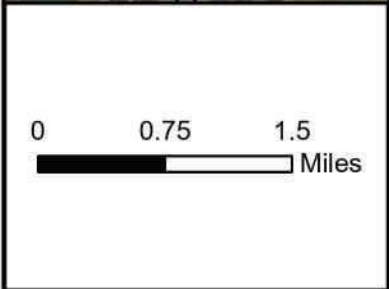
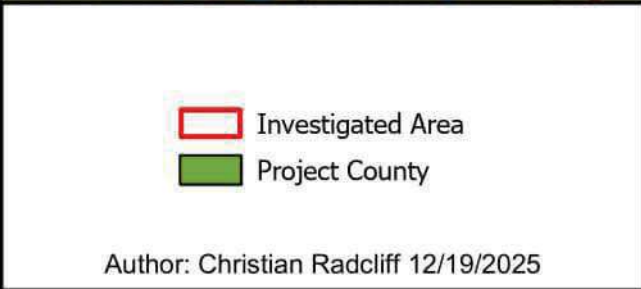
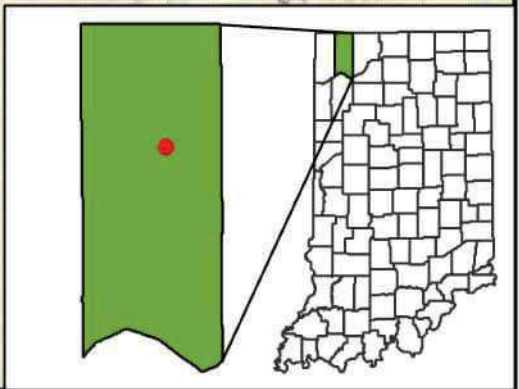
Environmental Project Manager and Permitting Specialist
SJCA Inc.

Date: January 2, 2026

Attachments:

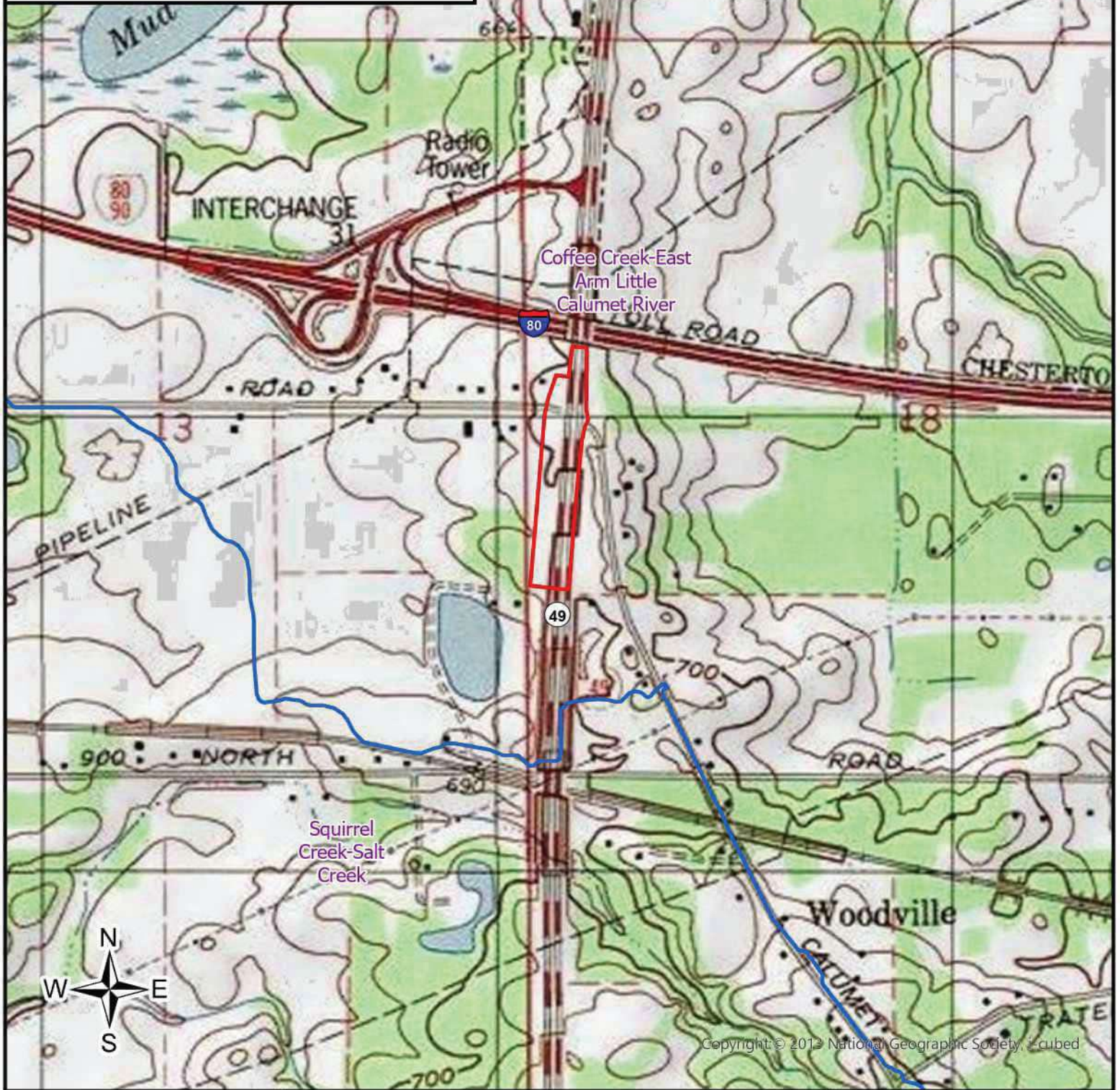
- Maps (Project Location, USGS Topographic, Floodplain, NHD Flowline, NWI, Hydric Soils, and Water Resources)
- Photo Location and Orientation Map and Site Photographs
- Wetland Determination Data Forms
- Preliminary Jurisdictional Determination Form

Project Location Map (1:72,000)
 Intersection Improvement Project
 SR 49 at CR 950 N/Calumet Ave
 Des. No. 2301097
 Porter County, Indiana
 Source: ESRI World Streetmap &
 IGIO 2021-2023 Orthoimagery



Author: Christian Radcliff 12/19/2025

Topographic Map (1:12,000)
 Intersection Improvement Project
 SR 49 at CR 950 N/Calumet Ave
 Des. No. 2301097
 Chesterton Quadrangle, Porter County, Indiana
 Source: US Geological Survey, PLSS



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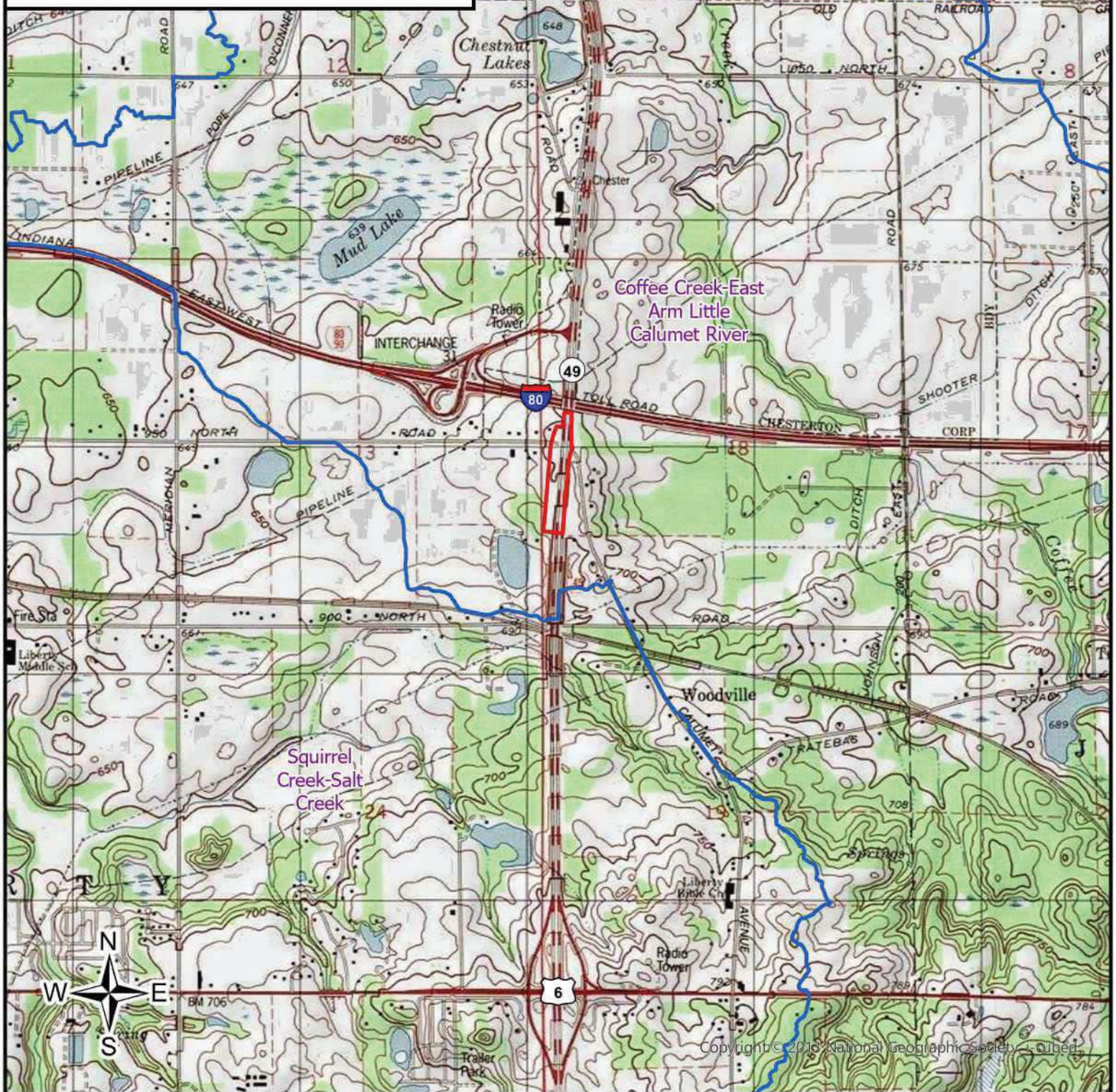
0 0.13 0.25
 Miles

Investigated Area
 HUC12



Author: Christian Radcliff 12/19/2025

Topographic Map (1:24,000)
 Intersection Improvement Project
 SR 49 at CR 950 N/Calumet Ave
 Des. No. 2301097
 Chesterton Quadrangle, Porter County, Indiana
 Source: US Geological Survey, PLSS



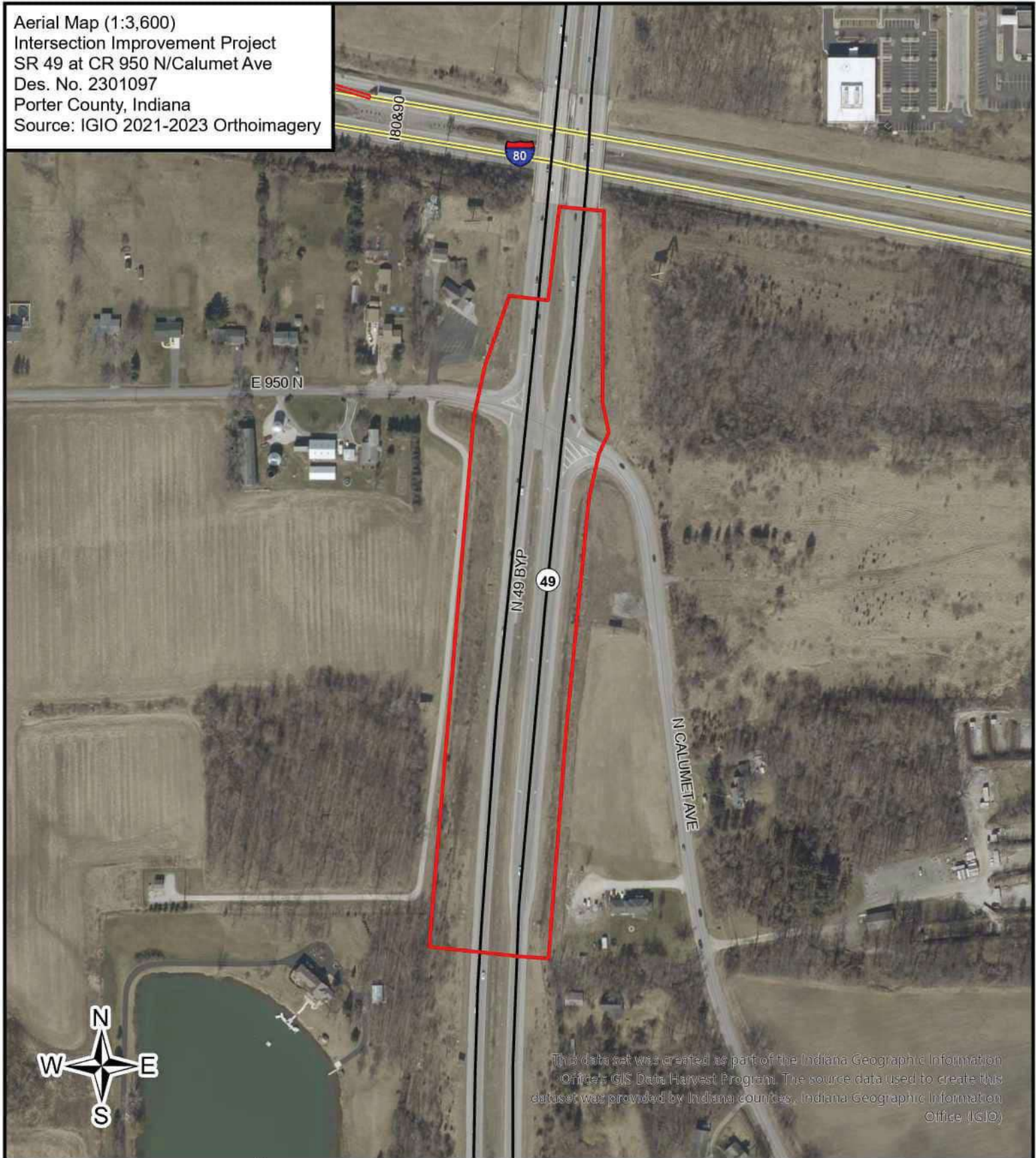
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 Miles

Investigated Area
 HUC12

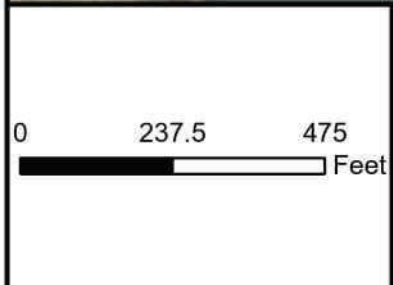


Author: Christian Radcliff 12/19/2025

Aerial Map (1:3,600)
 Intersection Improvement Project
 SR 49 at CR 950 N/Calumet Ave
 Des. No. 2301097
 Porter County, Indiana
 Source: IGIO 2021-2023 Orthoimagery



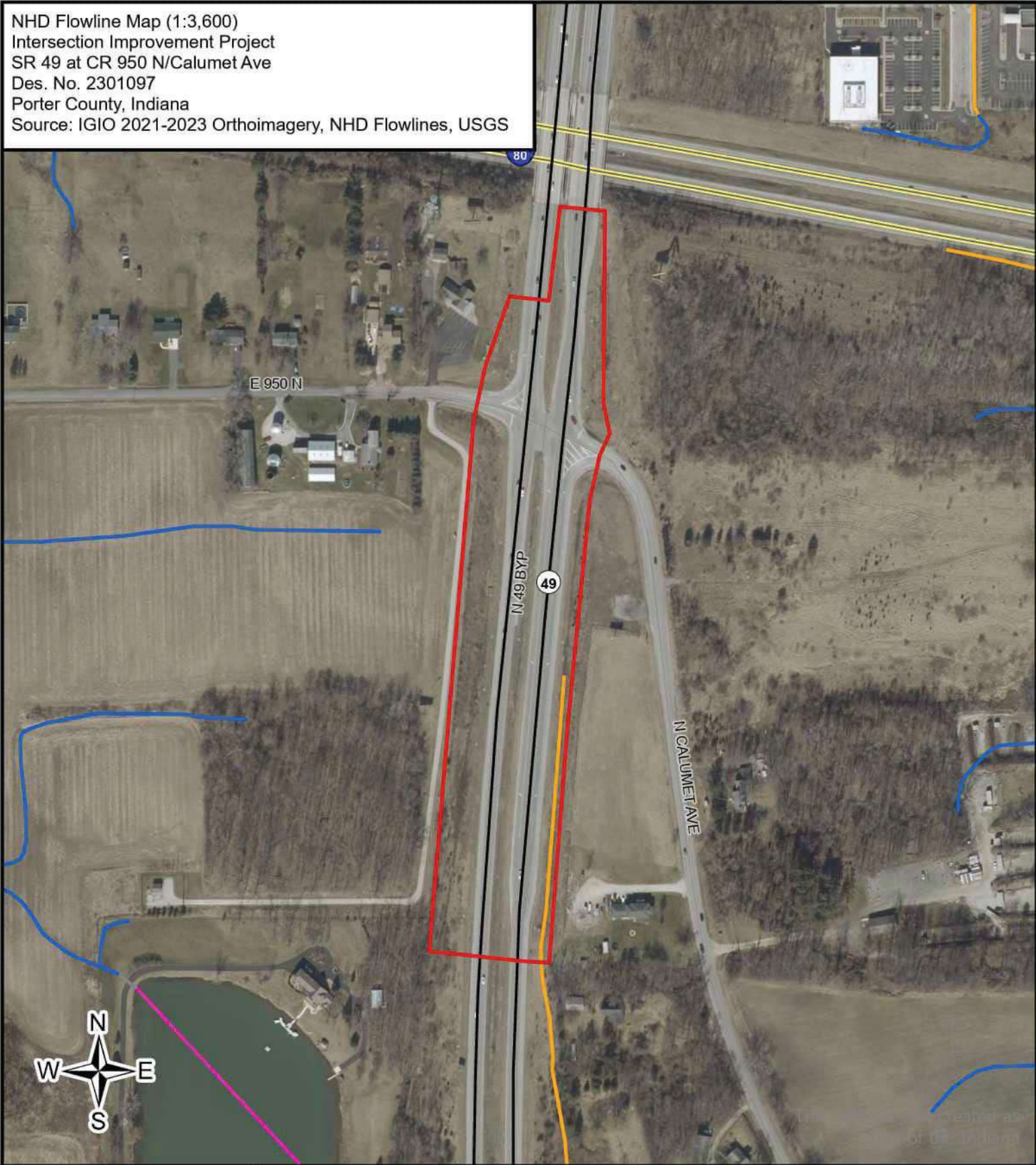
This data set was created as part of the Indiana Geographic Information Office's GIS Data Harvest Program. The source data used to create this dataset was provided by Indiana counties. Indiana Geographic Information Office (IGIO)



 Investigated Area

Author: Christian Radcliff 12/17/2025

NHD Flowline Map (1:3,600)
Intersection Improvement Project
SR 49 at CR 950 N/Calumet Ave
Des. No. 2301097
Porter County, Indiana
Source: IGIO 2021-2023 Orthoimagery, NHD Flowlines, USGS



00.040.09Miles

Investigated Area

Unclassified Flowlines

Flowline

Connector

Canal Ditch

Underground Conduit

Pipeline

Stream/River

Artificial Path

Coastline

Author: First Last 12/17/2025



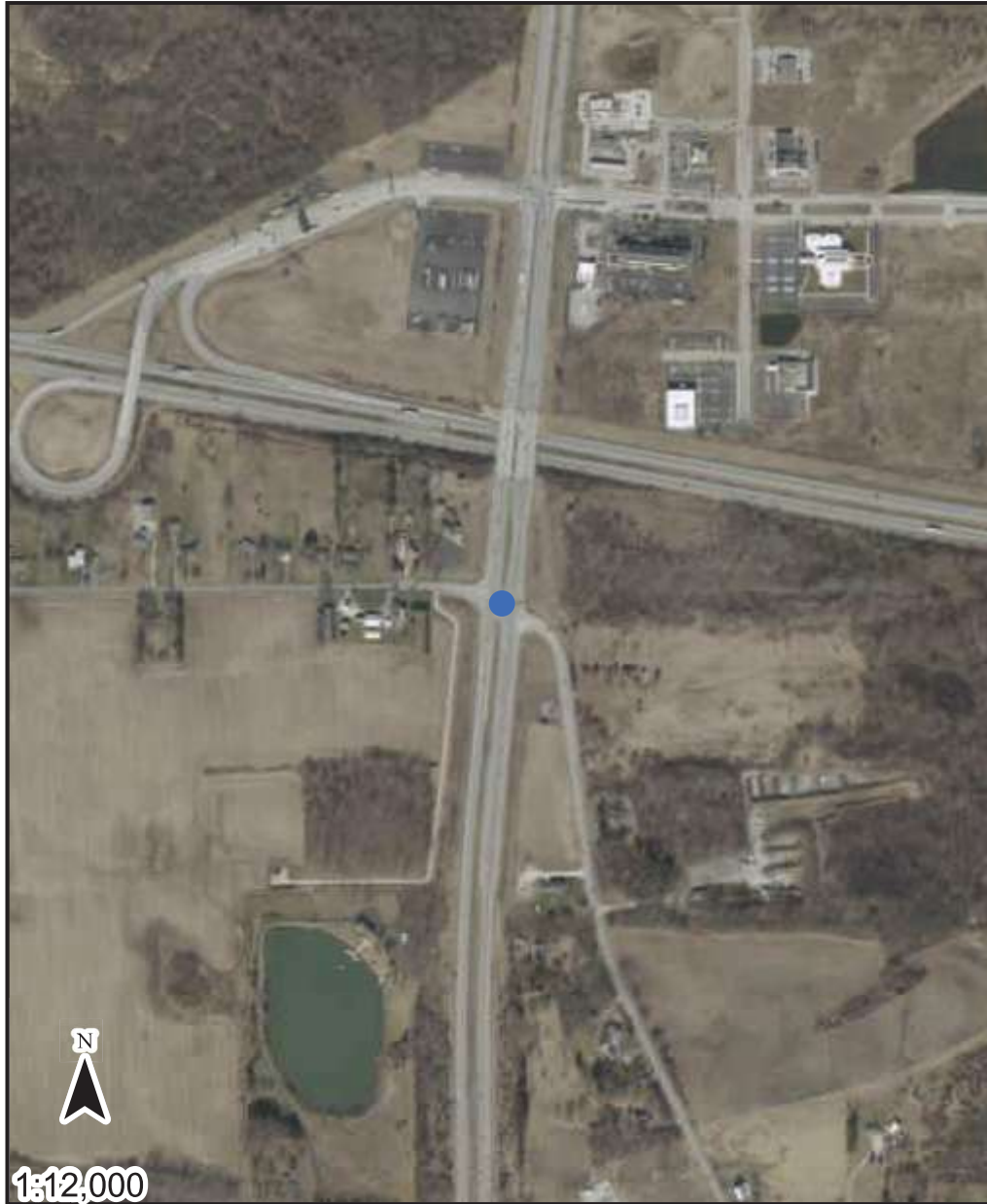
NWI Wetland Map (1:4,800)
 Intersection Improvement Project
 SR 49 at CR 950 N/Calumet Ave
 Des. No. 2301097
 Porter County, Indiana
 Source: IGIO 2021-2023 Orthoimagery, NWI, USFWS



- | | |
|--|--|
| Investigated Area | Freshwater Pond |
| NWI Wetlands | Lake |
| Freshwater Emergent Wetland | Other |
| Freshwater Forested/Shrub Wetland | Riverine |

Author: Christian Radcliff 12/17/2025





- Point of Interest
- Base Flood Elevation Point
- POI
- Not Mapped
- FPA Jurisdictions
- RGB**
- Red: Band_1
- Green: Band_2
- Blue: Band_3

Long: -87.04616518406108

Lat: 41.57160429757524

The information provided below is based on the point of interest shown in the map above.

County: **Porter**

Stream Name:

Coffee Creek

Approximate Ground Elevation: **701.3 feet (NAVD88)**

Base Flood Elevation: **660.5 Feet (NAVD88)**

Drainage Area: **Not Available**

Best Available Flood Hazard Zone: **Not Mapped**

National Flood Hazard Zone: **Not Mapped**

Is a Flood Control Act permit from the DNR needed for this location? **See following pages**

Is a local floodplain permit needed for this location? **Contact your local Floodplain Administrator-**

Floodplain Administrator: **Matt Gavelek, Town Engineer**

Community Jurisdiction: **Town Of Chesterton, City proper**

Phone: **(219) 926-2610**

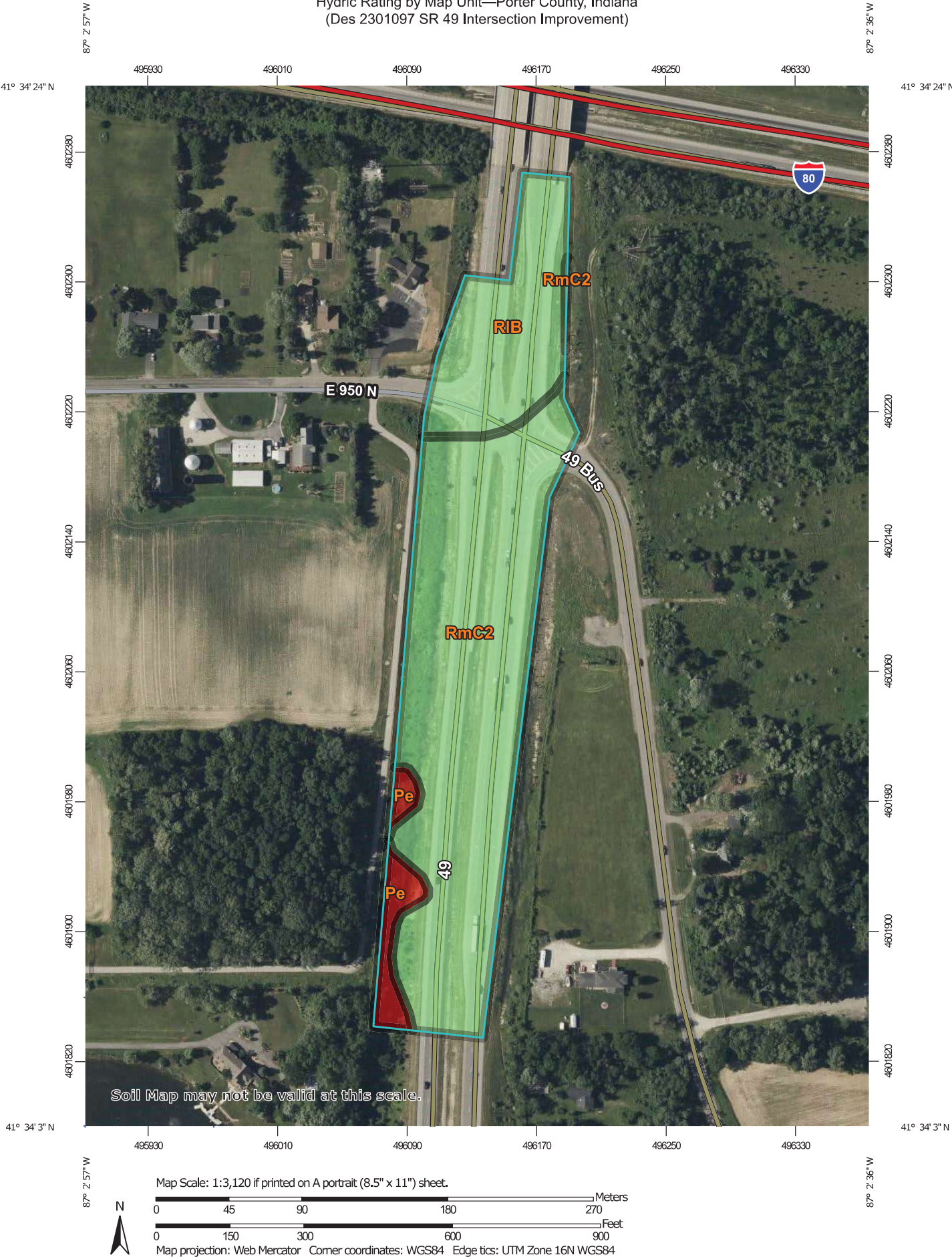
Email: **mgavelek@chestertonin.org**

US Army Corps of Engineers District: **Chicago**

F-15

Date Generated: 12/4/2025

Hydric Rating by Map Unit—Porter County, Indiana
(Des 2301097 SR 49 Intersection Improvement)



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey
F-16

12/3/2025

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

Soils

Soil Rating Polygons

Hydric (100%)

Hydric (66 to 99%)

Hydric (33 to 65%)

Hydric (1 to 32%)

Not Hydric (0%)

Not rated or not available

Soil Rating Lines

Hydric (100%)

Hydric (66 to 99%)

Hydric (33 to 65%)

Hydric (1 to 32%)

Not Hydric (0%)

Not rated or not available

Soil Rating Points

Hydric (100%)

Hydric (66 to 99%)

Hydric (33 to 65%)

Hydric (1 to 32%)

Not Hydric (0%)

Not rated or not available

Water Features

Streams and Canals

MAP INFORMATION

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

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Porter County, Indiana
Survey Area Data: Version 29, Sep 3, 2025

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

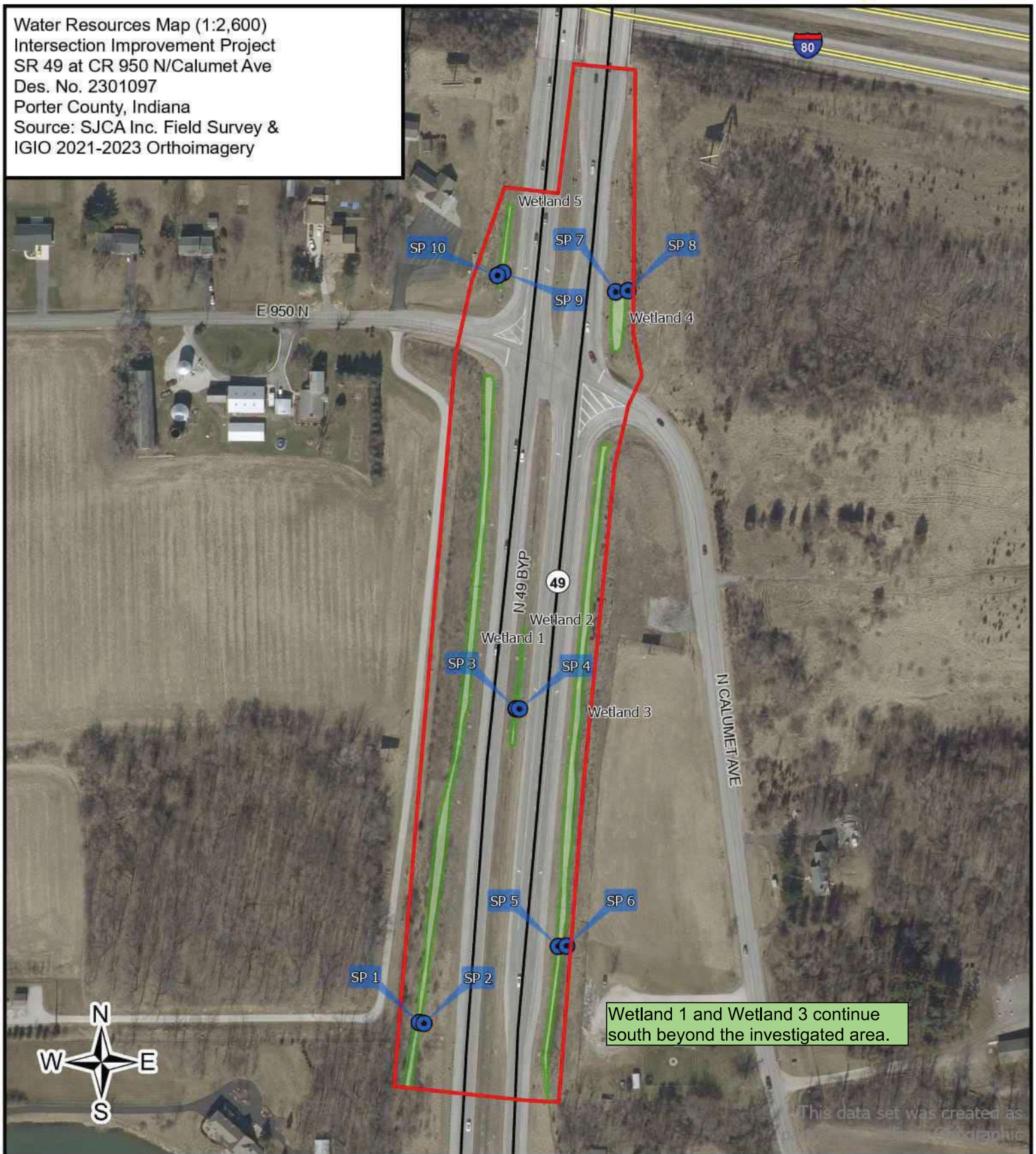
Date(s) aerial images were photographed: Jun 16, 2022—Jun 27, 2022

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

Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Pe	Pewamo silty clay loam	100	0.5	5.5%
RIB	Riddles silt loam, 2 to 6 percent slopes	10	2.2	23.7%
RmC2	Riddles loam, 6 to 12 percent slopes, eroded	10	6.6	70.7%
Totals for Area of Interest			9.4	100.0%

Water Resources Map (1:2,600)
 Intersection Improvement Project
 SR 49 at CR 950 N/Calumet Ave
 Des. No. 2301097
 Porter County, Indiana
 Source: SJCA Inc. Field Survey &
 IGIO 2021-2023 Orthoimagery



0 170 340
 Feet

Investigated Area

Wetlands

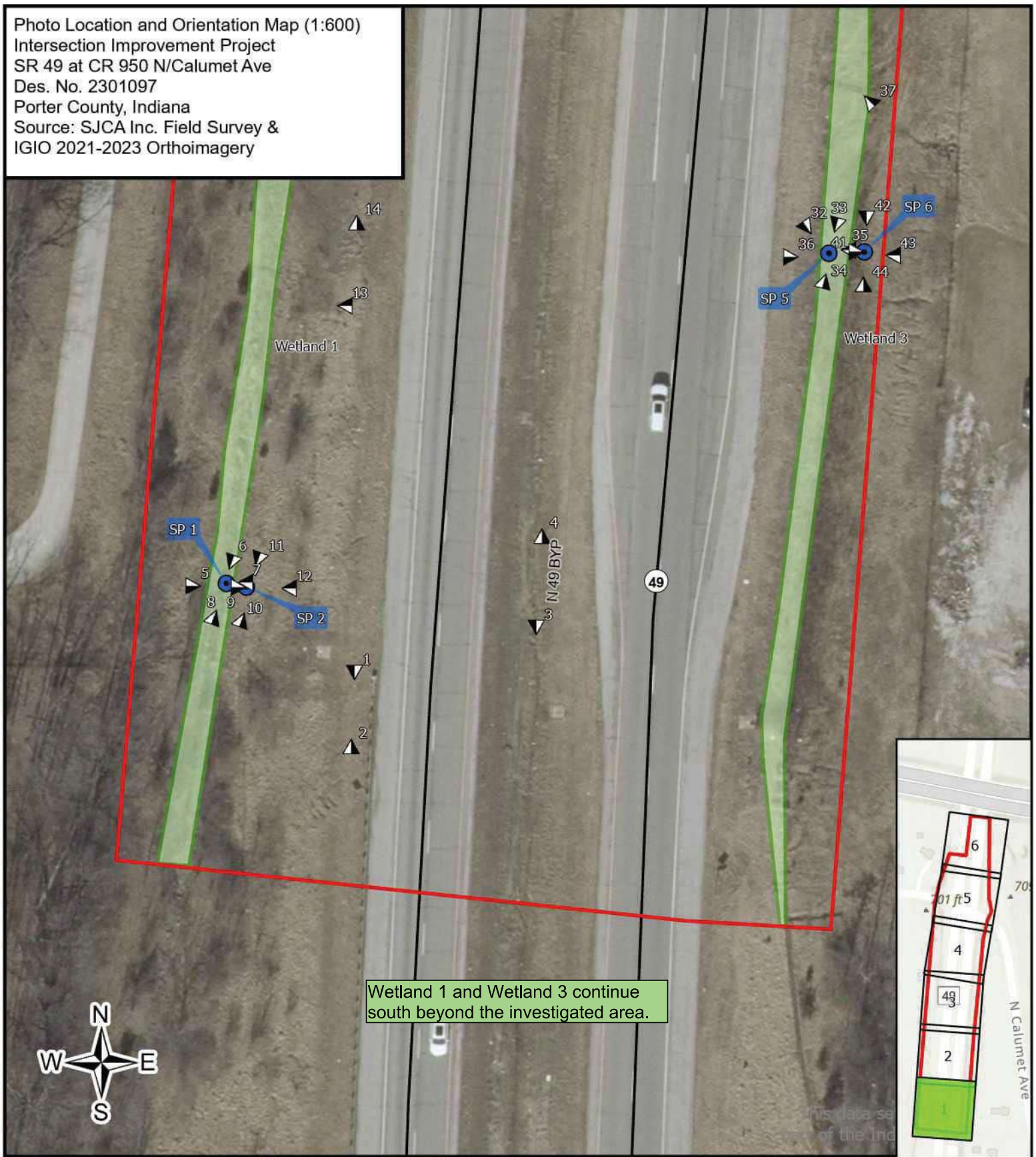
Emergent

Sample Points



F-19
 Author: Christian Radcliff 12/17/2025

Photo Location and Orientation Map (1:600)
 Intersection Improvement Project
 SR 49 at CR 950 N/Calumet Ave
 Des. No. 2301097
 Porter County, Indiana
 Source: SJCA Inc. Field Survey &
 IGIO 2021-2023 Orthoimagery



0 37.5 75
 Feet

Investigated Area

Wetlands

Emergent

Sample Points

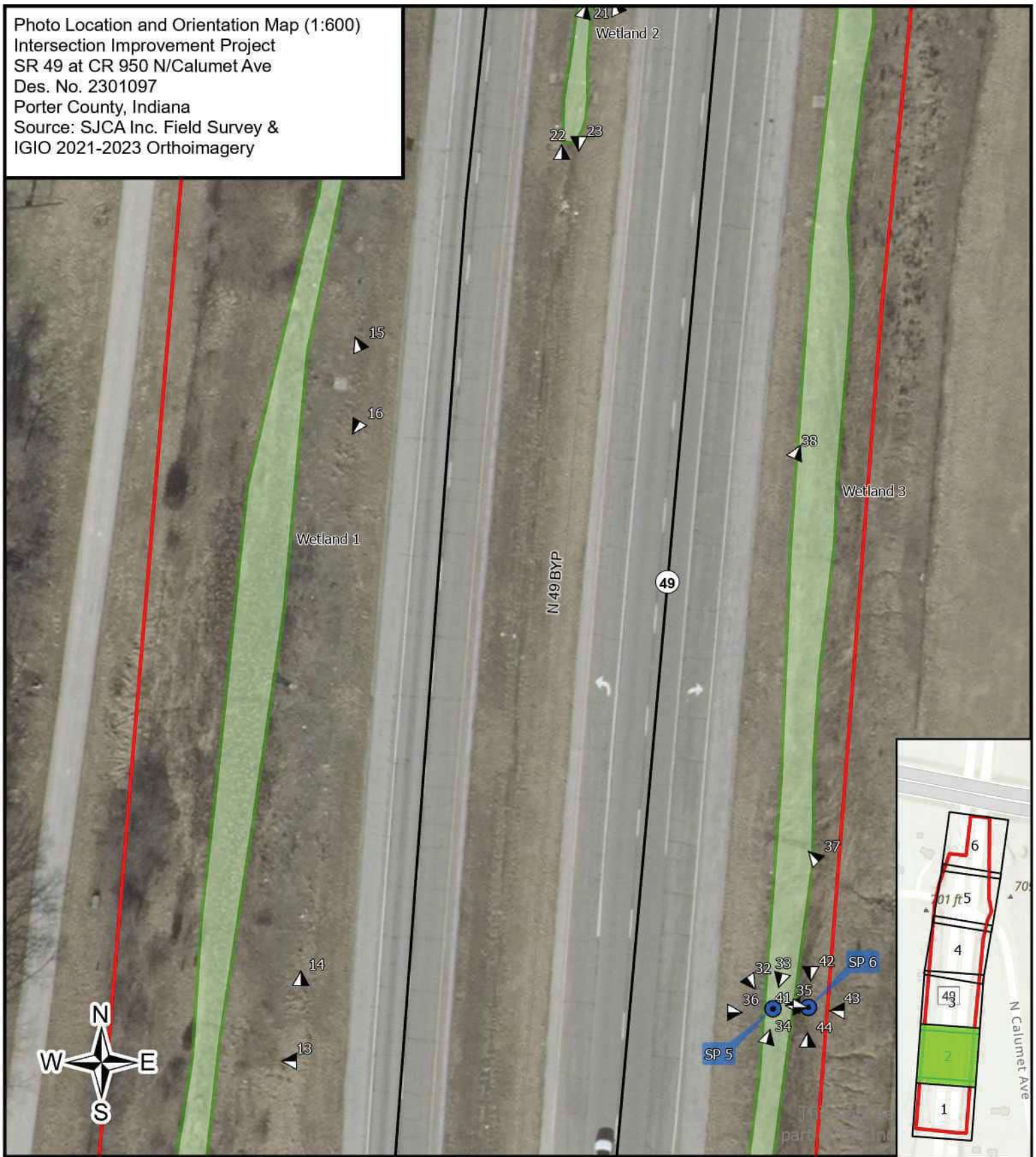
Photo Point

F-20

Author: Christian Radcliff 12/17/2025



Photo Location and Orientation Map (1:600)
 Intersection Improvement Project
 SR 49 at CR 950 N/Calumet Ave
 Des. No. 2301097
 Porter County, Indiana
 Source: SJCA Inc. Field Survey &
 IGIO 2021-2023 Orthoimagery



0 37.5 75
 Feet

Investigated Area

Wetlands

Emergent

Sample Points

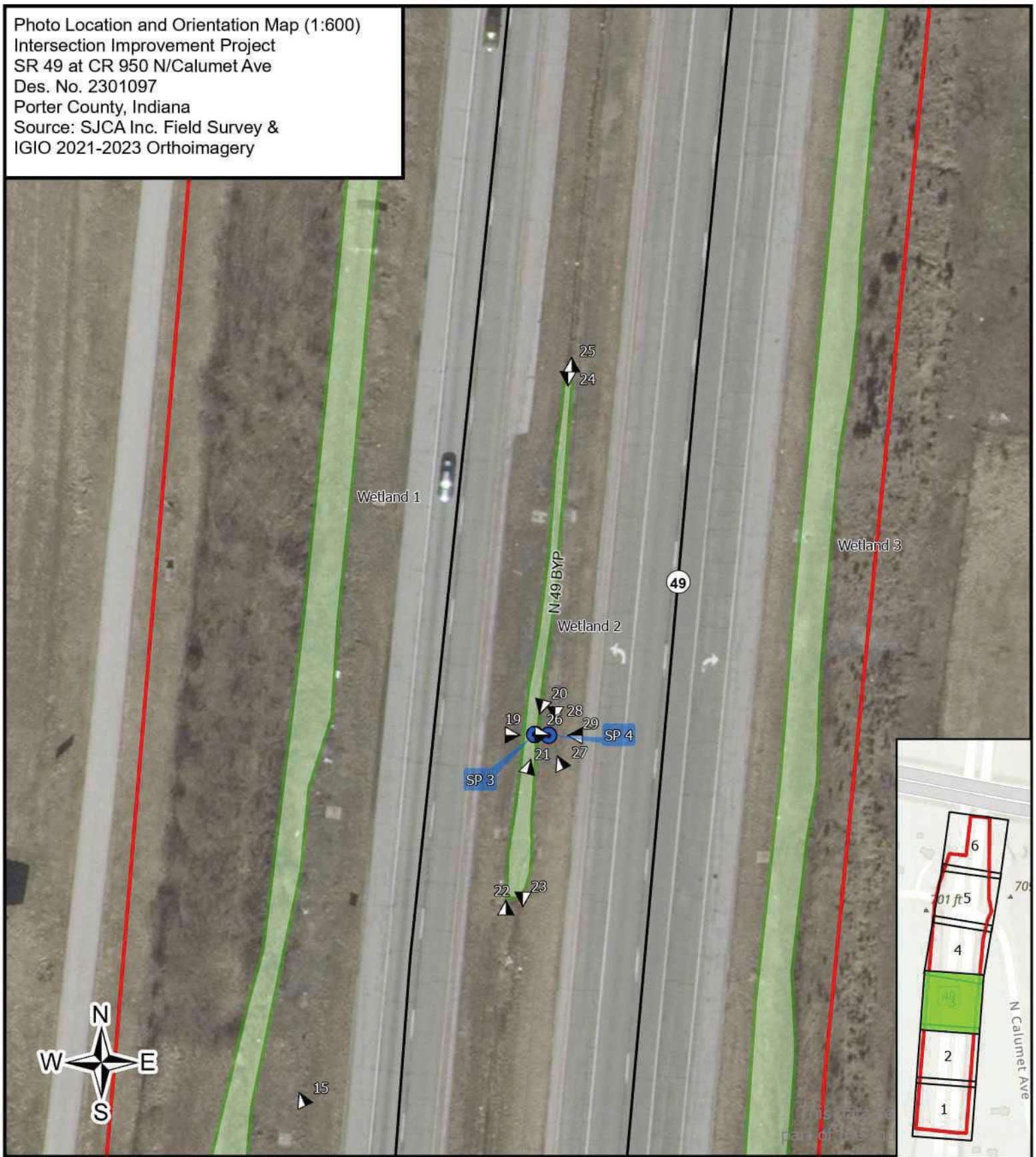
Photo Point

F-21

Author: Christian Radcliff 12/17/2025



Photo Location and Orientation Map (1:600)
 Intersection Improvement Project
 SR 49 at CR 950 N/Calumet Ave
 Des. No. 2301097
 Porter County, Indiana
 Source: SJCA Inc. Field Survey &
 IGIO 2021-2023 Orthoimagery



0 37.5 75
 Feet

Investigated Area

Wetlands

Emergent

● Sample Points

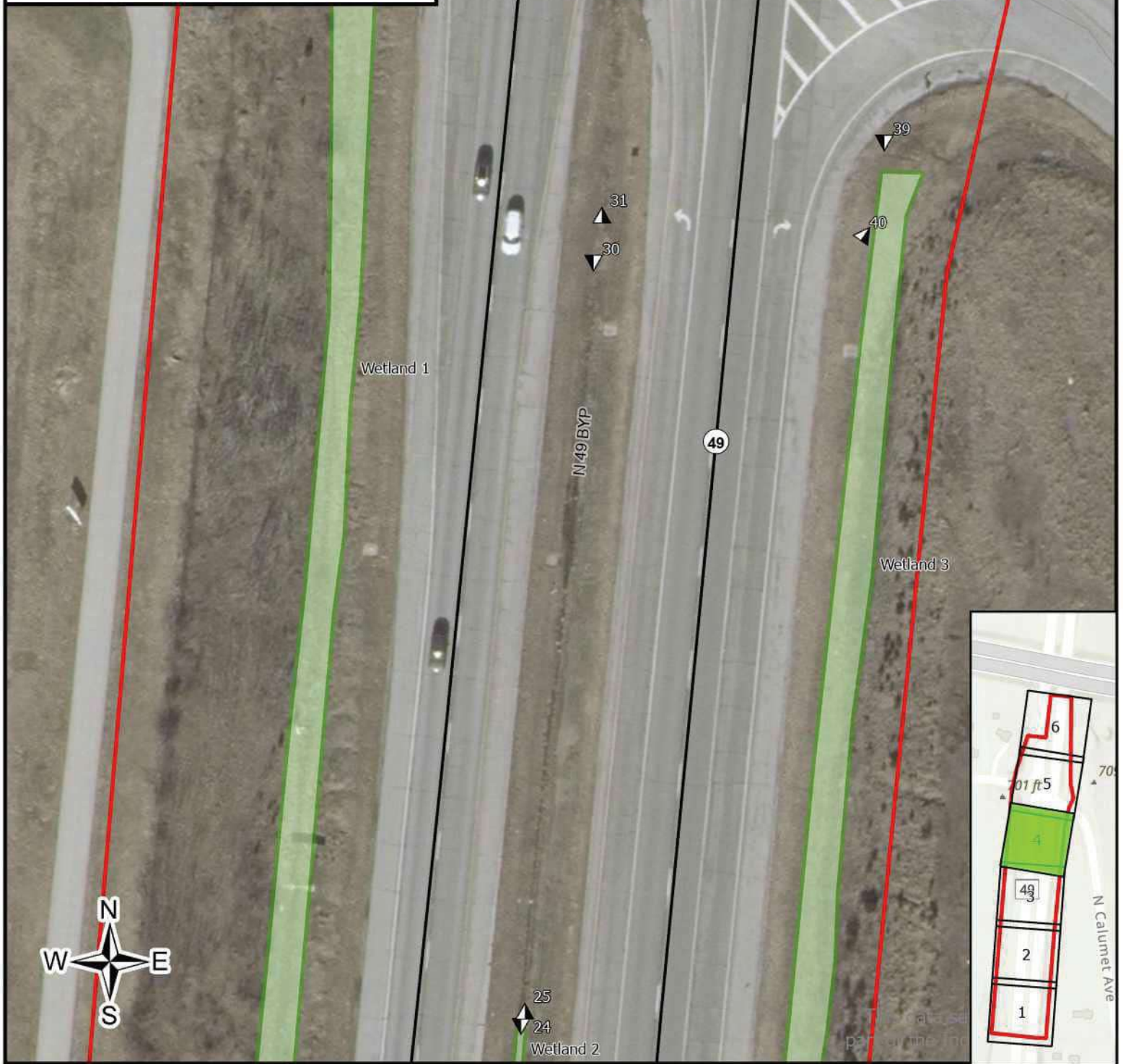
▲ Photo Point

F-22

Author: Christian Radcliff 12/17/2025



Photo Location and Orientation Map (1:600)
 Intersection Improvement Project
 SR 49 at CR 950 N/Calumet Ave
 Des. No. 2301097
 Porter County, Indiana
 Source: SJCA Inc. Field Survey &
 IGIO 2021-2023 Orthoimagery



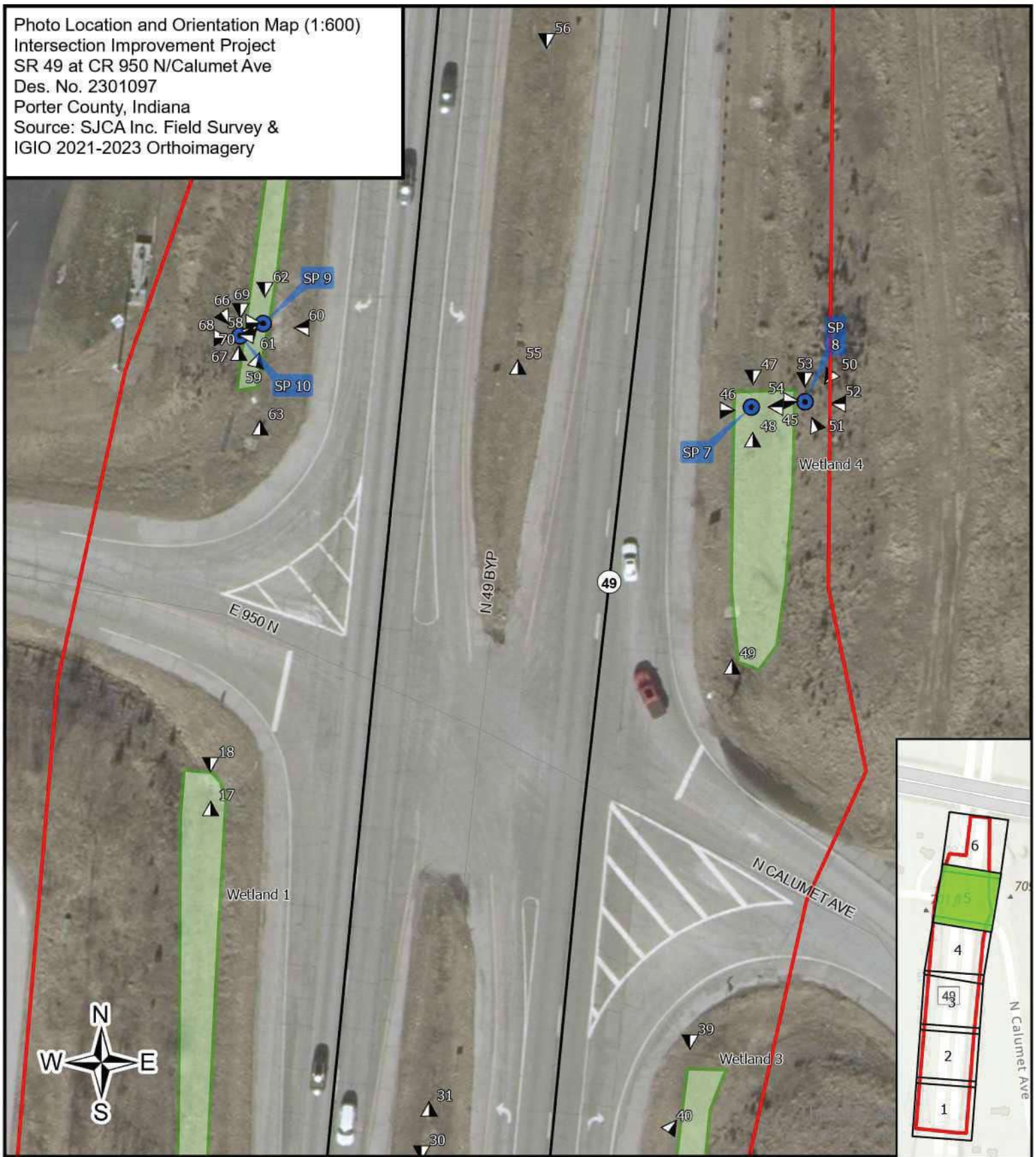
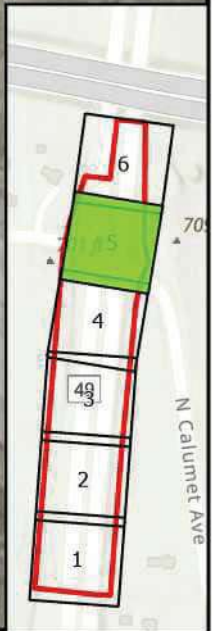
0 37.5 75
 Feet

- Investigated Area
- Wetlands
- Emergent
- Photo Point



F-23
 Author: Christian Radcliff 12/17/2025

Photo Location and Orientation Map (1:600)
 Intersection Improvement Project
 SR 49 at CR 950 N/Calumet Ave
 Des. No. 2301097
 Porter County, Indiana
 Source: SJCA Inc. Field Survey &
 IGIO 2021-2023 Orthoimagery



0 37.5 75
 Feet

Investigated Area

Wetlands

Emergent

Sample Points

Photo Point

F-24

Author: Christian Radcliff 12/17/2025



Photo Location and Orientation Map (1:600)
 Intersection Improvement Project
 SR 49 at CR 950 N/Calumet Ave
 Des. No. 2301097
 Porter County, Indiana
 Source: SJCA Inc. Field Survey &
 IGIO 2021-2023 Orthoimagery



0 37.5 75
 Feet

Investigated Area

Wetlands

Emergent

● Sample Points

▲ Photo Point

F-25

Author: Christian Radcliff 12/19/2025





Photo 1. Southern project terminus west of SR 49 facing south



Photo 2. Southern project terminus west of SR 49 facing north



Photo 3. Southern project terminus in median of SR 49 facing south



Photo 4. Southern project terminus in median of SR 49 facing north



Photo 5. SP1 soil and pit (Wetland 1)



Wetland 1 continues south beyond the investigated area.

Photo 6. SP1 facing southwest within Wetland 1



Photo 7. SP1 facing west towards Wetland 1



Photo 8. SP1 facing northeast towards Wetland 1



Photo 9. SP2 soil and pit (upland point)



Photo 10. SP2 facing northeast



Photo 11. SP2 facing southwest



Photo 12. SP2 facing west towards Wetland 1



Photo 13. Shift in vegetative community within Wetland 1 facing west



Photo 14. Wetland 1 facing north



Photo 15. Wetland 1 facing northwest



Photo 16. Wetland 1 facing southwest



Drainage culvert connects to Wetland 5

Photo 17. Drainage culvert at north end of Wetland 1 leading to Wetland 5 facing north



Photo 18. Facing south from north end of Wetland 1 towards disturbed vegetation



Photo 19. SP3 soil and pit (Wetland 2)



Photo 20. SP3 facing southwest in Wetland 2



Inlet carries drainage to adjacent ditch wetlands east and west of SR 49

Photo 21. SP3 facing northwest in Wetland 2

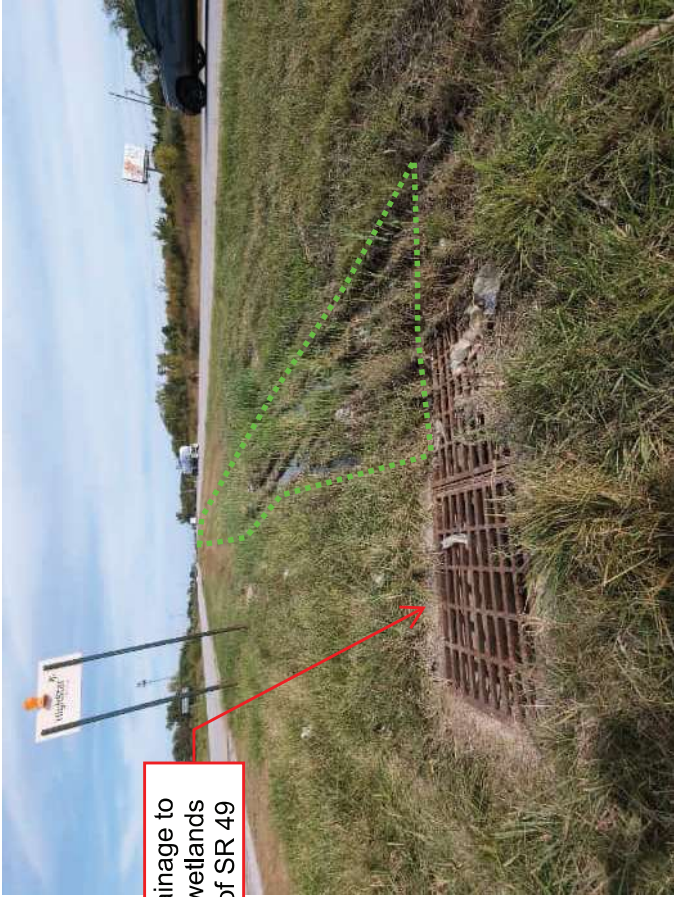


Photo 22. Southern end of Wetland 2 facing north towards drainage inlet

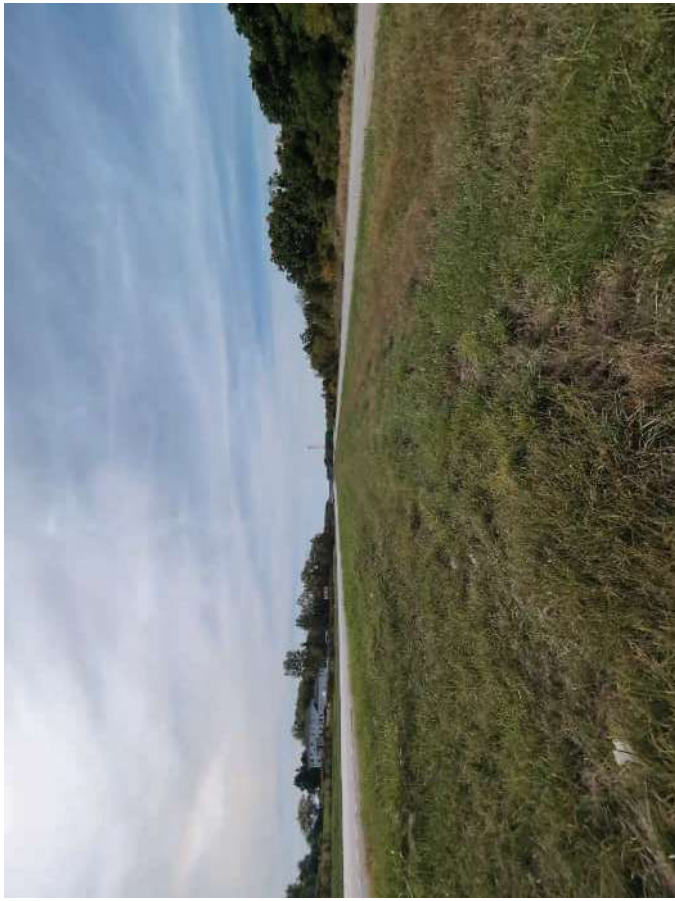


Photo 23. Upland south of Wetland 2 facing south



Photo 24. North end of Wetland 2 facing south



Photo 25. Upland north of Wetland 2 facing north



Photo 26. SP4 soil and pit (upland point)



Photo 27. SP4 facing northwest towards Wetland 2



Photo 28. SP4 facing south towards Wetland 2



Photo 29. SP4 facing west towards Wetland 2



Photo 30. North end of median on south side of intersection facing south



Photo 31. North end of median on south side of intersection facing north



Photo 32. SP5 soil and pit (Wetland 3)

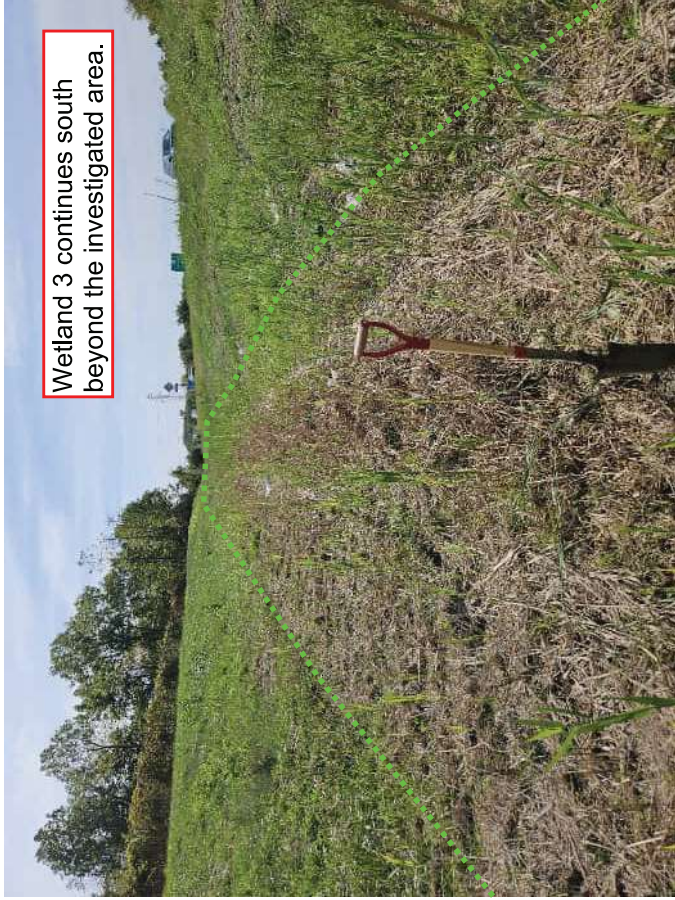


Photo 33. SP5 facing southwest within Wetland 3



Photo 34. SP5 facing northeast within Wetland 3



Photo 35. SP5 facing west within Wetland 3



Photo 36. SP5 facing east within Wetland 3



Photo 37. Drainage culvert leading to Wetland 3 facing northwest



Photo 38. Shift in vegetative community within Wetland 3 facing northeast

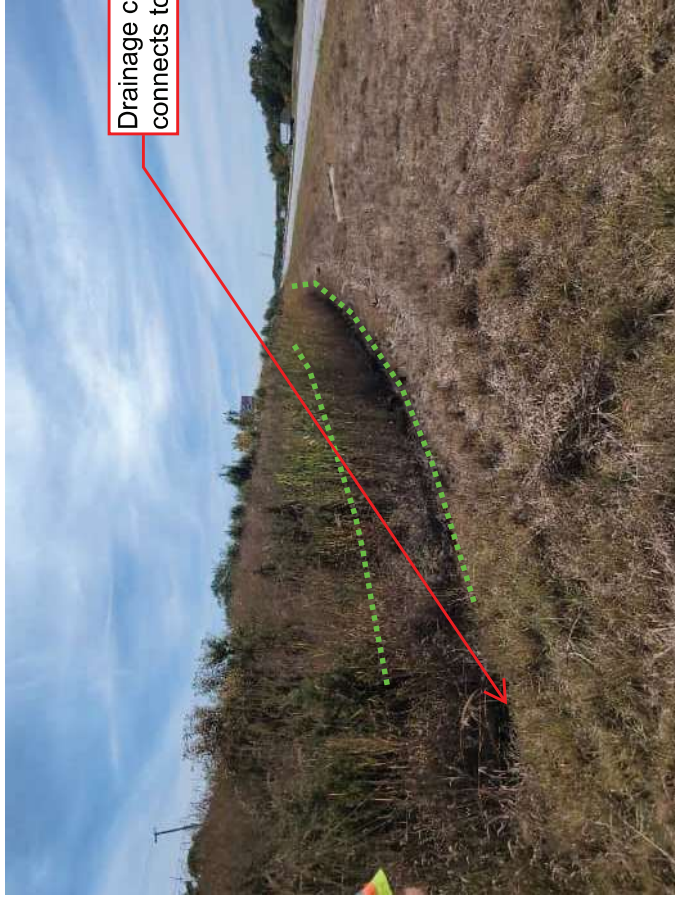


Photo 39. Northern end of Wetland 3 facing south



Photo 40. Northern end of Wetland 3 facing northeast



Photo 41. SP6 soil and pit (upland point)



Photo 42. SP6 facing south



Photo 43. SP6 facing west towards Wetland 3



Photo 44. SP6 facing north towards Wetland 3



Photo 45. SP7 soil (Wetland 4)



Photo 46. SP7 facing east within Wetland 4



Photo 47. SP7 facing south within Wetland 4



Photo 48. SP7 facing north within Wetland 4

Wetland 4 ends due to
shift in vegetative
community



Drainage culvert connects to Wetland 3

Photo 49. Facing north from southern end of Wetland 4 towards drainage culvert



Photo 50. SP8 soil and pit (upland point)



Photo 51. SP8 facing northwest



Photo 52. SP8 facing west towards Wetland 4



Photo 53. SP8 facing south



Photo 54. SP8 facing east



Photo 55. South side of median north of intersection facing north towards drainage inlet



Photo 56. North side of median north of intersection facing south



Photo 57. North side of median north of intersection facing north



Photo 58. SP9 soil and pit (Wetland 5)



Photo 59. SP9 facing northeast within Wetland 5



Photo 60. SP9 facing west within Wetland 5



Photo 61. SP9 facing northeast within Wetland 5



Photo 62. SP9 facing south within Wetland 5 towards drainage culvert



Photo 63. South end of Wetland 5 facing north with drainage culvert shown



Photo 64. North end of Wetland 5 facing south



Photo 65. Facing north towards upland area north of Wetland 5



Photo 66. SP10 soil and pit (upland point)



Photo 67. SP10 facing north



Photo 68. SP10 facing east towards Wetland 5



Photo 69. SP10 facing south towards project intersection



Photo 70. SP10 facing west

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Midwest Region See ERDC/EL TR-10-16; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 9/30/2027 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: Des 2301097 SR 49 Intersection Improvement City/County: Chesterton/Porter Sampling Date: 10/1/2025
Applicant/Owner: INDOT State: IN Sampling Point: SP1
Investigator(s): Christian Radcliff, Paul Babu Section, Township, Range: Section 18, Township 36 North, Range 5 West
Landform (hillside, terrace, etc.): Ditch Local relief (concave, convex, none): Concave
Slope (%): 2-4 Lat: 41.568532 Long: -87.046987 Datum: WGS 84
Soil Map Unit Name: Riddles loam, 6 to 12 percent slopes, eroded NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X 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 <u>X</u> No <u> </u> Hydric Soil Present? Yes <u>X</u> No <u> </u> Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Remarks:	

VEGETATION – Use scientific names of plants.

<u>Tree Stratum</u> (Plot size: <u>30 feet</u>) 1. <u>Salix nigra</u> Absolute % Cover <u>5</u> Dominant Species? <u>Yes</u> Indicator Status <u>OBL</u> 2. <u> </u> Absolute % Cover <u> </u> Dominant Species? <u> </u> Indicator Status <u> </u> 3. <u> </u> Absolute % Cover <u> </u> Dominant Species? <u> </u> Indicator Status <u> </u> 4. <u> </u> Absolute % Cover <u> </u> Dominant Species? <u> </u> Indicator Status <u> </u> 5. <u> </u> Absolute % Cover <u> </u> Dominant Species? <u> </u> Indicator Status <u> </u> 5 = Total Cover	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15 feet</u>) 1. <u> </u> Absolute % Cover <u> </u> Dominant Species? <u> </u> Indicator Status <u> </u> 2. <u> </u> Absolute % Cover <u> </u> Dominant Species? <u> </u> Indicator Status <u> </u> 3. <u> </u> Absolute % Cover <u> </u> Dominant Species? <u> </u> Indicator Status <u> </u> 4. <u> </u> Absolute % Cover <u> </u> Dominant Species? <u> </u> Indicator Status <u> </u> 5. <u> </u> Absolute % Cover <u> </u> Dominant Species? <u> </u> Indicator Status <u> </u> = Total Cover	
<u>Herb Stratum</u> (Plot size: <u>5 feet</u>) 1. <u>Typha angustifolia</u> Absolute % Cover <u>100</u> Dominant Species? <u>Yes</u> Indicator Status <u>OBL</u> 2. <u> </u> Absolute % Cover <u> </u> Dominant Species? <u> </u> Indicator Status <u> </u> 3. <u> </u> Absolute % Cover <u> </u> Dominant Species? <u> </u> Indicator Status <u> </u> 4. <u> </u> Absolute % Cover <u> </u> Dominant Species? <u> </u> Indicator Status <u> </u> 5. <u> </u> Absolute % Cover <u> </u> Dominant Species? <u> </u> Indicator Status <u> </u> 6. <u> </u> Absolute % Cover <u> </u> Dominant Species? <u> </u> Indicator Status <u> </u> 7. <u> </u> Absolute % Cover <u> </u> Dominant Species? <u> </u> Indicator Status <u> </u> 8. <u> </u> Absolute % Cover <u> </u> Dominant Species? <u> </u> Indicator Status <u> </u> 9. <u> </u> Absolute % Cover <u> </u> Dominant Species? <u> </u> Indicator Status <u> </u> 10. <u> </u> Absolute % Cover <u> </u> Dominant Species? <u> </u> Indicator Status <u> </u> 100 = Total Cover	Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u>105</u> x 1 = <u>105</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>105</u> (A) <u>105</u> (B) Prevalence Index = B/A = <u>1.00</u>
<u>Woody Vine Stratum</u> (Plot size: <u>30 feet</u>) 1. <u> </u> Absolute % Cover <u> </u> Dominant Species? <u> </u> Indicator Status <u> </u> 2. <u> </u> Absolute % Cover <u> </u> Dominant Species? <u> </u> Indicator Status <u> </u> = Total Cover	
Remarks: (Include photo numbers here or on a separate sheet.)	

SOIL

Sampling Point: SP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 4/2	100					Loamy/Clayey	CL
4-16	10YR 5/1	90	10YR 3/6	10	C	M	Loamy/Clayey	CL; Prominent redox concentrations

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

Hydric Soil Indicators: ☐ Histosol (A1) ☐ Histic Epipedon (A2) ☐ Black Histic (A3) ☐ Hydrogen Sulfide (A4) ☐ Stratified Layers (A5) ☐ 2 cm Muck (A10) ☐ Depleted Below Dark Surface (A11) ☐ Thick Dark Surface (A12) ☐ Iron Monosulfide (A18) ☐ Sandy Mucky Mineral (S1) ☐ 5 cm Mucky Peat or Peat (S3)	☐ Sandy Gleyed Matrix (S4) ☐ Sandy Redox (S5) ☐ Stripped Matrix (S6) ☐ Dark Surface (S7) ☐ Loamy Mucky Mineral (F1) ☐ Loamy Gleyed Matrix (F2) ☒ Depleted Matrix (F3) ☐ Redox Dark Surface (F6) ☐ Depleted Dark Surface (F7) ☐ Redox Depressions (F8)
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Indicators for Problematic Hydric Soils³:
☐ Iron-Manganese Masses (F12)
☐ Red Parent Material (F21)
☐ Very Shallow Dark Surface (F22)
☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes ☒ No ☐
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u>				<u>Secondary Indicators (minimum of two required)</u>			
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)		☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ True Aquatic Plants (B14)	☐ Dry-Season Water Table (C2)		☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Crayfish Burrows (C8)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Saturation Visible on Aerial Imagery (C9)		☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Stunted or Stressed Plants (D1)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ Geomorphic Position (D2)		☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☒ FAC-Neutral Test (D5)	
☐ Inundation Visible on Aerial Imagery (B7)	☐ Gauge or Well Data (D9)			☐ Sparsely Vegetated Concave Surface (B8)	☐ Other (Explain in Remarks)		

Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): _____ Water Table Present? Yes ☐ No ☒ Depth (inches): _____ Saturation Present? Yes ☐ No ☒ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes ☒ No ☐
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Midwest Region See ERDC/EL TR-10-16; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 9/30/2027 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: Des 2301097 SR 49 Intersection Improvement City/County: Chesterton/Porter Sampling Date: 10/1/2025
Applicant/Owner: INDOT State: IN Sampling Point: SP2
Investigator(s): Christian Radcliff, Paul Babu Section, Township, Range: Section 18, Township 36 North, Range 5 West
Landform (hillside, terrace, etc.): Slope Local relief (concave, convex, none): Convex
Slope (%): 15-20 Lat: 41.568528 Long: -87.046958 Datum: WGS 84
Soil Map Unit Name: Riddles loam, 6 to 12 percent slopes, eroded NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X 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 <u> </u> No <u>X</u> Hydric Soil Present? Yes <u>X</u> No <u> </u> Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Remarks:	

VEGETATION – Use scientific names of plants.

<u>Tree Stratum</u> (Plot size: <u>30 feet</u>) 1. <u> </u> 2. <u> </u> 3. <u> </u> 4. <u> </u> 5. <u> </u> <u> </u> =Total Cover	Absolute % Cover <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>	Dominant Species? <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>	Indicator Status <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0%</u> (A/B)	
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15 feet</u>) 1. <u>Juniperus virginiana</u> 2. <u> </u> 3. <u> </u> 4. <u> </u> 5. <u> </u> <u>5</u> =Total Cover	<u>5</u> <u> </u> <u> </u> <u> </u> <u> </u>	<u>Yes</u> <u> </u> <u> </u> <u> </u> <u> </u>	<u>FACU</u> <u> </u> <u> </u> <u> </u> <u> </u>		Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>5</u> x 2 = <u>10</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>65</u> x 4 = <u>260</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>70</u> (A) <u>270</u> (B) Prevalence Index = B/A = <u>3.86</u>
<u>Herb Stratum</u> (Plot size: <u>5 feet</u>) 1. <u>Sorghastrum nutans</u> 2. <u>Solidago altissima</u> 3. <u>Schedonorus arundinaceus</u> 4. <u>Symphytotrichum novae-angliae</u> 5. <u> </u> 6. <u> </u> 7. <u> </u> 8. <u> </u> 9. <u> </u> 10. <u> </u> <u>65</u> =Total Cover	<u>30</u> <u>20</u> <u>10</u> <u>5</u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>	<u>Yes</u> <u>Yes</u> <u>No</u> <u>No</u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>	<u>FACU</u> <u>FACU</u> <u>FACU</u> <u>FACW</u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>		
<u>Woody Vine Stratum</u> (Plot size: <u>30 feet</u>) 1. <u> </u> 2. <u> </u> <u> </u> =Total Cover	<u> </u> <u> </u> <u> </u>	<u> </u> <u> </u> <u> </u>	<u> </u> <u> </u> <u> </u>		
Remarks: (Include photo numbers here or on a separate sheet.)				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
				Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>	

SOIL

Sampling Point: SP2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR 6/2	100					Loamy/Clayey	SiL
5-16	10YR 6/1	60	10YR 5/6	40	C	M	Loamy/Clayey	L; Prominent redox concentrations

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

Hydric Soil Indicators: ☐ Histosol (A1) ☐ Histic Epipedon (A2) ☐ Black Histic (A3) ☐ Hydrogen Sulfide (A4) ☐ Stratified Layers (A5) ☐ 2 cm Muck (A10) ☐ Depleted Below Dark Surface (A11) ☐ Thick Dark Surface (A12) ☐ Iron Monosulfide (A18) ☐ Sandy Mucky Mineral (S1) ☐ 5 cm Mucky Peat or Peat (S3)	☐ Sandy Gleyed Matrix (S4) ☐ Sandy Redox (S5) ☐ Stripped Matrix (S6) ☐ Dark Surface (S7) ☐ Loamy Mucky Mineral (F1) ☐ Loamy Gleyed Matrix (F2) ☒ Depleted Matrix (F3) ☐ Redox Dark Surface (F6) ☐ Depleted Dark Surface (F7) ☐ Redox Depressions (F8)
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Indicators for Problematic Hydric Soils³:
☐ Iron-Manganese Masses (F12)
☐ Red Parent Material (F21)
☐ Very Shallow Dark Surface (F22)
☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes ☒ No ☐
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u>				<u>Secondary Indicators (minimum of two required)</u>			
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)					
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)					
☐ Saturation (A3)	☐ True Aquatic Plants (B14)	☐ Dry-Season Water Table (C2)					
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Crayfish Burrows (C8)					
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Saturation Visible on Aerial Imagery (C9)					
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Stunted or Stressed Plants (D1)					
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Geomorphic Position (D2)					
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ FAC-Neutral Test (D5)					
☐ Inundation Visible on Aerial Imagery (B7)	☐ Gauge or Well Data (D9)						
☐ Sparsely Vegetated Concave Surface (B8)	☐ Other (Explain in Remarks)						

Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): _____ Water Table Present? Yes ☐ No ☒ Depth (inches): _____ Saturation Present? Yes ☐ No ☒ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes ☐ No ☒
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Midwest Region See ERDC/EL TR-10-16; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 9/30/2027 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: Des 2301097 SR 49 Intersection Improvement City/County: Chesterton/Porter Sampling Date: 10/1/2025
Applicant/Owner: INDOT State: IN Sampling Point: SP3
Investigator(s): Christian Radcliff, Paul Babu Section, Township, Range: Section 18, Township 36 North, Range 5 West
Landform (hillside, terrace, etc.): Ditch Local relief (concave, convex, none): Concave
Slope (%): 0-2 Lat: 41.569987 Long: -87.046389 Datum: WGS 84
Soil Map Unit Name: Riddles loam, 6 to 12 percent slopes, eroded NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X 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 <u>X</u> No <u> </u> Hydric Soil Present? Yes <u>X</u> No <u> </u> Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Remarks:	

VEGETATION – Use scientific names of plants.

<u>Tree Stratum</u> (Plot size: <u>30 feet</u>) 1. <u> </u> 2. <u> </u> 3. <u> </u> 4. <u> </u> 5. <u> </u> <u> </u> =Total Cover	Absolute % Cover <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>	Dominant Species? <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>	Indicator Status <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)		
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15 feet</u>) 1. <u> </u> 2. <u> </u> 3. <u> </u> 4. <u> </u> 5. <u> </u> <u> </u> =Total Cover	<u> </u> <u> </u> <u> </u> <u> </u> <u> </u>	<u> </u> <u> </u> <u> </u> <u> </u> <u> </u>	<u> </u> <u> </u> <u> </u> <u> </u> <u> </u>		Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u>20</u> x 1 = <u>20</u> FACW species <u>80</u> x 2 = <u>160</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>100</u> (A) <u>180</u> (B) Prevalence Index = B/A = <u>1.80</u>	
<u>Herb Stratum</u> (Plot size: <u>5 feet</u>) 1. <u>Phalaris arundinacea</u> 2. <u>Typha angustifolia</u> 3. <u> </u> 4. <u> </u> 5. <u> </u> 6. <u> </u> 7. <u> </u> 8. <u> </u> 9. <u> </u> 10. <u> </u> <u>100</u> =Total Cover	<u>80</u> <u>20</u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>	<u>Yes</u> <u>Yes</u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>	<u>FACW</u> <u>OBL</u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>			Hydrophytic Vegetation Indicators: <u>X</u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u>X</u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
<u>Woody Vine Stratum</u> (Plot size: <u>30 feet</u>) 1. <u> </u> 2. <u> </u> <u> </u> =Total Cover	<u> </u> <u> </u> <u> </u>	<u> </u> <u> </u> <u> </u>	<u> </u> <u> </u> <u> </u>			
Remarks: (Include photo numbers here or on a separate sheet.)						

SOIL

Sampling Point: SP3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR 5/1	100					Mucky Loam/Clay	Muck
8-16	10YR 4/1	70	10YR 4/6	30	C	M	Loamy/Clayey	C; Prominent redox concentrations

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

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils ³ :
☐ Histosol (A1)	☐ Iron-Manganese Masses (F12)
☐ Histic Epipedon (A2)	☐ Red Parent Material (F21)
☐ Black Histic (A3)	☐ Very Shallow Dark Surface (F22)
☐ Hydrogen Sulfide (A4)	☐ Other (Explain in Remarks)
☐ Stratified Layers (A5)	
☐ 2 cm Muck (A10)	
☐ Depleted Below Dark Surface (A11)	
☐ Thick Dark Surface (A12)	
☐ Iron Monosulfide (A18)	
☐ Sandy Mucky Mineral (S1)	
☐ 5 cm Mucky Peat or Peat (S3)	

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

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes ☒ No ☐
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)	
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ True Aquatic Plants (B14)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Crayfish Burrows (C8)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Stunted or Stressed Plants (D1)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ Geomorphic Position (D2)	
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☒ FAC-Neutral Test (D5)	
☐ Inundation Visible on Aerial Imagery (B7)	☐ Gauge or Well Data (D9)		
☐ Sparsely Vegetated Concave Surface (B8)	☐ Other (Explain in Remarks)		

Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): _____ Water Table Present? Yes ☐ No ☒ Depth (inches): _____ Saturation Present? Yes ☒ No ☐ Depth (inches): 0 (includes capillary fringe)	Wetland Hydrology Present? Yes ☒ No ☐
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Midwest Region See ERDC/EL TR-10-16; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 9/30/2027 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: Des 2301097 SR 49 Intersection Improvement City/County: Chesterton/Porter Sampling Date: 10/1/2025
Applicant/Owner: INDOT State: IN Sampling Point: SP4
Investigator(s): Christian Radcliff, Paul Babu Section, Township, Range: Section 18, Township 36 North, Range 5 West
Landform (hillside, terrace, etc.): Slope Local relief (concave, convex, none): Convex
Slope (%): 5-10 Lat: 41.569987 Long: -87.046370 Datum: WGS 84
Soil Map Unit Name: Riddles loam, 6 to 12 percent slopes, eroded NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation X, Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X 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 <u> </u> No <u>X</u> Hydric Soil Present? Yes <u> </u> No <u>X</u> Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Remarks: Vegetation was mowed recently.	

VEGETATION – Use scientific names of plants.

<u>Tree Stratum</u> (Plot size: <u>30 feet</u>) 1. <u> </u> 2. <u> </u> 3. <u> </u> 4. <u> </u> 5. <u> </u> <u> </u> =Total Cover	<u>Absolute % Cover</u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>	<u>Dominant Species?</u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>	<u>Indicator Status</u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0%</u> (A/B)		
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15 feet</u>) 1. <u> </u> 2. <u> </u> 3. <u> </u> 4. <u> </u> 5. <u> </u> <u> </u> =Total Cover	<u> </u> <u> </u> <u> </u> <u> </u> <u> </u>	<u> </u> <u> </u> <u> </u> <u> </u> <u> </u>	<u> </u> <u> </u> <u> </u> <u> </u> <u> </u>		Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>100</u> x 4 = <u>400</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>100</u> (A) <u>400</u> (B) Prevalence Index = B/A = <u>4.00</u>	
<u>Herb Stratum</u> (Plot size: <u>5 feet</u>) 1. <u>Schedonorus arundinaceus</u> 2. <u>Festuca rubra</u> 3. <u> </u> 4. <u> </u> 5. <u> </u> 6. <u> </u> 7. <u> </u> 8. <u> </u> 9. <u> </u> 10. <u> </u> <u>100</u> =Total Cover	<u>50</u> <u>50</u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>	<u>Yes</u> <u>Yes</u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>	<u>FACU</u> <u>FACU</u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>			Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
<u>Woody Vine Stratum</u> (Plot size: <u>30 feet</u>) 1. <u> </u> 2. <u> </u> <u> </u> =Total Cover	<u> </u> <u> </u> <u> </u>	<u> </u> <u> </u> <u> </u>	<u> </u> <u> </u> <u> </u>			
Remarks: (Include photo numbers here or on a separate sheet.)						

SOIL

Sampling Point: SP4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR 5/3	100					Loamy/Clayey	CL
5-16	10YR 5/3	95	10YR 5/8	5	C	M	Loamy/Clayey	C; Prominent redox concentrations

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

Hydric Soil Indicators: ☐ Histosol (A1) ☐ Sandy Gleyed Matrix (S4) ☐ Histic Epipedon (A2) ☐ Sandy Redox (S5) ☐ Black Histic (A3) ☐ Stripped Matrix (S6) ☐ Hydrogen Sulfide (A4) ☐ Dark Surface (S7) ☐ Stratified Layers (A5) ☐ Loamy Mucky Mineral (F1) ☐ 2 cm Muck (A10) ☐ Loamy Gleyed Matrix (F2) ☐ Depleted Below Dark Surface (A11) ☐ Depleted Matrix (F3) ☐ Thick Dark Surface (A12) ☐ Redox Dark Surface (F6) ☐ Iron Monosulfide (A18) ☐ Depleted Dark Surface (F7) ☐ Sandy Mucky Mineral (S1) ☐ Redox Depressions (F8) ☐ 5 cm Mucky Peat or Peat (S3)	Indicators for Problematic Hydric Soils³: ☐ Iron-Manganese Masses (F12) ☐ Red Parent Material (F21) ☐ Very Shallow Dark Surface (F22) ☐ Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
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Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No <u>X</u>
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u>				<u>Secondary Indicators (minimum of two required)</u>			
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)		☐ Drainage Patterns (B10)			
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Dry-Season Water Table (C2)		☐ Crayfish Burrows (C8)			
☐ Saturation (A3)	☐ True Aquatic Plants (B14)	☐ Saturation Visible on Aerial Imagery (C9)		☐ Stunted or Stressed Plants (D1)			
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Geomorphic Position (D2)		☐ FAC-Neutral Test (D5)			
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)						
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)						
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)						
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)						
☐ Inundation Visible on Aerial Imagery (B7)	☐ Gauge or Well Data (D9)						
☐ Sparsely Vegetated Concave Surface (B8)	☐ Other (Explain in Remarks)						

Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Midwest Region See ERDC/EL TR-10-16; the proponent agency is CECW-CO-R		OMB Control #: 0710-0024, Exp: 9/30/2027 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)	
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Project/Site: Des 2301097 SR 49 Intersection Improvement
 Applicant/Owner: INDOT
 Investigator(s): Christian Radcliff, Paul Babu
 Landform (hillside, terrace, etc.): Ditch
 Slope (%): 0-2 Lat: 41.568886
 Soil Map Unit Name: Riddles loam, 6 to 12 percent slopes, eroded

City/County: Chesterton/Porter
 State: IN
 Section, Township, Range: Section 18, Township 36 North, Range 5 West
 Local relief (concave, convex, none): Concave
 Long: -87.046129
 NWI classification: N/A

Sampling Date: 10/1/2025
 Sampling Point: SP5

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation X , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X 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 <u>X</u> No <u> </u> Hydric Soil Present? Yes <u>X</u> No <u> </u> Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Remarks: Vegetation was mowed and/or sprayed recently.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 feet</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
1.																					
2.																					
3.																					
4.																					
5.																					
			=Total Cover																		
Sapling/Shrub Stratum	(Plot size: <u>15 feet</u>)				Prevalence Index worksheet: <table style="width:100%; border-collapse: collapse;"> <tr> <th style="width: 40%;">Total % Cover of:</th> <th style="width: 60%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>20</u></td> <td>x 1 = <u>20</u></td> </tr> <tr> <td>FACW species <u>80</u></td> <td>x 2 = <u>160</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>100</u> (A)</td> <td><u>180</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>1.80</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>20</u>	x 1 = <u>20</u>	FACW species <u>80</u>	x 2 = <u>160</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>100</u> (A)	<u>180</u> (B)	Prevalence Index = B/A = <u>1.80</u>	
Total % Cover of:	Multiply by:																				
OBL species <u>20</u>	x 1 = <u>20</u>																				
FACW species <u>80</u>	x 2 = <u>160</u>																				
FAC species <u>0</u>	x 3 = <u>0</u>																				
FACU species <u>0</u>	x 4 = <u>0</u>																				
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Column Totals: <u>100</u> (A)	<u>180</u> (B)																				
Prevalence Index = B/A = <u>1.80</u>																					
1.																					
2.																					
3.																					
4.																					
5.																					
			=Total Cover																		
Herb Stratum	(Plot size: <u>5 feet</u>)				Hydrophytic Vegetation Indicators: <u>X</u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u>X</u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
1.	<u>Phragmites australis</u>	<u>80</u>	<u>Yes</u>	<u>FACW</u>																	
2.	<u>Typha angustifolia</u>	<u>20</u>	<u>Yes</u>	<u>OBL</u>																	
3.																					
4.																					
5.																					
6.																					
7.																					
8.																					
9.																					
		<u>100</u>	=Total Cover																		
Woody Vine Stratum	(Plot size: <u>30 feet</u>)				Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>																
1.																					
2.																					
			=Total Cover																		
Remarks: (Include photo numbers here or on a separate sheet.)																					

SOIL

Sampling Point: SP5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR 5/2	100					Mucky Loam/Clay	Muck
8-16	10YR 5/2	80	10YR 5/8	20	C	M	Loamy/Clayey	C; Prominent redox concentrations

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

Hydric Soil Indicators: ☐ Histosol (A1) ☐ Sandy Gleyed Matrix (S4) ☐ Histic Epipedon (A2) ☐ Sandy Redox (S5) ☐ Black Histic (A3) ☐ Stripped Matrix (S6) ☐ Hydrogen Sulfide (A4) ☐ Dark Surface (S7) ☐ Stratified Layers (A5) ☒ Loamy Mucky Mineral (F1) ☐ 2 cm Muck (A10) ☐ Loamy Gleyed Matrix (F2) ☐ Depleted Below Dark Surface (A11) ☒ Depleted Matrix (F3) ☐ Thick Dark Surface (A12) ☐ Redox Dark Surface (F6) ☐ Iron Monosulfide (A18) ☐ Depleted Dark Surface (F7) ☐ Sandy Mucky Mineral (S1) ☐ Redox Depressions (F8) ☐ 5 cm Mucky Peat or Peat (S3)	Indicators for Problematic Hydric Soils³: ☐ Iron-Manganese Masses (F12) ☐ Red Parent Material (F21) ☐ Very Shallow Dark Surface (F22) ☐ Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
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Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes ☒ No _____
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators:			
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		<u>Secondary Indicators (minimum of two required)</u>	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)	
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ True Aquatic Plants (B14)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Crayfish Burrows (C8)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Stunted or Stressed Plants (D1)	
☒ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ Geomorphic Position (D2)	
☐ Iron Deposits (B5)	☒ Thin Muck Surface (C7)	☒ FAC-Neutral Test (D5)	
☐ Inundation Visible on Aerial Imagery (B7)	☐ Gauge or Well Data (D9)		
☐ Sparsely Vegetated Concave Surface (B8)	☐ Other (Explain in Remarks)		

Field Observations: Surface Water Present? Yes _____ No ☒ Depth (inches): _____ Water Table Present? Yes _____ No ☒ Depth (inches): _____ Saturation Present? Yes _____ No ☒ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes ☒ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Midwest Region See ERDC/EL TR-10-16; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 9/30/2027 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: Des 2301097 SR 49 Intersection Improvement City/County: Chesterton/Porter Sampling Date: 10/1/2025
Applicant/Owner: INDOT State: IN Sampling Point: SP6
Investigator(s): Christian Radcliff, Paul Babu Section, Township, Range: Section 18, Township 36 North, Range 5 West
Landform (hillside, terrace, etc.): Slope Local relief (concave, convex, none): Convex
Slope (%): 10-15 Lat: 41.568887 Long: -87.046078 Datum: WGS 84
Soil Map Unit Name: Riddles loam, 6 to 12 percent slopes, eroded NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X 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 <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present? Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	
Remarks:	

VEGETATION – Use scientific names of plants.

<u>Tree Stratum</u> (Plot size: <u>30 feet</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u> </u>	<u> </u>	<u> </u>	<u> </u>
2. <u> </u>	<u> </u>	<u> </u>	<u> </u>
3. <u> </u>	<u> </u>	<u> </u>	<u> </u>
4. <u> </u>	<u> </u>	<u> </u>	<u> </u>
5. <u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u> = Total Cover			
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15 feet</u>)			
1. <u> </u>	<u> </u>	<u> </u>	<u> </u>
2. <u> </u>	<u> </u>	<u> </u>	<u> </u>
3. <u> </u>	<u> </u>	<u> </u>	<u> </u>
4. <u> </u>	<u> </u>	<u> </u>	<u> </u>
5. <u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u> = Total Cover			
<u>Herb Stratum</u> (Plot size: <u>5 feet</u>)			
1. <u>Schedonorus arundinaceus</u>	<u>60</u>	<u>Yes</u>	<u>FACU</u>
2. <u>Asclepias syriaca</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>
3. <u>Daucus carota</u>	<u>10</u>	<u>No</u>	<u>UPL</u>
4. <u>Allium canadense</u>	<u>10</u>	<u>No</u>	<u>FACU</u>
5. <u> </u>	<u> </u>	<u> </u>	<u> </u>
6. <u> </u>	<u> </u>	<u> </u>	<u> </u>
7. <u> </u>	<u> </u>	<u> </u>	<u> </u>
8. <u> </u>	<u> </u>	<u> </u>	<u> </u>
9. <u> </u>	<u> </u>	<u> </u>	<u> </u>
10. <u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>100</u> = Total Cover			
<u>Woody Vine Stratum</u> (Plot size: <u>30 feet</u>)			
1. <u> </u>	<u> </u>	<u> </u>	<u> </u>
2. <u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u> = Total Cover			
Remarks: (Include photo numbers here or on a separate sheet.)			

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>0</u>	x 2 = <u>0</u>
FAC species <u>0</u>	x 3 = <u>0</u>
FACU species <u>90</u>	x 4 = <u>360</u>
UPL species <u>10</u>	x 5 = <u>50</u>
Column Totals: <u>100</u> (A)	<u>410</u> (B)
Prevalence Index = B/A = <u>4.10</u>	

Hydrophytic Vegetation Indicators:
 1 - Rapid Test for Hydrophytic Vegetation
 2 - Dominance Test is >50%
 3 - Prevalence Index is ≤3.0¹
 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 Problematic Hydrophytic Vegetation¹ (Explain)
¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes No X

SOIL

Sampling Point: SP6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 4/3	100					Loamy/Clayey	SiL
4-12	10YR 4/2	98	10YR 4/6	2	C	M	Loamy/Clayey	SiL; Prominent redox concentrations
12-16	10YR 5/2	98	10YR 4/6	2	C	M	Loamy/Clayey	SiL; Prominent redox concentrations

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

Hydric Soil Indicators: ☐ Histosol (A1) ☐ Sandy Gleyed Matrix (S4) ☐ Histic Epipedon (A2) ☐ Sandy Redox (S5) ☐ Black Histic (A3) ☐ Stripped Matrix (S6) ☐ Hydrogen Sulfide (A4) ☐ Dark Surface (S7) ☐ Stratified Layers (A5) ☐ Loamy Mucky Mineral (F1) ☐ 2 cm Muck (A10) ☐ Loamy Gleyed Matrix (F2) ☐ Depleted Below Dark Surface (A11) ☒ Depleted Matrix (F3) ☐ Thick Dark Surface (A12) ☐ Redox Dark Surface (F6) ☐ Iron Monosulfide (A18) ☐ Depleted Dark Surface (F7) ☐ Sandy Mucky Mineral (S1) ☐ Redox Depressions (F8) ☐ 5 cm Mucky Peat or Peat (S3)	Indicators for Problematic Hydric Soils³: ☐ Iron-Manganese Masses (F12) ☐ Red Parent Material (F21) ☐ Very Shallow Dark Surface (F22) ☐ Other (Explain in Remarks) <div style="text-align: right;">³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.</div>
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Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes ☒ No ☐
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u>				<u>Secondary Indicators (minimum of two required)</u>			
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)		☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ True Aquatic Plants (B14)	☐ Dry-Season Water Table (C2)		☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Crayfish Burrows (C8)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Saturation Visible on Aerial Imagery (C9)		☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Stunted or Stressed Plants (D1)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Geomorphic Position (D2)		☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ FAC-Neutral Test (D5)	
☐ Inundation Visible on Aerial Imagery (B7)	☐ Gauge or Well Data (D9)			☐ Sparsely Vegetated Concave Surface (B8)	☐ Other (Explain in Remarks)		

Field Observations: Surface Water Present? Yes _____ No ☒ Depth (inches): _____ Water Table Present? Yes _____ No ☒ Depth (inches): _____ Saturation Present? Yes _____ No ☒ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No ☒
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Midwest Region See ERDC/EL TR-10-16; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 9/30/2027 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: Des 2301097 SR 49 Intersection Improvement	City/County: Chesterton/Porter	Sampling Date: 10/1/2025
Applicant/Owner: INDOT	State: IN	Sampling Point: SP7
Investigator(s): Christian Radcliff, Paul Babu	Section, Township, Range: Section 18, Township 36 North, Range 5 West	
Landform (hillside, terrace, etc.): Ditch	Local relief (concave, convex, none): Concave	
Slope (%): 0-2	Lat: 41.571922	Long: -87.045778
Datum: WGS 84		
Soil Map Unit Name: Riddles loam, 6 to 12 percent slopes, eroded	NWI classification: N/A	

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

Are Vegetation X , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X 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 <u> X </u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u> X </u> No <u> </u>
Hydric Soil Present? Yes <u> X </u> No <u> </u>	
Wetland Hydrology Present? Yes <u> X </u> No <u> </u>	
Remarks: Vegetation has been recently mowed/sprayed.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u> 30 feet </u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u> 2 </u> (A) Total Number of Dominant Species Across All Strata: <u> 2 </u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u> 100.0% </u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
=Total Cover				Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u> 0 </u> x 1 = <u> 0 </u> FACW species <u> 40 </u> x 2 = <u> 80 </u> FAC species <u> 60 </u> x 3 = <u> 180 </u> FACU species <u> 0 </u> x 4 = <u> 0 </u> UPL species <u> 0 </u> x 5 = <u> 0 </u> Column Totals: <u> 100 </u> (A) <u> 260 </u> (B) Prevalence Index = B/A = <u> 2.60 </u>
Sapling/Shrub Stratum (Plot size: <u> 15 feet </u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
=Total Cover				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> X </u> 2 - Dominance Test is >50% <u> X </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Herb Stratum (Plot size: <u> 5 feet </u>)				
1. <i>Hordeum jubatum</i>	60	Yes	FAC	
2. <i>Phragmites australis</i>	40	Yes	FACW	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
=Total Cover				
Woody Vine Stratum (Plot size: <u> 30 feet </u>)				Hydrophytic Vegetation Present? Yes <u> X </u> No <u> </u>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
=Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: SP7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 4/3	100					Loamy/Clayey	SiCL
6-16	10YR 4/3	98	10YR 6/6	5	C	M	Loamy/Clayey	SiCL; Distinct redox concentrations

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

Hydric Soil Indicators: ☐ Histosol (A1) ☐ Histic Epipedon (A2) ☐ Black Histic (A3) ☐ Hydrogen Sulfide (A4) ☐ Stratified Layers (A5) ☐ 2 cm Muck (A10) ☐ Depleted Below Dark Surface (A11) ☐ Thick Dark Surface (A12) ☐ Iron Monosulfide (A18) ☐ Sandy Mucky Mineral (S1) ☐ 5 cm Mucky Peat or Peat (S3)	☐ Sandy Gleyed Matrix (S4) ☐ Sandy Redox (S5) ☐ Stripped Matrix (S6) ☐ Dark Surface (S7) ☐ Loamy Mucky Mineral (F1) ☐ Loamy Gleyed Matrix (F2) ☐ Depleted Matrix (F3) ☐ Redox Dark Surface (F6) ☐ Depleted Dark Surface (F7) ☒ Redox Depressions (F8)
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Indicators for Problematic Hydric Soils³:
☐ Iron-Manganese Masses (F12)
☐ Red Parent Material (F21)
☐ Very Shallow Dark Surface (F22)
☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes ☒ No _____
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u>				<u>Secondary Indicators (minimum of two required)</u>			
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)					
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)					
☐ Saturation (A3)	☐ True Aquatic Plants (B14)	☐ Dry-Season Water Table (C2)					
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Crayfish Burrows (C8)					
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Saturation Visible on Aerial Imagery (C9)					
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Stunted or Stressed Plants (D1)					
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ Geomorphic Position (D2)					
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☒ FAC-Neutral Test (D5)					
☐ Inundation Visible on Aerial Imagery (B7)	☐ Gauge or Well Data (D9)						
☐ Sparsely Vegetated Concave Surface (B8)	☐ Other (Explain in Remarks)						

Field Observations: Surface Water Present? Yes _____ No ☒ Depth (inches): _____ Water Table Present? Yes _____ No ☒ Depth (inches): _____ Saturation Present? Yes _____ No ☒ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes ☒ No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Midwest Region See ERDC/EL TR-10-16; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 9/30/2027 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: Des 2301097 SR 49 Intersection Improvement City/County: Chesterton/Porter Sampling Date: 10/1/2025
Applicant/Owner: INDOT State: IN Sampling Point: SP8
Investigator(s): Christian Radcliff, Paul Babu Section, Township, Range: Section 18, Township 36 North, Range 5 West
Landform (hillside, terrace, etc.): Slope Local relief (concave, convex, none): Convex
Slope (%): 25-30 Lat: 41.571927 Long: -87.045702 Datum: WGS 84
Soil Map Unit Name: Riddles loam, 6 to 12 percent slopes, eroded NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X 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 <u> </u> No <u>X</u> Hydric Soil Present? Yes <u> </u> No <u>X</u> Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Remarks:	

VEGETATION – Use scientific names of plants.

<u>Tree Stratum</u> (Plot size: <u>30 feet</u>) 1. <u> </u> 2. <u> </u> 3. <u> </u> 4. <u> </u> 5. <u> </u> <u> </u> =Total Cover	Absolute % Cover <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>	Dominant Species? <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>	Indicator Status <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0%</u> (A/B)	
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15 feet</u>) 1. <u>Juniperus virginiana</u> 2. <u> </u> 3. <u> </u> 4. <u> </u> 5. <u> </u> <u>20</u> =Total Cover	<u>20</u> <u> </u> <u> </u> <u> </u> <u> </u>	<u>Yes</u> <u> </u> <u> </u> <u> </u> <u> </u>	<u>FACU</u> <u> </u> <u> </u> <u> </u> <u> </u>		Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>120</u> x 4 = <u>480</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>120</u> (A) <u>480</u> (B) Prevalence Index = B/A = <u>4.00</u>
<u>Herb Stratum</u> (Plot size: <u>5 feet</u>) 1. <u>Sorghastrum nutans</u> 2. <u>Sporobolus heterolepis</u> 3. <u> </u> 4. <u> </u> 5. <u> </u> 6. <u> </u> 7. <u> </u> 8. <u> </u> 9. <u> </u> 10. <u> </u> <u>100</u> =Total Cover	<u>70</u> <u>30</u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>	<u>Yes</u> <u>Yes</u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>	<u>FACU</u> <u>FACU</u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>		
<u>Woody Vine Stratum</u> (Plot size: <u>30 feet</u>) 1. <u> </u> 2. <u> </u> <u> </u> =Total Cover	<u> </u> <u> </u> <u> </u>	<u> </u> <u> </u> <u> </u>	<u> </u> <u> </u> <u> </u>		
Remarks: (Include photo numbers here or on a separate sheet.)				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
				Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>	

SOIL

Sampling Point: SP8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 4/3	100					Sandy	SL
6-16	10YR 4/1	98	10YR 6/6	2	C	M	Sandy	SL; Distinct redox concentrations

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

Hydric Soil Indicators: ☐ Histosol (A1) ☐ Histic Epipedon (A2) ☐ Black Histic (A3) ☐ Hydrogen Sulfide (A4) ☐ Stratified Layers (A5) ☐ 2 cm Muck (A10) ☐ Depleted Below Dark Surface (A11) ☐ Thick Dark Surface (A12) ☐ Iron Monosulfide (A18) ☐ Sandy Mucky Mineral (S1) ☐ 5 cm Mucky Peat or Peat (S3)	☐ Sandy Gleyed Matrix (S4) ☐ Sandy Redox (S5) ☐ Stripped Matrix (S6) ☐ Dark Surface (S7) ☐ Loamy Mucky Mineral (F1) ☐ Loamy Gleyed Matrix (F2) ☐ Depleted Matrix (F3) ☐ Redox Dark Surface (F6) ☐ Depleted Dark Surface (F7) ☐ Redox Depressions (F8)
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Indicators for Problematic Hydric Soils³:
☐ Iron-Manganese Masses (F12)
☐ Red Parent Material (F21)
☐ Very Shallow Dark Surface (F22)
☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No <u>X</u>
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u>				<u>Secondary Indicators (minimum of two required)</u>			
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)		☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ True Aquatic Plants (B14)	☐ Dry-Season Water Table (C2)		☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Crayfish Burrows (C8)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Saturation Visible on Aerial Imagery (C9)		☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Stunted or Stressed Plants (D1)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Geomorphic Position (D2)		☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ FAC-Neutral Test (D5)	
☐ Inundation Visible on Aerial Imagery (B7)	☐ Gauge or Well Data (D9)			☐ Sparsely Vegetated Concave Surface (B8)	☐ Other (Explain in Remarks)		

Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Midwest Region See ERDC/EL TR-10-16; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 9/30/2027 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: Des 2301097 SR 49 Intersection Improvement City/County: Chesterton/Porter Sampling Date: 10/1/2025
Applicant/Owner: INDOT State: IN Sampling Point: SP9
Investigator(s): Christian Radcliff, Paul Babu Section, Township, Range: Section 18, Township 36 North, Range 5 West
Landform (hillside, terrace, etc.): Ditch Local relief (concave, convex, none): Concave
Slope (%): 0-2 Lat: 41.572010 Long: -87.046473 Datum: WGS 84
Soil Map Unit Name: Riddles loam, 2 to 6 percent slopes NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation X, Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X 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 <u>X</u> No <u> </u> Hydric Soil Present? Yes <u>X</u> No <u> </u> Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
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Remarks:
Vegetation has been recently mowed/sprayed.

VEGETATION – Use scientific names of plants.

<u>Tree Stratum</u> (Plot size: <u>30 feet</u>) 1. <u> </u> 2. <u> </u> 3. <u> </u> 4. <u> </u> 5. <u> </u> =Total Cover	Absolute % Cover Dominant Species? Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15 feet</u>) 1. <u> </u> 2. <u> </u> 3. <u> </u> 4. <u> </u> 5. <u> </u> =Total Cover		
<u>Herb Stratum</u> (Plot size: <u>5 feet</u>) 1. <u>Phragmites australis</u> 2. <u> </u> 3. <u> </u> 4. <u> </u> 5. <u> </u> 6. <u> </u> 7. <u> </u> 8. <u> </u> 9. <u> </u> 10. <u> </u> 100 =Total Cover		
<u>Woody Vine Stratum</u> (Plot size: <u>30 feet</u>) 1. <u> </u> 2. <u> </u> =Total Cover		
Remarks: (Include photo numbers here or on a separate sheet.)		Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>100</u> x 2 = <u>200</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>100</u> (A) <u>200</u> (B) Prevalence Index = B/A = <u>2.00</u>
		Hydrophytic Vegetation Indicators: <u>X</u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u>X</u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
		Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>

SOIL

Sampling Point: SP9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR 2/1	95	10YR 5/4	5	C	M	Muck	Distinct redox concentrations

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

Hydric Soil Indicators: ☒ Histosol (A1) ☐ Sandy Gleyed Matrix (S4) ☐ Histic Epipedon (A2) ☐ Sandy Redox (S5) ☐ Black Histic (A3) ☐ Stripped Matrix (S6) ☐ Hydrogen Sulfide (A4) ☐ Dark Surface (S7) ☐ Stratified Layers (A5) ☐ Loamy Mucky Mineral (F1) ☒ 2 cm Muck (A10) ☐ Loamy Gleyed Matrix (F2) ☐ Depleted Below Dark Surface (A11) ☐ Depleted Matrix (F3) ☐ Thick Dark Surface (A12) ☐ Redox Dark Surface (F6) ☐ Iron Monosulfide (A18) ☐ Depleted Dark Surface (F7) ☐ Sandy Mucky Mineral (S1) ☐ Redox Depressions (F8) ☐ 5 cm Mucky Peat or Peat (S3)	Indicators for Problematic Hydric Soils³: ☐ Iron-Manganese Masses (F12) ☐ Red Parent Material (F21) ☐ Very Shallow Dark Surface (F22) ☐ Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
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Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes ☒ No ☐
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u>				<u>Secondary Indicators (minimum of two required)</u>			
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)		☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)	
☒ Saturation (A3)	☐ True Aquatic Plants (B14)	☒ Dry-Season Water Table (C2)		☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Crayfish Burrows (C8)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Saturation Visible on Aerial Imagery (C9)		☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Stunted or Stressed Plants (D1)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ Geomorphic Position (D2)		☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☒ FAC-Neutral Test (D5)	
☐ Inundation Visible on Aerial Imagery (B7)	☐ Gauge or Well Data (D9)			☐ Sparsely Vegetated Concave Surface (B8)	☐ Other (Explain in Remarks)		

Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): _____ Water Table Present? Yes ☒ No ☐ Depth (inches): 15 Saturation Present? Yes ☒ No ☐ Depth (inches): 0 (includes capillary fringe)				Wetland Hydrology Present? Yes ☒ No ☐			
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:							
Remarks:							

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Midwest Region See ERDC/EL TR-10-16; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 9/30/2027 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: <u>Des 2301097 SR 49 Intersection Improvement</u>	City/County: <u>Chesterton/Porter</u>	Sampling Date: <u>10/1/2025</u>
Applicant/Owner: <u>INDOT</u>	State: <u>IN</u>	Sampling Point: <u>SP10</u>
Investigator(s): <u>Christian Radcliff, Paul Babu</u>		
Section, Township, Range: <u>Section 18, Township 36 North, Range 5 West</u>		
Landform (hillside, terrace, etc.): <u>Slope</u>		
Local relief (concave, convex, none): <u>Convex</u>		
Slope (%): <u>30-35</u>	Lat: <u>41.571997</u>	Long: <u>-87.046507</u>
		Datum: <u>WGS 84</u>
Soil Map Unit Name: <u>Riddles loam, 2 to 6 percent slopes</u>		NWI classification: <u>N/A</u>

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

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X 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 <u> </u> No <u>X</u> Hydric Soil Present? Yes <u> </u> No <u>X</u> Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Remarks: Vegetation has been recently mowed/sprayed.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 feet</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0%</u> (A/B)																
1.																					
2.																					
3.																					
4.																					
5.																					
=Total Cover																					
Sapling/Shrub Stratum	(Plot size: <u>15 feet</u>)				Prevalence Index worksheet: <table style="width:100%; border-collapse: collapse;"> <tr> <th style="width:40%;">Total % Cover of:</th> <th style="width:60%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>30</u></td> <td>x 4 = <u>120</u></td> </tr> <tr> <td>UPL species <u>40</u></td> <td>x 5 = <u>200</u></td> </tr> <tr> <td>Column Totals: <u>70</u> (A)</td> <td><u>320</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>4.57</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>30</u>	x 4 = <u>120</u>	UPL species <u>40</u>	x 5 = <u>200</u>	Column Totals: <u>70</u> (A)	<u>320</u> (B)	Prevalence Index = B/A = <u>4.57</u>	
Total % Cover of:	Multiply by:																				
OBL species <u>0</u>	x 1 = <u>0</u>																				
FACW species <u>0</u>	x 2 = <u>0</u>																				
FAC species <u>0</u>	x 3 = <u>0</u>																				
FACU species <u>30</u>	x 4 = <u>120</u>																				
UPL species <u>40</u>	x 5 = <u>200</u>																				
Column Totals: <u>70</u> (A)	<u>320</u> (B)																				
Prevalence Index = B/A = <u>4.57</u>																					
1. <u>Juniperus virginiana</u>		<u>30</u>	<u>Yes</u>	<u>FACU</u>																	
2. <u>Pyrus calleryana</u>		<u>30</u>	<u>Yes</u>	<u>UPL</u>																	
3. <u>Elaeagnus umbellata</u>		<u>10</u>	<u>No</u>	<u>UPL</u>																	
4.																					
5.																					
=Total Cover																					
Herb Stratum	(Plot size: <u>5 feet</u>)				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
1.																					
2.																					
3.																					
4.																					
5.																					
6.																					
7.																					
8.																					
9.																					
10.																					
=Total Cover																					
Woody Vine Stratum	(Plot size: <u>30 feet</u>)				Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>																
1.																					
2.																					
=Total Cover																					

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

SOIL

Sampling Point: SP10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-11	10YR 3/4	100					Loamy/Clayey	SiCL
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.							² Location: PL=Pore Lining, M=Matrix.	
Hydric Soil Indicators:							Indicators for Problematic Hydric Soils³:	
☐ Histosol (A1)			☐ Sandy Gleyed Matrix (S4)				☐ Iron-Manganese Masses (F12)	
☐ Histic Epipedon (A2)			☐ Sandy Redox (S5)				☐ Red Parent Material (F21)	
☐ Black Histic (A3)			☐ Stripped Matrix (S6)				☐ Very Shallow Dark Surface (F22)	
☐ Hydrogen Sulfide (A4)			☐ Dark Surface (S7)				☐ Other (Explain in Remarks)	
☐ Stratified Layers (A5)			☐ Loamy Mucky Mineral (F1)				³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
☐ 2 cm Muck (A10)			☐ Loamy Gleyed Matrix (F2)					
☐ Depleted Below Dark Surface (A11)			☐ Depleted Matrix (F3)					
☐ Thick Dark Surface (A12)			☐ Redox Dark Surface (F6)					
☐ Iron Monosulfide (A18)			☐ Depleted Dark Surface (F7)					
☐ Sandy Mucky Mineral (S1)			☐ Redox Depressions (F8)					
☐ 5 cm Mucky Peat or Peat (S3)								
Restrictive Layer (if observed):								
Type: <u>Hardpan</u>							Hydric Soil Present? Yes <u> </u> No <u>X</u>	
Depth (inches): <u>11</u>								
Remarks:								

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)	
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ True Aquatic Plants (B14)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Crayfish Burrows (C8)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Stunted or Stressed Plants (D1)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Geomorphic Position (D2)	
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ FAC-Neutral Test (D5)	
☐ Inundation Visible on Aerial Imagery (B7)	☐ Gauge or Well Data (D9)		
☐ Sparsely Vegetated Concave Surface (B8)	☐ Other (Explain in Remarks)		
Field Observations:			
Surface Water Present?	Yes ☐ No ☒ X	Depth (inches):	<input type="text"/>
Water Table Present?	Yes ☐ No ☒ X	Depth (inches):	<input type="text"/>
Saturation Present?	Yes ☐ No ☒ X	Depth (inches):	<input type="text"/>
(includes capillary fringe)		Wetland Hydrology Present? Yes ☐ No ☒ X	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD): January 2, 2026

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD:

Christian Radcliff, SJCA Inc
9102 N Meridian St, Suite 200
Indianapolis, IN 46260

C. DISTRICT OFFICE, FILE NAME, AND NUMBER: CENAP-OP-R-_____

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:

The Indiana Department of Transportation (INDOT), with funding from the Federal Highway Administration (FHWA), intends to proceed with an intersection improvement project, Designation Number (Des. No.) 2301097, involving the intersection of SR 49 and CR 950 N/Calumet Ave. The intersection is located approximately 1.50 miles north of US 6 in Porter County, Indiana. The existing intersection provides dedicated left-turn lanes from SR 49 onto CR 950 N/Calumet Ave. CR 950 N/Calumet Ave is stop-controlled at the intersection with SR 49. The proposed scope of work includes constructing a reduced conflict intersection (RCI) to reduce conflict points and lower the instance of crashes at the intersection. This alternative includes providing acceleration lanes on SR 49, U-turn locations for traffic turning left onto SR 49 from the intersecting roadway, and protected left-turn lanes for traffic turning left from SR 49 onto CR 950 N/Calumet Ave. Five emergent wetlands were identified in the Investigated Area.

(USE THE ATTACHED TABLE TO DOCUMENT MULTIPLE WATERBODIES AT DIFFERENT SITES)

State: IN County: Porter City: Chesterton

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

Lat. 41.571586 , Long. -87.046196

Universal Transverse Mercator: 4602210.32 m N, 496148.06 m E, Zone 16T

Name of nearest waterbody: Coffee Creek

Identify (estimate) amount of waters in the review area:

Non-wetland waters: N/A linear feet, N/A width (ft) and/or N/A acres.

Cowardin Class: N/A

Stream Flow: N/A

Wetlands: Wetlands 1-5, 0.784 ac

Cowardin Class: PEM1A, PEM5A

Name of any water bodies on the site that have been identified as Section 10 waters:

Tidal:

Non-Tidal:

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

☐ Office (Desk) Determination.

Date:

☐ Field Determination.

Date(s): ^{F-64}

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

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 approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that 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) that 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) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant’s acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (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 preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes 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 approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, 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, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable. This preliminary JD finds that there “*may be*” waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA:

Data reviewed for preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

- ☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:
Project Maps, December 2025
- ☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
 - ☐ Office concurs with data sheets/delineation report.
 - ☐ Office does not concur with data sheets/delineation report.
- ☐ 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: 24k, Chesterton Quadrangle
- ☒ USDA Natural Resources Conservation Service Soil Survey. Citation: 2025 Web Soil Survey Map
- ☒ National wetlands inventory map(s). Cite name: 2025 USFWS NWI Map
- ☐ State/Local wetland inventory map(s): _____
- ☒ FEMA/FIRM maps: 2025 IDNR INFIP Map
- ☐ 100-year Floodplain Elevation is: _____ (National Geodetic Vertical Datum of 1929)
- ☒ Photographs: ☒ Aerial (Name & Date): 2021-2023 Orthoimagery
☒ Other (Name & Date): Site Photos, 10/01/2025
- ☐ 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

January 2, 2026

Signature and date of
Regulatory Project Manager
(REQUIRED)

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

Site Number	Latitude	Longitude	Cowardin Class	Estimated amount of aquatic resource in review area	Class of aquatic resource
Wetland 1	41.568532	-87.046987	PEM5A	0.362 ac	Wetland (Section 404)
Wetland 2	41.569987	-87.046389	PEM1A	0.024 ac	Wetland (Section 404)
Wetland 3	41.568886	-87.046129	PEM5A	0.318 ac	Wetland (Section 404)
Wetland 4	41.571922	-87.045778	PEM5A	0.052 ac	Wetland (Section 404)
Wetland 5	41.572010	-87.046473	PEM5A	0.028 ac	Wetland (Section 404)



APPENDIX G PUBLIC INVOLVEMENT

December 31, 2024

SAMPLE
Notice of Survey Letter

ALM Investments LLC
13956 Hearthside Court
Chesterton, Indiana 46530

RE: SR 49 Intersection Improvement w/ Added Turn Lanes
Des. No. 2301097
1.5 miles North of US 6 at CR 950N/Calumet Ave
Porter County, Indiana
Notice of Survey
Parcel ID: 64-07-18-326-001.000-007, 64-07-18-303-810.000-007,
and 64-07-18-153-002.000-007

CHRISTOPHER J. JETER, PE
DAN G. DELGADO, PE
JARED M. HUSS, PE
KEVIN J. SIEDLECKI, PE
CHRISTOPHER M. VANHULLE, PE
DMITRI G. ADAMS, PE
AMANDA R. BUDREAU, PE
JOSEPH D. DUNBAR, PE
MARK H. FOSTER, PE
BLAKE R. WARNER, PE
REBECCA L. DUNBAR, PS, EI
DAVID J. TEGGELAAR, PE
MICHAEL A. WILLIAMS, PE
TREVOR M. CREAGER, PE
ADAM J. BEERY, PS, EI
CHARLES P. DEWES, PE

Dear Property Owner:

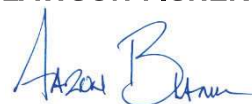
Lawson-Fisher Associates P.C. has been retained by the LaPorte District, Indiana Department of Transportation, to perform a survey for an intersection improvement project in Porter County, Indiana.

Our information indicates you own or occupy property near the subject project. Our employees will complete a survey of the project area. It may be necessary for them to come onto your property to complete this work. This is allowed by law by Indiana Code IC 8-23-7-26. If you have sold this property or it is occupied by someone else, 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, the project can eventually have on your property. If we determine your property is involved, we will contact you with additional information.

The survey work includes mapping the location of features such as trees, fences, drainage features, pavement, drive entrances, utilities, and obtaining ground elevations. We will also locate evidence of property and right-of-way limits, which may involve digging for property irons along the roadway frontage. The survey is needed for the proper planning and design of this intersection improvement project. Please be assured of our sincere desire to cause you as little inconvenience as possible during this survey. If you have any concerns, please contact me at the phone number or address shown below.

Very truly yours,
LAWSON-FISHER ASSOCIATES P.C.



Aaron W. Blank, PS, PE
Vice President, Survey Director

AWB/maf
c: Dan G. Delgado, PE



APPENDIX H AIR QUALITY

**Federal Transit
Administration**
Region V
200 West Adams St., Suite 320
Chicago, IL 60606-5253



Federal Highway Administration
Indiana Division
575 N. Pennsylvania St., Rm 254
Indianapolis, IN 46204-1576

August 28, 2025

Ms. Lyndsay Quist
Commissioner
Indiana Department of Transportation
100 N Senate Ave. N955
Indianapolis, IN 46204

SUBJECT: Indiana FY2026-2030 STIP Approval and Associated Federal Planning Finding

Dear Ms. Quist:

The Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) have completed our review of the FY2026-2030 Indiana Statewide Transportation Improvement Program (INSTIP), which was submitted by the Indiana Department of Transportation (INDOT) request letter dated June 6, 2025.

Based on our review of the information provided, certifications of the Statewide and Metropolitan transportation planning processes for and within the state of Indiana, and our participation in those transportation planning processes (including planning certification reviews conducted in Transportation Management Areas), FHWA and FTA are jointly approving the FY2026-2030 STIP, including the Metropolitan Planning Organization (MPO) Transportation Improvement Programs (TIPs) incorporated into the STIP by reference, subject to the corrective action identified in the attached Federal Planning Finding (FPF) report. FHWA and FTA consider the projects in the 5th year for informational purposes only, and our approval does not exceed four years per 23 CFR 450.220(c).

FHWA and FTA are required under 23 CFR 450.220(b) to document and issue an FPF in conjunction with the approval of the FY2026-2030 STIP. At a minimum, the FPF verifies that the development of the STIP is consistent with the provisions of both the Statewide and Metropolitan transportation planning requirements. FHWA and FTA find that the Indiana FY2026-2030 STIP substantially meets the transportation planning requirements and are approving the STIP subject to the corrective action outlined in the FPF. This approval is effective August 22, 2025, and is given with the understanding that an eligibility determination of individual projects for funding must be met, and INDOT must ensure the satisfaction of all administrative and statutory requirements, as well as address the corrective actions outlined in the attached report.

If you have questions or need additional information concerning our approval and the FPF, please contact Ms. Erica Tait of the FHWA Indiana Division at (317) 226-7481, or by email at erica.tait@dot.gov, or Mr. Anthony Greep of the FTA Region 5 Office at (312) 353-2866, or by email at anthony.greep@dot.gov.

Sincerely,

**KELLEY
BROOKINS**

Kelley Brookins
Regional Administrator
FTA Region V

Digitally signed by
KELLEY BROOKINS
Date: 2025.08.27
08:09:52 -05'00'

Sincerely,



Christopher J. Hall
Interim Division Administrator
FHWA Indiana Division

Digitally signed by
CHRISTOPHER J HALL
Date: 2025.08.28
10:04:48 -05'00'



INDIANA DEPARTMENT OF TRANSPORTATION

100 North Senate Avenue
Room N758-Executive Office
Indianapolis, Indiana 46204

PHONE: (855) 463-6848

Mike Braun, Governor
Lyndsay Quist, Commissioner

June 6, 2025

Mr. Christopher J Hall, Interim Division Administrator
FHWA Indiana Division
575 North Pennsylvania St., Room 254
Indianapolis, IN 46204

Ms. Kelley Brookins, Regional Administrator
FTA Region 5
200 West Adams St.
Suite 320
Chicago, IL 60606-5253

Dear Mr. Hall /Ms. Brookins:

The Indiana Department of Transportation is pleased to submit its Draft FY 2026-2029 Statewide Transportation Improvement Program (STIP) for review and comment by your offices.

Included in the final submitted document is a listing of the state's expansion/preservation and local small urban and rural and rural transit projects. The following Metropolitan Planning Organization TIP's will be included in the FY 2024-2028 STIP by reference.

Area Plan Commission of Tippecanoe County (APCTC)	FY 2026-2030
• APCTC TIP FY2026-2030	
Bloomington-Monroe County Metropolitan Planning Organization (BMCMPPO)	FY 2026-2030
• BMCMPPO TIP FY2026-2030	
Columbus Area Metropolitan Planning Organization (CAMPO)	FY 2026-2030
• CAMPO TIP FY2026-2030	
Delaware-Muncie Metropolitan Plan Commission (DMMPC)	FY 2026-2030
• DMMPC TIP FY2026-2030	
Evansville Metropolitan Planning Organization (EMPO)	FY 2026-2030
• EMPO TIP FY2026-2030	
Indianapolis Metropolitan Planning Organization (IMPO)	FY 2026-2029
• IMPO TIP FY2026-2029	
• IMPO Project Listing FY2026-2029	

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Kokomo-Howard County Governmental Coordinating Council (KHCGCC)	FY 2026-2030
• KHCGCC TIP FY2026-2030	
Kentuckiana Regional Planning and Development Agency (KIPDA)	FY 2025-2028
• KIPDA TIP FY2025-2028	
Michiana Area Council of Governments (MACOG)	FY 2026-2030
• MACOG TIP FY2026-2030	
Madison County Council of Governments (MCCOG)	FY 2026-2030
• MCCOG TIP FY2026-2030	
Northeastern Indiana Regional Coordinating Council (NIRCC)	FY 2026-2030
• NIRCC TIP FY2026-2030	
Northwestern Indiana Regional Planning Commission (NIRPC)	FY 2026-2030
• NIRPC TIP FY2026-2030	
Ohio-Kentucky-Indiana Regional Council of Governments (OKI)	FY 2026-2029
• OKI TIP FY2026-2029	
Terre Haute Area Metropolitan Planning Organization (THAMPO) TIP	FY 2026-2030
• THAMPO TIP FY2026-2029	

We greatly appreciate FHWA/FTA support in the development of the STIP 2026-2029 and look forward to working together to achieve our mutual goals. Should you have any questions pertaining to this amendment, please contact April Leckie, STIP Administration at 317-232-5466 or at aleckie@indot.in.gov.

Sincerely,



Lyndsay Quist, Commissioner
Indiana Department of Transportation

cc: (w/enclosure): Angelica Salgado, FTA
Cecilia Crenshaw, FTA
Anthony Greep, FTA
Bill Wheeler, FTA
Kelley Brookins, FTA
Matt Kane, FTA
Susan Weber, FTA
Erica Tait, FHWA
Paige Story, FHWA
Lyndsay Quist, INDOT
Blake Martain, INDOT

Kathy Eaton-McKalip, INDOT
Louis Feagans, INDOT
April Leckie, INDOT
Roy Nunnally, INDOT
Larry Buckel, INDOT
Jay Mitchell, INDOT
Jason Casteel, INDOT
Ryan Pennington, INDOT
Michael McNeil, INDOT

Transportation Improvement Program Fiscal Year Adoption 2024-2028

2200926		(Ver 3) 26-00,26-00		FEDERAL	
Title:	District Pavement Project (Non-I)	County: LaPorte		District: LaPorte	
Work Type:	HMA Overlay Minor Structural				
Limits:		Total 2026 - 2029: \$8,672,985			
Description:	HMA Overlay Minor Structural, SR 2 From the East Junction of US 421 to the West Junction of SR 39				
Phase	Fund Source	FY 2026	FY 2027	FY 2028	FY 2030
CE	NHPP Non Interstate	\$0	\$65,000	\$0	\$0
CN	NHPP Non Interstate	\$0	\$8,607,985	\$0	\$0
2301138		(Ver 3) 26-00,26-00		FEDERAL	
Title:	District Pavement Project (Interstate)	County: LaPorte		District: LaPorte	
Work Type:	HMA Overlay Minor Structural				
Limits:		Total 2026 - 2029: \$44,628,841			
Description:	On I-94; From 0.45 mi. W. of US 20/35 (NS RR Bridge) to MI State Line				
Phase	Fund Source	FY 2026	FY 2027	FY 2028	FY 2030
CN	NHPP Interstate	\$0	\$0	\$0	\$0
2401489		(Ver 2) 26-00,26-00		FEDERAL	
Title:	District Pavement Project (Interstate)	County: Lake		District: LaPorte	
Work Type:	HMA Overlay Minor Structural				
Limits:		Total 2026 - 2029: \$21,982,241			
Description:	I-80: 1.8 mi. W. of SR 51 (Clay St.) to I-80/90 Interchange (Toll Road)				
Phase	Fund Source	FY 2026	FY 2027	FY 2028	FY 2030
CN	NHPP Interstate	\$0	\$0	\$0	\$0
RW	NHPP Interstate	\$20,000	\$0	\$0	\$0
2301097		(Ver 2) 26-00,26-00		FEDERAL	
Title:	Intersection Improvement Project	County: Porter		District: LaPorte	
Work Type:	Intersect. Improv. W/ Added Turn Lanes				
Limits:		Total 2026 - 2029: \$1,158,865			
Description:	Intersect. Improv. W/ Added Turn Lanes - SR 49 at CR 950/Calumet Ave, 1.5 mi N of US 6; modified reduced conflict intersection. Adding a Acceleration lane on the WB to NB right turn lane. No added capacity				
Phase	Fund Source	FY 2026	FY 2027	FY 2028	FY 2030
CN	NHPP Non Interstate	\$0	\$0	\$1,158,865	\$0
Northwestern MPO NIRPC Project Listing					
Printed on Monday, April 28, 2025					
Page 49 of 146					



APPENDIX I ADDITIONAL STUDIES

**Land and Water Conservation Fund (LWCF) County Property List for Indiana
(Last Updated April 2025)**

ProjectNumber	SubProjectCode	County	Property
1800037	1800037	Porter	Woodland Park
1800050	1800050	Porter	Forest Park Golf Course
1800065	1800065	Porter	Woodland Park
1800080	1800080	Porter	Woodland Park
1800127	1800127	Porter	Indiana Dunes State Park & Dunes Nature Preserve
1800130	1800130	Porter	Bicentennial Park, Northside Park
1800171	1800171E	Porter	Indiana Dunes State Park
1800173	1800173	Porter	Indiana Dunes State Park & Dunes Nature Preserve
1800270	1800270	Porter	Harold Rogers Lakewood Park
1800276	1800276	Porter	Imagination Glen Park
1800284	1800284	Porter	Dogwood Park
1800304	1800304B	Porter	Moraine
1800312	1800312E	Porter	Indiana Dunes State Park
1800327	1800327D	Porter	Indiana Dunes State Park
1800349	1800349	Porter	Thomas Drazer Memorial Park & Pleasant Twp. Pool
1800363	1800363M	Porter	Indiana Dunes State Park
1800378	1800378B	Porter	Indiana Dunes State Park
1800405	1800405Q	Porter	Moraine Nature Preserve
1800407	1800407	Porter	Imagination Glen Park
1800413	1800413L	Porter	Indiana Dunes State Park
1800429	1800429	Porter	Indiana Dunes State Park & Dunes Nature Preserve
1800443	1800443	Porter	Haven Hollow Park
1800452	1800452	Porter	Sunset Hill Farm County Park
1800460	1800460	Porter	Indiana Dunes State Park & Dunes Nature Preserve
1800484	1800484	Porter	Prairie Duneland Trail
1800495	1800495	Porter	Prairie Duneland Trail
1800498	1800498	Porter	Prairie Duneland Trail
1800539	1800539	Porter	Imagination Glen Park
1800591	1800591	Porter	Sunset Hill Farm Park
1800624	1800624	Porter	Imagination Glen Park
1800626	1800626C	Porter	Indiana Dunes State Park

*Park names may have changed. If acquisition of publicly owned land or impacts to publicly owned land is anticipated, coordination with Indiana State Parks, Community Grants & Trails Section, should occur.

**ADDENDUM No.1
TO (ABBREVIATED) ENGINEER'S REPORT**

Project Number: 2301097
 Route / Feature Crossed: S.R. 49
 Project Location: S.R. 49 at C.R. 950N/Calumet Ave., 1.5 miles north of U.S. 6
 Date: 7-15-25

ADDENDUM JUSTIFICATION:

The District Traffic Engineer requested modifications to the original recommended alternative (Modified Median U-Turn) to improve overall performance, changing the intersection improvement type to a modified reduced conflict intersection.

REVISION TO ORIGINAL SCOPE DOCUMENT:

The (Abbreviated) Engineer's Report is being revised as follows:

Does the revision change the project's Purpose & Need statement? ☐ Yes ☒ No

Does the revision change the project's recommended alternative? ☒ Yes ☐ No

Evaluation of Alternatives, INSERT as follows:

Alternative 11 – Modified Reduced Conflict Intersection

This is a reduced conflict intersection that is modified so that only one movement on the major roadway can turn left onto the minor roadway and access the U-turn. This configuration would typically be used when there are low volumes of left-turn movements from the other major movement.

Table 15A

Table 15A: Foreasted Intersection Level of Service - Alternative 11										
Intersection			2028 AM Peak HR		2028 PM Peak HR		2048 AM Peak HR		2048 PM Peak HR	
			Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
SR 49 at CR 950 N & Calumet Ave	EB	Lt	-	-	-	-	-	-	-	-
		Th	-	-	-	-	-	-	-	-
		RT	14.6	B	24.2	C	19.6	C	28.8	D
	WB	Lt	-	-	-	-	-	-	-	-
		Th	-	-	-	-	-	-	-	-
		RT	24.7	C	19.4	C	31.6	D	22.8	C
	NB	Lt	-	-	-	-	-	-	-	-
		Th	0	A	0	A	0	A	0	A
		RT	0	A	0	A	0	A	0	A
	SB	Lt	17.5	B	19.1	B	26.4	C	28.2	C
		Th	0	A	0	A	0	A	0	A
		RT	0	A	0	A	0	A	0	A

As shown in Table 15A, this intersection improvement would operate at a minimum LOS C once completed but would deteriorate to a minimum LOS D by the design year. This scenario assumes the intersections of CR 950 N and N. Calumet Avenue as well as the proposed median U-turn operate under a stop condition, and further evaluation of a signalized improvement at these intersections may be warranted during the later part of the lifecycle to maintain a higher overall Level of Service.

Selected Alternative, REPLACE as follows:

Selected Alternative – Alternative 11

After evaluation of alternatives with the addition of Alternative 11, Alternative 11 was determined to be the most feasible and practical and is the recommended alternative. Construct a modified reduced conflict intersection per attach Exhibit “A” with an acceleration lane for the WB to NB right turn lane.

Does the revision change the project’s cost estimate?

☒ Yes

☐ No

<i>Estimated Total Project Costs</i>	<i>Revised Amount</i>	<i>Original Amount</i>
Preliminary Engineering	\$524,465.00	\$524,465.00
Construction Total:	\$ 1,840,000.00	\$ 1,262,582.00
Construction Engineering (CE)		
Other Considerations		
TOTAL:	\$2,364,465.00	\$1,787,047.00

Does the revision change the project’s environmental impacts?

☐ Yes

☒ No

Does the revision require additional Right-of-Way?

☐ Yes

☒ No

Does the revision change the project’s schedule (design or construction)?

☐ Yes

☒ No

Does the revision require additional coordination with utility companies?

☐ Yes

☒ No

ADDENDUM CONCURRENCE

This document was prepared by:

Dan G. Delgado, P.E. Digitally signed by Dan G. Delgado, P.E.
Date: 2025.07.17
09:37:19 -04'00' 7/17/25
Dan G. Delgado, P.E.
Project Manager
Lawson-Fisher Associates P.C.

Reviewed by:

Alan Holderread Digitally signed by Alan Holderread
Date: 2025.07.17
08:58:57 -05'00'
Alan H. Holderread, PE
District Traffic Engineer, LaPorte District

Reviewed by:

Paul South Digitally signed by Paul South
Date: 2025.07.17
09:49:04 -04'00'
Paul South, PE
District Scoping Manager, LaPorte District

Approved by:

Lynette K. Werner Digitally signed by Lynette K. Werner
Date: 2025.07.21
08:56:43 -05'00'
Lynette Werner, PE
System Asset Manager, LaPorte District



LEGEND:

- Existing R/W
- Proposed Line, Multi-Component, Broken, White, 6"
- Proposed Line, Multi-Component, Solid, White, 6"
- Proposed Line, Multi-Component, Solid, Yellow, 6"
- Proposed Line, Multi-Component, Dotted, White, 10"
- Proposed Line, Multi-Component, Solid, White, 10"

- Pavement Removal
- Proposed Pavement
- Proposed Concrete Island
- Proposed Transverse Marking, Multi-Component, Yield Line, White, 27"
- Proposed Pavement Message Markings, Multi-Component, Turn Arrow

NOT FOR CONSTRUCTION

DESIGNED BY	DESIGN ENGINEER	DATE
CHECKED BY	CHECKED BY	

INDIANA DEPARTMENT OF TRANSPORTATION	
EXHIBIT "A" MODIFIED ALTERNATE NO. 3	

SCALE 1" = 70'	BRIDGE FILE
SURVEY BOOK 2301027	DESIGNATION 2301027
PROJECT R-45147	SHEETS 1 of 1
	PROJECT LMI



Abbreviated Engineering Assessment Report

Route Location: SR 49
Tracking Number: 17653

Traffic Safety Asset Project
Proposed Fiscal Year: 2028
Work Type: Intersect. Improv. W/ Added Turn Lanes

District
LA PORTE Sub-District
64 - Porter County, Indiana

prepared by:
Holderread, Alan

01/14/2023

Prepared for the Indiana Department of Transportation



Executive Summary

The purpose of this report is to document the engineering assessment phase of project development, including all coordination that has been completed in preparation for this project. This document outlines the proposal and is intended to serve as a guide for subsequent survey, design, environmental, right of way and other project activities leading to construction. The preferred alternative identified in this document is considered predecisional, pending the outcome of environmental studies. An alternative other than the preferred alternative may not be selected without consultation with the preparer of this report.

Project Location

Project Location Information

Location Description

Route	SR 49	Latitude/Longitude From	41.573 / -87.046
City	Porter	Latitude/Longitude To	41.630 / -87.051
County	64 - Porter		
District	LA PORTE	Location	SR49 at CR950N/Calumet Ave, 1.5 miles north of US6
Sub District	LA PORTE	RP From	38 + 20 (@ 38+34.7)
MPO	NIRPC	RP To	38 + 40
NHS Route?	0 - Not on the NHS, 1 - Is on the NHS	Length	4.12 miles
Functional Class	3 - Principal Arterial - Other	Work Type	Intersect. Improv. W/ Added Turn Lanes
Rural or Urban	Chicago - Northwestern Indiana	Work Category	Intersection Improvement Project
<u>Other Location Info:</u>			

See attachments for a map showing the project location and for other pictures of the site.

Purpose and Need

The purpose of the project is to reduce crashes and maintain acceptable levels of service for SR49 and CR950N/Calumet Ave.

Project History

Existing Conditions

Notes from Field Check

Near Term Improvements

Structure Information



RoadWay Geometrics and Pavement Information

RoadWay Geometrics and Pavement Information

Lane Width
Curbed
Paved Shoulder Width
Usable Shoulder Width
Number of lanes in each direction
Intersection Traffic Control
Speed Limit
Pavement Type
Median Type
Drainage Type
Sidewalks Present?
Bike Lanes Present?
Guardrail/Barriers Present

Traffic Data

Volume Information and Traffic Forecast

Representative AADT AADT Year % Trucks DHV # % Yearly Traffic Growth Design Year AADT

The complete traffic forecast as provided by the Traffic Statistics Section in Central Office has been included in the attachments.

Crash Data Analysis

Crash History

ICC	0.79	Number of Crashes	48
ICF	1.80	Number of Fatal and Incapacitating Crashes	6
First Year of Crash Data	2019	Number of Non-Incapacitating Crashes	6
Last Year of Crash Data	2021	Number of Property Damage only Crashes	36

Crash Patterns : Manner of Collision

<u>Manner of Collision</u>	<u>Number</u>	<u>Percent</u>
Backing Crash		%
Collision With Animal (Including Deer) *		%
Collision With Object in Road		%
Head On (Between Motor Vehicles)		%
Same Direction Sideswipe		%
Opposite Direction Sideswipe		%
Other		%
Rear End		%
Ran Off Road		%
Left Turn, Right Turn or Angle		%

*In almost all cases, deer crashes and other animal crashes and other animal crashes should be removed from the analysis completely prior to completing the RoadHAT report.

**Crash Patterns: Pavement Condition Percentages**

<u>Type</u>	<u>Number</u>	<u>Percent</u>	<u>Compared to a Standard Value* of:</u>
On Dry Pavement		%	73.17%
On Wet Pavement		%	15.49%
On Other Condition Pavement		%	0.16%
On Snowy or Icy Pavement		%	11.18%

*Standard values are based on 2014-2018 data for all state owned facilities. Standard values are included for comparison purposes only.

Crash Patterns: Lighting Condition Percentages

<u>Type</u>	<u>Number</u>	<u>Percent</u>	<u>Compared to a Standard Value* of:</u>
Dawn/Dusk		%	5.49%
Others		%	0.10%
Dark (Lighted or Unlighted)		%	32.76%
Daylight		%	61.66%

*Standard values are based on 2014-2018 data for all state owned facilities. Standard values are included for comparison purposes only.

Crash Patterns: Weather Condition Percentages

<u>Type</u>	<u>Number</u>	<u>Percent</u>	<u>Compared to a Standard Value* of:</u>
Blowing Material		%	2.13%
Cloudy		%	18.33%
Clear		%	62.39%
Snow or Sleet		%	6.41%
Rain		%	9.79%
Severe Cross Winds		%	0.26%
Fog (Or Smoke or Smog)		%	0.68%

*Standard values are based on 2014-2018 data for all state owned facilities. Standard values are included for comparison purposes only.

The RoadHAT output, crash statistics summary and crash diagrams have been included in the attachments to this report.

Community/External Stakeholder ContextAdjacent INDOT ProjectsOther Miscellaneous Information**Analysis and Alternatives**Description of Alternatives**Alternative 1 Recommended**

Construct a modified reduced conflict intersection with an acceleration lane for the WB to NB right-turn lane



Cost Estimates (In Call Year Dollars)**Cost Estimate Summary****Alternative 1**

Right of Way Purchase	\$0
Preliminary Engineering 1	\$170,000
Utilities PE	\$0
Construction	\$1,158,865

Complete and detailed cost estimates for all considered alternatives are included in the attachments of this report.

Project Cost Estimate Summary

<u>Phase</u>	<u>Amount</u>	<u>Comments</u>
Railroad PE		
Construction Total		
ADA		
Sidewalks/ Multi Use Paths		
Small Culverts		
OH Sign Structures		
MSE Walls		
Noise Walls		
Rest Areas		
Traffic Signal		
ITS		
Remainder of CN after Asset Co		



Capacity Analysis

Preliminary Maintenance of Traffic Plan (MOT)

The above information is preliminary and conceptual in nature. The designer of record for this project shall be responsible for the determination of MOT scheme and the full design of that scheme. The above information can be used to inform the decision making of the designer but it does not absolve him of the responsibility of the design.

The provisions of the Indiana Manual on Uniform Traffic Control Devices, the Indiana Design Manual and the INDOT Standard Drawings concerning the design of an MOT zone shall be adhered to. A detailed design showing the MOT layout should be included in the final set of plans. The provisions of the Interstate Highway Congestion Policy shall be followed.

Pavement and Roadway Design

Design Considerations

Land Survey Location

Civil Township

Federal Aid System

National Truck Network

Urban Area Boundary

Adjacent Land Use

Pedestrian and Multi-Modal Considerations

Structural Impacts

Miscellaneous Notes

Right-of-Way Survey



Right of Way Summary

<u>Land Use</u>	<u>Parcel No.</u>	<u>Acres</u>	<u>Cost</u>
-----------------	-------------------	--------------	-------------

Utilities and Railroads

Hydraulic Recommendations

Environmental and Historic Considerations

Design Criteria

The design of this project shall adhere to . standards per the Indiana Design Manual.

Changes to Proposal

Contact the original preparer of the report if deviation from this document is determined to be necessary during a later phase of project development, including but not limited to scope of work or letting changes. Any desired changes should include justification for the change and the estimated cost.

Concurrence and Approval

<u>Title</u>	<u>Signature</u>	<u>Signed Date</u>
Prepared By	Holderread, Alan	01/14/2023
Reviewed By	Witkowski, Michelle	01/14/2023
Concurred By	South, Paul	01/14/2023
Approved By	Benczik, Steve	01/14/2023

DETERMINATION OF SIGNIFICANT WORK ZONE IMPACTSRoute: SR49 Des: _____ Project Development Stage: Scoping Date: _____*Note: this worksheet should be completed during scoping and the results placed in the SPMS project schedule.*

1. Determination by Federal Rule (Interstate corridors only)		YES	NO
a. Is the project in a Traffic Management Area (see list below)?		Non-Interstate	Non-Interstate
b. Will travel lane(s) be affected, continuously or intermittently, for more than three days?			
If answers to both 1a and 1b are yes, then the project is significant If no proceed to item 2, If yes, item 2 may be skipped		Non-Significant	

2. Determination by INDOT Policy (All INDOT corridors)		
a. Is project scope major reconstruction or new construction?	x	
b. Is AADT > 12,000 for 2 lane roads or 30,000 for multilane?	x	
c. Is the project in an urban or suburban area?	x	
d. Will mobility along corridor be significantly impacted?	x	
e. Will capacity of the highway be significantly reduced?	x	
f. Will alternative routing be needed?		x
g. Will communities, local businesses, schools, hospitals be significantly impacted?	x	
h. Are seasonal impacts significant?		x
i. Are grade changes significant?		x
If the answers to one or more of 2a thru 2i are yes, then the project may be significant – engineering judgment should be applied. If answers to all questions are no, then project is non-significant.		Significant

3. Comments:

Indiana Traffic Management Areas: <ul style="list-style-type: none"> • Gary (all of Lake, Porter, and La Porte counties) • South Bend/Elkhart (all of St Joseph and Elkhart counties) • Fort Wayne (all of Allen County) • Indianapolis (all of Marion, Boone, Hamilton, Hancock, Hendricks, Johnson, Madison, and Shelby counties) • Evansville (all of Vanderburgh and Warrick counties) • Cincinnati (all of Dearborn County) • Louisville (all of Clark and Floyd counties)

Bid Report

Project: SR 49 J-Turn	Job Number: 2019-6000-12-9 J-Turn	Bid Date: 11/18/2022	State: IN
Location:			

Pay Item	Description	Count	Quantity	Unit	Unit Price	Extension
105-06845	CONSTRUCTION ENGINEERING	--	1.000	L.S.	13,059.00	13,059.00
110-01001	MOBILIZATION AND DEMOBILIZATION	--	1.000	L.S.	33,000.00	33,000.00
203-02000	EXCAVATION, COMMON	--	1,000.000	C.Y.	80.00	80,000.00
203-02070	BORROW	--	500.000	C.Y.	50.00	25,000.00
205-12108	STORMWATER MANAGEMENT BUDGET	--	20,000.000	\$	1.00	20,000.00
205-12616	STORMWATER MANAGEMENT IMPLEMENTATION	--	1.000	L.S.	10,000.00	10,000.00
205-12618	SWQCP PREPARATION	--	1.000	L.S.	5,500.00	5,500.00
207-12635	SUBGRADE TREATMENT, TYPE IBC	--	2,480.000	S.Y.	17.00	42,160.00
401-07328	QC/QA-HMA, 3, 70, SURFACE, 9.5 mm	--	205.000	TON	140.00	28,700.00
401-07398	QC/QA-HMA, 3, 70, INTERMEDIATE, 19.0 mm	--	341.000	TON	135.00	46,035.00
401-07408	QC/QA-HMA, 3, 64, BASE, 25.0 mm	--	955.000	TON	162.00	154,710.00
401-12139	QC/QA-HMA, 4, 76, BASE, OG, 19.0 mm	--	341.000	TON	90.00	30,690.00
605-06140	CURB AND GUTTER, CONCRETE	--	1,300.000	L.F.	105.00	136,500.00
605-06240	CENTER CURB, A CONCRETE	--	572.000	S.Y.	50.00	28,600.00
621-01004	MOBILIZATION AND DEMOBILIZATION FOR SEEDING	--	1.000	EACH	850.00	850.00
621-06560	MULCHED SEEDING U	--	6,500.000	S.Y.	4.50	29,250.00
802-04993	SIGN	--	1.000	L.S.	5,000.00	5,000.00
808-09968	PAVEMENT MARKING	--	1.000	L.S.	10,000.00	10,000.00

Total: \$699,054.00

REPORT PARAMETERS	
Project	2019-6000-12-9 J-Turn - SR 49 J-Turn
Comparison	Bid Price

+20% Contingency: \$139,810.80

Total: \$838,864.80

MOT at \$320,000 per 12.16.2022 report

PE at \$170,000

No ROW, RR, Utility costs

Total CN: \$1,158,865

Total Cost: \$1,328,865

ABBREVIATED ENGINEERING ASSESSMENT REPORT
INTERSECTION IMPROVMENTS ALONG SR 49 AT:
BURLINGTON BEACH, CR 600 N, AND CR 950 N
PORTER COUNTY, INDIANA
DES. NO. TBD
DECEMBER 16TH, 2022

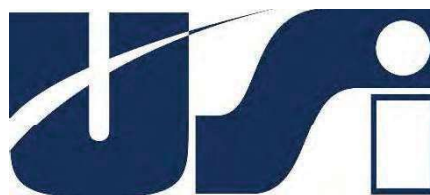
Prepared For:

Indiana Department of Transportation
LaPorte District
315 E. Boyd Blvd.
LaPorte, IN 46350

Design Engineers:

Wyatt A. Huber, P.E.

USI Consultants, Inc.
8415 E. 56th Street, Suite A
Indianapolis, IN 46215



ABBREVIATED ENGINEERING ASSESSMENT REPORT

ROADWAY PROJECTS:

SR 49 Intersection Improvements at:

Burlington Beach Rd, CR 600 N, and CR 950 N

DES. NUMBER / ROUTE IDENTIFICATION:

TBD **SR 49:** RP 33+0.537 (Burlington Beach Rd)
 RP 34+0.444 (CR 600 N)
 RP 38+0.346 (CR 950 N)

Porter County, Indiana

December 16, 2022

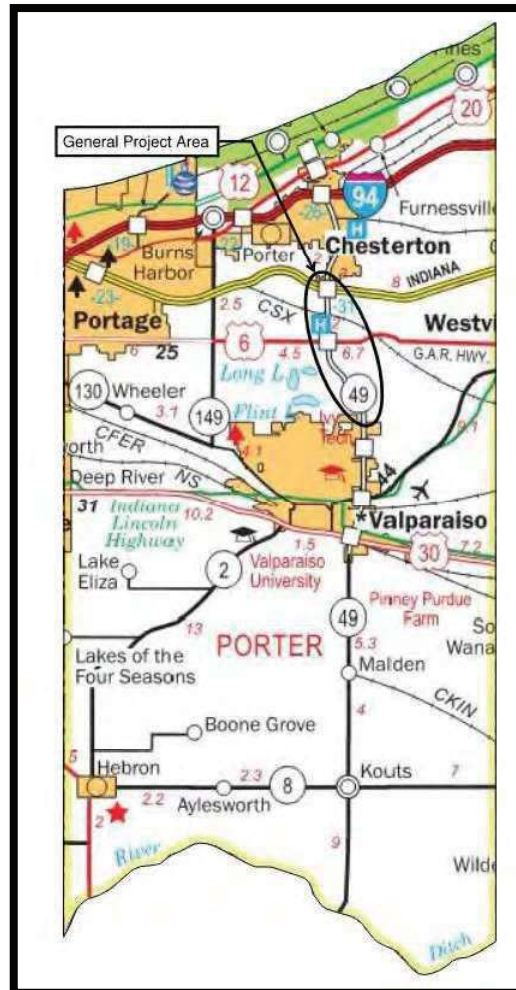


Figure 1: Project Location Overview

See Appendix A for a more detailed Project Location Map

Purpose of Report >>

The purpose of this report is to document the engineering assessment phase of project development, including all coordination that has been completed in preparation for this road project. This document outlines the proposal and is intended to serve as a guide for subsequent survey, design, environmental, right of way and other project activities leading to construction. The preferred alternative identified in this document is considered pre-decisional, pending the outcome of environmental studies.

Project Location >>

This project is located on SR 49 within Porter County, at the intersections of Burlington Beach Rd, CR 600 N, and CR 950 N between SR 2 and I-80/I-90 near Valparaiso, Indiana.

TABLE 1 – Project Location Details	
GPS Location (Burlington Beach Rd)	41° 30' 26.38" N, 87° 1' 22.15" W
GPS Location (CR 600 N)	41° 31' 15.14" N, 87° 1' 41.92" W
GPS Location (CR 950 N)	41° 34' 17.52" N, 87° 2' 46.30" W
INDOT District	LaPorte, LaPorte Sub-District

Project Purpose and Need >>

The purpose of this project is to improve the safety at the intersections of Burlington Beach, CR 600N, and CR 950N while maintaining an acceptable operational level of service. The need for this project is driven by the significant crash history present at each intersection, while a secondary need for this project is due to the poor operational Level of Service currently present or anticipated within the next twenty years.

Existing Facilities >>

SR 49 is a multi-lane divided highway classified as a Rural Principal Arterial – Other with a posted speed limit of 55 mph through the project area. The typical cross-section consists of 12-foot travel lanes, a 4-foot paved inside shoulder, an 11-foot paved outside shoulder, and a variable width center grass median. Land use ranges along the project area, but primarily consists of residential or agricultural parcels. SR 49 is a limited access corridor, with access points only at major intersections and no mid-block connections.

Burlington Beach Rd is primarily a two-lane roadway classified as a Major Collector with a posted speed limit of 30 mph through the project area. The typical cross-section appears to consist of 12-foot travel lanes with no paved shoulder. Burlington Beach Rd currently intersects SR 49 at a signalized intersection and widens out to allow for dedicated turn lanes. Land use along Burlington Beach Rd is primarily residential near the intersection of SR 49. No access control is present along this roadway.

CR 600 N is primarily a two-lane roadway classified as a Minor Collector with a posted speed limit of 35 mph through the project area. The typical cross-section appears to consist of 12-foot travel lanes with no paved shoulder. CR 600 N currently intersects SR 49 at a two-way stop-controlled intersection, with stop conditions on CR 600 N. Land use along CR 600 N is primarily agricultural near the intersection of SR 49. No access control is present along this roadway.

CR 950 N is primarily a two-lane roadway classified as a Local roadway with no posted speed limit. The typical cross-section appears to consist of 12-foot travel lanes with no apparent paved shoulder. CR 950 N currently intersects SR 49 at a skewed two-way stop-controlled intersection, with stop conditions on CR 950 N and N.

Calumet Avenue. Land use along CR 950 N is primarily residential on the north side of the roadway, and agricultural on the south side. No access control is present along this roadway.

Roadway Geometrics

Tables 2 and 3 below summarize the applicable design elements as well as the existing roadway characteristics for SR 49 and the intersecting roadways:

TABLE 2 – Basic Design Elements	
Functional Class	
SR 49	Principal Arterial - Other
Burlington Beach Rd	Major Collector
CR 600 N	Minor Collector
CR 950 N	Local
Posted Speed	
SR 49	55 MPH
Burlington Beach Rd	30 MPH
CR 600 N	35 MPH
CR 950 N	Not Posted (Assume 55 MPH)
Member Road Systems (SR 49)	On National Highway System
	On National Truck Network
	Statewide Corridor on Statewide Mobility Corridor Map
Access Control	
SR 49	Limited Access
Burlington Beach Rd	None
CR 600 N	None
CR 950 N	None

TABLE 3 – Roadway Characteristics			
Geometric Criteria			
Design Criteria	3R (Non-Freeway)	Rural/Urban	Rural
Terrain	Level		
Approach Cross Section			
IDM Figure Reference	IDM Figure 55-3A		
Travel Lane Count	4	Travel Lane Width	12 ft
Shoulder Width (Usable)	4 ft Inside 11 ft Outside	Shoulder Width (Paved)	4 ft Inside 11 ft Outside
Mainline Pavement	Composite	Shoulder Pavement	HMA

Existing Drainage

Review of the project area and existing plan sets indicate that stormwater runoff generally sheet flows from the roadway of SR 49 into inlet structures in the median or away into side ditches along the outside shoulders. It is not apparent if portions of the center median have a paved concrete invert.

For Burlington Beach Rd, CR 600 N, and CR 950 N, stormwater runoff appears to generally sheet flow from the roadway into roadside ditches.

Traffic Data >>

24-hour traffic counts were provided by INDOT at the intersections of SR 49 and Burlington Beach Rd, CR 600 N, and CR 950 N for use in this report. Traffic count data for Burlington Beach Rd was from 2018, CR 600 N traffic count data was from 2016, and CR 950 N traffic count data was collected in 2022. Data for Burlington Beach Rd and CR 600 N has been forecast at a 1% annual growth rate to 2022 to normalize the starting year for each intersection analysis. This data is summarized in Table 4a, 4b, and 4c below:

TABLE 4a – Traffic Data Summary (SR 49 @ Burlington Beach Rd)			
Roadway	ADT	Directional Dist. (%)	Percent Trucks
SR 49	35,845 vpd	49.32%	N/A (No Data)
Burlington Beach Rd	5,154 vpd	66.92%	N/A (No Data)

TABLE 4b – Traffic Data Summary (SR 49 @ CR 600 N)			
Roadway	ADT	Directional Dist. (%)	Percent Trucks
SR 49	38,874 vpd	53.32%	14.81%
CR 600 N	3,597 vpd	79.69%	1.68%

TABLE 4c – Traffic Data Summary (SR 49 @ CR 950 N)			
Roadway	ADT	Directional Dist. (%)	Percent Trucks
SR 49	36,064 vpd	48.84%	14.10%
CR 950 N	2,557 vpd	21.20%	1.88%

A official Traffic Forecast Report should be requested as the project moves further into design so all proposed improvements can be updated appropriately.

Existing Level of Service >>

RP 33+0.537: SR 49 and Burlington Beach Rd

A Level of Service (LOS) analysis was performed on the existing signalized intersection of SR 49 and Burlington Beach Rd using Synchro (Version 11.0) to determine the current operational performance. The results of this analysis are summarized in the table on the following page:

TABLE 5a: Existing Intersection Level of Service						
Intersection			2022 AM Peak Hour		2022 PM Peak Hour	
			Delay (s)	LOS	Delay (s)	LOS
SR 49 at Burlington Beach Rd	EB	LT	20.0	B	18.4	B
		TH	19.0	B	19.2	B
	WB	LT	19.6	B	20.5	C
		TH	15.6	B	15.9	B
		RT	15.3	B	15.2	B
	NB	LT	17.3	B	50.3	D
		TH	12.5	B	12.0	B
		RT	6.2	A	6.3	A
	SB	LT	20.7	C	18.2	B
		TH	10.3	B	14.7	B
		RT	6.9	A	8.0	A

As shown above, the existing signalized intersection at SR 49 and Burlington Beach Rd has movements that operate at a Level of Service C or lower for either the AM peak volume or the PM peak volume. However, the overall Level of Service for the intersection was found to be LOS B.

RP 34+0.444: SR 49 and CR 600 N

A Level of Service (LOS) analysis was performed on the existing two-way stop-controlled intersection of SR 49 and CR 600 N using Synchro (Version 11.0) to determine the current operational performance. The results of this analysis are summarized in the table below:

TABLE 5b: Existing Intersection Level of Service						
<i>Intersection</i>			<i>2022 AM Peak Hour</i>		<i>2022 PM Peak Hour</i>	
			Delay (s)	LOS	Delay (s)	LOS
SR 49 at CR 600 N	EB	LT	36.5	E	Could Not Solve	F
		TH				
		RT				
	WB	LT	858.3	F	Could Not Solve	F
		TH				
		RT				
	NB	LT	11.6	B	20.9	C
		TH	0.0	A	0.0	A
		RT	0.0	A	0.0	A
	SB	LT	12.2	B	13.3	B
		TH	0.0	A	0.0	A
		RT	0.0	A	0.0	A

As shown in Table 5b, the existing two-way stop-controlled intersection at SR 49 and CR 600 N has movements that operate at a Level of Service C or lower for either the AM peak volume or the PM peak volume, including LOS F movements that indicate that the intersection fails to operate effectively under its current capacity.

RP 38+0.346: SR 49 and CR 950 N

A Level of Service (LOS) analysis was performed on the existing two-way stop-controlled intersection of SR 49 and CR 950 N using Synchro (Version 11.0) to determine the current operational performance. The results of this analysis are summarized in the table on the following page:

TABLE 5c: Existing Intersection Level of Service						
Intersection			2022 AM Peak Hour		2022 PM Peak Hour	
			Delay (s)	LOS	Delay (s)	LOS
SR 49 at CR 950 N	EB	LT	84.4	F	Could Not Solve	F
		TH				
		RT				
	WB	LT	29.7	D	588.8	F
		TH				
		RT				
	NB	LT	10.7	B	15.6	C
		TH	0.0	A	0.0	A
		RT	0.0	A	0.0	A
	SB	LT	14.3	B	19.3	C
		TH	0.0	A	0.0	A
		RT	0.0	A	0.0	A

As shown above, the existing two-way stop-controlled intersection at SR 49 and CR 950 N has movements that operate at a Level of Service C or lower for either the AM peak volume or the PM peak volume, including LOS F movements that indicate that the intersection fails to operate effectively under its current capacity.

Crash Data & Analysis >>

A RoadHAT 4D crash analysis was performed at each of the intersections. Crash data was provided by INDOT for the three-year period of 2019 – 2021 at Burlington Beach Rd and CR 950 N. Crash data for CR 600N was only available for the three-year period of 2018 – 2020. The results of each analysis have been summarized in the tables below. Copies of each RoadHAT output, as well as additional crash information, have been included in Appendix B for reference.

RP 33+0.537: SR 49 and Burlington Beach Rd

A review of crash data for the intersection of SR 49 and Burlington Beach Rd revealed fifty-two crashes within the project limits. Of these crashes, the most predominant crash type was rear end collisions with thirty-five (or 67% of identified crashes). The second most-predominant crash type was right angle collisions, with eight (or approximately 15% of identified crashes). This intersection was evaluated as a Signalized Urban State Intersection, as it is located within the urbanized boundary of Valparaiso. Table 6a below displays the inputs and results for this RoadHAT analysis while Table 6b on the following page shows the manner of collision breakdown of identified crashes.

TABLE 6a – Summary of Crash History			
I _{CC}	0.67	Number of Crashes	52
I _{CF}	0.13	Number of Fatal/Incapacitating Crashes	6
First Year of Crash Data	2019	Number of Non-Incapacitating Crashes	7
Last Year of Crash Data	2021	Number of Property Damage Only Crashes	39

TABLE 6b – Summary of Crash Patterns: Manner of Collision		
<i>Manner of Collision</i>	<i>Number</i>	<i>Percent</i>
Backing Crash	0 (0)	0.00%
Collision with Animal (Incl. Deer)	0 (0)	0.00%
Collision with Object in Road	0 (0)	0.00%
Head On (Between Motor Vehicles)	1 (1)	1.92%
Left Turn, Right Turn, or Angle	8 (2)	15.38%
Opposite Direction Sideswipe	0 (0)	0.00%
Ran Off Road	3 (0)	5.77%
Rear End	35 (10)	67.31%
Same Direction Sideswipe	4 (0)	7.69%
Other	1 (0)	1.92%
Total	52 (13)	100.00%
X (Y): # of Crashes (# of Crashes Resulting in Injury)		

As indicated above, this intersection is operating slightly worse in regards to expected crash frequency. However, the severity of the crashes is significantly higher than would be expected. The alternatives within this report will evaluate measures to reduce the crash severity at this intersection location.

RP 34+0.444: SR 49 and CR 600 N

A review of crash data for the intersection of SR 49 and CR 600 N revealed thirty-two crashes within the project limits. Of these crashes, the most predominant types of crashes were turning collisions, including left-turn, right-turn, and right-angle collisions, with seventeen (or approximately 53% of identified crashes). The second most-predominant types of crashes were collisions with an object or animal, with seven (or approximately 22% of identified crashes). This intersection was evaluated as a Unsignalized Urban State Intersection, as it is located mostly within the urbanized area boundary of the MPO. Table 7a below displays the inputs and results for this RoadHAT analysis while Table 7b on the following page shows the manner of collision breakdown of identified crashes.

TABLE 7a – Summary of Crash History			
I _{CC}	0.77	Number of Crashes	32
I _{CF}	0.01	Number of Fatal/Incapacitating Crashes	5
First Year of Crash Data	2018	Number of Non-Incapacitating Crashes	5
Last Year of Crash Data	2020	Number of Property Damage Only Crashes	22
Note: RoadHAT analysis excluded seven crashes associated with objects/animals in roadway, as these instances are not a function of the roadway characteristics.			

TABLE 7b – Summary of Crash Patterns: Manner of Collision		
Manner of Collision	Number	Percent
Backing Crash	1 (0)	3.13%
Collision with Animal (Incl. Deer)	7 (0)	21.88%
Collision with Object in Road	0 (0)	0.00%
Head On (Between Motor Vehicles)	0 (0)	0.00%
Left Turn, Right Turn, or Angle	17 (8)	53.13%
Opposite Direction Sideswipe	0 (0)	0.00%
Ran Off Road	2 (1)	6.25%
Rear End	1 (0)	3.13%
Same Direction Sideswipe	3 (0)	9.38%
Other	1 (1)	3.13%
Total	32 (10)	100.00%
X (Y): # of Crashes (# of Crashes Resulting in Injury)		

As indicated above, this intersection is operating about as expected regarding expected crash frequency. However, the severity of the crashes is significantly higher than would be expected. As the predominant types of crashes (turning crashes) include 80% of the identified accidents resulting in injury, the alternatives within this report will evaluate measures to reduce the conflict points typically associated with these crash types.

RP 38+0.346: SR 49 and CR 950 N

A review of crash data for the intersection of SR 49 and CR 950 N revealed forty-eight crashes within the project limits. Of these crashes, the most predominant crash type was rear end collisions with twenty-eight (or approximately 60% of identified crashes). The second most-predominant crash type was turning crashes, including left turn, right turn, and right-angle collisions, with twelve (or 22% of identified crashes). This intersection was evaluated as a Unsignalized Urban State Intersection, as it is located within the urbanized area of the MPO. Table 8a below displays the inputs and results for this RoadHAT analysis while Table 8b on the following page shows the manner of collision breakdown of identified crashes.

TABLE 8a – Summary of Crash History			
I _{CC}	1.45	Number of Crashes	48
I _{CF}	1.51	Number of Fatal/Incapacitating Crashes	6
First Year of Crash Data	2019	Number of Non-Incapacitating Crashes	6
Last Year of Crash Data	2021	Number of Property Damage Only Crashes	36

TABLE 8b – Summary of Crash Patterns: Manner of Collision		
Manner of Collision	Number	Percent
Backing Crash	0 (0)	0.00%
Collision with Animal (Incl. Deer)	0 (0)	0.00%
Collision with Object in Road	0 (0)	0.00%
Head On (Between Motor Vehicles)	0 (0)	0.00%
Left Turn, Right Turn, or Angle	12 (5)	21.74%
Opposite Direction Sideswipe	0 (0)	0.00%
Ran Off Road	2 (0)	8.70%
Rear End	28 (5)	59.78%
Same Direction Sideswipe	5 (1)	6.52%
Other	1 (1)	3.26%
Total	48 (12)	100.00%
X (Y): # of Crashes (# of Crashes Resulting in Injury)		

As indicated above, this intersection is performing considerably worse than expected regarding crash frequency and crash severity. The alternatives within this report will evaluate measures to reduce the crash frequency and crash severity at this intersection.

Identification of Alternatives – Burlington Beach Rd >>

3R design criteria will be utilized in the development of this project. The following section evaluates each of the intersection design types presented within the INDOT Intersection Design Guide and will move viable alternatives forward for further evaluation.

Alternative 1 – Do Nothing

This alternative allows the existing intersection to remain in place with no improvements. To evaluate Alternative 1, the Level of Service of existing intersection was evaluated against forecasted traffic conditions using an anticipated Construction Year of 2028 and a Design Year of 2048. The results of this analysis are summarized in the table below:

TABLE 9: Forecasted Intersection Level of Service										
Intersection			2028 AM Peak HR		2028 PM Peak HR		2048 AM Peak HR		2048 PM Peak HR	
			Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
SR 49 at Burlington Beach Rd	EB	LT	29.4	C	37.1	D	65.5	E	65.9	E
		TH	13.9	B	29.8	C	31.7	C	69.3	E
		RT	13.9	B	29.8	C	31.7	C	69.3	E
	WB	LT	21.0	C	37.6	D	35.8	D	119.4	F
		TH	21.0	C	32.3	C	31.6	C	45.3	D
		RT	0.5	A	1.7	A	4.3	A	0.7	A
	NB	LT	50.9	D	66.2	E	61.6	E	105.3	F
		TH	28.7	D	17.2	B	22.8	C	14.6	B
		RT	0.1	A	0.5	A	0.1	A	0.9	A
	SB	LT	44.7	D	46.4	D	69.0	E	78.4	E
		TH	19.6	B	30.2	C	17.7	B	41.7	D
		RT	3.0	A	2.4	A	2.2	A	2.0	A

This alternative will not address poor operational Level of Service or the safety concerns present, and therefore does not meet the need nor achieves the purpose of the project. This alternative will not be considered further.

Alternative 2 – Median U-Turn Intersection Improvement

Median U-Turn intersection configurations are typically used in situations where the major roadway is a divided highway or boulevard and high demand for left-turns from the minor roadway cause operational delays or safety concerns, or in situations where heavy left-turn volumes from the major roadway conflict with heavy through movements. After review of the forecasted traffic movements at this intersection, there is relatively low demand for left turns from Burlington Beach Rd (less than 250 vehicles) compared against the heavy through volumes on SR 49 (greater than 3000 vehicles) during either the AM or PM peak hour. Similarly, there are relatively low left-turn volumes from SR 49 attempting to cross heavy through movements. Due to this, this alternative has been dismissed and will not be considered further.

Alternative 3 – Roundabout Intersection Improvement

Roundabout intersection configurations eliminate many conflict points typically associated with right-angle and left-turn collisions, as well as serve as a tool to implement speed control to a corridor. However, SR 49 is considered a high-speed facility, and the nature of the corridor supports uninterrupted free flow conditions along the major roadway. The introduction of a roundabout option would disrupt this aspect of the corridor, and therefore has been dismissed as a viable alternative. This alternative will not be considered further.

Alternative 4 – Displaced Left Turn Intersection Improvement

Displaced left-turn intersection configurations are typically used in situations where high left-turn volumes conflict with heavy through volumes on the major roadway for the majority of the day, rather than only at peak hours. As the current intersection of SR 49 and Burlington Beach Rd has relatively minor left-turn volumes from the major roadway, this alternative has been dismissed and will not be considered further.

Alternative 5 – Jughandle Intersection Improvement

Jughandle intersections operate by removing the left-turn movements from the major roadway at congested signalized intersections in order to reduce the number of signal phases. These movements are then made at stop-controlled intersections along the minor roadway, while cross-street left turns are still made at the signalized intersection. As the current intersection of SR 49 and Burlington Beach Rd has relatively minor left-turn volumes from either the major or minor roadways, this alternative has been dismissed and will not be considered further.

Alternative 6 – Offset “T” Intersection Improvement

Offset “T” intersections converts a conventional intersection into two “T” intersections offset by some distance along the major roadway. Due to the existing intersection configuration at SR 49 and Burlington Beach Rd, as well as the adjacent land use, this alternative is not viable and will not be considered further.

Alternative 7 – Continuous Green “T” Intersection Improvement

A continuous green “T” intersection is only applicable to existing “T” intersections, and therefore is not a viable alternative for this location. This alternative will not be considered further.

Alternative 8 – Quadrant Roadway Intersection Improvement

A quadrant roadway intersection removes all left-turn movements from the main intersection via a connecting roadway in one quadrant of the intersection. This type of intersection improvement requires a considerable amount of right-of-way to construct, and as well as the installation of at least two additional signalized intersections. Due to the minimal left turn volume at the current intersection, as well as the anticipated right-of-way impacts, this alternative has been dismissed and will not be considered further.

Alternative 9 – Grade Separation/Interchange Improvement

A grade separation eliminates the at-grade intersection of two roadways, allowing for the through traffic on both roadways to continue under free flow conditions and relocating any turning movements to the adjacent roadway network. Similarly, an interchange also serves this function but provides connectivity between a system of on- and off-ramps for turning traffic to enter and exit the major roadway. After review, it was determined that a grade separation or interchange improvement could be a viable alternative, and therefore will be moved forward for further evaluation.

Evaluation of Alternatives – Burlington Beach Rd >>

Alternative 9a: Grade Separation

No LOS calculations were performed for Alternate 9a, as the grade separation removes all conflicts between SR 49 and Burlington Beach Road. This alternate will eliminate all turning movements onto or from Burlington Beach. The traffic data shows that turning movements from Burlington Beach are significantly higher than the through traffic on this roadway, and therefore consideration should be given to where these turn movements would move to. As the closest interchange is located at CR 400 N, further analysis will be necessary to fully understand the operational impacts these diverted movements would cause.

Alternative 9b: Interchange

This alternative would elevate SR 49 over Burlington Beach Rd and remove the through movements from the intersection through the use of an overpass. Turning movements would enter and exit SR 49 from Burlington Beach Rd from a series of on- and off-ramps accessible from a roundabout intersection. The resulting level of service of these intersections has been summarized in the tables below:

TABLE 10: Intersection Level of Service – Alternative 9 (East Terminal)										
Intersection			2028 AM Peak HR		2028 PM Peak HR		2048 AM Peak HR		2048 PM Peak HR	
			Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
SR 49 at Burlington Beach Rd East Terminal	EB	TH	5.0	A	5.0	A	5.1	A	5.1	A
		RT	5.1	A	5.1	A	5.2	A	5.2	A
	WB	LT	9.8	A	9.8	A	9.8	A	9.8	A
		TH	3.8	A	3.8	A	3.8	A	3.8	A
	SB	LT	11.2	B	10.9	B	11.4	B	11.0	B
		RT	5.4	A	5.1	A	5.5	A	5.1	A

TABLE 11: Intersection Level of Service – Alternative 9 (West Terminal)										
Intersection			2028 AM Peak HR		2028 PM Peak HR		2048 AM Peak HR		2048 PM Peak HR	
			Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
SR 49 at Burlington Beach Rd West Terminal	EB	LT	9.8	A	9.8	A	9.8	A	9.8	A
		TH	3.8	A	3.8	A	3.8	A	3.8	A
	WB	TH	4.3	A	4.3	A	4.3	A	4.3	A
		RT	4.3	A	4.3	A	4.4	A	4.4	A
	NB	LT	10.5	B	11.3	B	10.6	B	11.4	B
		RT	4.6	A	5.4	A	4.7	A	5.5	A

As shown above, the removal of through movements along SR 49 at this intersection through the use of an interchange produces a minimum Level of Service B across all movements. This alternative also greatly reduces the number of conflict points at each intersection to 3, which should minimize the number of left, right, and angle crashes experienced at each intersection. Finally, separating the heavy through movements on SR 49 from the at-grade intersection allows them to maintain a free flow condition and will eliminate the concerns for rear end crashes due to the current signal. This alternative would also provide auxiliary lanes that connects the CR 400 N ramp to the Burlington Beach ramps to allow continuous weaving movements between interchanges.

Alternative Decision Matrix

Alternatives 9a and 9b are being moved forward as viable alternatives. Alternatives 9a and 9b have been put into an evaluation matrix to compare overall benefits. Each alternative has been ranked either 1 – “Best” or 2 – “Worst” across four criteria: safety, operational performance, cost, and environmental impacts.

TABLE 12: Burlington Beach Rd Comparison Matrix		
Comparison Criteria	Alternate 9a Grade Separation	Alternate 9b Interchange
Safety	2	1
Operational Performance	2	1
Cost	1	2
Environmental Impacts	1	1
Total	6	5

Safety: Alternative 9b is viewed as the best alternate in terms of safety. Alternate 9b provides roundabout intersections for the turning movements, which reduces the number of potential conflict points to 3. Additionally, the use of an interchange allows for through movements on SR 49 to continue under free flow conditions, which eliminates the rear end collision concerns that the current signal introduces.

Alternative 9a removes all turning movements from the intersection, therefore fully eliminating any conflict points between turning vehicles. The use of a grade separation would also eliminate rear end collision concerns caused by the current signal, as with Alternative 9b. However, this alternative was scored lower in terms of safety as the current turning movements will be diverted to other intersections with a grade separation. Further study would be required to understand the full impacts these diverted movements could cause to the safety of the receiving intersections, and therefore was scored lower for the purposes of this comparison.

Operational Performance: Alternative 9b is viewed best in terms of Operational Performance as it adds capacity to the system by eliminating the conflict between the through movements and providing roundabout intersections at the ramp terminals. The roundabout intersections perform at a LOS of B or above during the 2048 design year.

As mentioned in the safety section, Alternative 9a force turning vehicles to divert to other intersections without providing additional capacity to those intersections. Further analysis would be necessary to fully understand the impacts of these diverted movements on the receiving intersections operational performance, and therefore was scored lower for the purposes of this comparison.

Costs: Costs for both alternatives have been developed and are summarized in the following table.

TABLE 13: Alternative Cost Summary Table	
Alternative	Construction Cost
Alternative 9a	\$14,915,000
Alternative 9b	\$18,330,000

Environmental Impacts: Alternative 9a and 9b are ranked equal in terms of environmental impact. Although Alternative 9b has a larger footprint than Alternative 9a, minimal to no additional right-of-way is anticipated for both alternatives, therefore they have been ranked equivalently.

Final Recommendation: Alternate 9b was determined to be the best alternative as it ranks best after the comparison matrix and meets the purpose and need of the project. A preliminary display of this alternative has been provided in Appendix C for reference.

Identification of Alternatives – CR 600 N >>

3R design criteria will be utilized in the development of this project. The following section evaluates each of the intersection design types presented within the INDOT Intersection Design Guide and will move viable alternatives forward for further evaluation.

Alternative 1 – Do Nothing

This alternative allows the existing intersection to remain in place with no improvements. This alternative will not address poor operational Level of Service or the safety concerns present, and therefore does not meet the need nor achieves the purpose of the project. This alternative will not be considered further.

Alternative 2 – Signalized Intersection Improvement

Due to the nature of the SR 49 corridor, it is not desirable to introduce new stop conditions into the free flow through traffic. Therefore, a signalized improvement has been dismissed and will not be considered further.

Alternative 3 – Median U-Turn Intersection Improvement

Median U-Turn intersection configurations are typically used in situations where the major roadway is a divided highway or boulevard and high demand for left-turns from the minor roadway cause operational delays or safety concerns, or in situations where heavy left-turn volumes from the major roadway conflict with heavy through movements. After review of the forecasted traffic movements at this intersection, there is relatively low demand for left turns from CR 600 N (less than 250 vehicles) compared against the heavy through volumes on SR 49 (greater than 3000 vehicles) during either the AM or PM peak hour. Similarly, there are relatively low left-turn

volumes from SR 49 attempting to cross heavy through movements. Due to this, this alternative has been dismissed and will not be considered further.

Alternative 4 – Roundabout Intersection Improvement

Roundabout intersection configurations eliminate many conflict points typically associated with right-angle and left-turn collisions, as well as serve as a tool to implement speed control to a corridor. However, SR 49 is considered a high-speed facility, and the nature of the corridor supports uninterrupted free flow conditions along the major roadway. The introduction of a roundabout option would disrupt this aspect of the corridor, and therefore has been dismissed as a viable alternative. This alternative will not be considered further.

Alternative 5 – Displaced Left Turn Intersection Improvement

Displaced left-turn intersection configurations are typically used in situations where high left-turn volumes conflict with heavy through volumes on the major roadway for the majority of the day, rather than only at peak hours. As the current intersection of SR 49 and CR 600 N has relatively minor left-turn volumes from the major roadway, this alternative has been dismissed and will not be considered further.

Alternative 6 – Jughandle Intersection Improvement

Jughandle intersections operate by removing the left-turn movements from the major roadway at congested signalized intersections in order to reduce the number of signal phases. These movements are then made at stop-controlled intersections along the minor roadway, while cross-street left turns are still made at the signalized intersection. As the current intersection of SR 49 and CR 600 N has relatively minor left-turn volumes from either the major or minor roadways, this alternative has been dismissed and will not be considered further.

Alternative 7 – Offset “T” Intersection Improvement

Offset “T” intersections converts a conventional intersection into two “T” intersections offset by some distance along the major roadway. Due to the existing intersection configuration at SR 49 and CR 600 N, as well as the adjacent land use, this alternative is not viable and will not be considered further.

Alternative 8 – Continuous Green “T” Intersection Improvement

A continuous green “T” intersection is only applicable to existing “T” intersections, and therefore is not a viable alternative for this location. This alternative will not be considered further.

Alternative 9 – Quadrant Roadway Intersection Improvement

A quadrant roadway intersection removes all left-turn movements from the main intersection via a connecting roadway in one quadrant of the intersection. This type of intersection improvement requires a considerable amount of right-of-way to construct, and as well as the installation of at least two additional signalized intersections. Due to the minimal left turn volume at the current intersection, as well as the anticipated right-of-way impacts, this alternative has been dismissed and will not be considered further.

Alternative 10 – Grade Separation Improvement

A grade separation eliminates the at-grade intersection of two roadways, allowing for the through traffic on both roadways to continue under free flow conditions and relocating any turning movements to the adjacent roadway network. Due to potential for an interchange improvement at Burlington Beach Rd to the south, the close proximity of this improvement, and the fact that the turn volumes both entering and existing SR 49 at CR 600 N are relatively minimal, it was determined that a grade separation at this intersection should be considered further. This alternative has been moved forward for further consideration.

Evaluation of Alternatives – CR 600 N >>

Due to the relatively low volumes of turn movements at SR 49 and CR 600 N, a grade separation was deemed a viable solution, especially when considered alongside a potential interchange improvement at Burlington Beach Rd. A grade separation would completely remove the conflict points between the heavy through traffic volumes of SR 49 and the turning movements at CR 600 N, eliminating any concern for left, right, or angle collisions. Furthermore, existing turn movements from CR 600 N would not be detoured a significant distance, as the intersection of Burlington Beach Rd to the south could provide access to SR 49. Therefore, this alternative was determined to be a feasible option, and is the recommended alternative for this intersection. A preliminary display of this alternative has been provided in Appendix C for reference.

Identification of Alternatives – CR 950 N >>

3R design criteria will be utilized in the development of this project. The following section evaluates each of the intersection design types presented within the INDOT Intersection Design Guide and will move viable alternatives forward for further evaluation.

Alternative 1 – Do Nothing

This alternative allows the existing intersection to remain in place with no improvements. This alternative will not address poor operational Level of Service or the safety concerns present, and therefore does not meet the need nor achieves the purpose of the project. This alternative will not be considered further.

Alternative 2 – Signalized Intersection Improvement

This alternative would introduce a new signalized stop condition at this intersection. This alternative may be feasible as the nature of the SR 49 corridor begins to change near the interchange of I-80/I-90 and the Town of Chesterton. Therefore, this alternative will be moved forward for further evaluation.

Alternative 3 – Median U-Turn Intersection Improvement

Median U-Turn intersection configurations are typically used in situations where the major roadway is a divided highway or boulevard and high demand for left-turns from the minor roadway cause operational delays or safety concerns, or in situations where heavy left-turn volumes from the major roadway conflict with heavy through movements. After review of the forecasted traffic movements at this intersection, there is relatively low demand for left turns from N. Calumet Avenue, but there is a significant amount of turn movements from CR 950 N. Through movements between CR 950 N and N. Calumet Avenue are minimal, so consideration was given to removal of the existing median cut and implementing a modified median U-turn intersection improvement at this location. This alternative was determined to be feasible and will be moved forward for further evaluation.

Alternative 4 – Roundabout Intersection Improvement

Roundabout intersection configurations eliminate many conflict points typically associated with right-angle and left-turn collisions, as well as serve as a tool to implement speed control to a corridor. While SR 49 is considered a high-speed facility, the nature of the corridor begins to change near the intersection of I-80/I-90 and the Town of Chesterton. A roundabout improvement would help eliminate conflict points of the intersection, and help minimize left, right, and angle crashes. However, after review it was determined that there was a lack of available right-of-way due to the adjacent homes and the close proximity of the overpass over I-80/I-90. Therefore, this alternative has been dismissed and will not be considered further.

Alternative 5 – Displaced Left Turn Intersection Improvement

Displaced left-turn intersection configurations are typically used in situations where high left-turn volumes conflict with heavy through volumes on the major roadway for the majority of the day, rather than only at peak hours. As the current intersection of SR 49 and CR 950 N has relatively minor left-turn volumes from the major roadway, this alternative has been dismissed and will not be considered further.

Alternative 6 – Jughandle Intersection Improvement

Jughandle intersections operate by removing the left-turn movements from the major roadway at congested signalized intersections in order to reduce the number of signal phases. These movements are then made at stop-controlled intersections along the minor roadway, while cross-street left turns are still made at the signalized intersection. As the current intersection of SR 49 and CR 950 N has relatively minor left-turn volumes from the major roadway, this alternative has been dismissed and will not be considered further.

Alternative 7 – Offset “T” Intersection Improvement

Offset “T” intersections convert a conventional intersection into two “T” intersections offset by some distance along the major roadway. Due to the existing intersection configuration at SR 49 and CR 950 N, this alternative may be feasible and will be moved forward for further consideration.

Alternative 8 – Continuous Green “T” Intersection Improvement

A continuous green “T” intersection is only applicable to existing “T” intersections, and therefore is not a viable alternative for this location. This alternative will not be considered further.

Alternative 9 – Quadrant Roadway Intersection Improvement

A quadrant roadway intersection removes all left-turn movements from the main intersection via a connecting roadway in one quadrant of the intersection. This type of intersection improvement requires a considerable amount of right-of-way to construct, and as well as the installation of at least two additional signalized intersections. Due to the minimal left turn volume at the current intersection, as well as the anticipated right-of-way impacts, this alternative has been dismissed and will not be considered further.

Alternative 10 – Grade Separation Improvement

A grade separation eliminates the at-grade intersection of two roadways, allowing for the through traffic on both roadways to continue under free flow conditions and relocating any turning movements to the adjacent roadway network. Due to the minimal amount of through movements between CR 950 N and N. Calumet Avenue, as well as the larger amounts of turn movements from the minor roadways, a grade separation improvement was dismissed and will not be considered further.

Evaluation of Alternatives – CR 950 N >>

Alternatives 2, 3, and 7 have been moved forward for further consideration at this intersection.

Alternative 2 – Signalized Intersection Improvement

To further evaluate Alternative 2, a traffic signal warrant analysis was performed. The results of this analysis are summarized below:

- Warrant 1: Eight-Hour Vehicular Volume: **Yes**
- Warrant 2: Four-Hour Vehicular Volume: **Yes**
- Warrant 3: Peak-Hour Vehicular Volume: **Yes**

- Warrant 4: Pedestrian Volume: N/A
- Warrant 5: School Crossing: N/A
- Warrant 6: Coordinated Signal System: No
- Warrant 7: Crash Experience: **Yes**
- Warrant 8: Roadway Network: No
- Warrant 9: Intersection Near a Grade Crossing: No

As shown in the summary above, this intersection meets 4 of the 9 intersection warrants used to consider the installation of a traffic signal. Due to these results, the level of service was then evaluated under a signalized condition. The results of this analysis are summarized in the table below:

TABLE 14: Forecasted Intersection Level of Service – Alternative 2										
Intersection			2028 AM Peak HR		2028 PM Peak HR		2048 AM Peak HR		2048 PM Peak HR	
			Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
SR 49 at CR 950 N	EB	LT	15.7	B	17.9	B	19.0	B	22.4	C
		TH	15.7	B	17.9	B	19.0	B	22.4	C
		RT	15.7	B	17.9	B	19.0	B	22.4	C
	WB	LT	25.2	C	32.7	C	32.0	C	42.5	D
		TH	25.2	C	32.7	C	32.0	C	42.5	D
		RT	11.3	B	13.9	B	17.8	B	17.0	B
	NB	LT	30.7	C	48.7	D	41.4	D	80.7	F
		TH	11.1	B	19.6	B	16.0	B	27.3	C
		RT	0.0	A	0.0	A	0.0	A	0.0	A
	SB	LT	45.2	D	50.6	D	71.9	E	73.3	E
		TH	6.2	A	10.0	B	6.9	A	13.6	B
		RT	0.0	A	0.6	A	0.0	A	1.1	A

While a signalized intersection provides some improvement in level of service for a number of movements, southbound left turn movements still experience a LOS F under forecasted volumes due to the moderate amount of turn volumes trying to cross heavy northbound through movements. For the 2048 design year, this starts to also impact the southbound through movements as queueing from the left-turn movements at the intersection begins to spill into the left-most through lane. Due to these results, Alternative 2 was dismissed as it does not serve the purpose and need of this project.

Alternative 3 – Modified Median U-Turn Intersection Improvement

Alternative 3 consists of a modified median U-turn intersection improvement which eliminates the existing median cut at CR 950 N and N. Calumet Avenue, instead providing a median cut approximately 1200 feet south. This modification would eliminate direct through movements from CR 950 N or N. Calumet Avenue, which are minimal, as well as left-turn movements from northbound and southbound SR 49. Through movements from CR 950 N would instead turn right onto southbound SR 49, merge over into the left-turn lane, and then complete a U-turn onto northbound SR 49. These movements would then need to merge into the right-turn lane and complete the movement onto N. Calumet Avenue. Left-turn movements from southbound SR 49 would need to perform much of the same procedure, first making a U-turn onto northbound SR 49 and then a right-turn movement onto N. Calumet Avenue.

Due to the low volumes of left-turn movements from northbound SR 49 or left-turn and through movements from N. Calumet Avenue, as well as the close proximity of the bridge overpass over I-80/I-90 to the north, a dedicated median U-turn was not provided for these movements. Instead, left-turn movements from northbound SR 49 would need to continue north until the signalized intersection of SR 49 and I-80/I-90 where these vehicles would then perform a U-turn. Left-turn and through movements from N. Calumet Avenue would follow much of this same procedure, first turning right onto northbound SR 49 and then making a U-turn movement at the signalized intersection of SR 49 and I-80/I-90 before completing the rest of the intended movement.

To further evaluate Alternative 3, a level of service analysis using forecasted traffic volumes was performed. The results of this analysis are summarized in the table below:

TABLE 15: Forecasted Intersection Level of Service – Alternative 3										
Intersection			2028 AM Peak HR		2028 PM Peak HR		2048 AM Peak HR		2048 PM Peak HR	
			Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
SR 49 at CR 950 N	EB	LT	-	-	-	-	-	-	-	-
		TH	-	-	-	-	-	-	-	-
		RT	13.5	B	20.9	C	16.0	C	29.7	D
	WB	LT	-	-	-	-	-	-	-	-
		TH	-	-	-	-	-	-	-	-
		RT	19.7	C	24.1	C	29.9	D	46.1	E
	NB	LT	-	-	-	-	-	-	-	-
		TH	0.0	A	0.0	A	0.0	A	0.0	A
		RT	0.0	A	0.0	A	0.0	A	0.0	A
	SB	LT	10.1	B	10.7	B	15.1	C	14.3	B
		TH	0.0	A	0.0	A	0.0	A	0.0	A
		RT	0.0	A	0.0	A	0.0	A	0.0	A

As shown above, this intersection improvement would operate at a minimum LOS C once completed but would deteriorate to a minimum LOS E by the design year. The scenario above assumes the intersections of CR 950 N and N. Calumet Avenue as well as the proposed median U-turn operate under a stop condition, and further evaluation of a signalized improvement at these intersections may be warranted during the later part of the lifecycle to maintain a higher overall Level of Service.

The northbound left-turn movements will be displaced due to this alternative. However, it is anticipated that these vehicles would utilize the interchange at US 6 to exit SR 49, then utilize US 6 and local roadways to travel to their destination. Therefore, these movements are not anticipated to impact the Level of Service of the northern signalized intersection.

Westbound through and left volumes would be displaced likely to the signalized intersection to the north of the project due to this alternative. These volumes are forecasted to be minimal (less than 5 vehicles during peak hour). The Level of Service of the northern intersection has been evaluated under current traffic volumes and found to operate at an overall LOS C. Therefore, the potential addition of these displaced movements is not anticipated to cause significant impacts to the northern signalized intersection.

Alternative 7 – Offset “T” Intersection Improvement

Alternative 7 would consist of the realignment of N. Calumet Avenue to improve separation between CR 950 N and N. Calumet Avenue, forming an offset “T” intersection. To further evaluate Alternative 7, a level of service analysis using forecasted traffic volumes was performed. The results of this analysis are summarized in the table below:

TABLE 16: Forecasted Intersection Level of Service – Alternative 7										
Intersection			2028 AM Peak HR		2028 PM Peak HR		2048 AM Peak HR		2048 PM Peak HR	
			Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
SR 49 at CR 950 N	EB	LT	-	-	-	-	-	-	-	-
		TH	16.5	C	27.9	D	-	-	-	-
		RT	16.5	C	27.9	D	-	-	-	-
	WB	LT	-	-	-	-	-	-	-	-
		TH	19.8	C	31.8	C	-	-	-	-
		RT	19.8	C	30.1	C	-	-	-	-
	NB	LT	24.6	C	107.4	F	-	-	-	-
		TH	0.0	A	0.0	A	-	-	-	-
		RT	0.0	A	0.0	A	-	-	-	-
	SB	LT	46.1	E	253	F	-	-	-	-
		TH	0.0	A	0.0	A	-	-	-	-
		RT	0.0	A	0.0	A	-	-	-	-

As shown in Table 16, this intersection improvement begins to fail under 2028 forecasted traffic volumes, largely due to the delays caused by left-turn volumes attempting to cross or merge with heavy through volumes. Therefore, this alternative does not meet the purpose or need of the project, and has been dismissed.

Selected Alternative – Alternative 3, Modified Median U-Turn Intersection Improvement

After further evaluation of the alternatives moved forward for the intersection of SR 49 and CR 950 N, Alternative 3 was determined to be feasible and therefore is the recommended alternative. A preliminary display of this alternative has been provided in Appendix C for reference.

Utility Coordination and Identification of Existing Facilities >>

Utility coordination efforts were initiated to gather information on existing utility facilities within the project area for these intersection improvements. The following section summarizes this initial research gathered to date:

Buckeye Pipeline

Initial Notice was sent to the Utility on June 1st, 2022. Initial Notice Response was received on June 7th, 2022. Utility has an 8-inch steel pipeline which crosses SR 49 approximately 1,700 feet north of CR 700N and which crosses N. Calumet Ave. approximately 1,300 feet east of SR 49. After further review, it was determined that the facilities of this utility fall outside of the limits of the intersections evaluated in this report, and therefore no conflicts are anticipated.

Calumet Communications

Initial Notice was sent to the Utility on June 1st, 2022. A follow-up notice was sent to the utility on July 25th, 2022. No response has been received at the time of this report.

Comcast

Initial Notice was sent to the Utility on June 1st, 2022. A follow-up notice was sent to the utility on July 25th, 2022. No response has been received at the time of this report.

Crossroads Pipeline

Initial Notice was sent to the Utility on June 1st, 2022. A follow-up notice was sent to the utility on July 25th, 2022. No response has been received at the time of this report.

Duneland School Corp

Initial Notice was sent to the Utility on June 1st, 2022. Initial Notice Response was received on June 21st, 2022. Utility has underground fiber optic facilities that cross SR 49 near CR 900 N from Liberty Intermediate School to Jackson Elementary School. After further review, it was determined that the facilities of this utility fall outside of the limits of the intersections evaluated in this report, and therefore no conflicts are anticipated.

Enbridge Energy

Initial Notice was sent to the Utility on June 1st, 2022. A follow-up notice was sent to the utility on July 25th, 2022. No response has been received at the time of this report.

Frontier

Initial Notice was sent to the Utility on June 1st, 2022. Initial Notice Response was received on July 11th, 2022. Utility has buried fiber optic and copper facilities alongside and/or crossing at numerous locations along SR 49, including at the intersection of Burlington Beach Rd, CR 600 N, and CR 950 N. Coordination will need to be maintained with Frontier as design progresses to further evaluate the extent of any impacts or relocations necessary due to proposed improvements at these intersections.

Kankakee Valley REMC

Initial Notice was sent to the Utility on June 1st, 2022. Initial Notice Response was received on July 26th, 2022. Utility has underground electric facilities along the east side of SR 49 near CR 600 N and runs parallel to SR 49 to a point approximately 2,750 feet south of CR 600 N. Coordination will need to be maintained with Kankakee Valley REMC as design progresses to further evaluate the extent of any impacts or relocations necessary due to proposed improvements at the intersection of CR 600 N.

Lumen (Local & National)

Initial Notice was sent to the Utility on June 1st, 2022. Initial Notice Response was received on June 2nd, 2022. Utility has buried fiber optic facilities crossing SR 49 at multiple points. After further review, it was determined that the facilities of this utility fall outside of the limits of the intersections evaluated in this report, and therefore no conflicts are anticipated.

MCI/Verizon

Initial Notice was sent to the Utility on June 1st, 2022. Initial Notice Response was received on June 8th, 2022. Utility has underground fiber optic facilities crossing SR 49 within CSX right-of-way. After further review, it was

determined that the facilities of this utility fall outside of the limits of the intersections evaluated in this report, and therefore no conflicts are anticipated.

Nipsco (Gas & Electric)

Initial Notice was sent to the Utility on June 1st, 2022. Initial Notice Response was received on June 3rd, 2022. Utility has gas and electric facilities located along SR 49 at multiple locations. Coordination will need to be maintained with Nipsco as design progresses to further evaluate the extent of any impacts or relocations necessary due to the proposed improvements at these intersections.

Sprint

Initial Notice was sent to the Utility on June 1st, 2022. A follow-up notice was sent to the utility on July 25th, 2022. No response has been received at the time of this report.

City of Valparaiso Utilities

Initial Notice was sent to the Utility on June 1st, 2022. Initial Notice Response was received on July 25th, 2022. Utility has sanitary sewer force mains and water mains crossing SR 49 at multiple locations, including a 20-inch water main near Burlington Beach Rd. Coordination will need to be maintained with the City of Valparaiso Utilities as design progresses to further evaluate the extent of any impacts or relocations necessary due to the proposed improvements at the intersection of Burlington Beach Rd.

Environmental Considerations >>

TABLE 17 – Anticipated Environmental Impacts		
	<i>Description</i>	<i>Notes</i>
☒	Tree Clearing	Minimal tree clearing is anticipated for this project. Consultation with IPaC will occur during the environmental document procurement. Finding of “not likely to adversely effect” is likely to result from the IPaC consultation.
☒	Bats	Per the USFWS IPaC site: the Indiana Bat (<i>Myotis sodalis</i>), and the Northern Long-eared Bat (<i>Myotis septentrionalis</i>) have a potential to be affected by activities at the project location. Potential effects will be confirmed during further consultation with IPaC and USFWS as part of the environmental document preparation process.
☐	Historical	Per review of the IDNR SHAARD, potentially historic structures are known to be located within one mile of the project limits. However, based upon the proposed scope of the project, any impacts to the identified structures should be avoided. The proposed scope of work could qualify for the MPPA-B with no archeological reconnaissance required as long as the work occurs in previously disturbed soils. Cultural resources will be further investigated and coordinated with the INDOT Cultural Resources Office (CRO) during project development.
CE-4	CE Type	The project will require some right-of-way based on the extents of the project improvements, and will likely classify as a permanent traffic alteration. The District or the District’s consultant will prepare an environmental document in accordance with the National Environmental Policy Act, National Historic Preservation Act, and other relevant laws. Further consultation with the INDOT LaPorte District Environmental Services Director will occur to confirm the level of categorical exclusion document applicable to this project. For the purpose of this report, a CE-4 is assumed.

TABLE 18 – Anticipated Permits

	<i>Description</i>	<i>Notes</i>
☒	USACE 404/IDEM 401	According to the preliminary desktop review of the USGS TopoMaps, National Hydrography Dataset (NHD) and National Wetland Inventory (NWI) maps there are potential jurisdictional water features within the project area, including areas of mapped wetlands. A waters of the United States Investigation and Report along with coordination with the INDOT Ecology Waterway permitting is recommended. The proposed scope of work could result in unavoidable impacts to jurisdictional waterways and Section 404 permitting with the USACE would be required.
☐	IDNR CIF	The project does not anticipate to construct within any mapped floodways or floodplains, and therefore a IDNR CIF permit is not anticipated.
☒	IDEM CGSP	The proposed intersection improvement projects are anticipated to impact more than 1 acre of disturbed area, and therefore an IDEM CGSP is anticipated.
1	Storm Water Quality Manager Level	Storm Water Quality Manager Level 1 is anticipated.

Right of Way Impacts >>

Right of way review and verification are underway on this project. Right of way plans and existing grants/deeds were requested and received from INDOT as part of initial project research and were found to have been recorded timely. Existing right-of-way appears to be Limited Access, ranging from 110-foot to 215-foot from centerline on either side of the roadway per ST-Project No. 089-1 and ST-Project No. 089-3.

Limited right-of-way impacts are anticipated near each intersection location to facilitate each improvement. The following summarizes the anticipated impacts at each intersection:

SR 49 and Burlington Beach Rd: 4 parcels anticipated
 SR 49 and CR 600 N: 3 parcels anticipated
 SR 49 and CR 950 N: No right-of-way impacts anticipated

The right-of-way process will be continued and refined as project design progresses and efforts will be made to continue to avoid additional right-of-way impacts.

Maintenance of Traffic During Construction >>

TABLE 19 – Maintenance of Traffic Concept

Is this a mobility significant project / require a TMP?	Yes
Can the road be closed to traffic (detour)?	No
Does the project require an IHCP Exception?	Yes

The current maintenance of traffic concept for this project is to utilize phased construction to minimize impacts to traffic along SR 49 as much as possible. Work will need to be phased such that work can be facilitated through the use of lane closures, with temporary crossovers anticipated. Temporary closures along the minor roadways should be considered to limit traffic through the construction zone. Coordination will be maintained with the

INDOT LaPorte District Traffic Engineering Department to ensure all proposed MOT concepts and concerns are appropriately addressed. It is anticipated that a Transportation Management Plan will be required, as this is a mobility significant project.

Cost Estimate >>

Preliminary cost estimates for the project have been prepared and summarized below:

TABLE 20 – Project Costs				
Phase	Burlington Beach	CR 600 N	CR 950 N	Comments
Preliminary Engineering 1 (PE1):	\$2,797,500	\$1,588,500	\$146,250	15% of Total CN
Right-of-Way Purchase (RW1):	\$40,000	\$30,000	\$0	Assumes \$10,000 per Parcel
Right-of-Way Services (RW2):	\$40,000	\$30,000	\$0	Assumes \$10,000 per Parcel
Railroad (RR 1):	\$0	\$0	\$0	N/A
Utilities (UT1):	\$-	\$-	\$-	
Preliminary Engineering Total (PE):	\$2,877,500	\$1,648,500	\$146,250	
Construction:	\$18,330,000	\$10,270,000	\$655,000	
Maintenance of Traffic:	\$320,000	\$320,000	\$320,000	Assumes \$320,000 per Project
ADA Curb Ramps/Pedestals	\$0	\$0	\$0	N/A
Construction Total (CN):	\$18,650,000	\$10,590,000	\$975,000	
Railroad Construction (RR 2):	\$0	\$0	\$0	N/A
Utilities CN (UT2):	\$0	\$0	\$0	N/A
Other Considerations:	\$0	\$0	\$0	N/A
Total All Phases:	\$21,527,500	\$12,238,500	\$1,121,250	

A preliminary itemized construction cost estimate for each intersection has been provided in Appendix D for reference. A 20% contingency has been added to account for unknown aspects including inflation.

Changes to the Proposal >>

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



Concurrence >>

This document was prepared by:

A handwritten signature in black ink, appearing to read 'Wyatt Huber'.

Wyatt Huber, PE

12/16/2022

Date:

Reviewed by:

Alan Holderread, PE

District Traffic Engineer, LaPorte District

Date:

Paul South, PE

Scoping Manager, LaPorte District

Date:

Approved by:

Steve Benczik, PE

System Asset Manager, LaPorte District

Date:



APPENDIX A – PROJECT LOCATION MAP



8415 E. 56th Street
Indianapolis, Indiana 46216
Phone: 317-544-4996
Phone: 317-544-4996
Fax: 317-544-4997

PORTER COUNTY
SR-49 INTERSECTION IMPROVEMENTS

LOCATION MAP
RP 31+0.147 to RP 38+0.346

HORIZONTAL SCALE

VARIES

VERTICAL SCALE

n/a

SMALL STRUCTURE ID

•

DESIGNATION

•

SURVEY BOOK

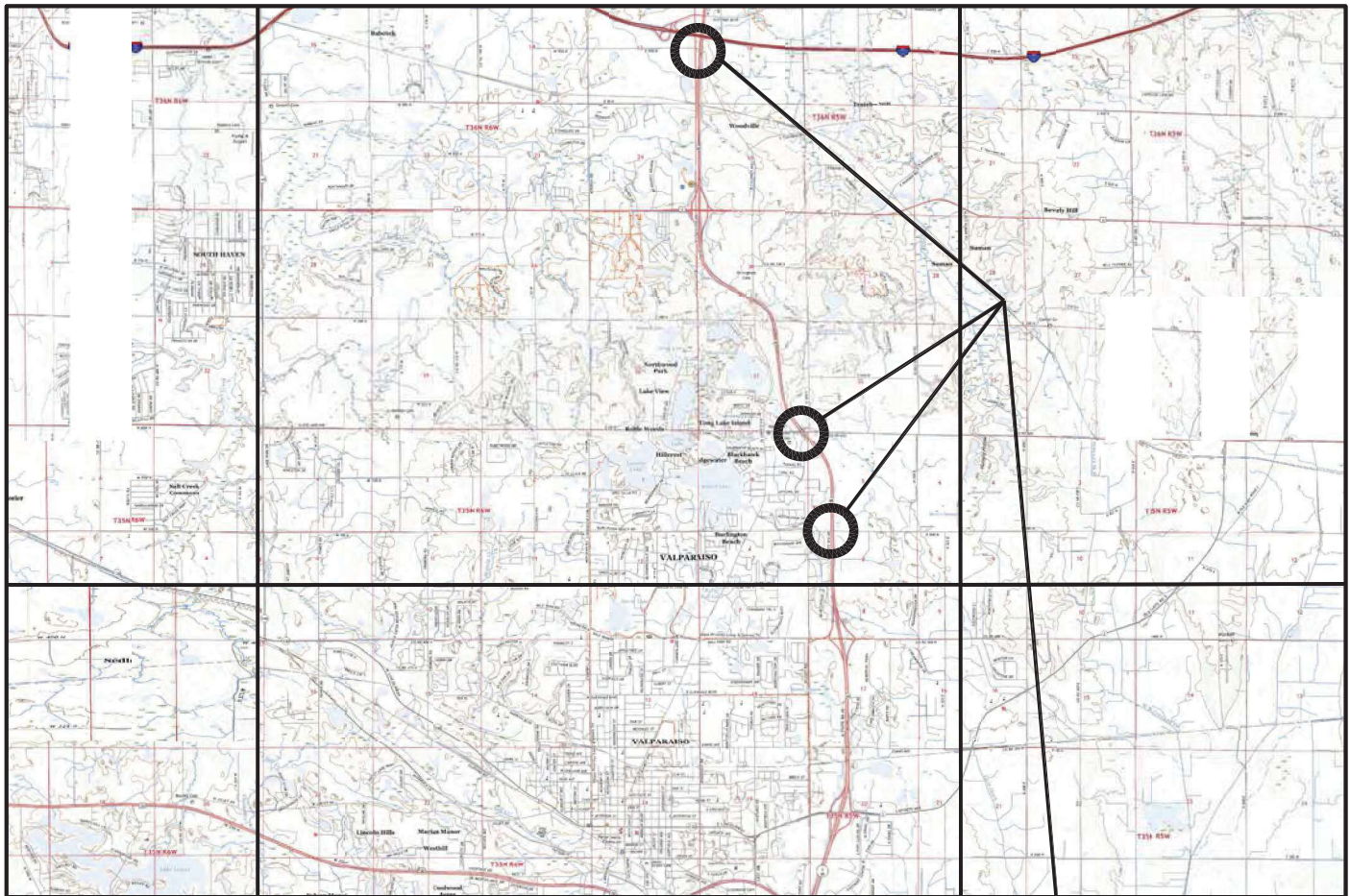
SHEETS

1 of 1

CONTRACT

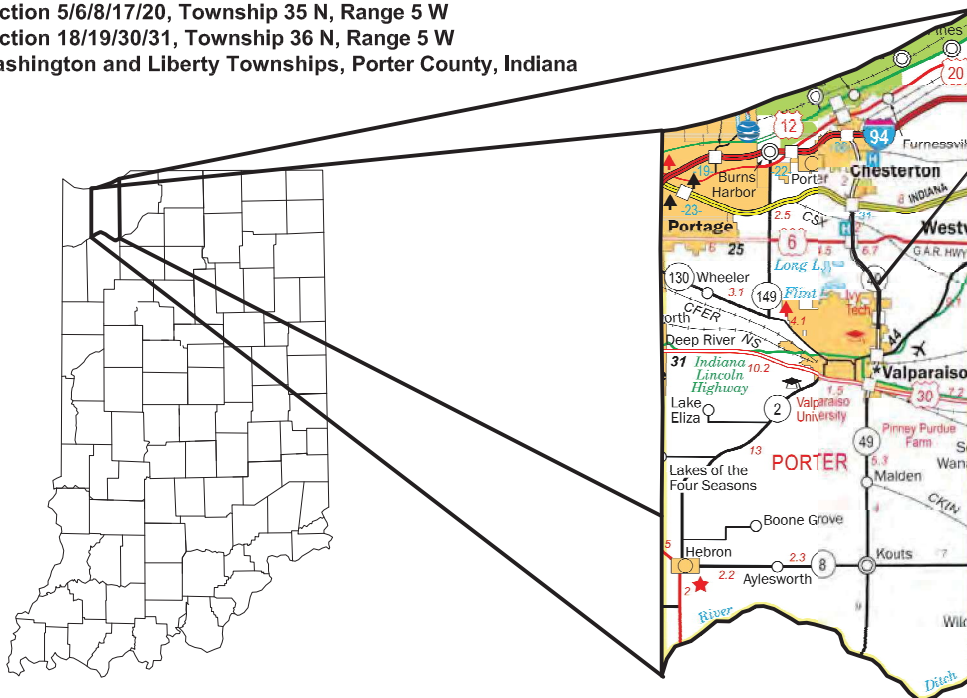
PROJECT

2019-8000-12-09



Section 5/6/8/17/20, Township 35 N, Range 5 W
Section 18/19/30/31, Township 36 N, Range 5 W
Washington and Liberty Townships, Porter County, Indiana

PROJECT LOCATIONS



PORTER COUNTY



APPENDIX B – ROADHAT 4D CRASH ANALYSIS

RoadHAT 4D	Index of Crash Frequency and Cost - Form F1		Page 1/2
Settings: Indiana state settings		Version: Version 4.1	
Location	SR 49 @ Burlington Beach Rd		
GIS			
Post			
Analyst	WAH		
Date	11/11/2022		
INPUT			
Road Facility Type	Signalized Urban State Intersection		
Busiest Road AADT (veh/day)	35845		
Crossing Road AADT (veh/day)	5154		
T Intersection Indicator (1 if present, 0 otherwise)	0		
First Year with Crash Data (yyyy)	2019		
Last Year with Crash Data (yyyy)	2021		
Number of Crashes (crash/period)			
Fatal and Incapacitating Injury Crashes	6		
Non-Incapacitating and Possible Injury Crashes	7		
Property Damage Only Crashes	39		
Route or Road Type	Signalized Urban State Intersection		
Average Crash Costs (\$)			
Fatal and Incapacitating Injury Crashes	1809300		
Non-Incapacitating and Possible Injury Crashes	366800		
Property Damage Only Crashes	40700		
Crash Cost Year (yyyy)	2017		
OUTPUT			
Expected Crash Frequency (crash/year)			
Fatal and Incapacitating Injury Crashes	1.149		
Non-Incapacitating and Possible Injury Crashes	1.83		
Property Damage Only Crashes	12.89		
All Crashes	15.86		
Index of Crash Frequency	0.13		
Index of Crash Cost	0.67		

RoadHAT 4D	Index of Crash Frequency and Cost - Form F1		Page 2/2
Settings: Indiana state settings		Version: Version 4.1	
Location	SR 49 @ Burlington Beach Rd		
GIS			
Post			
Analyst	WAH		
Date	11/11/2022		
Comments:			

RoadHAT 4D		Index of Crash Frequency and Cost - Form F1		Page 1/2	
Settings: Indiana state settings			Version: Version 4.1		
Location		SR 49 @ CR 600 N			
GIS					
Post					
Analyst		WAH			
Date		11/11/2022			
INPUT					
Road Facility Type			Unsignalized Urban State Intersection		
Busiest Road AADT (veh/day)			38874		
Crossing Road AADT (veh/day)			3597		
T Intersection Indicator (1 if present, 0 otherwise)			0		
First Year with Crash Data (yyyy)			2018		
Last Year with Crash Data (yyyy)			2020		
Number of Crashes (crash/period)					
Fatal and Incapacitating Injury Crashes			5		
Non-Incapacitating and Possible Injury Crashes			5		
Property Damage Only Crashes			15		
Route or Road Type			Unsignalized Urban State Intersection		
Average Crash Costs (\$)					
Fatal and Incapacitating Injury Crashes			1928400		
Non-Incapacitating and Possible Injury Crashes			358900		
Property Damage Only Crashes			38000		
Crash Cost Year (yyyy)			2017		
OUTPUT					
Expected Crash Frequency (crash/year)					
Fatal and Incapacitating Injury Crashes			0.791		
Non-Incapacitating and Possible Injury Crashes			0.83		
Property Damage Only Crashes			6.61		
All Crashes			8.23		
Index of Crash Frequency			0.01		
Index of Crash Cost			0.77		

RoadHAT 4D		Index of Crash Frequency and Cost - Form F1		Page 2/2	
Settings: Indiana state settings			Version: Version 4.1		
Location		SR 49 @ CR 600 N			
GIS					
Post					
Analyst		WAH			

RoadHAT 4D		Index of Crash Frequency and Cost - Form F1		Page 1/2	
Settings: Indiana state settings			Version: Version 4.1		
Location		SR 49 @ CR 950 N			
GIS					
Post					
Analyst		WAH			
Date		11/11/2022			
INPUT					
Road Facility Type			Unsignalized Urban State Intersection		
Busiest Road AADT (veh/day)			36064		
Crossing Road AADT (veh/day)			2557		
T Intersection Indicator (1 if present, 0 otherwise)			0		
First Year with Crash Data (yyyy)			2019		
Last Year with Crash Data (yyyy)			2021		
Number of Crashes (crash/period)					
Fatal and Incapacitating Injury Crashes			6		
Non-Incapacitating and Possible Injury Crashes			6		
Property Damage Only Crashes			36		
Route or Road Type			Unsignalized Urban State Intersection		
Average Crash Costs (\$)					
Fatal and Incapacitating Injury Crashes			1928400		
Non-Incapacitating and Possible Injury Crashes			358900		
Property Damage Only Crashes			38000		
Crash Cost Year (yyyy)			2017		
OUTPUT					
Expected Crash Frequency (crash/year)					
Fatal and Incapacitating Injury Crashes			0.636		
Non-Incapacitating and Possible Injury Crashes			0.65		
Property Damage Only Crashes			5.34		
All Crashes			6.63		
Index of Crash Frequency			1.51		
Index of Crash Cost			1.45		

RoadHAT 4D		Index of Crash Frequency and Cost - Form F1		Page 2/2	
Settings: Indiana state settings			Version: Version 4.1		
Location		SR 49 @ CR 950 N			
GIS					
Post					
Analyst		WAH			